Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

Final Report of the Phase I Evaluation of the DIAND On-Reserve Housing Program

Canada

Final Report of the Phase I Evaluation of the DIAND On-Reserve Housing Program

July 27, 1984

Submitted to:

Mr. Peter Fillipoff
Project Manager
Evaluation Branch
Corporate Policy
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Prepared by:

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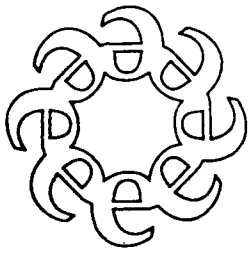

Ekos Research Associates Inc.

July 27, 1984

Mr. Peter Fillipoff
Project Manager
Evaluation Branch
Corporate Policy, DIAND
10 Wellington St., Rm. 1902
Hull, Quebec

Dear Mr. Fillipoff:

Ekos Research Associates Inc. is pleased to submit twenty-five copies of the "Final Report for the Phase I Evaluation of the DIAND On-Reserve Housing Program".

We believe that the study has successfully accomplished all of its objectives and provided answers to the major study issues. We wish to emphasize that the substantive findings presented are only illustrative of conditions on the six study reserves and should not be generalized beyond this stock.

We look foward to discussing this material with yourself and other members of the Project Advisory Committee.

Sincerely,

EKOS RESEARCH ASSOCIATIONS Inc.

Frank Graves
President

ACKNOWLEDGEMENTS

The study was accomplished through the efforts of a multi-disciplinary team of professionals. Following is a list of the formal project team:

Ekos Research Associates Inc.

Frank Graves,	Project Director and Principle Investigator
David Redmond,	Senior Analyst and Assistant Investigator
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First Nations Consultants

Dan Brant,	Senior Critical Advisor

The study team would also like to acknowledge the following persons and groups for their valuable contributions. Their assistance was gratefully appreciated in the production of this report.

Peter Fillipoff,	Department of Indian Affairs Northern Development
John Graham,	Department of Indian Affairs Northern Development

Housing and Band Support Branch, DIAND
On-Reserve Housing Program Evaluation Project Advisory Committee
Canada Mortgage and Housing Corporation
The Assembly of First Nations- National Indian Housing Council
The Band Councils and Residents of Canim Lake, Okanagan, White Bear, Sakimay, Poplar Hill, and Fort William
Regional Offices of DIAND in Ontario, Saskatchewan, British Columbia
District Officies in Williams Lake, Regina, Sioux Lookout, Thunder Bay
Medical Services Branch, Health and Welfare

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

The Department of Indian Affairs and Northern Development (DIAND) is in the process of evaluating the On-reserve Housing Program. This program is a major federal program and the chief component of the government's efforts to provide safe and decent housing on reserves.

The front-end planning activities for the evaluation were completed in 1981-82 and these studies suggested that a major survey effort for a representative sample of reserves was necessary to provide reliable and valid answers to the major evaluation issues. Given the complexity of the study design, DIAND's program evaluation branch decided to conduct a major pilot study which would thoroughly test all of the evaluation methodology on six separate reserves. This study, known as Phase I of the evaluation, has now been completed and is the subject of the present report. In this executive summary we provide a concise overview of the methodology used and a critical assessment of the reliability, validity and practicality of the methodology. The summary will also present some preliminary, illustrative findings drawn from the small Phase I sample. This report concludes with a summary of recommendations regarding revisions to the Phase I methodology and a work plan and resource estimate for Phase II of the evaluation.

It is important to note that the Phase I analysis are in no way intended to be representative of the entire on-reserve housing stock. The six communities were selected to provide a rigourous field test and not to generalise to the population.

2.0 TRAINING, STAFFING AND SURVEY INSTRUMENTS

Training was a pivotal component of the overall methodology. Phase I adapted a set of existing training materials which were designed to provide the necessary interview and inspection skills. This entailed the administration of eight separate instruments. These instruments were administered by a field force made up of: Indian census and liaison personnel within the host community, Ekos trained Indian interviewers, DIAND and CMHC Technical Services inspectors and Ekos - Price Waterhouse professionals.

In the following table we summarise the major survey instruments, associated field responsibilities and results.

EXHIBIT A

INSTRUMENT SUMMARY

INSTRUMENT	RESULTS	RECOMMENDATIONS
1. CENSUS: (ADMINISTERED BY INDIAN PERSONNEL FROM WITHIN RESERVE) • COLLECTS BASIC SOCIO-DEMOGRAPHIC & INFRAS-STRUCTURE DATA FOR ALL HOUSEHOLDS	• ACCEPTABLE	• RETAIN METHOD • BETTER ADVANCE COMMUNICATION AND TRAINING • DEVELOP CONTRACT AND TERMS OF REFERENCE FOR THE BAND
2. OCCUPANT INTERVIEW: (ADMINISTERED BY EKOS - TRAINED INDIAN INTERVIEWERS) • COLLECTS DETAILED SOCIO-DEMOGRAPHIC; FINANCIAL & PERCEPTUAL DATA FOR SAMPLE OF HOUSEHOLDS	• GOOD RESULTS	• RETAIN METHOD • SHORTEN AND SIMPLIFY
3. TECHNICAL SKIM: (TRAINED INDIAN INTERVIEWER) • SHORT TECHNICAL INSPECTION OF STRUCTURE	• VERY GOOD RESULTS	• RETAIN METHOD

INSTRUMENT SUMMARY

INSTRUMENT	RESULTS	RECOMMENDATIONS
4. TECHNICAL INSPECTION: (DIAND TECHNICAL SERVICES INSPECTOR) • DETAILED TECHNICAL INSPECTION	• VERY GOOD RESULTS • COST ESTIMATION PROBLEMATIC	• RETAIN METHOD • USE 25% SAMPLE • IMPROVE METHOD AND ESPECIALLY TRAINING PROCEDURES FOR COST ESTIMATION
5. BAND INTERVIEW: (FIELD SUPERVISOR) • VARIETY OF PERCEPTUAL & FACTUAL DATA ON HOUSING CONDITIONS, INFRASTRUCTURE, & PROGRAM CONSUMPTION	• GOOD RESULTS • TOO LONG	• SHORTEN AND SIMPLIFY • REDUCE OPEN-ENDED NATURE • DETERMINE ELIGIBLE RESPONDENT(S)
6. DISTRICT OFFICE INTERVIEW	• PARTS ARE ACCEPTABLE • SUBSTANTIAL REVISIONS ARE INDICATED	• SHORTEN AND SIMPLIFY • MINIMISE REDUNDANCY AND SELF-EVALUATION • RELATE TO EFFICIENCY AND CONTROL ISSUES
7. REGIONAL OFFICE INTERVIEW	• AS PER DISTRICT	• AS PER DISTRICT
8. COMMUNITY NURSE SURVEY	• PARTS ARE ADEQUATE - SHOULD BE INCREASED IN SCOPE	• RETAIN METHOD

In summary the staffing, training and instruments all worked reasonably well and we recommend they be used in Phase II with a series of minor revisions. These revisions are discussed in Section 1 in the full final report.

3.0 SURVEY EXPERIENCE AND SAMPLING REFINEMENTS

The pilot study involved six reserves chosen by the Department from the main sample of 89 reserves. The selection of the six reserves was based on the desire to test the methodology in various regions, in bands with different housing conditions, and in urban, rural and remote settings. The pilot band sample included two urban reserves (Fort William in Ontario, and the Okanagan in British Columbia), three rural reserves (Sakimay and White Bear in Saskatchewan, and Canim Lake in British Columbia), and one remote reserve (Poplar Hill in Northern Ontario).

The reserves in British Columbia and Saskatchewan were surveyed from May 7th to the 18th and the Ontario reserves were surveyed from May 28th to June 2nd. The sample characteristics are described in Exhibit B.

EXHIBIT B
SAMPLE CHARACTERISTICS

Reserve	Interviews Attempted	Completed Interviews	Completed Technical Skim	Completed Technical	Refusals
Canim Lake	28	20	20	14	2
Okanagan	35	19	19	15	3
Sakimay	27	18	18	18	0
White Bear	38	20	20	20	2
Poplar Hill	16	15	15	15	1
Fort William	24	20	20	20	1

District Office Surveys were completed for Williams Lake, B.C., Yorkton, Saskatchewan, Sioux Lookout and Thunder Bay, Ontario.

Regional Office Surveys were completed for Saskatchewan and Ontario.

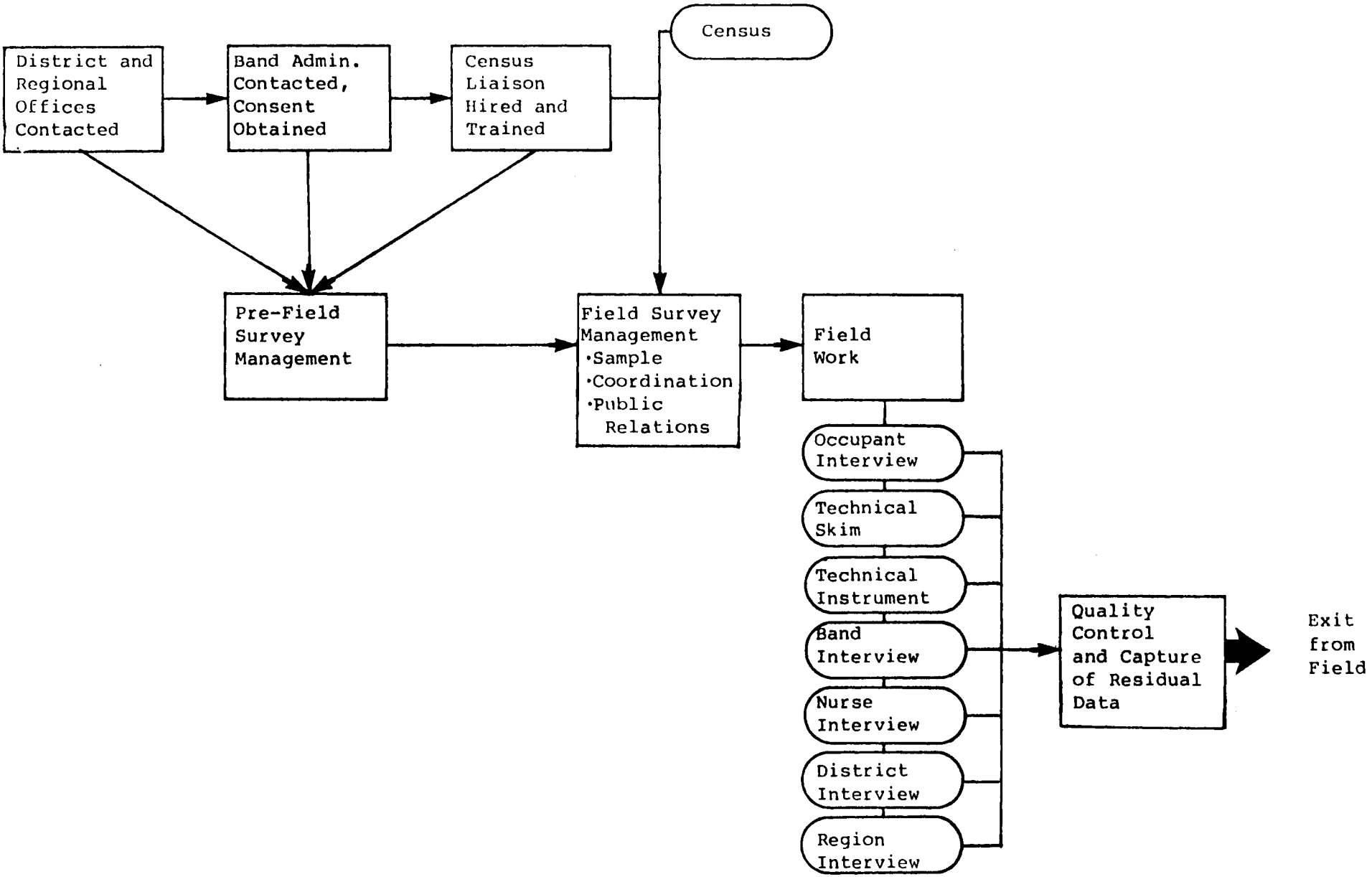
The study also examined the question of whether or not the origional sample would support the analytical requirements of CMHC's evaluation of their on-reserve housing. The study concluded that the original sample would probably be inadequate and recommended fifteen additional reserves be added with certain or additional modifications to the sampling procedure. The original sample of 89 reserves was also modified in a very minor sense. These changes are discussed in the full report.

4.0 SURVEY LOGISTICS

The survey process is described in Exhibit C. Overall, this process worked well and we recommend using this process, with revisions, in Phase II.

EXHIBIT C

PILOT PHASE SCHEMA OF FIELD LOGISTICS



The survey logistics are unusally complex. Thorough and careful preparation and coordination are essential to effective survey execution. We recommend: increased band-level communication, early instrument delivery, increased advance field work by the field supervisor, heightened use of Indian liaison, a three-party interview-inspection team and minor revisions to the district, region and health-officer interview logistics. These revisions are described in detail in the full report.

5.0 DATA QUALITY ASSESSMENT

Overall data quality was assessed as good. Numerous minor revisons are suggested in the full report and the study has also prepared revised survey instruments. Some data, such as financial data are difficult to collect, however, steps have been taken to improve the quality of all necessary data to the highest practical levels.

The Indian interviewers performed extremely well as interviewers. Validity anaylsis of house condition ratings provided by both inspectors and trained interviewers showed very high levels of consistency between these two data sources. Our analysis of the validity and reliability of physical condition data indicates we can be quite confident in the high quality of these data. The quality of occupant ratings of physical house condition also appears to be higher than that exhibited in other studies of the general population. The band, district, regional and nurse interviews are quite impressionistic in nature. The data provide a valuable set of perspectives and appear to be answered with reasonable reliability. The question of validity is not as pertinent here since these data are explicitly perspectical and perspectival in nature.

6.0 ILLUSTRATIVE ANALYSES

Although the data are only drawn from six communities and are clearly not representative of the general population, we can provide some preliminary substantive analysis which illustrate the kinds of hypotheses which can be supported by this type of data base.

In terms of physical house condition, it appears the conditions are very mixed both from reserve to reserve and within communities. From this sample we can find significant evidence of poor conditions which suggest an urgent need for the program. In comparison to the general population, conditions on reserve tend to be considerably worse.

Examining trends through time we find that there have been significant improvements in reducing the number of units in the 'beyond repair' category. The number of units in need of substantial repairs has not declined significantly although this varies from place to place. Perceptual data at the band and household level tend to confirm this pattern of objective indicators with some significant differences.

Crowding remains a salient shelter priority. Different objective indicators of suitability, as well as perceptual data from the household and band, tend to reinforce this finding. The objective data show crowding conditions to be much worse than the national averages. On the positive side, time series data suggest that there has been substantial progress made in increasing the supply of housing and diminishing the severity of the backlog of demand for on-reserve housing. Nonetheless, from these pilot data the problem of crowding appears to remain a important priority for the program.

Health and safety indicators reveal a similar pattern. Our sample is seriously deficient vis-à-vis the nation as a whole in terms of basic facilities and ammenities germane to health and safety. Fire safety is an urgent concern as are crowding, sanitation services and water supply problems. Related to these findings is the fact that infrastructure problems have been identified as major hardships for many occupants in the sample. The provision of basic community services and facilities is a high priority for many reserves and the data point to serious deficiencies in comparison to the national housing stock.

In conclusion, the illustrative substantive analysis from this small sample point to a series of alarming conditions which vividly underline the continuing need for the program.

The data also suggest that the program is making significant inroads in ameliorating these problems but that major work remains to be done. Naturally we must await the results of the total, representative sample of 104 reserves before offering any final judgements on these and other issues.

7.0 RESIDUAL ISSUES

Informal discussions with representatives of interested Indian groups hve resulted in the identification of a series of methodology revisions which would make the Phase II evaluation findings of more direct interest to Indian People. The evaluation requirements of DIAND can be addressed by the methodology with the necessary refinements included. They principally involve giving a high priority to Indian views, perceptions and satisfaction with housing. It will also be necessary to include a formal orientation to provide the knowledge required for generating solutions.

8.0 WORK PLAN

Phase II of the evaluation field work can be completed in 1984 if the work is begun by September 15th or October 1st at the latest. These late starting dates would assume that much of the advance work, including notifying all concerned parties, conducting the Census of units and scheduling the later interview and inspection work would be completed by DIAND prior to awarding the Phase II contract. Staffing and training could be conducted inthe first three to four weeks of the project and the field work completed in the next six to eight weeks. Data base management, analysis and report writing would be completed inthe first three months of 1985.

We believe that the total cost for Phase II of the evaluation would be approximately $430,000.00. This total includes direct payments to the Bands for completing the Census, professional fees for training, supervision, coordination, data base management, analysis and report writing, computer and data capture charges, all expenses for sending the survey teams into the field, and all per diem expenses for personnel contracted by the consultant. The budget assumes that DIAND inspectors will be used throughout the country.

1.0 INTRODUCTION

1.1 Background to the Evaluation

The On-Reserve Housing Program has been DIAND's primary component in its mandate from the federal government to provide resources to improve Indian housing conditions. Over the last few years, the program has experienced a considerable number of changes. These have been the result of DIAND's gradual withdrawal from its traditional role as a service agency, and the post-1977 focus upon transferring responsibilities for actual housing delivery to the recipients of the service (i.e., Indian bands and agencies themselves). Prior to this time, the Program delivered all, and later most, on-reserve housing. Today DIAND'S involvement in the actual delivery of housing units is residual and restricted to a few remote locations.

The transfer of responsibilities has been undertaken by the Housing Directorate in the context of a wider policy on the part of the Department to promote Indian self-government. This has been accompanied and enhanced by a generally acknowledged improvement in government/Indian relations over the course of the last two decades.

In 1977, a major national on-reserve housing survey conducted by DIAND revealed that there was a sizeable and increasing housing problem on the reserves. Estimates suggested as many as 11,000 new houses were needed. This situation was in part attributed to a preceding Indian "baby boom" which produced a dramatic increase in the rate of family and household formation. In addition, a commitment to reducing over-crowding levels resulted in a significant need estimate. The low longevity of Indian housing also contributed to this estimate.

1977 also saw substantial revisions to the Program. A policy was explicitly adopted by DIAND emphasizing the need to encourage Indian bands and individuals to assume responsibility for planning, financing, building and managing on-reserve housing. However, these changes were not entirely successful in relieving the serious backlog of Indian housing. Reasons cited included the low levels of housing subsidies, the reluctance of bands and individuals to use loans, and restricted access to CEIC job-creation funds. The result was that in mid-1980 following Treasury Board approval of this measure, the Program was again amended to increase the level of subsidy for house construction on- reserve.

In 1981, an update of the 1977 survey showed that there had still been only limited success in improving on-reserve housing conditions. In October 1981, a position paper was produced by DIAND, "Indian On-Reserve Housing", containing a re-assessment of its responsibilities in the light of these findings and of the financial operation of the Program. This was submitted to Cabinet in early 1982. The position paper recommended changes in the Program's funding mechanism, the levels of funds available for various Program aspects and in the Program's administration.

Concurrent to these developments, an Evaluation Assessment of the On-Reserve Housing Program was conducted in 1981/82. It reviewed program logic, evaluation issues and options. The assessment described a coordinated evaluation strategy which involved a series of precondition and methodology development studies followed by a full national evaluation.

Meanwhile further changes have ocurred to the program. The latest of these changes, in April 1983, brought into place some initiatives to relate new construction to the National Building Code, revise the subsidy levels and provide new funds to allow support for housing management and technical expertise at the band level. All of these changes must be situated within the broader political context set by the Penner Report.

At present, the 1977 DIAND study still provides the most comprehensive housing stock data and needs statement for Indians living on reserves. The current program evaluation provides an opportunity to generate a new and more detailed "bench-mark" of on-reserve housing stock data. The creation of a data base for reserve housing stock is an important effect of the program evaluation. This information will be comparable with the 1977 study but will also go beyond this earlier study in several important respects. Several government agencies and private organisations have a vested interest in the data captured by the evaluation. Although the evaluation will not serve all data needs (e.g., there will still be a need for a total inventory of all units), it will provide the most current and detailed source of information on physical conditions, need and demand at a national and regional level.

The On-Reserve Housing Program is only one of a number of inter-related programs implemented by DIAND. The Program, in effect, functions in an environment of complex relationships with a number of other agencies and circumstances generated by policy commitments. These can be subdivided into several major categories:

1) The varying degrees of Indian involvement

These relate to the increasing and ongoing pressures exerted by Indian leaders for increased responsibility in self-government and autonomy, and growing concern on the part of Indian communities that the issue of the identified housing backlog be adequately addressed. These factors have been paralleled by the Department's commitment to reducing its involvement to a residual role in direct housing provision.

2) The sharing of responsibility with other DIAND programs

A number of other DIAND Programs also have housing-related objectives as part of their rationale, notably those concerning economic development, social assistance and community infrastructure development. An evaluation assessment of the community infrastructure element of the Community Infrastructure and Services Program was prepared in 1983 by Ekos Research Associates Inc.

3) Extra-Departmental Programs

In addition to DIAND, a number of other federal agencies have responsibilities for Indian service and facility provision complementing those of the On-Reserve Housing Program. These comprise Canada Mortgage and Housing Corporation, Health and Welfare Canada, Department of Regional and Industrial Expansion, and Employment and Immigration Canada. Measures involved include approved loans, various forms of service and development funding and native contributions. The mandates of these agencies include housing delivery and funding, community and environmental health inspections, development funding and housing construction employment schemes respectively.

The subtle and complex relationships between programs, agencies and departments outlined in Exhibit 1.1 exist against the backdrop of a multipartite cultural and political context. The program evaluation's function is to examine the On-Reserve Housing Program from its inception and in its various forms. Given the complex nature of the evaluation environment, and the innovative nature of the research strategy, it was advisable to conduct the study in two phases: (i) a methodology refinement and major pilot study; and, (ii) a full national study.

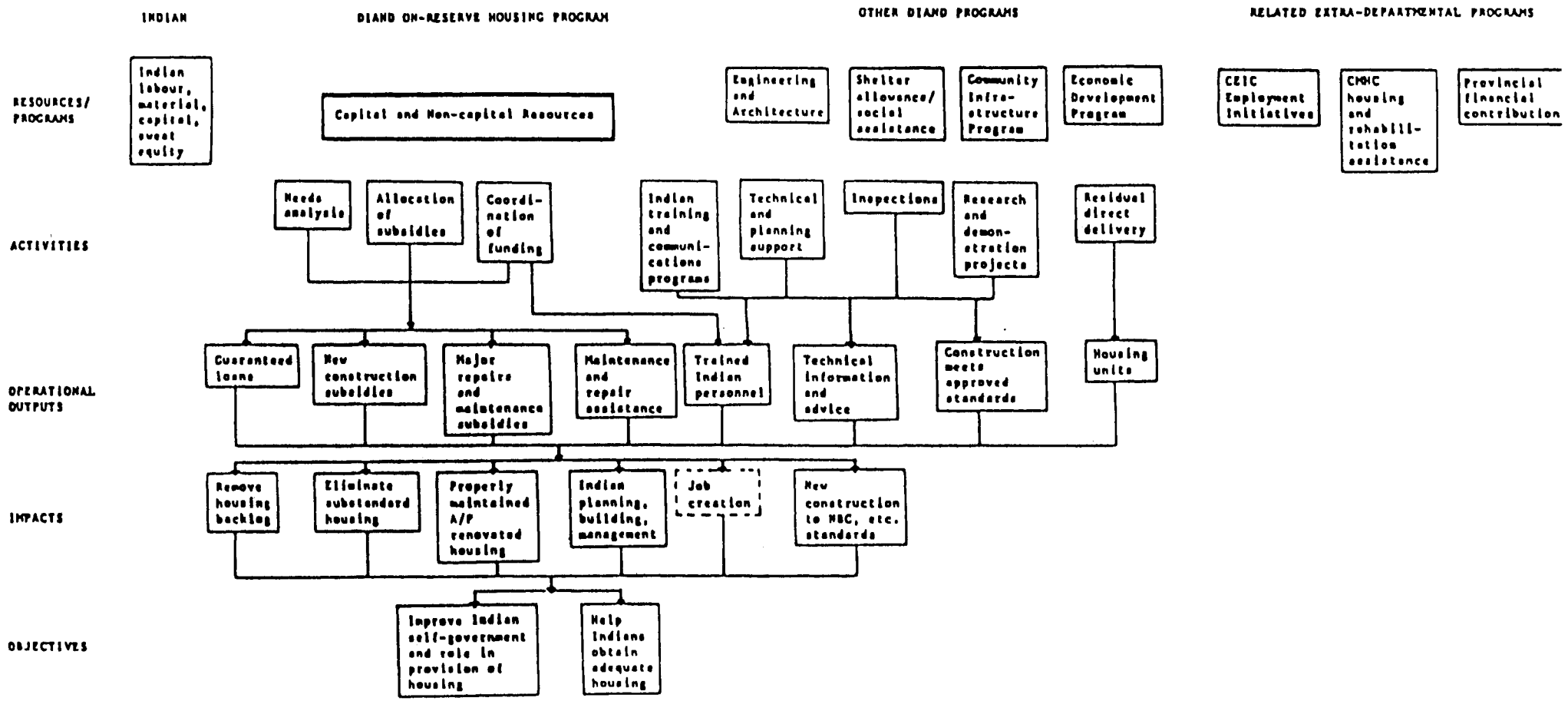
1.2 Purpose of Phase I

The purpose of Phase I was to field test the methodology of the On-Reserve Housing Program Evaluation to detect areas in need of refinement. In addition, the field exercise was to serve as an experiment in survey logistics and communications with all interested parties, and as a test of training procedures.

Conducting a pilot pre-test study of the program evaluation technique was in retrospect a prudent management decision. Instituting a wider study based on a national sample of bands without a prior field test could have produced a study with a low level of confidence. The field test served to expose minor flaws in data collection techniques which, if not detected by Phase I, could have had a profound impact on the entire evaluation's quality. The discovery of these areas of difficulty will save DIAND time and money over the course of the evaluation. The pre-test detailed what was necessary to produce a cost-effective program evaluation of high quality which would serve the needs of all interested parties.

EXHIBIT 1.1

PROGRAM LOGIC DIAGRAM: STRUCTURAL LINKAGES AMONG COMPONENT RESOURCES, ACTIVITIES, OUTPUTS AND IMPACTS



1.3 Report Organisation

The lessons taught and the experience gained by the pilot pre-test are the focus of this report. The field test has fine-tuned Phase II of the program evaluation in three areas: training procedures and staffing, survey logistics, and communication and methodology. These areas are documented in this report.

Section 2 (Training), outlines the training methods, their results and recommendations for Phase II.

Section 3 (Survey Experience) and Section 4 (Survey Logistics) discuss the field work and its results. In Section 3 descriptive statistics summarise the effectiveness of the survey instruments and the sampling. Section 4 provides an overview of the six on-reserve field experiences and outlines problem areas and solutions.

Section 5 (Data Quality Assessment), Section 6 (Substantive Overview) and Section 7 (Reformulation of Issues and Analysis), are the core of the report. Combined, these sections discuss methodological refinements in light of statistical analysis.

Section 8 (Work Plan and Resource Requirements for Phase II) is a proposed schedule of human and material resources based on the pilot pre-test experience.

2.0 TRAINING METHODS, RESULTS AND RECOMMENDATIONS

2.1 Rationale

Crucial to any survey-based program evaluation is the quality and skill of those conducting the interviews. A well designed survey instrument can be rendered worthless by an interviewer if he/she does not follow proper procedures. To ensure a high level of data quality, interviewer candidates attended a special training course developed for the On-Reserve Housing Program Evaluation. Also participating were the technical inspectors from DIAND, CMHC and representatives of Price-Waterhouse who as subcontractors were conducting the majority of the field work.

The training course was necessitated by the complex nature of the survey instruments[1]. Each of the survey instruments represents a link in the program evaluation chain. A weak link would lower the data quality for the entire program evaluation. Exhibit 2.1 demonstrates how each survey instrument is related. The areas in dark grey demonstrate where specific information is collected at more than one level (survey overlap).

Familiarisation with the entire study and an in-depth knowledge of their "link" was critical to the success of program evaluation. A detailed training course for interviewers and inspectors was essential to ensure that the proper data collection procedures were used thereby producing data that would be reliable, valid and practical.

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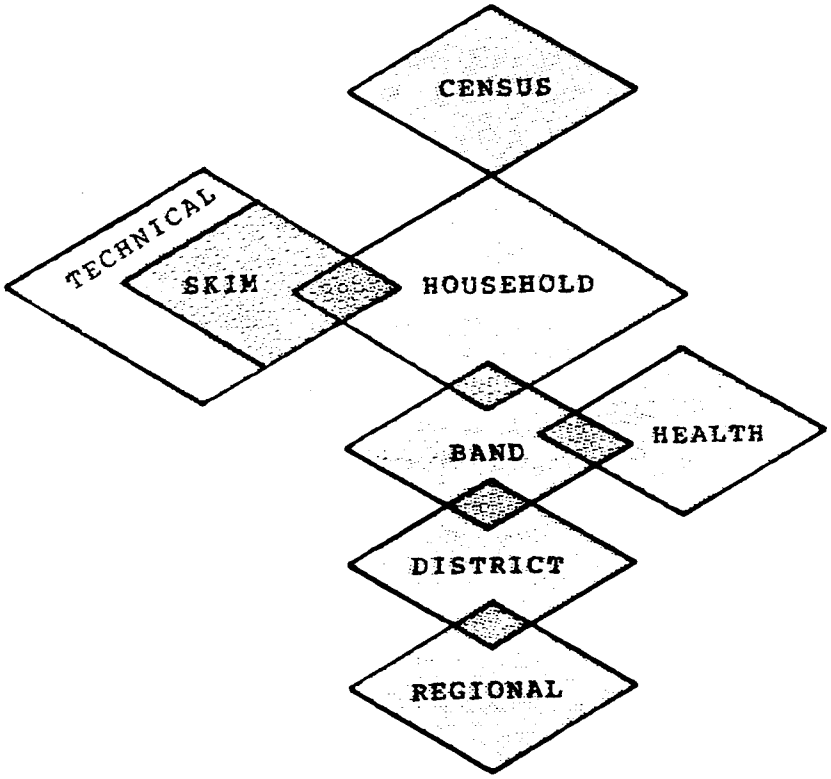
[1] For a complete discussion of the survey instruments see Department of Indian Affairs and Northern Development, Methodology for the Evaluation of the On-Reserve Housing Program, Volumes I and II, Ekos Research Associates Inc. 1983

EXHIBIT 2.1

SURVEY INSTRUMENTS AND THEIR RELATIONSHIPS



2.2 Approach

2.2.1 Interviewer Training Guidelines

A training course was adapted from existing course materials. This course was designed to teach the field force the necessary skills to effectively and efficiently execute the various survey materials. The interviewer had to complete both a household survey instrument and technical skim survey instrument. The requisite skills for administering both these instruments had to be taught. To develop household interview skills Ekos utilised its own household respondent survey training guide, with input from First Nations Consultants. To develop inspection skills Ekos updated, in an on-reserve context, a building inspection package developed and successfully used for a major study of physical house condition and rehabilitation need in 1980* and the 1983 evaluation of RRAP**. The combination of the revised household interviewer guide and the building inspection package formed a detailed training course for the On-Reserve Housing Program Evaluation Survey interviewers. A training manual was produced containing both building inspection and interview techniques and valuable background information concerning the study. It became an important reference work for the trainees in the course and during the field work. This material appears as a separate and companion Volume III of this report.

2.2.2 Interviewer Technical Focus

The interviewer training course's curriculum had two foci which reflected the two survey instruments. The building inspection package taught the rudimentary skills

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* The On-Reserve Housing Program Evaluation building inspection training package was developed from a Canada Mortgage and Housing Corporation study, Pilot Study of Physical House Condition and Rehabilitation Need, Ekos Research Associates Inc., 1980.

** Residential Rehabilitation Assistance Program.

necessary to conduct the technical skim instrument. Approximately two days of the three day course were spent on teaching the inspection package through lectures and audio/visual slide presentations. The objective was to provide the technical skills to perform an assessment of existing housing which would be sufficiently detailed to classify a dwelling's physical condition. The focus was on:

- distinguishing between dwelling, building and property;
- identifying housing components;
- identifying relevant indicators of problems facing particular components;
- distinguishing between structural and surface conditions;
- distinguishing between tidiness of the dwelling and condition of surface or structure; and,
- describing and evaluating condition on a 7-point interval rating scale.

These foci are detailed in the Interviewer Training Manual (see Training Package).

2.2.3 Interviewer Household Focus

The second focus of the curriculum was on the household instrument and the skills required to complete it. The interviewer manual contained an overview of the interviewer's role and importance in the project. With this role defined, a general understanding of the study's methodology was presented to provide a basis for understanding the logic behind each question in the survey instrument.

Interviewing skills rely on a good understanding of the survey instrument. Once the interviewers understood the questionnaire, communication techniques for interviewing were presented. Techniques were explained and demonstrated on:

- securing an interview;
- interview methods;
- probing and prompting;
- ethics and courtesies.

A special lecture was designed by First Nations Consultants on interviewing Indian people. A list of "do's and don'ts" was developed. Input by the Indian trainees, who had lived or were living on-reserve, led to an expansion of the list.

2.2.4 Inspector Training Focus

The inspectors' training was designed to synchronise with a portion of the interviewers' training course. The inspectors were given the background to the entire program evaluation. This was necessary in order to explain the specific methodology behind the technical instrument.

To ensure that each inspector was equally familiar with the technical data being sought an audio/visual lecture was presented covering:

- distinction between structure and surface;
- distinction between tidiness of the dwelling and the physical condition of the structure and surface;
- identification of relevant indicators of condition problems with the particular items; and,
- describing and evaluating house condition on a 7-point interval rating scale.

A Technical Manual was produced for the inspectors. It described in detail the technical criteria of the building inspection methods designed for the study. The manual included an explanation on the procedures to successfully complete all aspects of the inspection instrument including costing for repairs. This material also appears in Volume III. Familiarisation with the instrument and methodology lasted for half a day. The remaining one and a half days of the course were spent on the field trips.

2.2.5 Training Experiences - Field Trips

Interviewer and inspector skills were developed, practised and tested during the training course through "hands-on" experience. Access was obtained to a substandard residence and a second dilapidated residence. The substandard residence was surveyed in a group format and discussion and questions on the technical assessments were encouraged. The inspectors' tasks were to walk through the house completing the technical instrument and while doing so provide expert commentary on its condition for the interviewers.

The interviewers conducted a group inspection. During this inspection they received guidance from the building inspectors' comments. The inspectors' comments on the physical conditions added substance to the classroom lectures.

The second, dilapidated residence was assessed independently by all the trainees. The results were closely monitored and discussed in a debriefing session. Each question on the technical and technical skim instruments was discussed and the individual ratings noted. Each trainee's reasons for the selection of a particular rating was noted. Variations between inspectors and interviewers individually and amongst the inspectors and interviewers as separate groups were debated. A group consensus was reached on the house rating. Each person's score was "marked" in relation to the group rating. Variances were examined and clarifications made. The end product was a clear understanding of the technical and technical skim instruments.

The interviewers' assessments did not differ greatly from those provided by the building inspectors. The interviewers' individual assessments of the sample property, made in accordance to the 7-point rating scale, varied within allowable limits. Achieving a standardisation in house condition rating between the individual interviewers and inspectors and between the two groups was an important objective of the course. Statistical analysis outlining the validity and reliability of the technical ratings between the groups and between individuals can be found in Section 5.2.

2.2.6 Training Experiences - Mock Interview

To provide "hands-on" experience" in the household instrument, simulated interviews with native respondents supplied by First Nations Consultants were conducted. These interviews were helpful in three ways. The interviewers become familiar with the questionnaire and their constructive comments prompted de-bugging revisions. Secondly, the simulated interviews were realistically conducted. The performance of each interviewer was judged by the course instructors. The mock interview served as a test of communication skills. Finally, the interviews functioned as a mini pre-test and enabled Ekos to examine the flow and timing of the questionnaire.

The household respondent section of the training course lasted one day. When combined with the two days of technical training, it provided a solid base from which interviewers could confidently administer the survey instruments in a fashion that would reliably produce quality data.

2.3 Field Staffing

2.3.1 Inspector Selection

The program evaluation calls for an "expert" technical assessment of the selected residences. This was to be conducted by building inspectors supplied by DIAND. The regional offices involved in the test pilot were contacted and a request made through the Program Evaluation Branch of DIAND for the release of inspectors. The Regional Offices in Ontario and Saksatchewan supplied inspectors for

both the training course and the fieldwork. A CMHC inspector was contracted in the case of the British Columbia Regional Office.

2.3.2 Interviewer Selection

The selection of interviewers was done in two stages. The first stage was a general screening of several candidates and the hiring of five "potential" interviewers. The second stage in the selection process consisted of the five candidates attending a special training course designed by Ekos to meet the criteria of this program evaluation. At the end of the course two candidates were selected. The number of interviewer positions was determined by fieldwork schedules. Later a third interviewer was hired to ensure that the tight time lines for the pilot test were met.

2.3.3 Stage One Interviewer Selection

DIAND advised that the interviewers selected be either status or non-status Indians. This would help minimize perceived difficulties in obtaining survey information from household respondents. In compliance with this request Ekos generated a list of candidates for stage one of the selection process from three sources:

- Public Service Commission (Native Employment Centre);
- Canada Employment Centre for Students; and,
- referrals from Indian Affairs and Northern Development.

A review of the resumés from these three sources was conducted and after careful scrutiny 10 candidates were selected. Representatives from Ekos, Price-Waterhouse and the PSC conducted a thirty minute interview with each candidate. The selection committee completed the first stage of the selection process by choosing five candidates to take the interviewer training course.

2.3.4 Stage Two Interviewer Selection

The second stage of the selection process was based on an assessment of the candidates' performance during the interviewer training course. The candidates were judged on their class work and fieldwork. Abilities to communicate (interview) and to absorb the necessary house inspection skills were monitored by course instructors and by Ekos and Price-Waterhouse representatives. After two on-site house inspections and a series of simulated interviews, two trainees were selected to conduct the bulk of the survey fieldwork. A third trainee was hired to function in a support capacity.

2.4 CONCLUSIONS AND RECOMMENDATIONS

2.4.1 Interviewer

The interviewer training course was designed to provide instruction for the administration of the occupant and technical skim instruments and to prepare the trainees to overcome difficulties and unforeseen obstacles in conducting the survey. The effects of the training have a direct impact on the quality of the work produced during the pre-test. The quality of the field work in the pre-test was very good, as the generally high response rates demonstrate. Credit for the high level of interviewer proficiency can be related to the skills taught in the training course. We recommend no changes to this section of the training package for interviewers.

The interviewer results concerning the technical skim were generally good. There were consistent high correlations between interviewer and inspector ratings (see Section 5 for details), although the interviewer ratings demonstrated slightly greater variation (i.e., higher standard deviations) with the more technically demanding questions. This was not unexpected given the different levels of technical expertise between interviewer and inspector. The impact of this finding on the training course should be to increase the focus on the technical skills needed to administer the finer points of the techical skim.

2.4.2 Inspector

The inspector training course was more of an information package on the program evaluation, concentrating on the methodology and administration of the technical

survey instrument. The training course assumed a high existing level of expertise and the course provided an overview of the technical information sought. No significant difficulties were uncovered in Phase I with the physical inspection and the capture of technical information.

The only area for which the inspectors performed poorly was in cost estimation and use of the cost matrix. All inspectors had difficulty with this part of the instrument, and we recommend that more time be spent on the cost estimation in training. A special lecture should be included in order to standardise all procedures for administering this part of the technical instrument to ensure that high quality data is obtained.

2.4.3 Field Supervisors

The consultants from Price Waterhouse who attended the training session were involved with the program evaluation from its inception and attended all sessions to familiarise themselves with the training procedures and the trainees who were to be under their supervision.

In the presentation of the training procedures and the field methods to the supervisors the importance of quality control (the constant review of all data gathered in the field) was not explained in detail. The field experience in Phase I has indicated this was an oversight. We recommend that a heavy emphasis be placed on quality control and that appropriate procedures should be implemented as part of a daily routine while in the field.

2.4.4 Staffing

The staffing procedures were adequate. A potential difficulty lies with obtaining adequate numbers of Indian personnel for Phase II. The trainees were hired locally and were predominantly university or college students. The timing of Phase II in September-November may create problems in finding the numbers of candidates having good interview skills.

We recommend that staffing be upgraded to include adverstisements and job descriptions to be circulated outside of the immediate Ottawa area, possibly through Canada Manpower, Indian organisations such as The Assembly of First Nations could be contacted and asked to forward the names of potential candidates. The success of Phase II depends on attracting and hiring the best possible candidates as interviewers.

3.0 SURVEY EXPERIENCE: PRELIMINARY DESCRIPTIVE STATISTICAL PROFILES

3.1 Sample Results

Introduction

The pilot study involved six reserves reserves chosen by the Department from the main sample of 89 reserves. The selection of the six reserves was based on the desire to test the methodology in various regions, in bands of various sizes, in bands with different housing conditions and housing program inputs, and in urban, rural and remote settings. The pilot band sample included two urban reserves (Fort William in Ontario, and the Okanagan in British Columbia), three rural reserves (Sakimay and White Bear in Saskatchewan, and Canim Lake in British Columbia), and one remote reserve (Poplar Hill in Northern Ontario).

The reserves in British Columbia and Saskatchewan were surveyed from May 7th to the 18th and the Ontario reserves were surveyed from May 28th to June 2nd. The sample characteristics are described in Exhibit 3.1

EXHIBIT 3.1

SAMPLE CHARACTERISTICS

Reserve	Interviews Attempted	Completed Interviews	Completed Technical Skim	Completed Technical	Refusals
Canim Lake	28	20	20	14	2
Okanagan	35	19	19	15	3
Sakimay	27	18	18	18	0
White Bear	38	20	20	20	2
Poplar Hill	16	15	15	15	1
Fort William	24	20	20	20	1

District Office Surveys were completed for Williams Lake, B.C., Yorkton, Saskatchewan, Sioux Lookout and Thunder Bay, Ont.

Regional Office Surveys were completed for Saskatchewan and Ontario.

3.2 Implications for Phase II Sampling

3.2.1 CMHC Considerations - Introduction

Under Sections 56.1, 59 and 34.1 of the National Housing Act (NHA)*, CMHC operates three separate program components which assist in delivery of adequate housing on-reserve. These programs entail a very significant public investment and CMHC is concerned with evaluating these programs according to the guidelines of the OCG. Rather than conducting an independent evaluation, it has been suggested that CMHC piggy-back its program evaluation data requirements on the DIAND program evaluation. This approach should reduce the eventual response burden placed on the on-reserve population, provide considerable economies of scale and ensure semantically consistent data with the DIAND data base.

Despite the obvious merits of conducting a linked data collection effort, there remains some question as to whether or not the originally proposed DIAND sample would provide an adequate data base to support the CMHC evaluation requirements. Recall that the original sample was designed to support inferences to the population of all on-reserve housing. In fact, the CMHC evaluation is crucially concerned with a separate sub-population which is systematically different from the overall population. This population can be defined as all currently existing dwellings which have received some sort of CMHC funding. In more practical terms we can define the study population as all reserves which have received CMHC funding.**

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* Also Sections 6 and 37.1.

** This is necessary since a unit-based (i.e., individual element) sampling frame of all properties is not available. Hence, we must utilise a two-stage cluster sample in which the primary sampling unit is the reserve.

In light of these concerns, one of the issues for Phase I was to investigate the adequacy of the currently proposed sampling frame of 89 reserves and approximately 2,000 houses. It was also important to find out how feasible it was to identify CMHC-funded units and to distinguish the program components involved.

Each of the three separate components offer a different vehicle for obtaining adequate on-reserve housing. Under Section 59 of the National Housing Act, CMHC provides individual homeowner loans to Indians on reserves. The interest rate is at market level. The loans are secured by Ministerial guarantee. Under the Section 6 Insured Lending Program, CMHC provides NHA insurance on mortgage loans made by an approved lender.

Under Section 56.1 CMHC provides annual contributions to the operating costs of Band-owned rental housing. The maximum contribution is equal to the difference between the mortgage payment at the actual rate of mortgage interest and the payment if the rate of interest were equal to 2 per cent. The intention of the contribution is to reduce rents. Start-up assistance (under Section 37.1) is also available on reserves, to assist the Indian band in planning the housing project. The assistance takes the form of an interest free repayable loan which is capitalised into the mortgage.

Under the Section 34.1 Rural Residential Rehabilitation Assistance Program, the Corporation provides loan assistance for approved rehabilitation work to bring housing units up to RRAP standards. A portion of the loan

is forgiveable, the level depending basically on the income of the applicant and the geographical location of the reserve.

Analysis

Exhibit 3.2.A shows the level of CMHC program activity on reserves by program component since 1978. The pattern shows that overall, CMHC activity on-reserve has been growing rather rapidly, particularly in the case of RRAP Section 34.1 and Section 56.1.

EXHIBIT 3.2.A

LEVEL OF CMHC PROGRAM ACTIVITY (UNIT COMMITMENTS)

YEAR	S59	S34.1	S56.1	TOTAL
	Homeowner/ Rental			
1978	138	184	91	413
1979	290	520	305	1,115
1980	44/279	852	368	1,543
1981	54/385	1,172	551	2,162
1982	18/192	1,693	824	2,727
1983	30/101	2,362	971	3,464
TOTAL	1,531	6,783	3,110	11,424

About 11,500 units on-reserve have received some form of program assistance from CMHC in the past six years. Knowing that rates of obsolescence are high and that CMHC involvement on reserves was relatively lower before 1978, we can probably assume that there are approximately 12,000 units currently in existence on reserves which have received CMHC assistance. Under the current sampling plan 2,000 units were randomly selected from the approximate total of 50,000 units on reserves. This would provide the following estimate of CMHC units in the sample:

(a) proportion of CMHC units

$$= P_{CMHC} = \frac{f_{CMHC}}{f_{total}} = \frac{12,000}{50,000} = .24 \quad (1)$$

(b) estimated number of CMHC units in sample

$$= P_{CMHC} \times n = .24 \times 2000 = 480 \quad (2)$$

We would suggest that a sample of about 480 units would be adequate for the evaluation if CMHC were content with the following restrictions:

- One-way breakdowns of the pooled CMHC-recipient stock (e.g., differences by North/South, geo-code, etc.). Complex two or more way breakdowns would probably not be possible unless the classificatory variables were very simple (e.g., two or three categories).

- Each of the three major components could be analysed separately at an overall aggregate level (viz., for the entire country). In the case of

RRAP and Section 56.1 units it might be possible to make very simple two-way breakdowns by simple categorical variables.

If we realised the expected number of CMHC units suggested by the previous exercise (i.e., over 450), this would provide a good basic sample for the evaluation. However, our actual field experience suggests that we may not be able to properly identify that number of units.

In the pilot study five of the six reserves were purposively selected (from the overall sample of 89 reserves) on the grounds that we knew that these bands had received CMHC funding. We attempted to distinguish the funding history for each of the dwelling units included in the sample. This information was collected from either the band housing administrator or else from the local CMHC or DIAND district office. Using this data (which we are still in the process of cross-verifying) we have identified the following units within our sample as having CMHC funding of some sort.

EXHIBIT 3.2.B
SAMPLED UNITS FOR RESERVES WHICH RECEIVED CMHC PROGRAM BENEFITS

Reserve	Total No. of Units Sampled	RRAP	S56.1	S59
Fort William	20	0	4	6
Canim Lake	20	4	4	1
Okanagan	19	4	4	0
Sakimay	18	5	5	1
White Bear	20	0	3	0
TOTAL	97	13	20	8
PERCENTAGE	-	13.4%	20.6%	8.24%

These figures suggest that, in those places we visited which received CMHC funding, about 13% of the sample had received RRAP, 21% had received Section 56.1 and about 8% had received Section 59 funding. In total, slightly over 42% of this sample had identified CMHC funded units.

These percentages are somewhat lower than what we would expect to realise given the administrative program data. Figures taken from CMHC files suggest that CMHC programs are delivered to approximately 30% of all bands. This would imply that the 12,000 cases are highly concentrated since these bands do not contain more than 20,000 dwelling units*. Why do we not see a larger number of CMHC units in our sample (viz., about 60% rather than 40%)? The answer is complex:

(i) The cases may be under-reported. We attempted cross- verification of figures provided by bands and CMHC local offices in some cases and found the figures reasonably compatible.

(ii) Some of the units may have disappeared (e.g., through premature obsolescence, fire, etc.).

(iii) Certain cases may apply to a single property (e.g., RRAP funds used on Section 56.1 on 59 units).

(iv) All of the cases funded may not have actually been built, acquired or rehabilitated.

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* The probability proportional to size (PPS) sampling procedure favours larger bands which may also be more likely to be aware of CMHC programs than smaller bands.

In reviewing CMHC data, we estimate that approximately thirty of the eighty-nine reserves in the sample have received CMHC funding of some sort. Assuming that the figures derived from our small sample of five bands are relatively unbiased, we would estimate that the following number of CMHC units will be identified in Phase II:

Estimated number of 56.1 = 20.6% x 30 bands x 20 units sampled = 124

Estimated number of 34.1 = 13.4% x 30 bands x 20 units sampled = 80

Estimated number of 59 = 8.2% x 30 bands x 20 units sampled = 49

TOTAL = 253

These estimates, which may be quite imprecise (e.g., plus or minus 25%) imply that the existing sample will provide between two to three hundred cases of CMHC units.

This number of cases would provide a very slender sample for the purposes of evaluation. At a bare minimum it would permit rough aggregate analysis of the overall (national) population of all CMHC-treated units on reserve. It would also support overall aggregate analyses of the individual program components, within rather broad confidence intervals. Assuming a worst case scenario, we may even encounter a situation where we only have between one and two hundred total cases of CMHC units and as few as a couple of dozen Section 59 units.

In order to support CMHC requirements, we suggest two options for increasing the sample. The first option would provide a sample of approximately 500 CMHC units at an additional cost of approximately $45,000 for surveying fifteen additional reserves. The second option would increase the CMHC sample by an additional 225 units and provide a better distribution for regional sub-population analyses. It would entail a further (approximately) $30,000 in costs.

OPTION A (15 Reserves, 250 Units)

As we argued earlier, a sample of about five hundred (or twice the currently expected sample) would be desirable. In order to realise this size of sample it will be necessary to augment the current sample. There are a variety of methods available for accomplishing this goal.

In order to ensure that the data base is capable of supporting the analytical demands of CMHC's evaluation we would suggest that the following sampling strategy be pursued. An additional fifteen reserves should be randomly selected from the population of reserves which have received CMHC funding (and are not included in the existing sample). We would also recommend the same PPS sampling employed for the DIAND sample should be utilised. The cluster size (number of dwelling units sampled within the reserve) should be increased to forty for these reserves*. This approach should double the sample size for CMHC-treated units. The new sample would then be pooled with the existing sample of

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* In some (smaller) cases this may be impossible since there may be less than 40 units in the reserve's stock.

reserves which have received CMHC funds (i.e., thirty reserves). This data base could then be analysed separately by CMHC.

The cost implications for this approach are as follows. The design, training and staffing cost are fixed and there are considerable economies of scale for travel, data base management and supervision. Hence, we would estimate that the costs would be expanded mainly by the additional amount of field force time, accommodation, direct travel costs and data capture required for the additional fifteen reserves. Assuming that CMHC would receive a purified data file and SPSS system file, we would estimate the costs for this data collection to be approximately $45,000. This figure is based on the assumptions stated earlier and our knowledge of average costs per reserve as derived from estimates of the costs for the eighty-nine bands. A more precise figure is possible only after the actual sample is drawn.

OPTION B (20 Reserves, 475 Units)

In reviewing Option A with CMHC, we have learned that a major evaluation hypothesis is that inter-regional variations in program delivery and administration are significantly associated with program effectiveness (and efficiency). In order to empirically evaluate this hypothesis it will be necessary to have sufficient cases to model program performance by program component and by region.

This requirement is not a serious difficulty for Option A in the case of the more common components (i.e., S.56.1 and S.34.1) in the larger regions. However, the more infrequent cases under S.59, in smaller regions such as the Atlantic, will occur too rarely in the sample to support inferences about program performance by region and component. We would suggest a minimum expected cell frequency of 10 for crosstabular analysis and under Option A the smaller cells would fall below this number.

The solution would be to increase the number of sampled bands by an additional five communities and to stratify the selection by region such that sufficient cases were available for the smaller regions and components. At the same time we would recommend increasing the cluster size for all sampled bands receiving CMHC funding to 40. These two refinements would yield an additional 225 cases for an expected total CMHC sample of approximately 700 units. It would also improve the distribution of cases such that the two-way breakdown of cases by region and program component would be possible (although S.59 cases in the Atlantic would still be quite slim since there are only a couple of dozen in the entire population).

These additional refinements would add another $30,000 (approximately) to field costs, on top of the costs of Option A (i.e., $45,000 + $30,000 or $75,000 in total).

The following pros and cons should be considered in reviewing Option B;

1. Stratification will increase the complexity of the sampling and analysis. Although we can use the reciprocal of the sampling weights to correct

the analysis for disproportionalities in the sampling, the effect on sampling errors will be difficult to estimate precisely (e.g., SPSS and SAS calculates standard errors under the assumption of simple random sampling).

2. The smallest cells in the sample design probably reflect their relative importance in the overall program. Unless these cases are going to assume greater significance by virtue of some emerging shift in policy or priorities it may not be cost-effective to collect a disproportionate amount of data for such a small part of the overall CMHC on-reserve effort.

3. Finally, evidence of inter-regional variations in larger regions (and programs) may capture much of the kinds of variations which will explain variations in program effectiveness. In other words general inter-regional variations and variations in the larger regions may provide a suitable proxy for the smaller regions.

Under either Option A or Option B the new sample can be pooled with the original sample of those communities (with CMHC funding) from the original sample of 89 to provide an unbiased sample of the CMHC study population.

Summary and Recommendations

In summary, we have revieved the question of whether or not the current sample would support the evaluation requirements of CMHC. We have concluded that we cannot confidently project an adequate sample from our knowledge of the distribution of program benefits and our field experience in Phase I. Hence we recommend that CMHC bolster the existing sample with fifteen additional reserves and collect data for forty (randomly selected) units per band. This sample would then be pooled with a select subsample from the original sample of eighty-nine bands to provide CMHC with approximately 500 cases (+/-25%) which have received CMHC funding.

Option A would increase data collection costs by approximately $45,000 and would provide an adequate data base for an aggregate analysis of performance of each of the three program components. If the requirement for two-way breakdowns to smaller programs and regions is essential then Option B is recommended which entails a further $30,000, or $75,000 in total.

3.2.2 Overall Sampling

A two stage cluster sample methodology was used in the selection of reserve dwellings[3]. Stage one was the selection of bands to be sampled. The program evaluation is based on the data obtained from 98 samples of 20 house units. The 98 samples are drawn from a list of Indian Bands

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[3] For a detailed explanation, see Methodology for the Evaluation of the On-Reserve Housing Program Volume I. Ekos Research Associates Inc., Department of Indian and Northern Affairs, 1983.

supplied by DIAND. The sampling process is based a probability proportional to size. With the selection process based on size it was possible that a large single band could be selected for more than one sample. In the sampling procedures 89 bands were selected from which 98 samples are drawn. The results are:

- 81 bands selected for 1 sample = 81
- 7 bands selected for 2 samples = 14
- 1 band selected for 3 samples = 3

Total Bands = 89 Total Sample = 98

Stage two of the cluster sample is the selection of the housing units to be interviewed at the band level. For each sample 20 housing units are selected. The house units are randomly chosen from the band census. In all, 1,960 units are to be interviewed. The proportional breakdown is:

81 bands	x	20 units	=	1,520
7 bands	x	40 units	=	280
1 band	x	60 units	=	60
89 bands				1,960 units

The selection of reserves for the evaluation was modified slightly by DIAND for administrative reasons. The substitute reserves were of similar size, classification and location. Appendix A represents the approved primary sample of bands.

A secondary sample of 25 reserves will be generated by the same procedures as the first. In the event of a reserve dropping out of the evaluation a replacement from the secondary sample will be selected. The substitute reserve will be of the same classification and proximity of the original.

A secondary sample of housing units will be randomly generated from the band census on each reserve. These dwellings will be visited by the interviewers if the primary sample is exhausted.

4.0 SURVEY LOGISTICS: METHODS, RESULTS AND RECOMMENDATIONS

4.1 Introduction

The field logistics involved a series of tasks which are visually displayed in Exhibit 4.1. The process for carrying out data collection in the pilot phase can be divided into three components including preliminary fieldwork, survey management, and fieldwork. This section describes each step involved in this process from the perspective of what was done in the pilot phase, whether such procedures were effective, and changes we recommend for the main study.

4.2 Preliminary Fieldwork

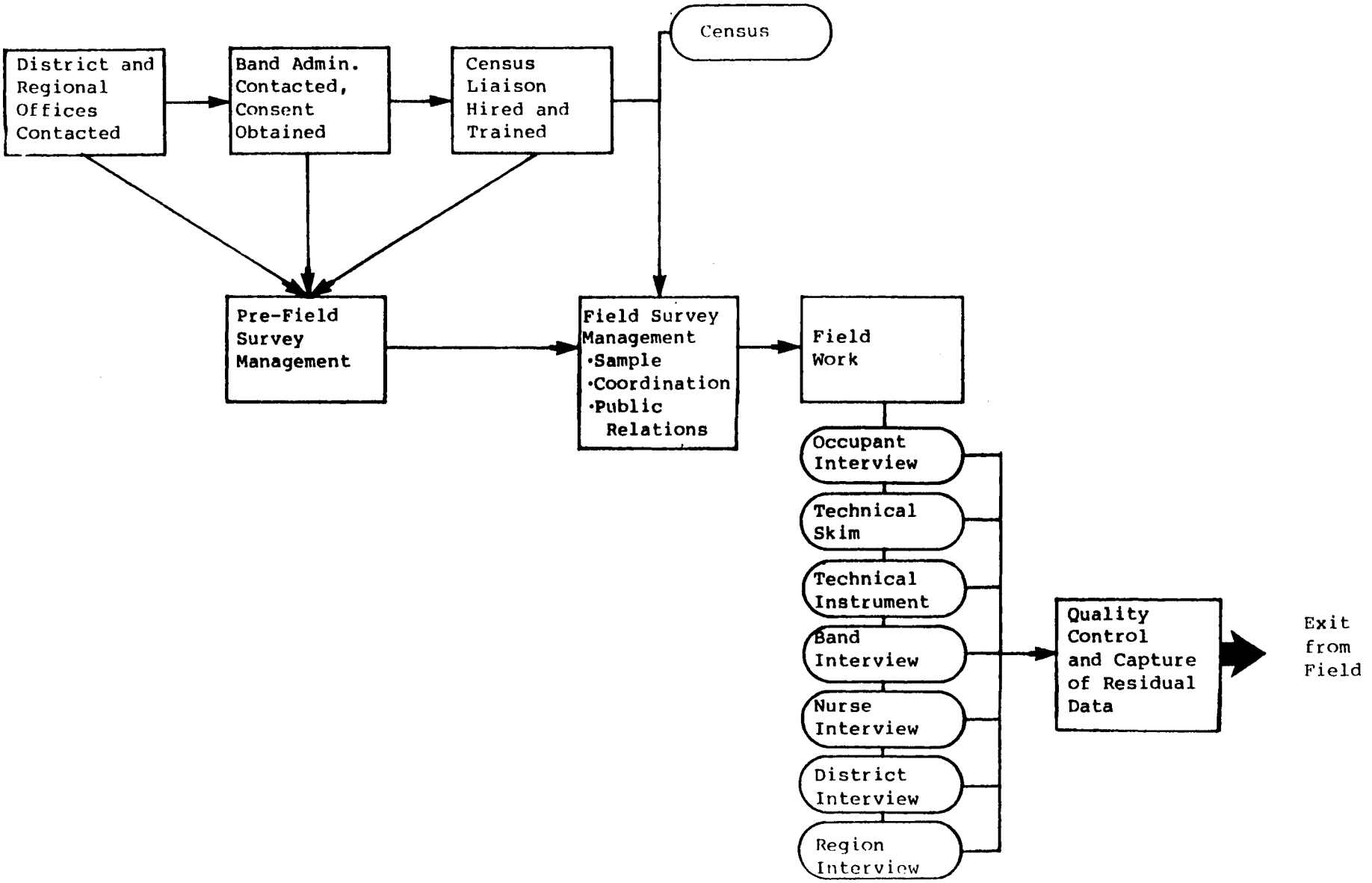
Introduction

The Program Evaluation Branch of DIAND assumed responsibility for initial contacts with parties affected by the field work (Bands, District Offices, Regional Offices, etc.). This entailed letting them know of the study and advising them that Ekos and Price Waterhouse would be collecting study data. After this initial advisement, it was left to the consultants to make arrangements for particular field visits.

4.2.1 Regional and District Office Level

Contacts with Regional and District officials were made by the consultants after the Program Evaluation Branch had advised them of the study. No significant difficulties were encountered in this process. However, in making

EXHIBIT 4.A
PILOT PHASE SCHEMA OF FIELD LOGISTICS



arrangements it was discovered, particularly at the District level, that the scope and detail of the evaluation was not clear. The District offices did not completely comprehend their role in the organization of the field work. It was left to the consultants, who were responsible for the completion of the fieldwork, to inform the Regional and District Offices of the program evaluation's intricacies.

The importance of the program evaluation and the tight time lines of field work did not filter down to the District office level. District officials, owing to the geographical dispersion of their client group, were often unavailable for periods of several days at a time as they were visiting out-of-town communities in their districts. Difficulties in arranging interviews with District officials within the tight schedules of the fieldwork were encountered. Low priority was seemingly attached to interviews in relation to daily operations. Missed appointments or a sudden change in plans by District officials would have had a profound impact on overall scheduling.

4.2.2 Band Administration

The process for arranging field visits with the Bands varied. In the six pilot test cases the local District offices did some of the scheduling arrangements on behalf of the consultants. Direct contact between the Bands and the field force was established where telephone lines existed. In one case, Poplar Hill, telephone communications were non-existent. The problem with the communication was compounded by language difficulties. In this circumstance the District office provided notification of the field visit and arranged the necessary advance work.

In several instances in the pilot phase difficulties were encountered in arranging Band visits because of uncertainty about the Band's willingness to participate in the study. Two of the six Bands were discussing withdrawing from the study up to one week before the dates that field work was scheduled to commence for their particular communities. The unwillingness of the Bands to come on stream represented a failure to communicate the overall importance of the evaluation and the direct benefits the Band would receive from the survey data. The delay in obtaining Band approval had numerous adverse implications for the field work including: not permitting sufficient time for the Band housing census; and not permitting sufficient time to advise all household occupants of field work that might affect them.

The uncertainty of Band cooperation had a profound affect on survey logistics. Schedules for air travel, accommodation and car rentals for these two Bands in B.C. and Ontario were placed in limbo. Alternate Bands were selected and contacted. Preliminary fieldwork preparations and travel arrangements were paralleled for two replacement bands. The result was a detailed contingency plan developed to fit the existing schedule.

4.2.3 Band Housing Census and Liaison Field Work

For each of the Bands in the pilot phase, the consultants engaged a Band member to conduct the Band housing census and provide liaison assistance during the house inspection and occupant surveys. The liaison person was recruited by the District offices in conjunction with

the respective Band administrations. For Poplar Hill the liaison services also included interpretation of all the occupant interviews between Cree and English. For all Bands we found it necessary to use the services of the liaison person as a guide to the reserve, showing field staff where to find sampled houses and household occupants.

The liaison person was prepared for the census work on the basis of a briefing sent by the consultants. The package contained a Census Training Manual and census maps of each reserve. The manual was developed especially for the evaluation and is included in Volume III of this report. The liaisons were to read it and train themselves on how to conduct the census. In followup telephone calls we found that the materials were adequate and that on a whole the liaison person was able to ascertain what were his particular tasks.

The training package included reserve maps in a scale displaying the location of housing units. The census maps were generated from one, or a combination of;

- DIAND reserve maps
- hydro company maps
- aerial photographs and existing maps from provincial and federal ministries of resources.

The development of these census maps required six to eight weeks lead time in obtaining the necessary materials from all sources. In only one case, Canim Lake, was an accurate and up to date census maps obtained. The map was purchased from B.C. Hydro and was dated January, 1984. However, it displayed only the house units with hydro facilities. For all 6 reserves it became necessary for the liaison person to update the census maps to include all housing units.

The census survey was found to be quite time consuming to conduct as the liaison individual was required to visit each on-reserve house to gather information on the occupants and extent of services to the house. In addition, the laborious process of recording each unidentified house on the census map slowed the process down. The liaison individuals were able to cover between three and eight houses per hour. Most of this variance can be explained by the productivity and style of work of the liaison individual rather than the geography of the reserves.

4.3 Survey Management

4.3.1 Survey Management Prior to Field Entry

Survey Management can be defined as the coordination of the survey logistics prior to field entry and during field work. Good survey management facilitates the ease of data gathering and renders the process more cost effective. In the pilot phase survey management responsibilities were divided between Ekos Research and Price Waterhouse.

The coordination of the trained interviewers and the inspectors with the liaison person, Band office, District office and Regional office required continuing communications. The survey resources had to be fitted into the tentative schedules arranged in the preliminary field work.

The field work was to be conducted throughout the month of May. The preliminary field work communications focused on obtaining the earliest possible start date for

the conduction of the surveys. Once these dates were finalised the coordination of survey resources was undertaken. Band acceptance of the evaluation was not confirmed for Okanagan until May 4th and for Fort William until the 21st. As a result arrangements for the western portion of the field work were not finalised until May 5th and for Ontario until May 23rd.

The field force began on May 6th in British Columbia and worked its way back into Ontario. Canim Lake was the first reserve visited followed by the Okanagan, Sakimay, White Bear, Poplar Hill and Fort William. Schedules and resources were arranged to reflect the late confirmation of Okanagan and Fort William. The pre-field survey management for the six reserves involved:

- investigating the exact location of each reserve and planning the most cost effective method of transport and the closest sites of accommodation;
- arrangement for transport (air travel/bus);
- travel advances;
- notification to Regional, District and Band administrators of the proposed schedule;
- car rentals;
- ensuring that the liaison person had already conducted or was conducting the census and informing them of the proposed schedule;
- ensuring that all necessary equipment and survey instruments were ready and in place; and
- contingency plans in case of bad weather, delays or Band withdrawls in mid-stream.

The success of the survey depended on its management and on the quality and depth of the preliminary field

work. The delay in finalising the sample of reserves for the pilot phase was reflected in higher costs for conducting the survey. For example, premium airfares had to be booked for all flights. If more lead time had been available for survey management, cheaper flights could have been arranged saving an estimated $900. Though this seems a small figure at present it should be considered in the context of Phase II with visits to eighty-three reserves from the Yukon to Nova Scotia.

4.3.2 Selecting Samples for Inspections and Occupant Surveys Interviews

Houses to be included in the occupant survey and technical inspections were selected by the team supervisor on a random sampling basis, using the Band housing census as the sampling frame. The sampling procedures ensured that all houses on the reserve had an equal probability of being selected. In addition to the sample of 20 units a few additional houses were selected from each Band to be used as substitute cases where any of the original 20 could not be surveyed owing to refusals or difficulty with contacting the occupants.

The sampling procedures worked well. Their dependence on satisfactory completion of the census pointed to the importance of completing the census prior to the visit of the survey team. A delay in the census would leave the entire field team stranded with "the meter running". In the training course the interviewers were trained to conduct the census in the case of such an emergency. The decision to use the interviewers as enumerators was left to the discretion of the field supervisors. Fortanately this did not happen in the pilot phase but it is not an unrealistic possibility in Phase II.

4.3.3 Organisation and Timing of Household Visits

The largest part of the field work effort with each Band was accounted for by three related surveys; the occupant survey, technical skim survey, and the full inspection survey. In the pilot phase all three surveys were conducted in an integrated fashion using teams of two trained interviewers and a qualified housing inspector. The Canim Lake reserve served as a test for interview methods. Several variations in conducting the surveys were tried. Sending interviewers to seperate residences and having the inspector move from one residence to the other was attempted. This proved inefficient. Grouping the interviewers and inspectors into one unit or team was tried. The team would survey each house together, with the inspector completing the physical house condition instrument, one interviewer conducting the occupant interview and the other doing the techncial skim inspection. Generally the two interviewers alternated the interviews and technical skims between one another as they progressed to each new house in the sample.

The team approach to data collection at the house level is probably the only feasible approach. If the inspector and interviewer were to visit houses at different times, there would be a greater possibility of being unable to obtain corresponding samples for each of the three survey because of:

- occupants not being at home for all separate data collection visits;

2.2 Approach

2.2.1 Interviewer Training Guidelines

A training course was adapted from existing course materials. This course was designed to teach the field force the necessary skills to effectively and efficiently execute the various survey materials. The interviewer had to complete both a household survey instrument and technical skim survey instrument. The requisite skills for administering both these instruments had to be taught. To develop household interview skills Ekos utilised its own household respondent survey training guide, with input from First Nations Consultants. To develop inspection skills Ekos updated, in an on-reserve context, a building inspection package developed and successfully used for a major study of physical house condition and rehabilitation need in 1980* and the 1983 evaluation of RRAP**. The combination of the revised household interviewer guide and the building inspection package formed a detailed training course for the On-Reserve Housing Program Evaluation Survey interviewers. A training manual was produced containing both building inspection and interview techniques and valuable background information concerning the study. It became an important reference work for the trainees in the course and during the field work. This material appears as a separate and companion Volume III of this report.

2.2.2 Interviewer Technical Focus

The interviewer training course's curriculum had two foci which reflected the two survey instruments. The building inspection package taught the rudimentary skills

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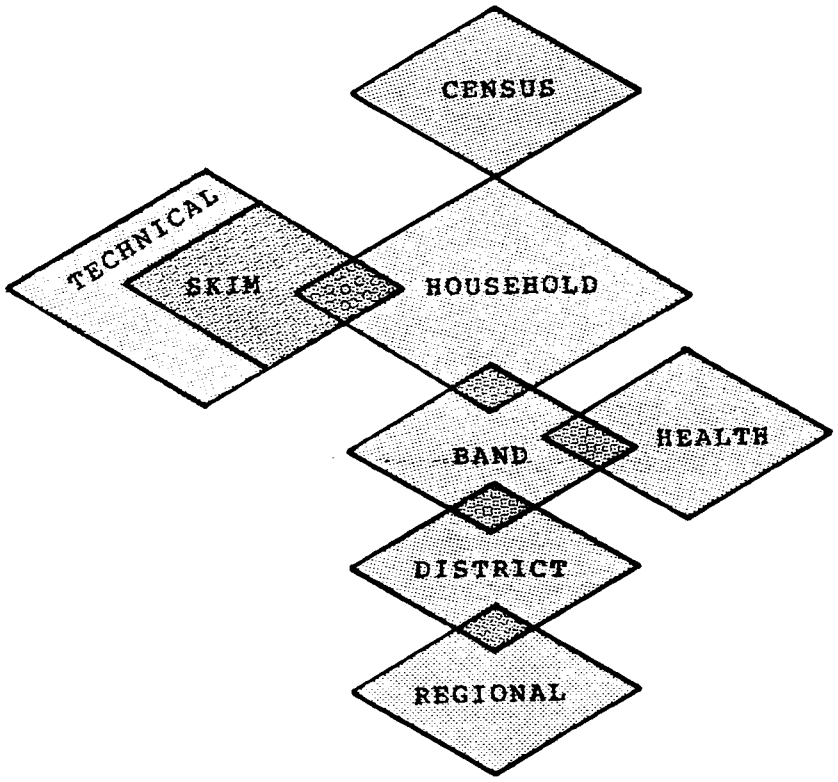
* The On-Reserve Housing Program Evaluation building inspection training package was developed from a Canada Mortgage and Housing Corporation study, Pilot Study of Physical House Condition and Rehabilitation Need, Ekos Research Associates Inc., 1980.

** Residential Rehabilitation Assistance Program.

EXHIBIT 2.1

SURVEY INSTRUMENTS AND THEIR RELATIONSHIPS



necessary to conduct the technical skim instrument. Approximately two days of the three day course were spent on teaching the inspection package through lectures and audio/visual slide presentations. The objective was to provide the technical skills to perform an assessment of existing housing which would be sufficiently detailed to classify a dwelling's physical condition. The focus was on:

- distinguishing between dwelling, building and property;
- identifying housing components;
- identifying relevant indicators of problems facing particular components;
- distinguishing between structural and surface conditions;
- distinguishing between tidiness of the dwelling and condition of surface or structure; and,
- describing and evaluating condition on a 7-point interval rating scale.

These foci are detailed in the Interviewer Training Manual (see Training Package).

2.2.3 Interviewer Household Focus

The second focus of the curriculum was on the household instrument and the skills required to complete it. The interviewer manual contained an overview of the interviewer's role and importance in the project. With this role defined, a general understanding of the study's methodology was presented to provide a basis for understanding the logic behind each question in the survey instrument.

Interviewing skills rely on a good understanding of the survey instrument. Once the interviewers understood the questionnaire, communication techniques for interviewing were presented. Techniques were explained and demonstrated on:

- securing an interview;
- interview methods;
- probing and prompting;
- ethics and courtesies.

A special lecture was designed by First Nations Consultants on interviewing Indian people. A list of "do's and don'ts" was developed. Input by the Indian trainees, who had lived or were living on-reserve, led to an expansion of the list.

2.2.4 Inspector Training Focus

The inspectors' training was designed to synchronise with a portion of the interviewers' training course. The inspectors were given the background to the entire program evaluation. This was necessary in order to explain the specific methodology behind the technical instrument.

To ensure that each inspector was equally familiar with the technical data being sought an audio/visual lecture was presented covering:

- distinction between structure and surface;
- distinction between tidiness of the dwelling and the physical condition of the structure and surface;
- identification of relevant indicators of condition problems with the particular items; and,
- describing and evaluating house condition on a 7-point interval rating scale.

A Technical Manual was produced for the inspectors. It described in detail the technical criteria of the building inspection methods designed for the study. The manual included an explanation on the procedures to successfully complete all aspects of the inspection instrument including costing for repairs. This material also appears in Volume III. Familiarisation with the instrument and methodology lasted for half a day. The remaining one and a half days of the course were spent on the field trips.

2.2.5 Training Experiences - Field Trips

Interviewer and inspector skills were developed, practised and tested during the training course through "hands-on" experience. Access was obtained to a substandard residence and a second dilapidated residence. The substandard residence was surveyed in a group format and discussion and questions on the technical assessments were encouraged. The inspectors' tasks were to walk through the house completing the technical instrument and while doing so provide expert commentary on its condition for the interviewers.

The interviewers conducted a group inspection. During this inspection they received guidance from the building inspectors' comments. The inspectors' comments on the physical conditions added substance to the classroom lectures.

The second, dilapidated residence was assessed independently by all the trainees. The results were closely monitored and discussed in a debriefing session. Each question on the technical and technical skim instruments was discussed and the individual ratings noted. Each trainee's reasons for the selection of a particular rating was noted. Variations between inspectors and interviewers individually and amongst the inspectors and interviewers as separate groups were debated. A group consensus was reached on the house rating. Each person's score was "marked" in relation to the group rating. Variances were examined and clarifications made. The end product was a clear understanding of the technical and technical skim instruments.

The interviewers' assessments did not differ greatly from those provided by the building inspectors. The interviewers' individual assessments of the sample property, made in accordance to the 7-point rating scale, varied within allowable limits. Achieving a standardisation in house condition rating between the individual interviewers and inspectors and between the two groups was an important objective of the course. Statistical analysis outlining the validity and reliability of the technical ratings between the groups and between individuals can be found in Section 5.2.

2.2.6 Training Experiences - Mock Interview

To provide "hands-on" experience" in the household instrument, simulated interviews with native respondents supplied by First Nations Consultants were conducted. These interviews were helpful in three ways. The interviewers become familiar with the questionnaire and their constructive comments prompted de-bugging revisions. Secondly, the simulated interviews were realistically conducted. The performance of each interviewer was judged by the course instructors. The mock interview served as a test of communication skills. Finally, the interviews functioned as a mini pre-test and enabled Ekos to examine the flow and timing of the questionnaire.

The household respondent section of the training course lasted one day. When combined with the two days of technical training, it provided a solid base from which interviewers could confidently administer the survey instruments in a fashion that would reliably produce quality data.

2.3 Field Staffing

2.3.1 Inspector Selection

The program evaluation calls for an "expert" technical assessment of the selected residences. This was to be conducted by building inspectors supplied by DIAND. The regional offices involved in the test pilot were contacted and a request made through the Program Evaluation Branch of DIAND for the release of inspectors. The Regional Offices in Ontario and Saksatchewan supplied inspectors for

both the training course and the fieldwork. A CMHC inspector was contracted in the case of the British Columbia Regional Office.

2.3.2 Interviewer Selection

The selection of interviewers was done in two stages. The first stage was a general screening of several candidates and the hiring of five "potential" interviewers. The second stage in the selection process consisted of the five candidates attending a special training course designed by Ekos to meet the criteria of this program evaluation. At the end of the course two candidates were selected. The number of interviewer positions was determined by fieldwork schedules. Later a third interviewer was hired to ensure that the tight time lines for the pilot test were met.

2.3.3 Stage One Interviewer Selection

DIAND advised that the interviewers selected be either status or non-status Indians. This would help minimize perceived difficulties in obtaining survey information from household respondents. In compliance with this request Ekos generated a list of candidates for stage one of the selection process from three sources:

- Public Service Commission (Native Employment Centre);
- Canada Employment Centre for Students; and,
- referrals from Indian Affairs and Northern Development.

A review of the resumes from these three sources was conducted and after careful scrutiny 10 candidates were selected. Representatives from Ekos, Price-Waterhouse and the PSC conducted a thirty minute interview with each candidate. The selection committee completed the first stage of the selection process by choosing five candidates to take the interviewer training course.

2.3.4 Stage Two Interviewer Selection

The second stage of the selection process was based on an assessment of the candidates' performance during the interviewer training course. The candidates were judged on their class work and fieldwork. Abilities to communicate (interview) and to absorb the necessary house inspection skills were monitored by course instructors and by Ekos and Price-Waterhouse representatives. After two on-site house inspections and a series of simulated interviews, two trainees were selected to conduct the bulk of the survey fieldwork. A third trainee was hired to function in a support capacity.

2.4 CONCLUSIONS AND RECOMMENDATIONS

2.4.1 Interviewer

The interviewer training course was designed to provide instruction for the administration of the occupant and technical skim instruments and to prepare the trainees to overcome difficulties and unforeseen obstacles in conducting the survey. The effects of the training have a direct impact on the quality of the work produced during the pre-test. The quality of the field work in the pre-test was very good, as the generally high response rates demonstrate. Credit for the high level of interviewer proficiency can be related to the skills taught in the training course. We recommend no changes to this section of the training package for interviewers.

The interviewer results concerning the technical skim were generally good. There were consistent high correlations between interviewer and inspector ratings (see Section 5 for details), although the interviewer ratings demonstrated slightly greater variation (i.e., higher standard deviations) with the more technically demanding questions. This was not unexpected given the different levels of technical expertise between interviewer and inspector. The impact of this finding on the training course should be to increase the focus on the technical skills needed to administer the finer points of the techical skim.

2.4.2 Inspector

The inspector training course was more of an information package on the program evaluation, concentrating on the methodology and administration of the technical

survey instrument. The training course assumed a high existing level of expertise and the course provided an overview of the technical information sought. No significant difficulties were uncovered in Phase I with the physical inspection and the capture of technical information.

The only area for which the inspectors performed poorly was in cost estimation and use of the cost matrix. All inspectors had difficulty with this part of the instrument, and we recommend that more time be spent on the cost estimation in training. A special lecture should be included in order to standardise all procedures for administering this part of the technical instrument to ensure that high quality data is obtained.

2.4.3 Field Supervisors

The consultants from Price Waterhouse who attended the training session were involved with the program evaluation from its inception and attended all sessions to familiarise themselves with the training procedures and the trainees who were to be under their supervision.

In the presentation of the training procedures and the field methods to the supervisors the importance of quality control (the constant review of all data gathered in the field) was not explained in detail. The field experience in Phase I has indicated this was an oversight. We recommend that a heavy emphasis be placed on quality control and that appropriate procedures should be implemented as part of a daily routine while in the field.

2.4.4 Staffing

The staffing procedures were adequate. A potential difficulty lies with obtaining adequate numbers of Indian personnel for Phase II. The trainees were hired locally and were predominantly university or college students. The timing of Phase II in September-November may create problems in finding the numbers of candidates having good interview skills.

We recommend that staffing be upgraded to include adverstisements and job descriptions to be circulated outside of the immediate Ottawa area, possibly through Canada Manpower, Indian organisations such as The Assembly of First Nations could be contacted and asked to forward the names of potential candidates. The success of Phase II depends on attracting and hiring the best possible candidates as interviewers.

3.0 SURVEY EXPERIENCE: PRELIMINARY DESCRIPTIVE STATISTICAL PROFILES

3.1 Sample Results

Introduction

The pilot study involved six reserves reserves chosen by the Department from the main sample of 89 reserves. The selection of the six reserves was based on the desire to test the methodology in various regions, in bands of various sizes, in bands with different housing conditions and housing program inputs, and in urban, rural and remote settings. The pilot band sample included two urban reserves (Fort William in Ontario, and the Okanagan in British Columbia), three rural reserves (Sakimay and White Bear in Saskatchewan, and Canim Lake in British Columbia), and one remote reserve (Poplar Hill in Northern Ontario).

The reserves in British Columbia and Saskatchewan were surveyed from May 7th to the 18th and the Ontario reserves were surveyed from May 28th to June 2nd. The sample characteristics are described in Exhibit 3.1

EXHIBIT 3.1

SAMPLE CHARACTERISTICS

Reserve	Interviews Attempted	Completed Interviews	Completed Technical Skim	Completed Technical	Refusals
Canim Lake	28	20	20	14	2
Okanagan	35	19	19	15	3
Sakimay	27	18	18	18	0
White Bear	38	20	20	20	2
Poplar Hill	16	15	15	15	1
Fort William	24	20	20	20	1

District Office Surveys were completed for Williams Lake, B.C., Yorkton, Saskatchewan, Sioux Lookout and Thunder Bay, Ont.

Regional Office Surveys were completed for Saskatchewan and Ontario.

3.2 Implications for Phase II Sampling

3.2.1 CMHC Considerations - Introduction

Under Sections 56.1, 59 and 34.1 of the National Housing Act (NHA)*, CMHC operates three separate program components which assist in delivery of adequate housing on-reserve. These programs entail a very significant public investment and CMHC is concerned with evaluating these programs according to the guidelines of the OCG. Rather than conducting an independent evaluation, it has been suggested that CMHC piggy-back its program evaluation data requirements on the DIAND program evaluation. This approach should reduce the eventual response burden placed on the on-reserve population, provide considerable economies of scale and ensure semantically consistent data with the DIAND data base.

Despite the obvious merits of conducting a linked data collection effort, there remains some question as to whether or not the originally proposed DIAND sample would provide an adequate data base to support the CMHC evaluation requirements. Recall that the original sample was designed to support inferences to the population of all on-reserve housing. In fact, the CMHC evaluation is crucially concerned with a separate sub-population which is systematically different from the overall population. This population can be defined as all currently existing dwellings which have received some sort of CMHC funding. In more practical terms we can define the study population as all reserves which have received CMHC funding.**

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* Also Sections 6 and 37.1.

** This is necessary since a unit-based (i.e., individual element) sampling frame of all properties is not available. Hence, we must utilise a two-stage cluster sample in which the primary sampling unit is the reserve.

In light of these concerns, one of the issues for Phase I was to investigate the adequacy of the currently proposed sampling frame of 89 reserves and approximately 2,000 houses. It was also important to find out how feasible it was to identify CMHC-funded units and to distinguish the program components involved.

Each of the three separate components offer a different vehicle for obtaining adequate on-reserve housing. Under Section 59 of the National Housing Act, CMHC provides individual homeowner loans to Indians on reserves. The interest rate is at market level. The loans are secured by Ministerial guarantee. Under the Section 6 Insured Lending Program, CMHC provides NHA insurance on mortgage loans made by an approved lender.

Under Section 56.1 CMHC provides annual contributions to the operating costs of Band-owned rental housing. The maximum contribution is equal to the difference between the mortgage payment at the actual rate of mortgage interest and the payment if the rate of interest were equal to 2 per cent. The intention of the contribution is to reduce rents. Start-up assistance (under Section 37.1) is also available on reserves, to assist the Indian band in planning the housing project. The assistance takes the form of an interest free repayable loan which is capitalised into the mortgage.

Under the Section 34.1 Rural Residential Rehabilitation Assistance Program, the Corporation provides loan assistance for approved rehabilitation work to bring housing units up to RRAP standards. A portion of the loan

is forgiveable, the level depending basically on the income of the applicant and the geographical location of the reserve.

Analysis

Exhibit 3.2.A shows the level of CMHC program activity on reserves by program component since 1978. The pattern shows that overall, CMHC activity on-reserve has been growing rather rapidly, particularly in the case of RRAP Section 34.1 and Section 56.1.

EXHIBIT 3.2.A

LEVEL OF CMHC PROGRAM ACTIVITY (UNIT COMMITMENTS)

YEAR	S59	S34.1	S56.1	TOTAL
	Homeowner/ Rental			
1978	138	184	91	413
1979	290	520	305	1,115
1980	44/279	852	368	1,543
1981	54/385	1,172	551	2,162
1982	18/192	1,693	824	2,727
1983	30/101	2,362	971	3,464
TOTAL	1,531	6,783	3,110	11,424

About 11,500 units on-reserve have received some form of program assistance from CMHC in the past six years. Knowing that rates of obsolescence are high and that CMHC involvement on reserves was relatively lower before 1978, we can probably assume that there are approximately 12,000 units currently in existence on reserves which have received CMHC assistance. Under the current sampling plan 2,000 units were randomly selected from the approximate total of 50,000 units on reserves. This would provide the following estimate of CMHC units in the sample:

(a) proportion of CMHC units

$$= P_{CMHC} = \frac{f_{CMHC}}{f_{total}} = \frac{12,000}{50,000} = .24 \quad (1)$$

(b) estimated number of CMHC units in sample

$$= P_{CMHC} \times n = .24 \times 2000 = 480 \quad (2)$$

We would suggest that a sample of about 480 units would be adequate for the evaluation if CMHC were content with the following restrictions:

- One-way breakdowns of the pooled CMHC-recipient stock (e.g., differences by North/South, geo-code, etc.). Complex two or more way breakdowns would probably not be possible unless the classificatory variables were very simple (e.g., two or three categories).

- Each of the three major components could be analysed separately at an overall aggregate level (viz., for the entire country). In the case of

RRAP and Section 56.1 units it might be possible to make very simple two-way breakdowns by simple categorical variables.

If we realised the expected number of CMHC units suggested by the previous exercise (i.e., over 450), this would provide a good basic sample for the evaluation. However, our actual field experience suggests that we may not be able to properly identify that number of units.

In the pilot study five of the six reserves were purposively selected (from the overall sample of 89 reserves) on the grounds that we knew that these bands had received CMHC funding. We attempted to distinguish the funding history for each of the dwelling units included in the sample. This information was collected from either the band housing administrator or else from the local CMHC or DIAND district office. Using this data (which we are still in the process of cross-verifying) we have identified the following units within our sample as having CMHC funding of some sort.

EXHIBIT 3.2.B
SAMPLED UNITS FOR RESERVES WHICH RECEIVED CMHC PROGRAM BENEFITS

Reserve	Total No. of Units Sampled	RRAP	S56.1	S59
Fort William	20	0	4	6
Canim Lake	20	4	4	1
Okanagan	19	4	4	0
Sakimay	18	5	5	1
White Bear	20	0	3	0
TOTAL	97	13	20	8
PERCENTAGE	-	13.4%	20.6%	8.24%

These figures suggest that, in those places we visited which received CMHC funding, about 13% of the sample had received RRAP, 21% had received Section 56.1 and about 8% had received Section 59 funding. In total, slightly over 42% of this sample had identified CMHC funded units.

These percentages are somewhat lower than what we would expect to realise given the administrative program data. Figures taken from CMHC files suggest that CMHC programs are delivered to approximately 30% of all bands. This would imply that the 12,000 cases are highly concentrated since these bands do not contain more than 20,000 dwelling units*. Why do we not see a larger number of CMHC units in our sample (viz., about 60% rather than 40%)? The answer is complex:

(i) The cases may be under-reported. We attempted cross- verification of figures provided by bands and CMHC local offices in some cases and found the figures reasonably compatible.

(ii) Some of the units may have disappeared (e.g., through premature obsolescence, fire, etc.).

(iii) Certain cases may apply to a single property (e.g., RRAP funds used on Section 56.1 on 59 units).

(iv) All of the cases funded may not have actually been built, acquired or rehabilitated.

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* The probability proportional to size (PPS) sampling procedure favours larger bands which may also be more likely to be aware of CMHC programs than smaller bands.

In reviewing CMHC data, we estimate that approximately thirty of the eighty-nine reserves in the sample have received CMHC funding of some sort. Assuming that the figures derived from our small sample of five bands are relatively unbiased, we would estimate that the following number of CMHC units will be identified in Phase II:

Estimated number of 56.1 = 20.6% x 30 bands x 20 units sampled = 124

Estimated number of 34.1 = 13.4% x 30 bands x 20 units sampled = 80

Estimated number of 59 = 8.2% x 30 bands x 20 units sampled = 49

TOTAL = 253

These estimates, which may be quite imprecise (e.g., plus or minus 25%) imply that the existing sample will provide between two to three hundred cases of CMHC units.

This number of cases would provide a very slender sample for the purposes of evaluation. At a bare minimum it would permit rough aggregate analysis of the overall (national) population of all CMHC-treated units on reserve. It would also support overall aggregate analyses of the individual program components, within rather broad confidence intervals. Assuming a worst case scenario, we may even encounter a situation where we only have between one and two hundred total cases of CMHC units and as few as a couple of dozen Section 59 units.

In order to support CMHC requirements, we suggest two options for increasing the sample. The first option would provide a sample of approximately 500 CMHC units at an additional cost of approximately $45,000 for surveying fifteen additional reserves. The second option would increase the CMHC sample by an additional 225 units and provide a better distribution for regional sub-population analyses. It would entail a further (approximately) $30,000 in costs.

OPTION A (15 Reserves, 250 Units)

As we argued earlier, a sample of about five hundred (or twice the currently expected sample) would be desirable. In order to realise this size of sample it will be necessary to augment the current sample. There are a variety of methods available for accomplishing this goal.

In order to ensure that the data base is capable of supporting the analytical demands of CMHC's evaluation we would suggest that the following sampling strategy be pursued. An additional fifteen reserves should be randomly selected from the population of reserves which have received CMHC funding (and are not included in the existing sample). We would also recommend the same PPS sampling employed for the DIAND sample should be utilised. The cluster size (number of dwelling units sampled within the reserve) should be increased to forty for these reserves*. This approach should double the sample size for CMHC-treated units. The new sample would then be pooled with the existing sample of

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* In some (smaller) cases this may be impossible since there may be less than 40 units in the reserve's stock.

reserves which have received CMHC funds (i.e., thirty reserves). This data base could then be analysed separately by CMHC.

The cost implications for this approach are as follows. The design, training and staffing cost are fixed and there are considerable economies of scale for travel, data base management and supervision. Hence, we would estimate that the costs would be expanded mainly by the additional amount of field force time, accommodation, direct travel costs and data capture required for the additional fifteen reserves. Assuming that CMHC would receive a purified data file and SPSS system file, we would estimate the costs for this data collection to be approximately $45,000. This figure is based on the assumptions stated earlier and our knowledge of average costs per reserve as derived from estimates of the costs for the eighty-nine bands. A more precise figure is possible only after the actual sample is drawn.

OPTION B (20 Reserves, 475 Units)

In reviewing Option A with CMHC, we have learned that a major evaluation hypothesis is that inter-regional variations in program delivery and administration are significantly associated with program effectiveness (and efficiency). In order to empirically evaluate this hypothesis it will be necessary to have sufficient cases to model program performance by program component and by region.

This requirement is not a serious difficulty for Option A in the case of the more common components (i.e., S.56.1 and S.34.1) in the larger regions. However, the more infrequent cases under S.59, in smaller regions such as the Atlantic, will occur too rarely in the sample to support inferences about program performance by region and component. We would suggest a minimum expected cell frequency of 10 for crosstabular analysis and under Option A the smaller cells would fall below this number.

The solution would be to increase the number of sampled bands by an additional five communities and to stratify the selection by region such that sufficient cases were available for the smaller regions and components. At the same time we would recommend increasing the cluster size for all sampled bands receiving CMHC funding to 40. These two refinements would yield an additional 225 cases for an expected total CMHC sample of approximately 700 units. It would also improve the distribution of cases such that the two-way breakdown of cases by region and program component would be possible (although S.59 cases in the Atlantic would still be quite slim since there are only a couple of dozen in the entire population).

These additional refinements would add another $30,000 (approximately) to field costs, on top of the costs of Option A (i.e., $45,000 + $30,000 or $75,000 in total).

The following pros and cons should be considered in reviewing Option B;

1. Stratification will increase the complexity of the sampling and analysis. Although we can use the reciprocal of the sampling weights to correct

the analysis for disproportionalities in the sampling, the effect on sampling errors will be difficult to estimate precisely (e.g., SPSS and SAS calculates standard errors under the assumption of simple random sampling).

2. The smallest cells in the sample design probably reflect their relative importance in the overall program. Unless these cases are going to assume greater significance by virtue of some emerging shift in policy or priorities it may not be cost-effective to collect a disproportionate amount of data for such a small part of the overall CMHC on-reserve effort.

3. Finally, evidence of inter-regional variations in larger regions (and programs) may capture much of the kinds of variations which will explain variations in program effectiveness. In other words general inter-regional variations and variations in the larger regions may provide a suitable proxy for the smaller regions.

Under either Option A or Option B the new sample can be pooled with the original sample of those communities (with CMHC funding) from the original sample of 89 to provide an unbiased sample of the CMHC study population.

Summary and Recommendations

In summary, we have reviewed the question of whether or not the current sample would support the evaluation requirements of CMHC. We have concluded that we cannot confidently project an adequate sample from our knowledge of the distribution of program benefits and our field experience in Phase I. Hence we recommend that CMHC bolster the existing sample with fifteen additional reserves and collect data for forty (randomly selected) units per band. This sample would then be pooled with a select subsample from the original sample of eighty-nine bands to provide CMHC with approximately 500 cases (+/-25%) which have received CMHC funding.

Option A would increase data collection costs by approximately $45,000 and would provide an adequate data base for an aggregate analysis of performance of each of the three program components. If the requirement for two-way breakdowns to smaller programs and regions is essential then Option B is recommended which entails a further $30,000, or $75,000 in total.

3.2.2 Overall Sampling

A two stage cluster sample methodology was used in the selection of reserve dwellings[3]. Stage one was the selection of bands to be sampled. The program evaluation is based on the data obtained from 98 samples of 20 house units. The 98 samples are drawn from a list of Indian Bands

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[3] For a detailed explanation, see Methodology for the Evaluation of the On-Reserve Housing Program Volume I. Ekos Research Associates Inc., Department of Indian and Northern Affairs, 1983.

supplied by DIAND. The sampling process is based a probability proportional to size. With the selection process based on size it was possible that a large single band could be selected for more than one sample. In the sampling procedures 89 bands were selected from which 98 samples are drawn. The results are:

- 81 bands selected for 1 sample = 81
- 7 bands selected for 2 samples = 14
- 1 band selected for 3 samples = 3

Total Bands = 89 Total Sample = 98

Stage two of the cluster sample is the selection of the housing units to be interviewed at the band level. For each sample 20 housing units are selected. The house units are randomly chosen from the band census. In all, 1,960 units are to be interviewed. The proportional breakdown is:

81 bands	x	20 units	=	1,520
7 bands	x	40 units	=	280
1 band	x	60 units	=	60
89 bands				1,960 units

The selection of reserves for the evaluation was modified slightly by DIAND for administrative reasons. The substitute reserves were of similar size, classification and location. Appendix A represents the approved primary sample of bands.

A secondary sample of 25 reserves will be generated by the same procedures as the first. In the event of a reserve dropping out of the evaluation a replacement from the secondary sample will be selected. The substitute reserve will be of the same classification and proximity of the original.

A secondary sample of housing units will be randomly generated from the band census on each reserve. These dwellings will be visited by the interviewers if the primary sample is exhausted.

4.0 SURVEY LOGISTICS: METHODS, RESULTS AND RECOMMENDATIONS

4.1 Introduction

The field logistics involved a series of tasks which are visually displayed in Exhibit 4.1. The process for carrying out data collection in the pilot phase can be divided into three components including preliminary fieldwork, survey management, and fieldwork. This section describes each step involved in this process from the perspective of what was done in the pilot phase, whether such procedures were effective, and changes we recommend for the main study.

4.2 Preliminary Fieldwork

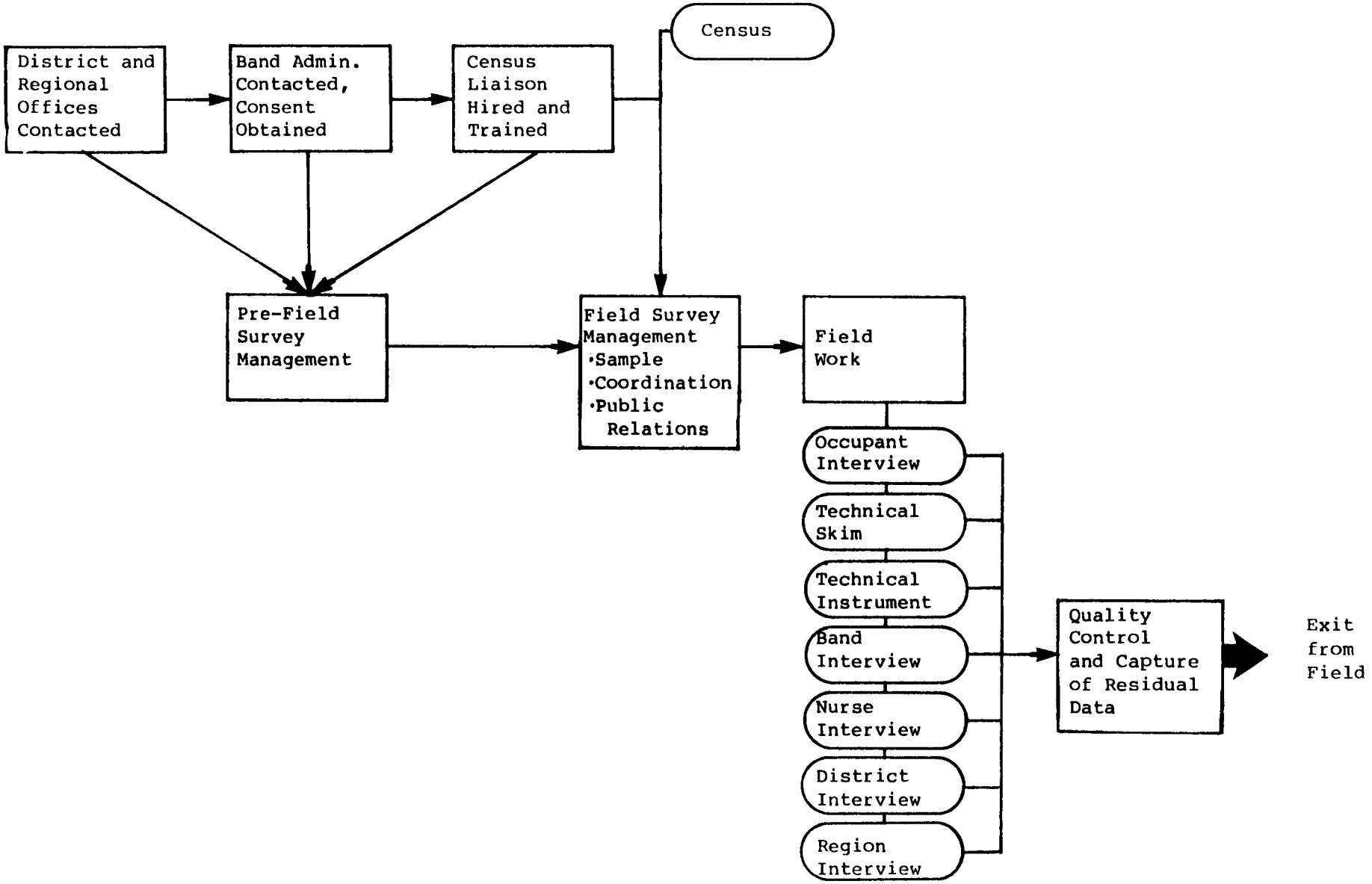
Introduction

The Program Evaluation Branch of DIAND assumed responsibility for initial contacts with parties affected by the field work (Bands, District Offices, Regional Offices, etc.). This entailed letting them know of the study and advising them that Ekos and Price Waterhouse would be collecting study data. After this initial advisement, it was left to the consultants to make arrangements for particular field visits.

4.2.1 Regional and District Office Level

Contacts with Regional and District officials were made by the consultants after the Program Evaluation Branch had advised them of the study. No significant difficulties were encountered in this process. However, in making

EXHIBIT 4.A
PILOT PHASE SCHEMA OF FIELD LOGISTICS



arrangements it was discovered, particularly at the District level, that the scope and detail of the evaluation was not clear. The District offices did not completely comprehend their role in the organization of the field work. It was left to the consultants, who were responsible for the completion of the fieldwork, to inform the Regional and District Offices of the program evaluation's intricacies.

The importance of the program evaluation and the tight time lines of field work did not filter down to the District office level. District officials, owing to the geographical dispersion of their client group, were often unavailable for periods of several days at a time as they were visiting out-of-town communities in their districts. Difficulties in arranging interviews with District officials within the tight schedules of the fieldwork were encountered. Low priority was seemingly attached to interviews in relation to daily operations. Missed appointments or a sudden change in plans by District officials would have had a profound impact on overall scheduling.

4.2.2 Band Administration

The process for arranging field visits with the Bands varied. In the six pilot test cases the local District offices did some of the scheduling arrangements on behalf of the consultants. Direct contact between the Bands and the field force was established where telephone lines existed. In one case, Poplar Hill, telephone communications were non-existent. The problem with the communication was compounded by language difficulties. In this circumstance the District office provided notification of the field visit and arranged the necessary advance work.

In several instances in the pilot phase difficulties were encountered in arranging Band visits because of uncertainty about the Band's willingness to participate in the study. Two of the six Bands were discussing withdrawing from the study up to one week before the dates that field work was scheduled to commence for their particular communities. The unwillingness of the Bands to come on stream represented a failure to communicate the overall importance of the evaluation and the direct benefits the Band would receive from the survey data. The delay in obtaining Band approval had numerous adverse implications for the field work including: not permitting sufficient time for the Band housing census; and not permitting sufficient time to advise all household occupants of field work that might affect them.

The uncertainty of Band cooperation had a profound affect on survey logistics. Schedules for air travel, accommodation and car rentals for these two Bands in B.C. and Ontario were placed in limbo. Alternate Bands were selected and contacted. Preliminary fieldwork preparations and travel arrangements were paralleled for two replacement bands. The result was a detailed contingency plan developed to fit the existing schedule.

4.2.3 Band Housing Census and Liaison Field Work

For each of the Bands in the pilot phase, the consultants engaged a Band member to conduct the Band housing census and provide liaison assistance during the house inspection and occupant surveys. The liaison person was recruited by the District offices in conjunction with

the respective Band administrations. For Poplar Hill the liaison services also included interpretation of all the occupant interviews between Cree and English. For all Bands we found it necessary to use the services of the liaison person as a guide to the reserve, showing field staff where to find sampled houses and household occupants.

The liaison person was prepared for the census work on the basis of a briefing sent by the consultants. The package contained a Census Training Manual and census maps of each reserve. The manual was developed especially for the evaluation and is included in Volume III of this report. The liaisons were to read it and train themselves on how to conduct the census. In followup telephone calls we found that the materials were adequate and that on a whole the liaison person was able to ascertain what were his particular tasks.

The training package included reserve maps in a scale displaying the location of housing units. The census maps were generated from one, or a combination of;

- DIAND reserve maps
- hydro company maps
- aerial photographs and existing maps from provincial and federal ministries of resources.

The development of these census maps required six to eight weeks lead time in obtaining the necessary materials from all sources. In only one case, Canim Lake, was an accurate and up to date census maps obtained. The map was purchased from B.C. Hydro and was dated January, 1984. However, it displayed only the house units with hydro facilities. For all 6 reserves it became necessary for the liaison person to update the census maps to include all housing units.

The census survey was found to be quite time consuming to conduct as the liaison individual was required to visit each on-reserve house to gather information on the occupants and extent of services to the house. In addition, the laborious process of recording each unidentified house on the census map slowed the process down. The liaison individuals were able to cover between three and eight houses per hour. Most of this variance can be explained by the productivity and style of work of the liaison individual rather than the geography of the reserves.

4.3 Survey Management

4.3.1 Survey Management Prior to Field Entry

Survey Management can be defined as the coordination of the survey logistics prior to field entry and during field work. Good survey management facilitates the ease of data gathering and renders the process more cost effective. In the pilot phase survey management responsibilities were divided between Ekos Research and Price Waterhouse.

The coordination of the trained interviewers and the inspectors with the liaison person, Band office, District office and Regional office required continuing communications. The survey resources had to be fitted into the tentative schedules arranged in the preliminary field work.

The field work was to be conducted throughout the month of May. The preliminary field work communications focused on obtaining the earliest possible start date for

the conduction of the surveys. Once these dates were finalised the coordination of survey resources was undertaken. Band acceptance of the evaluation was not confirmed for Okanagan until May 4th and for Fort William until the 21st. As a result arrangements for the western portion of the field work were not finalised until May 5th and for Ontario until May 23rd.

The field force began on May 6th in British Columbia and worked its way back into Ontario. Canim Lake was the first reserve visited followed by the Okanagan, Sakimay, White Bear, Poplar Hill and Fort William. Schedules and resources were arranged to reflect the late confirmation of Okanagan and Fort William. The pre-field survey management for the six reserves involved:

- investigating the exact location of each reserve and planning the most cost effective method of transport and the closest sites of accommodation;
- arrangement for transport (air travel/bus);
- travel advances;
- notification to Regional, District and Band administrators of the proposed schedule;
- car rentals;
- ensuring that the liaison person had already conducted or was conducting the census and informing them of the proposed schedule;
- ensuring that all necessary equipment and survey instruments were ready and in place; and
- contingency plans in case of bad weather, delays or Band withdrawls in mid-stream.

The success of the survey depended on its management and on the quality and depth of the preliminary field

work. The delay in finalising the sample of reserves for the pilot phase was reflected in higher costs for conducting the survey. For example, premium airfares had to be booked for all flights. If more lead time had been available for survey management, cheaper flights could have been arranged saving an estimated $900. Though this seems a small figure at present it should be considered in the context of Phase II with visits to eighty-three reserves from the Yukon to Nova Scotia.

4.3.2 Selecting Samples for Inspections and Occupant Surveys Interviews

Houses to be included in the occupant survey and technical inspections were selected by the team supervisor on a random sampling basis, using the Band housing census as the sampling frame. The sampling procedures ensured that all houses on the reserve had an equal probability of being selected. In addition to the sample of 20 units a few additional houses were selected from each Band to be used as substitute cases where any of the original 20 could not be surveyed owing to refusals or difficulty with contacting the occupants.

The sampling procedures worked well. Their dependence on satisfactory completion of the census pointed to the importance of completing the census prior to the visit of the survey team. A delay in the census would leave the entire field team stranded with "the meter running". In the training course the interviewers were trained to conduct the census in the case of such an emergency. The decision to use the interviewers as enumerators was left to the discretion of the field supervisors. Fortanately this did not happen in the pilot phase but it is not an unrealistic possibility in Phase II.

4.3.3 Organisation and Timing of Household Visits

The largest part of the field work effort with each Band was accounted for by three related surveys; the occupant survey, technical skim survey, and the full inspection survey. In the pilot phase all three surveys were conducted in an integrated fashion using teams of two trained interviewers and a qualified housing inspector. The Canim Lake reserve served as a test for interview methods. Several variations in conducting the surveys were tried. Sending interviewers to seperate residences and having the inspector move from one residence to the other was attempted. This proved inefficient. Grouping the interviewers and inspectors into one unit or team was tried. The team would survey each house together, with the inspector completing the physical house condition instrument, one interviewer conducting the occupant interview and the other doing the techncial skim inspection. Generally the two interviewers alternated the interviews and technical skims between one another as they progressed to each new house in the sample.

The team approach to data collection at the house level is probably the only feasible approach. If the inspector and interviewer were to visit houses at different times, there would be a greater possibility of being unable to obtain corresponding samples for each of the three survey because of:

- occupants not being at home for all separate data collection visits;

- increased respondent burden arising from separate visits could lead to high rates of non-response and non-completion;

- incorrect identification of sample houses.

In addition, the team approach was found to facilitate economies on transportation requirements for reserves where data collection efforts require using cars.

During the pilot phase we found that a survey team of two interviewers and an inspector could survey seven to ten houses in a full working day. Most of the household level field work during the pilot phase was done in working hours. However, our experience indicated the need for some flexibility in the timing of field work. For bands where significant numbers of Band members are employed during 9:00 a.m. to 6:00 p.m., it is essential that this be taken into account and household visits be scheduled for evening hours when respondents are more likely to be available. Similarly it is clear that the timing of field work needs to take account of longer term factors affecting respondent availability including seasonal employment patterns, hunting, fishing and trapping seasons and so on.

4.3.4 Public Relations

The pilot phase showed that field work was greatly facilitated by the extent to which parties affected had been well briefed in advance of the evaluation. Where householders had received advance notice of the study they were generally more willing to participate and less time was required of field staff in introducing the study and answering queries. Such advance information minimized

misunderstanding about the purpose of the study. One particularly common misunderstanding, occuring where Bands had not been well advised of the study, was that the field work was a preliminary stage of a housing improvement effort rather than a national research project. This was a particularly worrisome misunderstanding since it could lead to unfounded expectations that house repairs and replacement might follow the surveying of any deficient houses.

Poor public relations had a profound effect in managing the field team's schedule. The down time in poorly prepared areas lowered production as much as twenty per cent. To meet the assigned quota of interviews required an additional field effort. All contingency time built into the pilot phase schedule was exhausted.

4.4 Field Work

This section refers to the administrative aspects of the survey instruments. More substantive concerns with data quality and instrument performance are dealt with in Section 5.

4.4.1 Census

As discussed earlier, the census was administered by the Band liaison. The results were generally good considering the short advance notification and self-training procedures. In most cases the census was conducted in a single blitz of the reserve. Call back procedures were not used. The enumerators focused on capturing the number of house units and indicating their location on the census maps. With no call backs gaps existed in the infrastructure

data. Copies of the census were returned to the liaison to complete after the departure of the field team. The additional information was forwarded to Ekos Research for inclusion in the infrastructure data file.

4.4.2 Occupant Interview

The occupant interview instrument was found to be well designed and relatively easy to administer. The biggest single concern with this interview was its length. Practice interviews during the interviewer training course took up to one hour to complete. In the field it was discovered that the length of time introducing and administering the questionnaire varied considerably -- between 25 and 60 minutes. Advance knowledge of the survey and its purpose eliminate lengthy introductions. On reserves where the census work was not properly done time was spent on briefing the occupant as to the intention of the survey and obtaining their permission to conduct it. The duration of the interviews depended in large part on the number of services in the house. Homes without electricity or piped water, for example, did not require asking the sets of questions on these services. Ease of communication with occupants was also a major determinant of interview length. Where occupants had a good command of English interviews progressed much more smoothly. At the other extreme were the interviews which had to be conducted with the assistance of an interpreter.

Some minor errors in the instrument were noted during the field work. In some parts of the questionnaire the skip logic was not completely explicit. The appropriate

modifications for administering the instrument have been made in conjunction with refinements discovered during data analysis.

The occupant survey contains several questions dealing with the ownership and rental arrangements for on reserve housing. In most of the pilot phase communities these proved to be difficult questions for respondents to fully understand. This reflects the unique housing situations found on many reserves where there is a high degree of collective (i.e. Band) responsibility for housing and distinctions between ownership and rental are often unclear to occupants. Changes to the instrument have been made to ensure that respondents better understand the difference between the concept of personal and collective ownership. This misperception of a basic concept highlighted other possible areas of misunderstanding such as the difference between mortgage and rent.

4.4.3 Technical Skim

The technical skim proved to be straightforward to administer. It usually took less time to complete than the occupant interview -- between 15 and 25 minutes. This did not pose any logistical problems as interviewers were able to use any time waiting for the second interviewer to review completed forms and to identify the next house in the sample. Interviewers with experience became very proficient in their administration of the instrument. Their proficiency and level of expertise are reflected in the technical skim data comparison with the data from trained housing inspectors. This is discussed in Section 5 of this report.

4.4.4 Technical Inspection

The trained inspectors used to administer the technical inspection found that it could be completed without any significant difficulty. The only concern raised was in relation to the time involved in completing the cost estimates for repairing or replacing homes. Several of the inspectors participating in the pilot phase found that they did not have time to finish the cost matrix sections of the instrument during the on-site inspections, and were required to spend time in the evenings following field work to complete the forms. Difficulties with the cost matrix can be traced to the training session. It was apparent in the field work that the inspectors had not picked up on what "costings" information they were to provide. Since this was common to all the inspectors the probable fault lies in the training and not with the personnel.

The pilot phase experience indicated that the technical inspection is the most time consuming to administer of the three household level instruments, taking between 40 and 75 minutes to complete. If the team approach to on-reserve data collection is to be followed, any increase in the number of units that can be covered by a team in a day will have to involve some streamlining of the technical inspection instrument.

4.4.5 Band Level Instrument

The Band level instrument was administered by the field supervisor. The respondents varied, depending partly on the Band size and its administration. In two cases the

Band chief responded while in the other four reserves it was either the Band Manager or the Housing Program Officer.

The Band instrument was the most flawed of the eight survey instruments. It was cumbersome and time consuming to administer. The interviews took up to three hours to complete. In part, the length of the interview was due to the detail of information sought. Often respondents had to refer to files for the information, for example information on various categories of CMHC funding. In other instances questions asked were repetitive or redundant. A few questions dealt with issues rather obliquely and did not adequately address significant management and evaluation concerns. Areas that have been reworked for the main phase of the study include those questions dealing with the Band/District Office linkages and those on the process whereby new Band houses are allocated to Band members. More specifically the revised Band level instrument includes an additional section dealing with the interfaces between the Band and District offices of DIAND with regard to the On-Reserve Housing Program. It includes questions on: the reporting arrangements between the two parties; the nature and extent of DIAND controls on the Band's housing activities; and arrangements for planning Band housing. It also includes questions asking Bands what they see as being the relative importance of the housing program's objectives; providing housing, creating work, promoting management and construction skills, and providing an opportunity for Indian self-government.

4.4.6 Regional and District Office Instrument

The Regional and District office instruments are very similar. They were administered by the field

supervisor in a group format with the responsible personnel present for the On-Reserve Housing Program.

In the administration of the instrument specific problems with the questionnaires were uncovered. First, some of the questions dealt with broad management and organisational concerns (e.g., organisation of tasks in the office) that were not clearly related to issues of the housing program. Second, these questions were quite vague and interpretation of the responses posed considerable difficulties. Third, judgements about management practices were made by persons who were responsible for them and they were being asked to critically assess themselves. Fourth, many of the questions entailed quantitative ratings on a seven point scale when qualitative information was required.

Similarly to the Band interview, the Region and District office interviews were too long. The potential of interview fatigue was high. The field experience indicated the necessity to shorten the instrument.

4.4.7 Community Nurse

The field supervisor was to contact the community health representative on reserve or a Health and Welfare nurse responsible for the reserve to conduct the health survey instrument. From the field experience it was apparent that the community health representative was in a better position to respond to the questionnaire because of its specific detail to reserve needs (i.e., the number of disabled persons). Contact with the C.H.R was made through the Band administration and no problems were encountered with either obtaining the information or with the questionnaire format.

4.4.8 Quality Control Procedures

The instruments being used in the housing evaluation are of such a level of sophistication that there is considerable potential for errors to be made in the way data is collected. Quality control was instituted in the field to catch interviewer/inspector errors. The most common errors encountered were; imprecise recording on the seven point ratings; skip logic errors; inappropriate use of coding categories and improper identification of houses on questionnaire forms. Such errors, if not identified immediately were likely to recur. Field supervisors reviewed the instruments completed by interviewers and inspectors while on site. It was particularly important to conduct on site quality reviews for field staff in the initial days of the study, and for the first houses done in each community. In most cases instruments were reviewed by the supervisor at the end of each day in the field. Difficulties were discussed and problem areas rectified.

4.4.9 Follow-up Field Work

In field work situations it is common to find that certain data are not immediately available and can be more easily obtained at a later date. However, we found it very difficult to conduct follow-up data collection subsequent to visiting the reserve because of the difficulties involved in communicating long-distance with Band administrations. Specific CMHC funding data was, in error, omitted in the data collection. Capturing the information after the team left the field was a tedious and problematic experience involving letters, phone calls and telex messages. This experience served to underline the importance of completing

all data collection at the time of the main site visits and avoiding all situations where outstanding data collection is left for a later date.

4.4.10 Field Staff Performance

The three interviewers employed in the pilot phase were all women, and two of them were students for whom the field work represented summer employment. In general they were found to be very well qualified for the work. The proposed timing of the next phase of the study in September-November may make it difficult to recruit enough similarly qualified individuals as interviewers.

In the pilot phase inspectors from the Department were used for the technical inspection survey. This had both advantages and disadvantages. The advantages were:

- the inspectors were already familiar with the reserve communities being studied. This reduced the time needed to become familiar with the reserve involved in the field work;

- the inspectors were familiar with Indian housing conditions;

- ease in making field work arrangements for inspectors, given established channels of communications.

The disadvantages included:

- possible lack of objectivity of Departmental

inspectors given their ongoing involvement in the housing program;

- potential underestimation of the gravity of on-reserve housing conditions because they are habituated to poor conditions and building standards;

- reluctance of DIAND inspectors to be supervised by contractees of the Department;

- the burden placed on the District's inspection function by the main field work effort with up to 83 Bands to be covered in between six and ten weeks.

The CMHC inspector from Vancouver was used in British Columbia. The inspector was familiar with Indian housing conditions. The use of non-DIAND personnel eliminated many of the disadvantages previously listed. The only disadvantage was in field work arrangements as the team had no direct channel of communication with the local District and Region offices.

Three field supervisors, from the two consulting firms, were used in the study. Each encountered their own minor difficulties with field management. These were regional in nature and due to unique reserve conditions. Variance in their performance was found in quality control. In one case quality control was not done while on site. Residual occupant and technical information became next to impossible to obtain. This error stressed the need for tight supervision at critical points in the field work, these being field entry and exit from a reserve.

4.5 Conclusions and Recommendations

4.5.1 Increase Band Level Communication

The principle aim of the initial Band contact is to explain the overall study and to secure their acceptance and cooperation on all aspects of the field work. An important output of this process should be written approval providing the consultants with permission to proceed with the study. Such a letter, or other written approval, should come from either the Band Manager, the Chief or the Band Council. Our experience with the pilot phase suggests that such written assurances of cooperation with the study are not easy to obtain. Only one of the Bands surveyed to date provided written approval, and then only a few days before the field work was to commence. To ensure a written document, we recommend that the consultants present a draft letter addressed to the Band members outlinging the study to the Band Manager or Chief. If they agree to its content have a final copy signed and distributed during the census thereby notifying all residents on reserve of the study. In addition to written notification, announcements regarding the study and field work at community meetings or social events should be considered. In short, increased communication at the band level will save time and money in the long run.

4.5.2 Early Instrument Delivery

The Band and the community nurse instruments could be forwarded in advance to the appropriate respondents. Early delivery of the Band instrument would give the respondent time to review the questions and obtain the

necessary information to complete the interview. Forwarding the instrument would increase the chance of obtaining the best qualified person to answer the questions on behalf of the Band.

4.5.3 Advance Field Work - Supervisor

The experience in the pilot phase highlighted an area of difficulty in Band-Consultant communication. To correct this problem area we recommend that arrangements for field work at the Band level would be better facilitated by having a field supervisor visit each Band in advance to explain the purpose of the survey and discuss field logistics with the Band administration. This would also provide an occasion to select the Band liaison individual and brief them on the work involved in the census. The personal contact with the liaison person would eliminate potential difficulties produced by the current census self-training procedures.

4.5.4 Liaison

In the pilot phase the liaison individuals were selected by District officials visiting the reserves prior to the main field work. This approach had certain disadvantages:

- it placed a work burden on District officials that may be unrealistically high for the main study of 83 bands;

- there was some lack of clarity in the communication of the terms under which the liaison person was hired. In one instance the District office committed the consultants to reimbursing the liaison individual at a level about four times higher than for other reserves.

The hiring of the liaison person by the advance field supervisor would eliminate one task from the District office. The cost of liaison services would be derived from a stipulated price contract developed for Phase II. It is important to standardise the cost of liaison work. We recommend a figure of approximately $2.50 per unit for most reserves and an additional $0.50 per unit for reserves where the housing is geographically dispersed.

4.5.5 Occupant Interviews

In dealing with the occupant and technical interviews we strongly recommend the team approach of the two interviewers and inspector visiting a dwelling all at once. We also stress the importance of quality control and the capture of all information while in the field. Revisions are necessary to streamline the three instruments. The content of these revisions have been minor in importance and deal with the definition of terms in an Indian context.

The need to clarify terminology in an Indian context is still a concern but it was not a major problem for Phase I. It could become a more serious problem for some Bands which require interpretation such as Poplar Hill. It is difficult to judge if the correct response was given based on what was intended to be asked. Perceptions on ownership, mortgage, rent and so on will have to be clarified as part of the Phase II methodology.

4.5.6 Census

The census instrument has been slightly modified to include the source of the information collected. The instrument in the pilot phase did not contain a space to indicate if the data was obtained directly from the occupant or picked-up in a visual inspection by the enumerator because the occupant was not present at the time of enumeration.

4.5.7 District and Region

In one of the Districts visited, we encountered a mildly antipathetic attitude toward the study on the part of District officials. We believe that, at least in part, this may have been due to an oversight in protocol, where the office contact person indicated to the consultants was relatively junior. This made it awkward when requesting arrangements to be made for interviews with more senior officials. We recommend that for the main study, efforts be made to establish District office contacts through the District Housing Program Manager.

The instrument for the District and Regional Office interviews for Phase II will focus more on program components and linkages. As with the Band level instrument particular attention has been given to the linkages between the Department and the Band and other government departments involved in on-reserve housing.

The revised questionnaires provide more specific questions that address concrete issues or problems that are directly relevant to the planning and delivery of the housing program. The questionnaires search for more "objective" evidence on potential issues and problems as opposed to ratings by stakeholders. Finally, open-ended questions with specific focuses have been inserted to probe complex issues which cannot be appropriately measured through rating scales.

4.5.8 Health Information

The community health survey requires information keep at a Band level by the Community Nurse Representative. Efforts should be targeted at this individual and failing this at the responsible Health and Welfare nurse.

5.0 DATA QUALITY ASSESSMENT

A complete data quality assessment must consider three important issues; practicality, validity and reliability. To assess the practicality of the Phase I methodology, we are concerned with the efficiency and economy with which the eight survey instruments were administered. It is important to determine that the methodology will work in the field within a reasonable period of time and within a reasonable budget. The assessment of validity is concerned with the question of whether the survey instruments measure what they are intended to measure. This important issue can be tested in a variety of ways as there are several instruments which ask similar questions of different respondents. The concern with reliability refers to the intersubjective repeatability of results or in other words, will different people get the same results, using the same instrument to measure the same subject.

5.1 Overview of Findings and Recommendations for Survey Instruments

Exhibit 5.1 provides an overview of the findings and recommendations for the eight survey instruments used in the pilot study. For each survey instrument there is a brief description, some general and specific findings, and the recommendations for Phase II associated with these findings. The issue of practicality is emphasised in these recommendations.

EXHIBIT 5.1

Overview of Findings and Recommendations for Survey Instruments

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
1. Census The census was an enumeration of all existing housing stock on reserve. It captured data on community infrastructure, household composition and basic household water supply and toilet facilities.	General • Quality generally good except for one or two bands Specific • Facilities/infrastructure data good • Validity of demographic data in doubt (i.e., number of residents per house figures appear low)	• Better advance preparation in training procedures will improve implementation • Continue to use local people familiar with local units and services • Develop standarised stipulated price contract with band for provision of Census and liason services
2. Occupant Interview The occupant interview was designed to provide a profile of the resident household,	General • Overall response rate very high • Attitudinal questions work well	• Indian interviewers worked very well; continue to use them

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
2. Continued		
their level of satisfaction with house conditions, maintenance practises, demand preferences and satisfaction with housing delivery.	• Detailed factual data do not seem as good • Validity and reliability for most items appears good	• Fine-tuning of format • Streamline instrument • Collect some of the financial administrative data from the bands
	Specific	
	• Financial expenditures data produce poor responses • Income data appear good for those who responded (approximately 70%) • Program awareness/satisfaction data are quite poor	• Simplify expenditures questions • Retain tree-method of gaining income data • Drop program perception data or roll up into one question
	• Satisfaction questions fared poorly in non-English, non-French communities • Rating of physical conditions (through Census repair need question) is quite good (better than general population)	• Use culture-fair method (e.g., a smiling faces scale for non-charter language speakers)
	• Some socio-demographic and tenure questions fared poorly	• Fine-tuning to reflect actual on-reserve conditions (i.e., extended families, or native concept ownership)
	• Special need questions poorly answered	• Drop or move to end of questionnaire

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
3. Technical Skim The technical skim was designed to provide a measure of housing conditions that would be compared to the building inspector's assessment. It is a skeleton of the full Technical Instrument covering the major areas of building inspection which can be readily identified by a non-technical observer.	General • Logistics of field entry and inspection worked well • Completion rates for descriptive items and condition ratings are very high • Descriptive measures and condition ratings are all highly associated with inspector ratings - i.e., validity of interviewer ratings is very good • Summary measures (i.e., additive scales) of condition ratings are highly reliable (reliability coefficients range from .81 to .85) • Summary measures correlate highly with overall ratings and both correlate highly with inspector summary scales and overall condition measures	• Trained interviewers exceeded our expectations in the quality (reliability and validity) of their condition ratings and should also be used in Phase II • Shortened method should eventually be developed and used for expanded inventory of all units

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
3. Continued	Specific	
	• A few of the more technically demanding rating items showed significant variation between interviewer and inspector ratings (e.g., moisture problems)	• More attention to these items in the training sessions should overcome this modest problem
4. Expert Inspection The technical inspection instrument was an expert assessment of house condition. It was designed to be completed by a knowledgable expert who could provide detailed information on housing conditions, including mechanical systems, and repair costs.	General	
	• Completion rates for descriptive items and condition ratings are very high	• Training sessions for inspectors should be considered as important as for interviewers to ensure a thorough understanding of the methodology and a standardised application
	• Summary measures (additive scales) of condition ratings are highly reliable (reliability coefficients range from .86 to .99)	• Better preparation and more emphasis on costing during the training is required
	• Summary scales correlate highly with overall condition ratings	• We recommend a 25% subsample of technical inspections to improve the ability to analyse cost data and improve the quality of field work
	• Costing data is currently a problem because of incomplete responses	• The use of DIAND technical inspectors is now recommended

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
5. Band Interview The band instrument was designed to provide practical data on the band's views regarding housing conditions, use of housing programs, and community services.	General • Difficulty in arranging an interview with the right person or group • Diverse and complex instrument made it difficult for respondent to answer all the questions • It was too long so that many questions were answered generally and later questions become redundent	• Better preparation in advance to secure appropriate interview • Instruments should be sent in advance so that information can be assembled by the band for later interview • Shorten instrument by making questions more general so they apply to similar areas • More questions should be closed response in Phase II to facilitate analysis of 89 bands. Results from Phase I made this possible - open-ended questions should be restricted to areas which are necessarily general or where the opportunity to express unique problems must be provided

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
6. Regional Office The Regional Office interview closely parrallels the District Office interview. It is designed to outline, the Region's responsibilities for the housing program, its communication with bands and districts and provide an indication of the success and failure of the housing program as currently administered.	General	
	• Provided useful data on priorities of bands, attitudes to Department's resource allocation, training requirements and Indian housing skills	• Instrument in present format is generally good and only minor revisions need to be made
	• Some questions were too broad	• Clarify intent of questions
	• Some questions were redundant because of earlier general questions	• Formulate questions to apply to similar areas. This will also shorten the instrument.
	Specific	
	• Self-evaluation of performance questions resulted in relatively useless responses that were too subjective	• Solicit more objective information such as time spent in program areas, dollars spent on specific tasks and numbers of visits to bands by regional office staff
	• Responsibilities between programs are not always clear	• Questions should focus on issues and concerns relating to Housing Program

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
7. District Office This instrument was designed to outline the Districts responsibilities for the housing program, its communication with bands and Regional office, and to provide an indication of the success and failure of the housing program as currently administered.	General • Provides more specific information concerning band housing (i.e., construction and maintenance • District offices are knowledgeable concerning program effectiveness and changes in on-reserve housing conditions (i.e., assessing that standards have improved substantively) • District offices appear knowledgeable about the distribution of housing capital within bands Specific • As per Regional office	• As per Regional office • As per Regional office

INSTRUMENT	FINDINGS/COMMENTS	RECOMMENDATIONS
8. Community Nurse This survey was designed to obtain a crude general measure of health for the reserve. The purpose on the instrument was to identify on-going health concerns and ot obtain an indication of level of services.	General • Findings were inconclusive • Accurate health information was difficult to obtain from a single source. Comparisons with national averages would misrepresent the health conditions on reserve • In general, all nurses reported that community health services were adequate • Community nurses were neutral as to the role of housing conditions and their impact on health conditions Specific • Housing is not meeting the needs of the disabled or aged	• Despite the limitations of the methodology we recommend continuing the existing health survey with some improvement (i.e., more specific questions geared to housing questions) Consultations with MSB (NHW) are underway for this purpose

5.2 Critical Review of Reliability and Validity

5.2.1 Summary Measures - A Priori Linear Additive Indices and their Reliability

In this section of our report we will consider the results of our attempts to create summary measures of key study concepts. Summary measures are created through combining and manipulating individual items. The decision as to which individual items are selected for inclusion on a given scale can proceed either deductively (on theoretical, a priori grounds) or inductively (on the basis of observed correlations). We will consider the former process. Some of the main advantages of scaling individual items into composite measures are as follows:

(i) increased reliability (assuming internal consistency);
(ii) increased validity (assuming internal consistency);
(iii) parsimony;
(iv) simplification of subsequent analysis;
(v) attenuation of data redundancy and multicollinearity.

Assuming metric level data (i.e., interval/ratio measures), we can begin to summarise data by collapsing items concepts and then collapsing concepts into overall measures of house condition. We add together the scores of individual items measuring the theme or subject we wish to scale. The appropriate (negative or positive) sign must be assigned in order to ensure that the resulting scale accurately uses the information contained in the items composing the scale. In the absence of explicit and strong

theoretical guidance we follow Galtung's (1967*) suggestion that scale items should be symmetrically loaded (viz., equal weighting) in the absence of explicit theoretical guidance to the contrary.

In assessing the reliability of summary indices such as the ones proposed here, we suggest a technique known as Cronbach's alpha. This test is drawn from psychometric literature and it is specifically designed to test the reliability of linear composites such as these summary indices. The measure ranges from 0 (totally unreliable) to +1 (totally reliable). +.5 would be considered the minimum required level for a usable scale although many researchers suggest a more stringent +.75 threshold. Another interpretation of the alpha statistic is that it is the square root of the correlation between the scale and the "true" score (viz., the score free of measurement error). Exhibit 5.2.1 presents the reliability coefficients for the most important summary measures of house condition. They are very high in all cases and indicate that the important summary scales of house condition can be used with confidence.

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* Galtung, John, Theory and Methods of Social Research, Columbia University Press, New York, 1967.

EXHIBIT 5.2.1

RELIABILITY COEFFICIENTS FOR SUMMARY RATINGS OF INSPECTOR AND INTERVIEWER CONDITION RATINGS*

Summary Scale	No. of Items in Scale	Cronbach's Alpha
Interior Surface		
Inspector	4	.86
Interviewer	3	.78
Interior Structure		
Inspector	7	.99
Interviewer	7	.81
Exterior Surface	Insufficient items to scale	
Exterior Structure		
Inspector	8	.94
Interviewer	8	.85
Overall House Conditions		
Inspector	28	.97
Interviewer	20	.96

* Reliability coefficients report Cronbach's alpha, a measure ranging from 0 (totally unreliable) to +1 (totally reliable). A score of +.5 is acceptable while a score of +.75 is a very stringent acceptance threshold

5.2.2 Validity Tests for Non-Expert Condition Ratings

Validity refers to the issue of whether a measuring instrument really measures the construct or property it purports to measure. There are a range of empirical techniques available for estimating validity. It should be noted that validity assessment is a thornier issue than reliability assessment. In many respects, it is more important.

Although validity and reliability often go hand in hand, they neither logically nor empirically imply each other. For instance, it is possible to have a totally reliable (internally consistent) instrument which consistently measures something other than what it is supposed to be measuring.

The simplest form of validity test is known as face validity. As the term implies, this technique is based on whether or not a relationship between a concept and an observed measurement appears to be true. Peer review is an example of face validity testing. Since the results of such an informal test are both subjective and informal, it would be foolish to rely exclusively on such an approach.

An analogous simple approach to data validity is a review of the descriptive statistics such as data means, frequency distributions, range checks and standard deviations. By contrasting the observed data with what is expected, based on personal experience and previous results, individual items can be pre-screened for validity of the results. The descriptive statistics provide the opportunity for such validity checks. In general, the results range from acceptable to excellent.

Another useful approach is known as predictive validity (sometimes referred to as criterion-related validity). This test involves the assumption that we have a criterion measure of the underlying conceptual property we wish to measure. For this pilot study, the criterion validity tests are extremely the most important. We know that the fully qualified DIAND housing inspectors trained in using the technical instrument are capable of making accurate assessments of housing conditions. With the expert ratings as criteria or standards, we can compare the interviewer ratings, and a small number of occupant ratings for accuracy (ie. validity).

Exhibit 5.2.2A presents the Pearson correlation coefficients for the inspector and interviewer house condition ratings for both the summary scales and global (overall) condition ratings. The Pearson correlation is a measure of the degree of association for interval level data and varies from -1 (complete negative association) to +1 (complete positive association), with a zero score indicating that the variables are not associated at all. The correlation coefficients in this exhibit indicate consistently high positive correlations. From this evidence we may be confident that the interviewer ratings are valid.

Exhibit 5.2.2B presents the non-parametric measures fo association for all three sources of information (inspector, interviewer and occupant) for the three-category census repair need question. Similar scores from the 1980 Ottawa Housing study are also presented. The Gamma statistic reported is similar to the Pearson r coefficient but is used for non-parametric (ie. unequal intervals

EXHIBIT 5.2.2A

INSPECTOR/INTERVIEWER RATING CORRELATIONS FOR SUMMARY SCALES AND GLOBAL RATINGS

Summary Scales	Pearson r*
Interior Surfaces	.68
Interior Structures	.75
Overall Interior	.75
Exterior Surfaces	.71
Exterior Structures	.79
Overall Exterior	.78

Global Ratings	Pearson r
Global Interior	.73
Global Exterior	.81
Global House Condition	.85

* Pearson r is a measure of association for interval-level data. It varies from -1 (complete negative association) to +1 (complete positive association), with zero indicating no association. All coefficients presented are significant at the .001 level, or in other words, there is only one chance in a thousand that these statistical reltaionships are the result of random association or chance.

EXHIBIT 5.2.2.B

NON-PARAMETRIC MEASURES OF ASSOCIATION* FOR INSPECTOR, INTERVIEWER AND OCCUPANT RATINGS OF 1981 CENSUS REPAIR NEED QUESTION

Comparison Groups	1984 On-Reserve	1980 Ottawa Pilot
Inspector-Interviewer	.91	.69
Inspector-Occupant	.75	.48
Occupant-Interviewer	.70	.62

* Statistic reported is GAMMA, which may vary from -1.0 to +1.0. All statistics are significant at the .001 level.

between categories) data. The scores indicate a very high correspondence between both the occupant and interviewer ratings and the expert inspector ratings. The occupant scores are particularly surprising as they indicate that the occupant repair need rating on-reserve is much more accurate than for the non-reserve population. This could have important implications for interpreting the 1981 census data for the on-reserve population.

6.0 ILLUSTRATIVE SUBSTANTIVE ANALYSIS

The purpose of this section is to demonstrate the degree to which the data base can answer the substantive issues underlying the Evaluation and the concerns of other interested parties. We intended to illustrate this capability through the analysis of four key issues. Although the analysis has focussed primarily on these issues, the data base is capable of supporting at least a basic analysis of all of the issues discussed in the analysis plan. The four issues are:

1. Physical House Condition - current and changing patterns for objective and perceptual indicators of shelter adequacy;

2. Suitability - current and changing patterns for objective and perceptual indicators of crowding;

3. Health and Safety - evidence of the relationship between on-reserve housing and health and safety; and,

4. Infrastructure - a review of objective and perceptual indicators of the adequacy of community infrastructure.

An important caveat concerning the analysis is that these results are only intended as illustrative. There is no justification to assume that the six communities surveyed are representative of the entire population. However, if these results are in any way representative then there can be no doubt there is an urgent need for the program.

6.1 Physical Condition and Housing Adequacy

Introduction

Perhaps the ultimate objective of the program is to provide "adequate" shelter. One of the major dimensions of shelter adequacy is good physical condition. This analysis is designed to illustrate how the evaluation data base can support solid inferences regarding the adequacy of the stock.

Adequacy is viewed in terms of both "objective" judgements of physical house condition (as rated by both inspectors and specially trained interviewers) and the perceptions of the occupant. Perceptual indicators include subjective impressions of physical conditions and expressed levels of residential satisfaction. The data are also set in a temporal context in order to better understand changing patterns through time.

6.1.1 Objective Indicators

Exhibit 6.1.A presents the census count of units and assessments of repair needs by inspectors. Exhibit 6.1.B graphically presents the repair need assessment by band. Some of the important findings are as follows:

- On average, nine per cent of the total stock is unoccupied, however, Poplar Hill has 45% of the stock unoccupied, and Canim Lake 16%.

- One-third of units are judged to need major repairs, one-quarter minor and 44% no repairs. Major aberrations from this pattern are Poplar Hill (60% of units are considered by technical inspectors to need major repairs) and Sakimay (only 6% need major repairs).

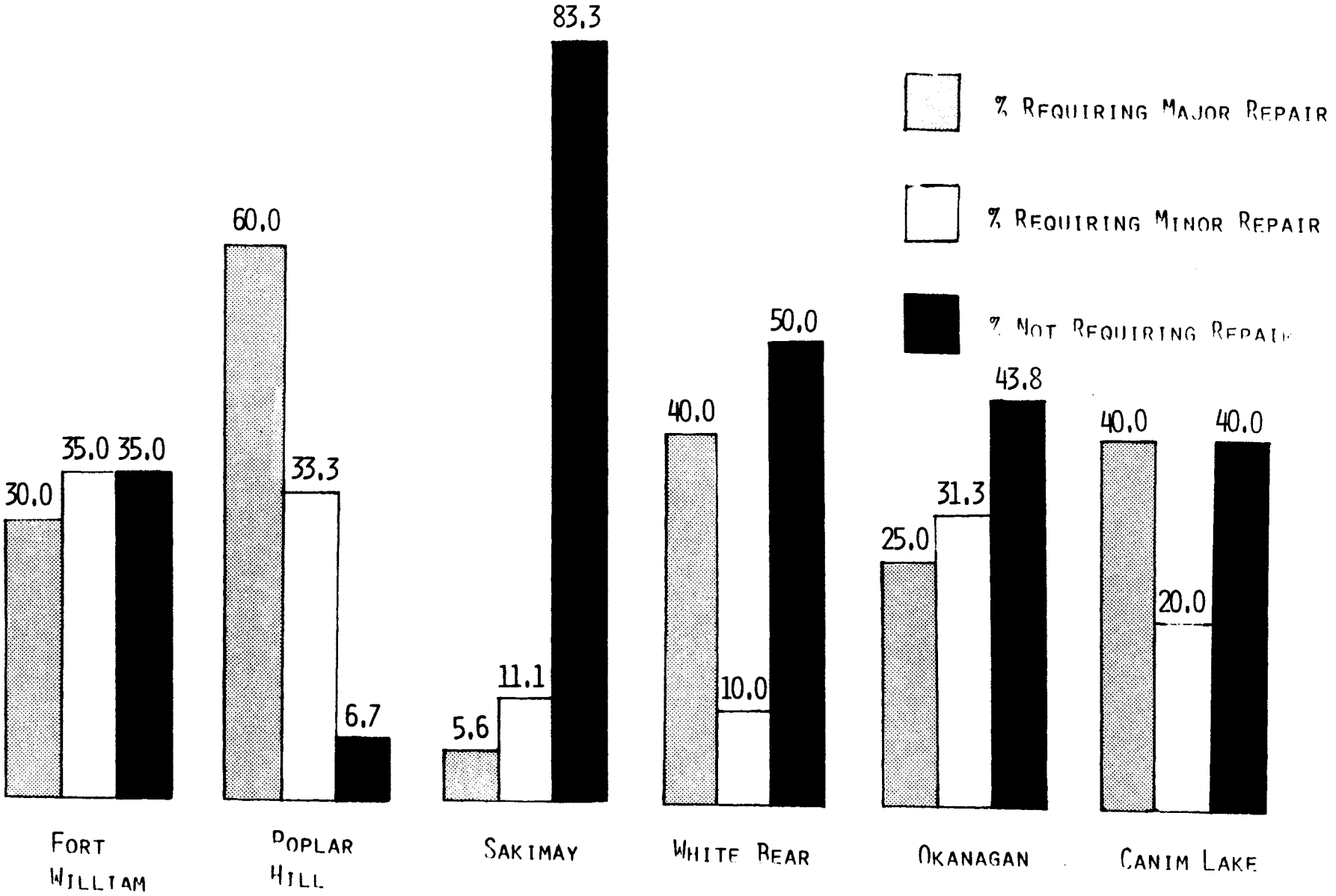
EXHIBIT 6.1.A

CENSUS COUNT OF UNITS AND INSPECTOR ASSESSMENTS OF REPAIR NEEDS

	Fort William	Poplar Hill	Sakimay	White Bear	Okanagan	Canim Lake	OVERALL
Number of Housing Units							
Occupied	67	44	51	134	146	49	491
Unoccupied	0	20	5	10	4	9	48
Total	67	64	56	144	150	58	539
Average Age of Housing Unit (in years)	12.94	6.21	6.00	11.29	21.54	15.00	12.07
Condition Ratings							
% Major Repairs Needed - Inspector	30.0	60.0	5.6	40.0	25.0	40.0	32.7
% Minor Repairs Needed - Inspector	35.0	33.3	11.1	10.0	31.3	20.0	23.1
% No Repairs, Only Maintenance Needed - Inspector	35.0	6.7	83.3	50.0	43.8	40.0	44.2

EXHIBIT 6.1.B

INSPECTOR RATINGS OF HOUSE REPAIR NEED



Next, consider in Exhibit 6.1.C the technical inspectors' overall ratings of house condition. Recall that this summary rating is made only after a detailed physical inspection of the dwelling has occurred. We have judged the reliability and validity of this measure as excellent.

Overall Conditions

- For the overall sample, (2) "very good condition" is the modal (most frequent) response category (23%). However, (5) "immediate attention required" is the next most frequent category. One interpretation of this figure is that over 40% of the sampled units are judged as physically substandard in some important respect.

- These figures indicate a relatively serious set of problems.

EXHIBIT 6.1.C

INSPECTOR RATINGS OF OVERALL PHYSICAL HOUSE CONDITIONS

(Percentage of Units in Seven Categories)

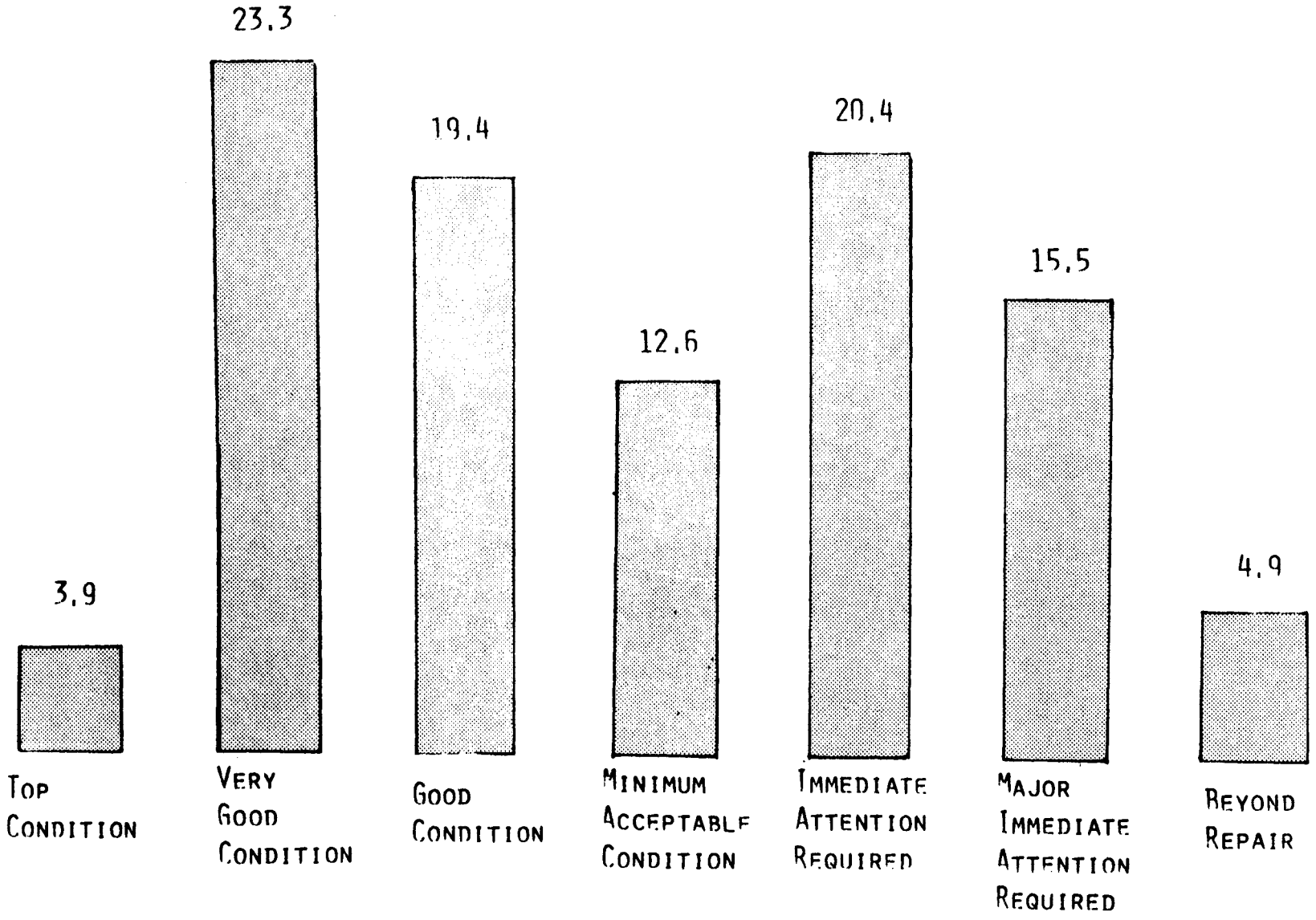
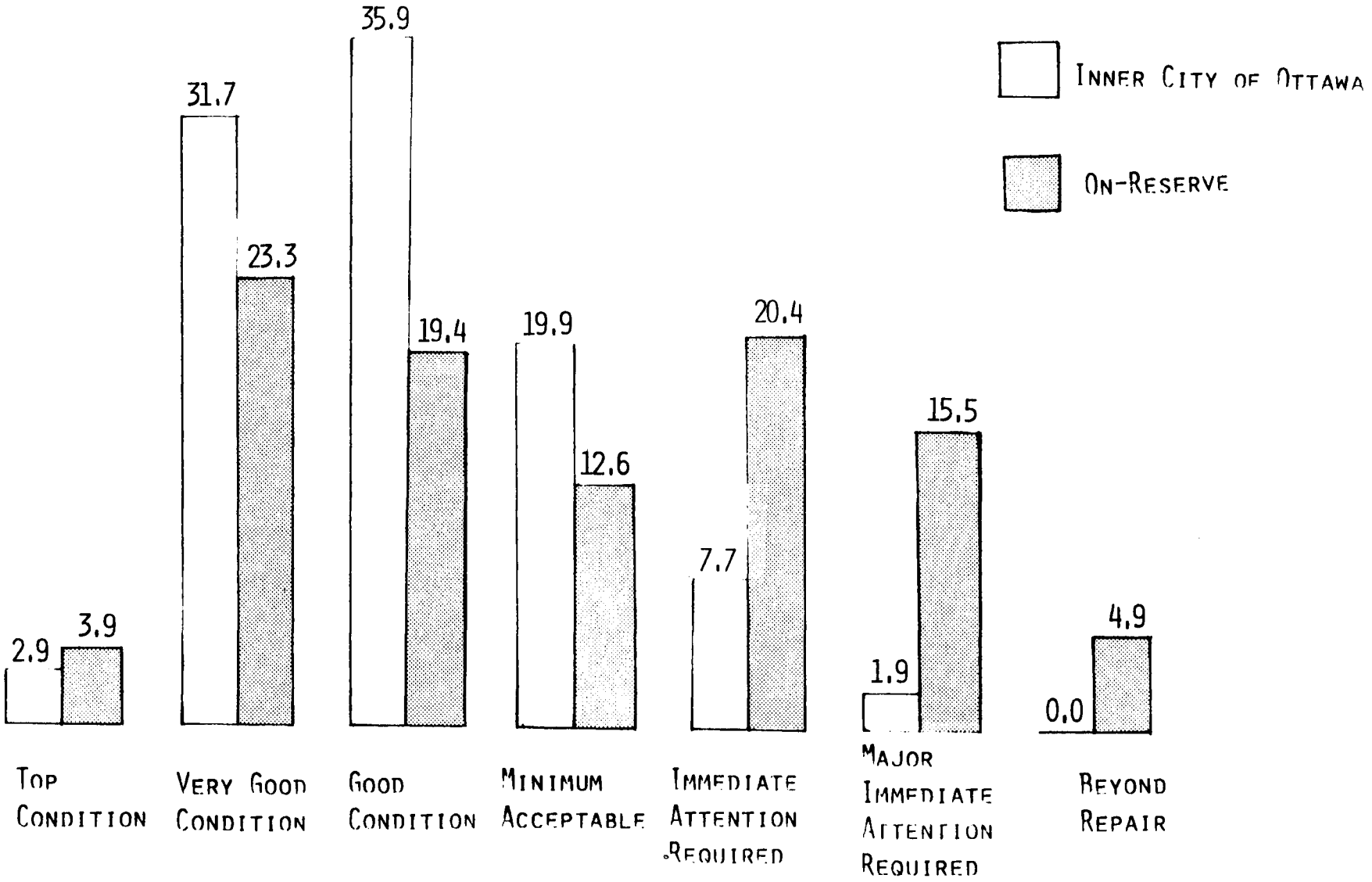


EXHIBIT 6.1.D

COMPARISON OF INSPECTOR RATINGS OF OVERALL PHYSCIAL HOUSE CONDITION IN THE TWO HOUSING STOCKS: ON-RESERVE AND THE INNER CITY OF OTTAWA
(Percentage of Units in Seven Categories)



- Comparable data drawn from the U.S.-Canada study of physical house condition placed less than 10% of the inner city stock of Ottawa in the substandard category (despite the fact that the sample was stratified to over-represent poorer condition units). This means that the pilot on-reserve stock was over four times as likely to be substandard as the Ottawa inner city stock. The histogram in Exhibit 6.1.D on the following page graphically displays this relationship.

Inter-Reserve Comparisons

- Conditions vary radically from reserve to reserve (see Exhibit 6.1.E*).

- Poplar Hill is by far the worst reserve with 20% of the houses rated as beyond repair, 73% substandard, and a mean rating of 5.4.

- White Bear (X = 4.4) has serious condition problems with slightly over half the houses in a substandard state.

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* X represents the symbol for average score or rating
S represents the symbol for standard deviation, or average difference from the average (i.e., the greater the standard deviation, the greater the variation in condition ratings).

EXHIBIT 6.1.E

TECHNICAL INSPECTORS' OVERALL RATING OF HOUSE CONDITION (PERCENTAGES OF HOUSES BY CATEGORY)

	Fort William	Poplar Hill	Sakimay	White Bear	Okanagan	Canim Lake	Overall	Inner City of Ottawa
Top Condition	0	0	16.7	0	6.3	0	3.9	2.9
Very Good Condition	30.0	0	22.2	15.8	31.3	40.0	23.3	31.7
Good Condition	15.0	6.7	22.2	15.8	43.8	13.0	19.4	35.9
Minimal Acceptable Level	5.0	20.0	27.8	15.8	6.3	0	12.6	19.9
Immediate Attention Required	40.0	20.0	5.6	21.1	0	33.3	20.4	7.7
Major, Immediate Attention Required	10.0	33.3	0	26.3	12.5	13.3	15.5	1.9
Beyond Repair	0	20.0	5.6	5.3	0	0	4.0	0
S	1.50	1.24	1.55	1.58	1.37	1.63	1.66	-
$\overline{X}$	3.85	5.40	3.06	4.42	3.00	3.67	3.88	3.00

- Overall conditions are on average minimally acceptable in Fort Williams (X = 3.9) and Canim Lake (X = 3.7).

- Okanagan (X = 3.0) and Sakimay (X = 3.1) are in good overall condition with only 12.5% and 10.2% substandard units respectively.

Intra-Reserve Comparisons

- The degree of similarity or homogeneity of conditions within the sampled reserves also varies considerably.

- Conditions tend to be quite equal (viz., uniformly bad) in Poplar Hill (s = 1.2). Okanagan also shows relative equality of conditions (viz., mostly very good or good, s = 1.4). In Fort William (s = 1.5), Sakimay (s = 1.6), White Bear (1.6) and Canim Lake (1.6), there tend to be relatively larger gaps in the level of physical conditions. For example, in Canim Lake there are no 1's, 4's or 7's. All of the houses are either good or very good (53%) or else substandard (47%).

Most Prevalent Problems

- Although condition problems tend to vary by reserve the following list indicates the five most frequent housing condition problem area in the technical inspections:

    - condition of attached structures (e.g., exterior porches and balconies);
    - general condition of door and window condition;
    - condition of exterior wall surfaces (or cladding);

- structural condition of exterior of foundation walls;
- condition of interior wall and ceiling surfaces;
- serious fire hazards due to construction or unit design.

6.1.2 Perceptual Data

In addition to defining adequacy in terms of the independent, technical judgements of inspectors and trained interviewers, we also utilise occupant perceptual data. This includes subjective impressions of conditions and perceived satisfaction with housing. Perceptual data provide an important check (triangulation) against a rigid unidimensional definition of housing adequacy. The program client's perspective may be different from inspector's. In general, the basic patterns are consistent with the technical inspection data.

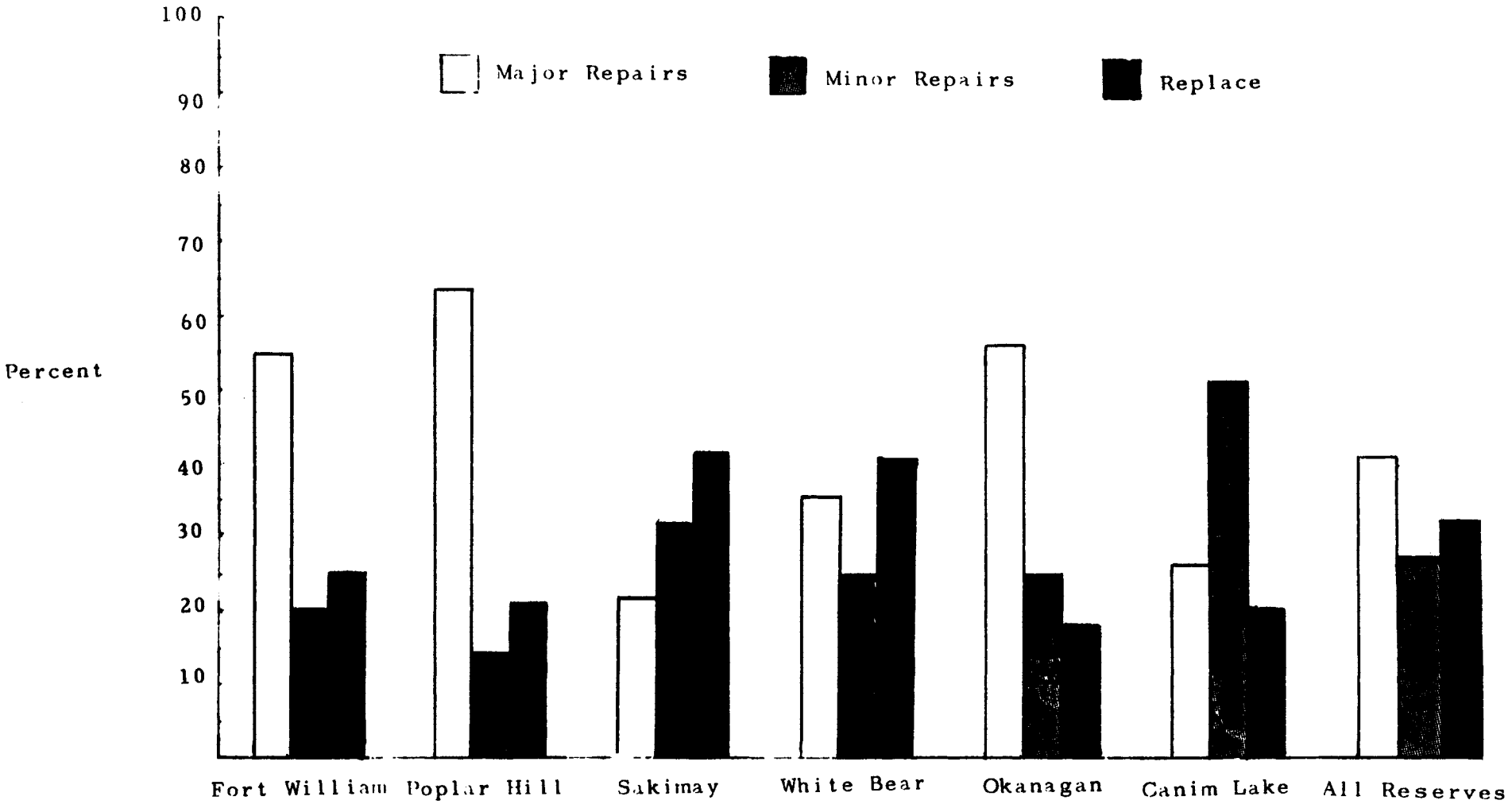
Need for Repairs

Exhibit 6.1.F presents the breakdowns of occupant perceptions of repair need for each of the bands and for the overall sample. Some important findings are:

- 69% of occupants perceived their units as needing repairs: 42% think major repairs are needed and 27% think minor. These figures are significantly higher than the national averages. According to the 1981 Census, 7% of Canadian households thought major repairs were required and 17% thought minor repairs. The figures are even higher than Census averages in the Native on-reserve population: 53% of these households felt repairs were necessary: 23% major and 30% minor. This latter disparity can be explained by small sample size of the pre-test.

EXHIBIT 6.1.F

OCCUPANT PERCEPTION OF NEED FOR REPAIRS BY RESERVE



- This result reflects the objective indicators. The fact that ten times as many households in our sample rated their houses as needing major repairs as in the 1981 Census vividly underlines the urgent need for the program.

- It is also important to note that the occupants' responses to the Census repair need question are well correlated with the inspectors' ratings. This means that these data provide a valid condition indicator as well as perceptual indicator of residential need.

- Occupant assessments of the need for repairs are associated with occupant perceptions of who is responsible for maintenance. Occupants who saw themselves as responsible were more likely to need major repairs or no repairs (42% and 39% respectively) whereas occupants who saw the band as responsible were more likely to need minor repairs (67%).

Inter-Reserve Comparisons

- 64% of Poplar Hill, 56% of Okanagan and 55% of Fort William occupants surveyed reported major repairs were needed. These levels contrast sharply with those in other reserves: 35% of respondents on White Bear reserve, 27% on Canim Lake and 22% on Sakimay reserves reported major repairs were required. The distinction between the need for major and minor repairs by occupants, especially non-owners, is less reliable than the distinction between repairs needed and no repairs needed. Ranking the reserves on this dimension, 81% of Okanagan occupants surveyed reported repairs were required, followed by Canim Lake (80%), Poplar Hill (79%), Fort William (75%), White Bear (60%) and Sakimay (56%).

- These figures are not totally consistent with the pattern of objective indicators. In particular, Okanagan occupants overestimate their need for repair and White Bear residents seem to understate need.

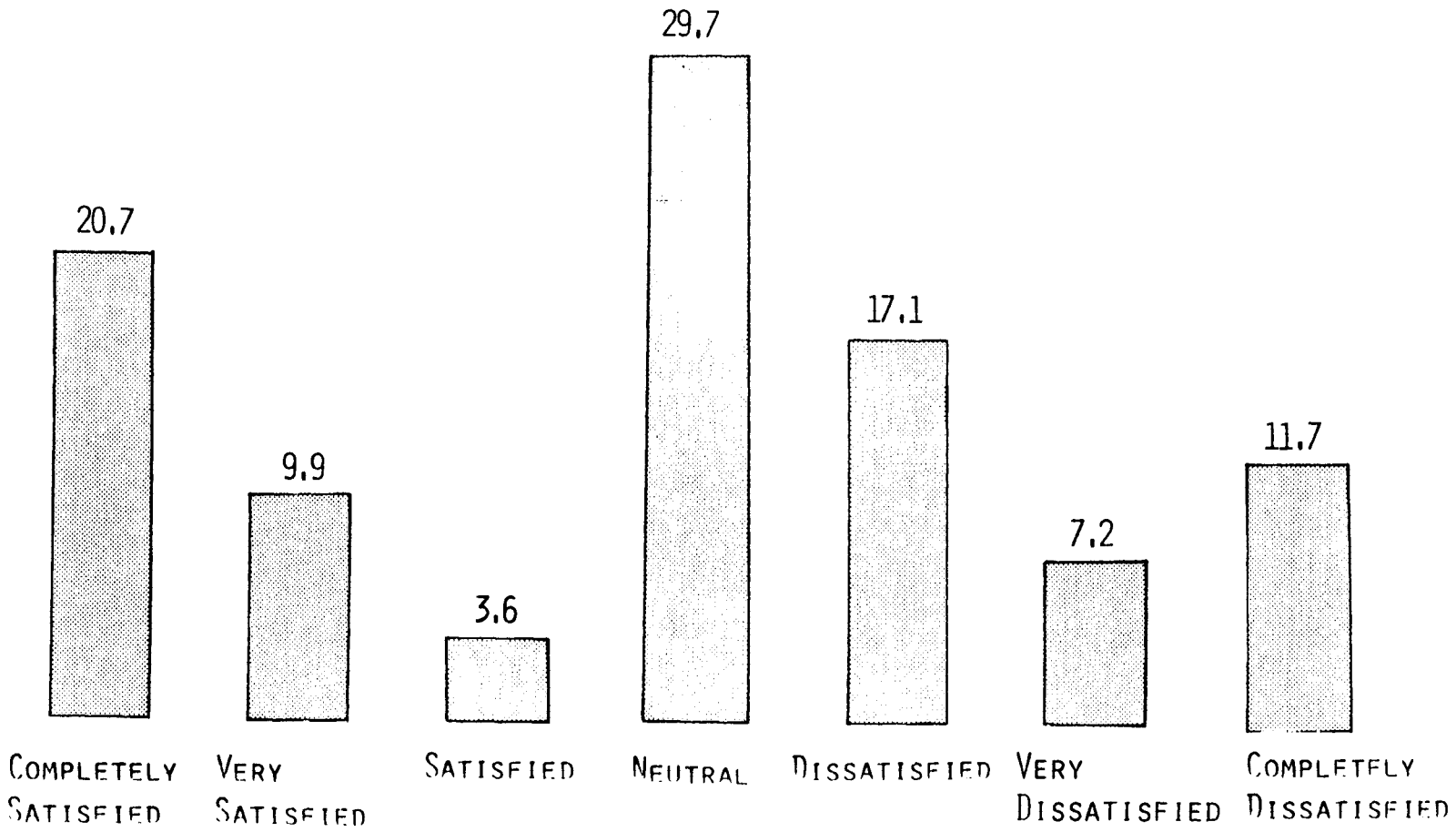
Satisfaction with Dwelling

In addition to objective and perceptual indicators of physical condition, a very useful performance indicator for the program is dwelling satisfaction. Exhibit 6.1.G presents the occupant ratings of overall house satisfaction for all six reserves combined.

- Rating their overall satisfaction with their house on a 1 to 7 scale (with 1 being Completely Satisfied and 7 being Totally Dissatisfied) the mean occupant rating score was 3.81. These are significant levels of occupant satisfaction with housing especially in light of the positive response bias which can be expected for this sort of question. The high standard deviation indicates occupant responses were unevenly and widely distributed over the scale: one-fifth were completely satisfied and 12% totally dissatisfied.

EXHIBIT 6.1.G

OCCUPANT RATINGS OF OVERALL SATISFACTION WITH HOUSE
(Percentages for All Six Reserves)



- Occupant overall satisfaction with their housing was significantly associated with the perception of whether the unit needed repairs. Occupants who were highly satisfied have a 21% chance of perceiving their unit as needing major repairs and a 52% chance of needing no repairs. Occupants who were somewhat or totally dissatisfied have a 67% chance of perceiving their unit as needing major repairs and 19% chance of perceiving their unit as needing no repairs.

- Using assessments of need for repairs by interviewers, occupants satisfied with their housing were 4.8 times as likely to need no repairs than to need major repairs, whereas dissatisfied occupants were 2.8 times as likely to need major rather than no repairs.

Inter-Reserve Comparisons

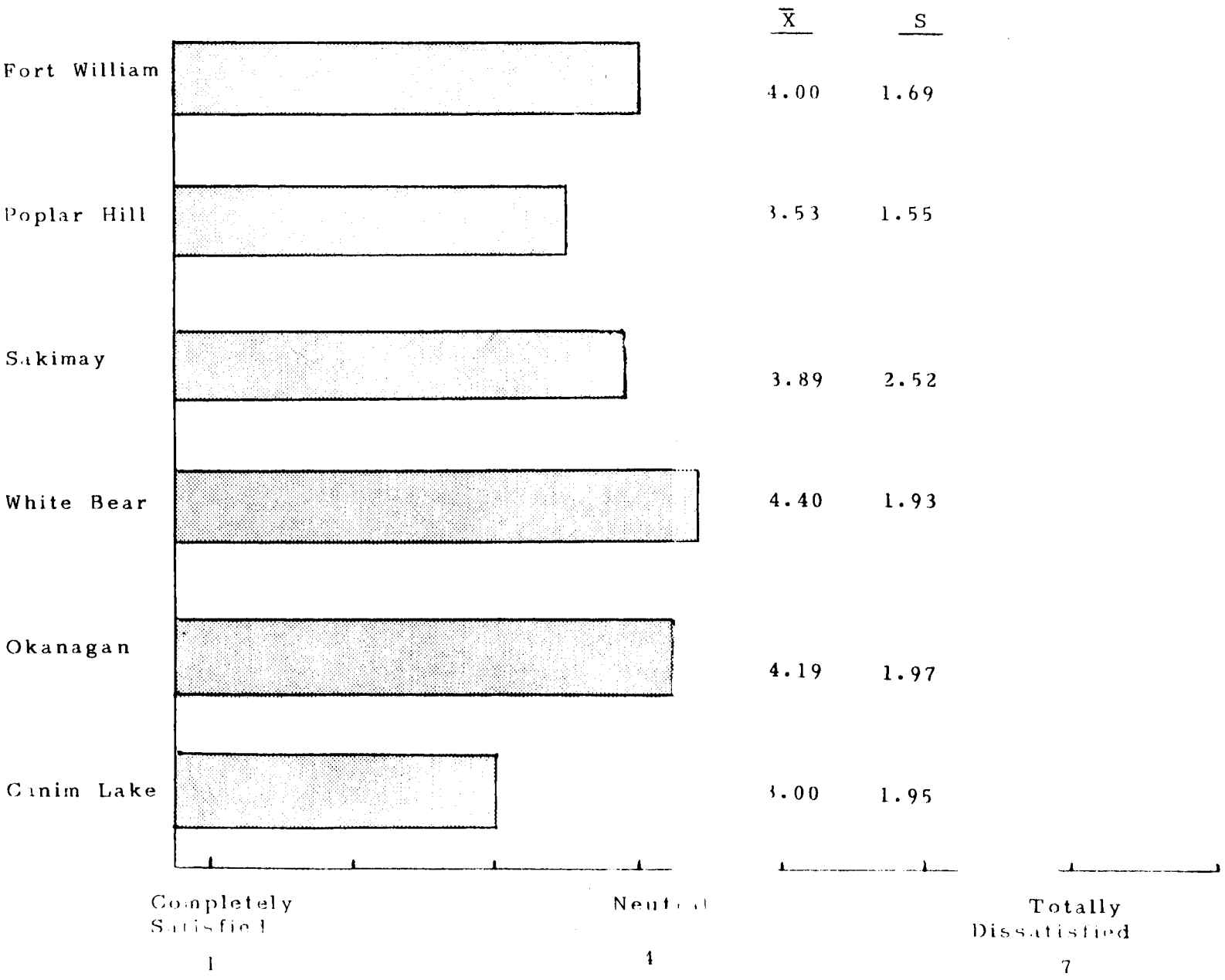
Exhibit 6.1.H presents a graph of the average occupant rating of house satisfaction for each of the six bands.

- By reserve, White Bear occupants were least satisfied with housing quality (mean score 4.40), followed by Okanagan, Fort William, Sakimay, Poplar Hill and Canim Lake (3.19).

- Satisfaction is plausibly related to objective conditions in four of the six reserves. Poplar Hill seems satisfied with the worst objective physical conditions. This may be due to a translation/interpretation problem. Okanagan residents are dissatisfied with relatively much better conditions. This may be due to a cycle of rising improvements and expectations.

EXHIBIT 6.1.H

MEAN RATING BY OCCUPANTS OF OVERALL SATISFACTION WITH HOUSING



6.1.3 Band Perceptions of Housing Conditions

Band council perceptions of housing conditions are summarised in Exhibit 6.1.I. Some important findings are as follows:

- The Fort William band council estimated that 50% of their families need rehousing, 44% of units needed minor repairs and 12% major. This last category may be double-counted in the minor repair category and the estimate of families needing rehousing may include families living in units needing repairs. This problem will likely recur with the figures in this section. The possibility of double counting will be eliminated on the revised interview guides.

- The Poplar Hill band council felt that none of their units met minimum acceptable standards (especially concerning size, plumbing and electricity). One-quarter of families were considered to need rehousing. The band reported few units which needed major or minor repairs so the concern seems to be size (overcrowding) and services.

- The Sakimay council considered half of their families needed rehousing and about 40% needed minor repairs (21% major repairs). The band saw their most serious housing problems to be that houses were not large enough to accommodate large or extended families, and lack of running water and proper sewage disposal systems. Crowding and service problems will be discussed in more detail in the following sections.

- The White Bear council estimated that three-quarters of their families needed rehousing. The major housing problem was poor conditions, overcrowding and lack of indoor plumbing and central heating.

EXHIBIT 6.1.I

BAND PERCEPTIONS OF HOUSING CONDITIONS

	Total Number of Units	Portion of Families Needing Rehousing	Number of Units Requiring:	
			Major Repairs	Minor Repairs
Fort William	68	50%	8	30
Poplar Hill	64	25%	3	4
Sakimay	56	50%	12	22
White Bear	145	75%	109	109
Okanagan	145	25%	50	100
Canim Lake	58	50%	16	16

- The Okanagan band council estimated 25% of their families needed rehousing, one-third of units needed major repairs and one-third minor. Band concerns were specifically overcrowding and deficient wiring in older houses (10 years and more).

- The Canim Lake council estimated half of their families could need rehousing and about one-quarter of units needed major and minor repairs. Their major housing problems were perceived to be fire safety, overcrowding, structural soundness, and physical condition.

6.1.4 Changing Conditons

An important evalution concern is not merely documenting current conditions but trying to estimate trends and patterns through time. Are goals and objectives being realised or is there an actual deterioration in conditions?

Objective Indicators

A limited number of comparisons can be made to the 1977 benchmark survey (i.e., we do not have benchmark data for Poplar Hill). Exhibit 6.1.J displays some of the basic objective indicators.

- Of the 5 reserves where comparisons are possible we note that the total number of occupied units has increased by over 42% (from 314 to 447). Hence we can conclude that the supply of housing units has been substantially increased.

EXHIBIT 6.1.J

1977 - 1984 HOUSING CONDITION*

	Fort William		Sakimay		White Bear		Okanagan		Canim Lake	
	1977	1984	1977	1984	1977	1984	1977	1984	1977	1984
NUMBER OF HOUSING UNITS										
Occupied	61	67	30	51	100	134	91	146	32	49
Unoccupied	7	0	3	5	9	10	20	4	0	9
Total	68	67	33	56	109	144	111	150	32	58
HOUSE CONDITION (Occupied Units Only)										
% Fair	73.8	50.0	40.0	89.8	78.0	47.3	72.5	87.5	37.5	53.4
% Need Major Repair	14.8	50.0	50.0	5.6	17.0	47.4	20.9	12.5	50.0	46.6
% Need Replacement	11.5	0	10.0	5.6	5.0	5.3	6.6	0	12.5	0

* Based on 1984 Interviewer Ratings

- The number of units in the worst category beyond repair has dropped substantially for all reserves.

- Overall, the number of units requiring major repairs has remained about the same (although this varies from place to place).

- The number of units in passable (above standard) condition has increased slightly although this pattern varies greatly from place to place.

- The greatest success stories are Sakimay, Canim Lake and Okanagan.

- Fort William and White Bear have experienced success in eliminating the 'beyond repair' units but have seen a substantial portion of the acceptable stock slip into the 'needs major repair' category.

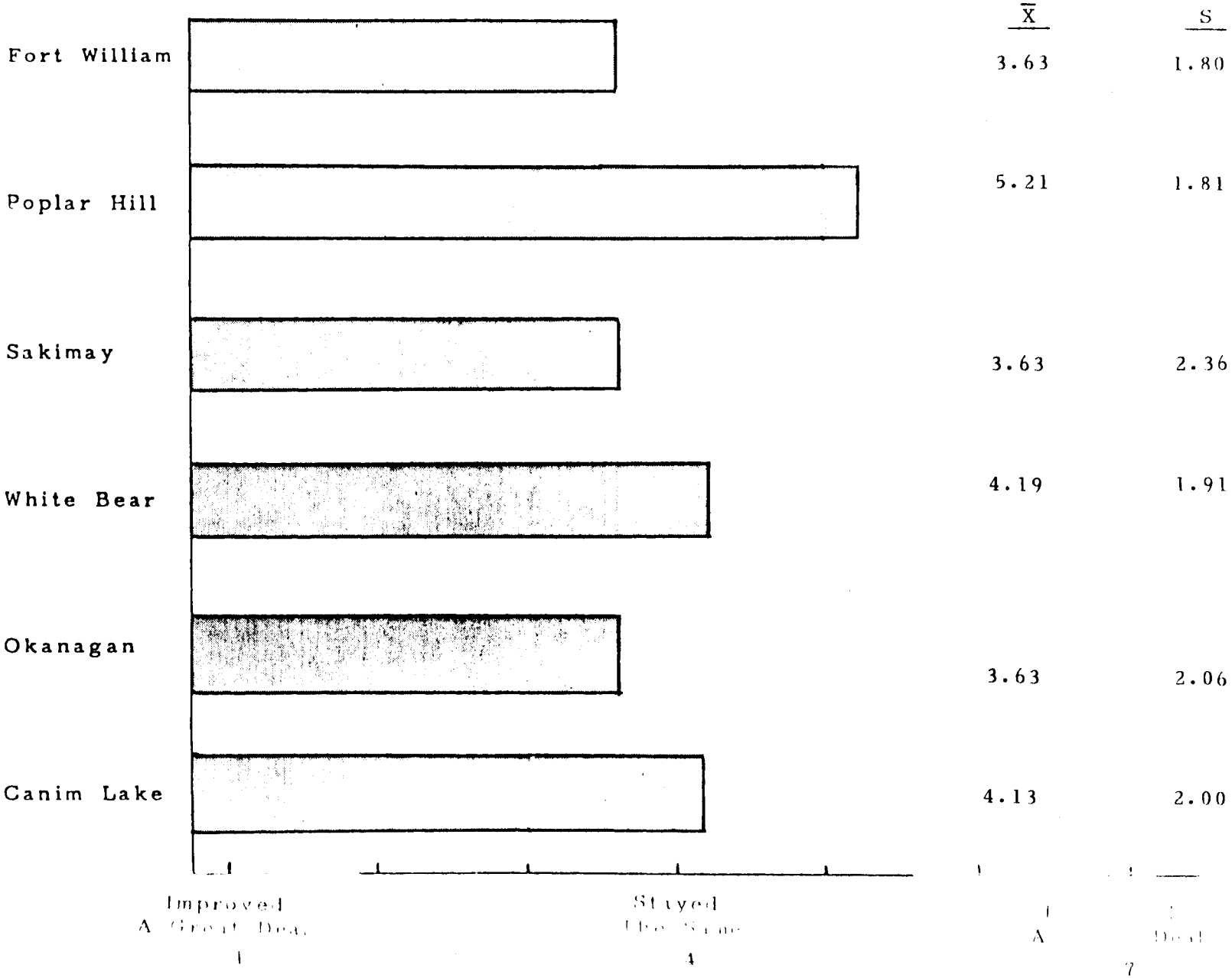
Perceptual Indicators

In addition to objective indicators of changes in housing condition over time, occupant perceptions of changes in their housing quality over time can also serve as a useful performance indicator. Exhibit 6.1.K presents the findings for occupant perceptions in change in housng quality over the last three years. The important findings are as follows:

- The mean score for occupant assessments of whether the quality of their housing had improved or decreased over the past three years (on a 1 to 7 score with 1 being

EXHIBIT 6.1.K

OCCUPANT PERCEPTION OF CHANGE IN HOUSE QUALITY



Improved a Great Deal, and 4 being No Change and 7 being Decreased a Great Deal) was 3.95. The standard deviation was 2.04. These figures suggest occupants on average do not perceive a substantial improvement in housing conditions over time. However, there was considerable variation in the perceptions among households for all reserves.

- Perceptions of changes in housing quality varied with income. Households earning less than $7,000 per annum have a 50% chance of perceiving a reduction in housing quality and an 18% chance of perceiving an improvement. Households earning above $15,000 have an 11% chance of reduced quality and an 89% chance of improved housing quality. This latter group is five times as likely to report that their housing quality had improved over the past three years relative to the lowest income group. The lowest income group is 4.5 times as likely to perceive a drop in housing quality as those earning over $15,000 per annum.

- The occupants' perceptions of how their housing quality had changed over the last three years were significantly associated with their perceptions of the need for repair. Occupants who perceived a definite improvement were 3.5 times as likely to need no repairs than to need major repairs. Occupants who perceived a definite decrease in housing quality were eight times as likely to need major repairs than not to need repairs. Interviewer assessments of the need for repairs were similarly associated with occupant perceptions of changes in housing quality. This provides independent validation of the perceived change in conditions question.

- Poplar Hill occupants perceived the greatest housing quality (mean score 5.21), followed by White Bear and Canim Lake. The mean scores for the other three reserves were identical.

6.2 Suitability

Introduction

Suitability refers to the relationship between space and occupants. Since crowding and density have been cited as key reasons for recent program changes this is obviously a major substantive concern for the evaluation. In this section we provide some illustrative analyses of suitability using alternate definitions and perspectives.

6.2.1 Objective Indicators

Exhibit 6.2.A presents a series of quantitative indicators that relate to available space and crowding for individual bands and for the overall sample. Some important findings are as follows:

- The mean number of persons living in each unit was 5.06 and the mean number of families per house 1.23. The average number of persons per room was 1.01. These figures are higher than the national average (in 1981, the mean number of persons per room in Canada was .5). These objective data support the hypothesis of over-crowding.

- Fort William, White Bear and Canim Lake have higher than average indices of families per unit (defined as per the

EXHIBIT 6.2.A

OBJECTIVE INDICATORS OF AVAILABLE SPACE AND CROWDING

	Fort William	Poplar Hill	Sakimay	White Bear	Okanagan	Canim Lake	All Six Reserves
Average Number of Persons Per Unit	5.70	5.00	5.00	4.65	4.31	5.67	5.06
Average Number of Families Per Unit	1.35	1.00	1.11	1.40	1.06	1.40	1.23
Average Number of Square Feet Per Family	1,251.8	552.6	758.9	599.8	1,689.9	1,309.1	1,026.0
Average Number of Persons Per Room	1.08	1.32	0.79	0.94	0.84	1.12	1.01
Average Number of Square Feet Per Person	232.5	172.6	245.7	230.3	425.2	291.2	263.8
Average Number of People Per Bathroom	5.59	NA	3.92	4.85	4.40	4.63	4.66
Average Number of Bathrooms Per Family	0.75	NA	1.11	0.48	0.97	1.13	0.73
Average Number of Rooms Per Family	4.46	4.14	5.59	3.86	5.28	4.40	4.59

Census definition of nuclear family) but about average or better than average indices of persons per room. Poplar Hill is the worst by this latter index of crowding.

6.2.2 Perceptual Indicators

Exhibit 6.2.B presents the overall responses of occupants for their ratings of the adequacy of their housing space.

- The mean rating by occupants of the adequacy of space in their units (on a 1 to 7 scale with 1 being Far Too Much, 4 being About the Right Amount, and 7 being Far Too Little) was 4.76. About 56% felt that space was about right but a highly significant 40% felt space was inadequate. These perceptual data support the objective data and the hypothesis that overcrowding is an urgent housing problem.

Patterns of Association

- The occupant assessment of space adequacy was significantly associated with whether the household had children (under the age of 19). 61% of households with children rated the space as more or less adequate (3 to 5 on the 1 to 7 scale) compared to 93% of households without children.

- Inadequate space as perceived by occupants and poor housing condition as assessed by interviewers are significantly associated: 23% of occupants assessing their homes as providing fairly adequate to space (1 to 5

EXHIBIT 6.2.B

PERCENTAGE DISTRIBUTION OF OCCUPANTS BY THEIR RATINGS OF THE SPACE ADEQUACY OF THEIR UNITS

Far To Much	0.9
Somewhat Too Much	1.8
Slightly Too Much	1.8
About the Right Amount	55.9
Slightly Too Little	12.6
Somewhat Too Little	9.9
Far Too Little	17.1
Total Percentage	100.0
Valid Responses	111
Mean Rating Score	4.76
Standard Deviation	1.30

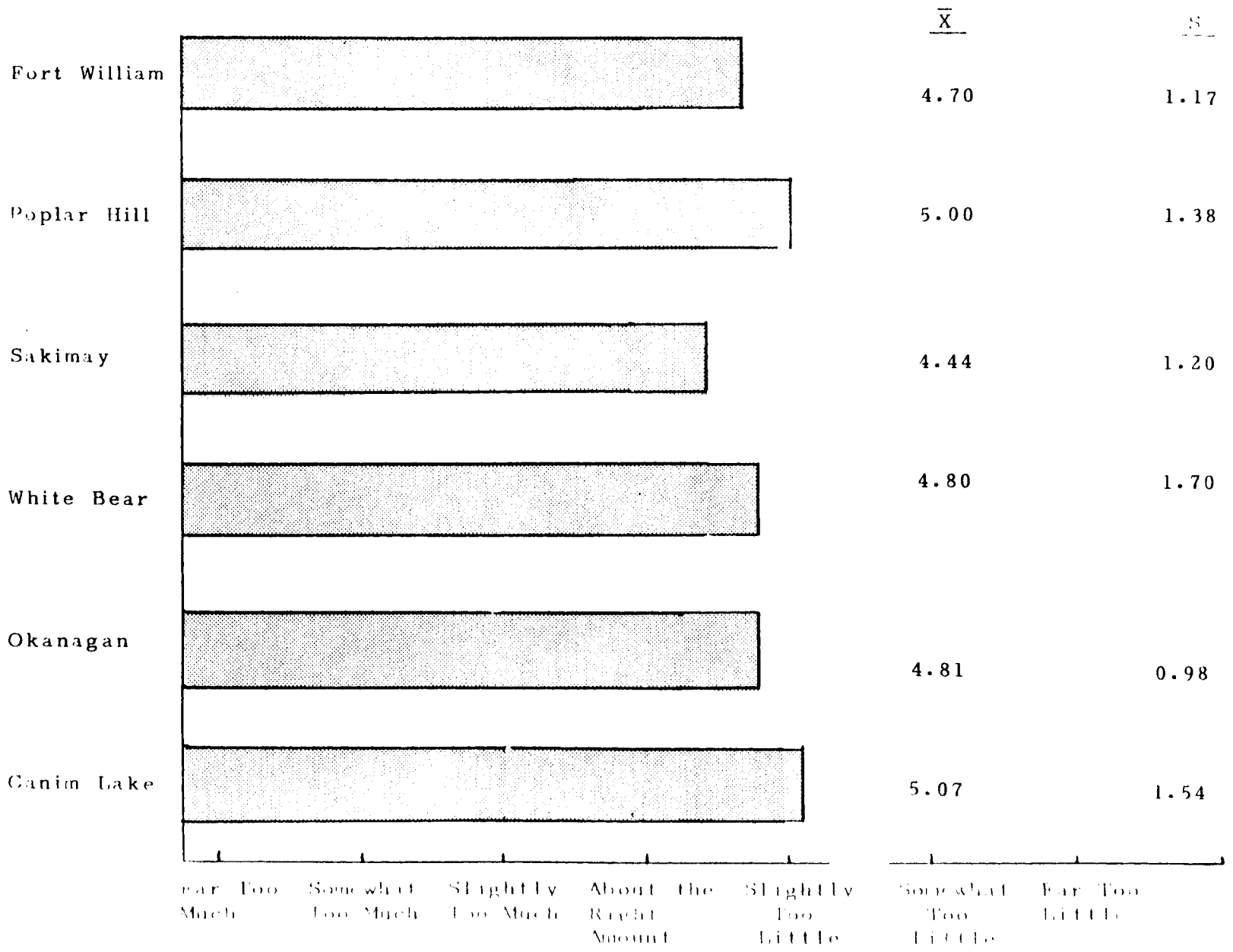
on a 1 to 7 scale) needed major repairs to their units compared to 57% of occupants dissatisfied with the space in thier units.

Inter-Reserve Comparisons

- Canim Lake and Poplar Hill have the worst mean space adequacy rating by occupants (5.07 and 5.00 respectively) followed by Okanagan (4.81), White Bear (4.80), Fort William (4.70) and Sakimay (4.44). Exhibit 6.2.C presents the ratings for individual reserves.

EXHIBIT 6.2.C

MEAN RATING BY OCCUPANTS OF SPACE ADEQUACY OF THEIR UNITS BY RESERVE



6.2.3 Band Perceptions

- All bands interviewed considered overcrowding to be a serious housing problem on their reserve. The overcrowding derived from rooms and units too small to accommodate large or extended families.

- All bands considered overcrowding as the major item to be considered when allocating rehabiitation funds or new units. (Other important criteria for all bands were physical conditions and special needs of occupants).

6.2.4 Changing Conditions

- As can be seen from Exhibit 6.2.D, the average number of people per house dropped, in all but Fort William, between 1977 and 1984. The only index of crowding available for both years is the percentage of units with one, two and three or more families. Comparing these two indices, Fort William, Sakimay, White Bear and Canim Lake have relatively more crowded units in 1984 (if crowded is defined as housing more than one family per unit). The change was most marked on Sakimay reserve: 6% of units were overcrowded in 1977 compared to 21% in 1984. Okanagan was the only reserve which reduced its portion of overcrowded units over the period. This finding may be due to different definitions of family used by the two surveys. The 1984 definition was for the nuclear family. The 1977 definition was for any group of people that wished to live together as a family unit.

EXHIBIT 6.2.E

1977 - 1984 OCCUPANCY AND CROWDING COMPARISONS

	Fort William		Poplar Hill		Sakimay		White Bear		Okanagan		Canim Lake	
	1977	1984	1977	1984	1977	1984	1977	1984	1977	1984	1977	1984
NUMBER OF PEOPLE PER HOUSE	5.47	5.70	-	5.0	6.42	5.0	5.85	4.65	5.41	4.14	7.25	5.65
CROWDING												
Units with 1 Family	82.3	79.7	-	93.2	93.9	78.7	79.8	78.7	88.3	90.9	40.6	38.8
Units with 2 Families	16.2	12.2	-	6.0	6.1	18.9	13.7	18.9	10.8	9.1	50.0	49.9
Units with 3 or more Families	1.5	3.1	-	0	0	2.4	6.5	2.4	0.9	0	9.4	16.3

6.3 Health and Safety

Introduction

Inadequate or unsuitable housing or services can threaten the health and safety of occupants. National Health and Welfare state in the 1980 "Indian Conditions" report that overcrowding and poor housing quality contribute directly to higher morbidity and mortality rates on reserves. The extent to which this threat exists and its sources are measures of on-reserve conditions. We have already reviewed this important topic in our discussion of adequacy and suitability. In this section we will concentrate on the residual housing indicators which have not already been presented. Section 6.4 will assess the adequacy of services and infrastructure on reserves.

Housing-related indicators will include objective ratings by inspectors of fire hazards due to unit design and occupant practices and the occupant's report on household fire prevention and sanitary facilities. We also include the resident's reporting of accidental fires.

6.3.1 Objective Indicators

Exhibit 6.3.A presents some condition ratings which relate to health and safety problems. Several important findings emerge.

- Technical inspections revealed that 36% of units fail to meet the National Building Code standards which to a large degree reflect health and safety concerns. A slightly higher percentage would fail RRAP standards.

EXHIBIT 6.3.A

INSPECTOR RATINGS OF UNITS WITH HEALTH AND SAFETY PROBLEMS

	Fort William	Poplar Hill	Sakimay	White Bear	Okanagan	Canim Lake	OVERALL
% Units not Meeting Building Codes	26.3	93.3	22.2	45.0	20.0	13.3	36.6
% Units with Fire Hazards from Construction	25.0	60.0	5.6	40.0	12.6	26.7	27.9
% Units with Fire Hazards from Occupant	25.0	20.0	5.6	30.0	6.7	14.3	17.6
% Units with Visible* Wiring in Poor Condition	25.0	NA	5.6	20.0	25.0	20.0	22.2

* Interviewer Rated

- 28% of units are at serious risk from fire due to unit design or construction (e.g., panelling around the stove, means of access and egress, poorly secured or deteriorated fuel storage tanks, size of woodstove, etc.).

- Serious fire hazards due to resident practices (e.g., improperly stored combustible materials, etc.) were evident in 18% of units.

- The presence or absence of significant danger from fire hazards due to occupant practices (as assessed by inspectors) was not significantly associated with occupant perceptions of who is responsible for maintenance or repairs, or who owned the house. It was significantly associated with the age of the house (61% of houses which failed the fire hazard assessment were over 20 years of age compared to 25% of those that passed).

Inter-Reserve Comparisons

- Conditions vary radically from reserve to reserve.

- Poplar Hill is by far the worst reserve with 93% of its houses failing to meet the building code, 60% exhibiting serious fire hazards from construction and 20% from occupant practices.

- White Bear has serious safety problems with 45% of the units failing to meet the National Building Code, 40% at risk from fire due to construction and 30% from occupant practices.

- Between a quarter and a fifth of Fort William, Sakimay and Okanagan units fail to meet building code standards. Evidence of fire hazards varies among these three reserves, with Fort William about average and Canim Lake and Sakimay lower than average.

- Canim Lake is in best shape as far as building code violations go, only 13% of units fail the test. Fire safety violations are about average.

- The objective indicators point to significant health and safety problems in general and fire hazards in particular.

6.3.2 Occupant Reporting of Unit Facilities

Occupants were asked to provide detailed information about the presence or absence, type and working condition of several types of house facilities. Exhibit 6.3.B summarises the results for individual bands and for the overall samle. The findings include:

- 73% of occupants reported piped liquid waste disposal or septic tanks, 25% had privy pits and 2% were without toilet facilities. Of those with toilet facilities, 42% reported one or more breakdowns over the past year (10% experienced five or more). Occupants are severely disadvantaged compared to the total Canadian population. The 1983 Household Facilities and Equipment Survey reported only .7% of households without flush or chemical toilets. In other words, the incidence of houses without flush toilets is 38 times higher than the national average.

EXHIBIT 6.3.B

HOUSING STOCK CHARACTERISTICS BY RESERVE

Percentage of Occupants Reporting:	Fort William	Poplar Hill [1]	Sakimay	White Bear [2]	Okanagan	Canim Lake	All Six Reserves
Septic Tank or Piped Liquid Waste Disposal	90.0	0	100.0	35.0	100.0	100.0	73.2
Water Obtained from Lake or River	10.0	100.0	0	0	6.7	0	16.5
No Kitchen Sink	0	NA	0	5.0	0	0	2.0
No Water Heater	10.0	NA	0	60.0	0	0	15.3
No Basin	10.0	NA	0	60.0	0	0	15.3
No Bath	10.0	NA	0	55.0	0	0	16.3
Accidental Fire	25.0	0	5.6	15.0	12.5	40.0	16.1
No Fire or Smoke Detector	35.0	80.0	55.6	75.0	68.8	13.3	54.1
Mean Rating by Occupant of Heating System Adequacy [3]	2.22	3.11	3.00	2.79	2.69	3.33	2.85

[1] Poplar Hill residents are without piped or well water and so responded to all facility questions as "not applicable".

[2] 68.4% of White Bear respondents get their water from a public watering hole.

[3] Rated on a 1 to 7 scale with 1 = Completely Adequate and 7 = Totally Inadequate.

- 16% of respondents reported no bath (this was 14% of the total sample; the non-respondents were likely to have lacked this facility) and 47% of respondents (41% of the total sample) lacked a shower. Just over one per cent of Canadian households (1983 HFE Survey) lacked a bath or shower. Again on-reserve residents are relatively disadvantaged. However, the extent to which the absence of facilities affects the health and safety of the occupant is difficult to ascertain. Band officials and community health nurses were asked to assess the importance of this connection. Their responses are provided in Section 6.3.3.

- 17% of occupants reported lakes or rivers as their source of water. Of the 72% with piped water or individual wells, 39% experienced breakdowns last year (5% had five or more).

- 56% of occupants rated their heating system as more than adequate (1 and 2 on a 1 to 7 scale) and 16% thought it inadequate (6 and 7 on the same scale). The mean score on a 1 to 7 scale was 2.85 (median score was 1.96 and mode 1.0 or completely adequate).

- 16% of occupants reported an accidental fire in their homes. Only 46% have a working fire or smoke detector.

- The occupant data reinforce the conclusions drawn from the objective inspection data. Reserves are seriously deficient in some of the basic facilities and amenities which are germane to health and safety. The fire hazard ratings noted by the inspectors are expressed in terms of a high number of reported fires.

Inter-Reserve Comparisons

- By reserve, Poplar Hill and White Bear are in the worst shape. Poplar Hill is without toilet and most other facilities, 80% of units lack fire or smoke detectors and the reserve has the second worst mean rating of the adequacy of the heating system. White Bear lacks piped liquid waste disposal or septic tanks in 35% of the homes.

6.3.3 Band and Community Nurse Perceptions

With the exception of Fort William and Okanagan, bands tend to see a high correlation between housing conditions and health. This is especially true for White Bear and Poplar Hill, which have the worst housing conditions.

EXHIBIT 6.3.C
EXTENT TO WHICH HEALTH LEVELS ARE AFFECTED BY HOUSING CONDITIONS, INDIAN BAND AND COMMUNITY NURSE PERCEPTIONS[1]

	Effect on Ongoing Health Problems		Effect on Disease Outbreaks	
	Band	Community Nurse	Band	Community Nurse
Fort William	3	NA	1	NA
Poplar Hill	6	NA	DK	NA
Sakimay	5	NA	5	NA
White Bear	7	No Ongoing Problems	5	1
Okanagan	No On-going Problems	4	No Out-breaks	4
Canim Lake	5	5	No Out-breaks	6

[1] Rating are on a 1 to 7 scale for the extent that conditions affect health levels with 1 being Not at All, and 7 indicating To a Great Extent (DK means the respondent did not know and NA refers to data not available).

6.4 On Reserve Services and Infrastructure

The DIAND Community Infrastructure and Services Program provides financial support for the physical improvement of essential housing and community services (e.g., roads, electricity, water system, sanitation services, etc.). The housing evaluation attempted to add basic descriptive information on infrastructure. Following are some preliminary results.

6.4.1 Census Enumeration of Infrastructure/Facilities

- As can be seen from Exhibit 6.4.A, 20% of all households had partial or no hydro services, 13% lacked road access, 67% had no garbage collection services and 12% lacked water supply from other than from a lake or river. In each of these cases, these figures are far worse than those experienced by the average Canadian living off reserve. These figures are clearly related to health and safety problems. The objective picture suggests that infrastructure problems may be at least as urgent as housing problems.

Inter-Reserve Comparisons

- Poplar Hill is by far the worst reserve: 95% of units lack hydro services, there is no road access, and the reserve lacks garbage collection, water supply and waste disposal services.

- White Bear has good hydro service provision but 35% of roads are seasonal and garbage collection is non-existent. All households have water from an

organised system, however, 64% rely on a public water point. Canim Lake has partial hydro service for 23% of units but services and facilities are otherwise in place.

- These data are consistent with previous phyical condition, and health and safety findings.

EXHIBIT 6.4.A
INDIVIDUAL HOUSING UNIT ENUMERATION OF INFRSTRUCTURE/FACILITIES

Infrastructure/Facilities	Fort William	Poplar Hill	Sakimay	White Bear	Okanagan	Canim Lake	Overall
Hydro Provision							
Full Service	100	1.6	92.9	92.3	95.2	67.2	80.5
Partial Service	0	3.1	7.1	0	2.0	22.6	4.7
None	0	95.3	0	7.7	2.8	5.2	14.8
Road Access							
Paved	79.4	0	3.6	0	0	0	10.4
Gravel	20.6	0	53.6	38.9	84.2	70.7	49.3
Dirt	0	0	39.3	57.6	15.8	29.3	27.1
None	0	100	3.5	3.5	0	0	13.2
Year-Round	100	0	94.4	64.6	99.3	96.5	86.4
Seasonal	0	0	5.6	35.4	.7	3.5	13.6
Garbage Collection							
Yes	100	0	16.4	0	34.1	87.7	33.2
No	0	100	83.6	100	65.9	12.3	66.8
Water Supply							
Individual Well	2.9	0	65.5	5.8	16.4	3.4	13.6
Central Piped	97.1	0	32.7	25.4	83.6	93.2	55.8
Trucked Water	0	0	0	5.8	0	3.4	1.9
Public Watering Point	0	0	1.8	64.0	0	0	16.6
None	0	100	0	0	0	0	12.1
Toilet Facilities							
Piped Liquid Waste Disposal	0	0	21.8	18.7	0	0	7.2
Septic Tank	100	0	67.3	10.8	94.5	91.4	58.7
Trucked Disposal	0	0	3.6	5.0	0	0	1.7
Other	0	0	7.3	65.5	5.5	6.9	20.2
Non-Existent	0	100	0	0	0	1.7	12.3

6.4.2 Perceptual Indicators

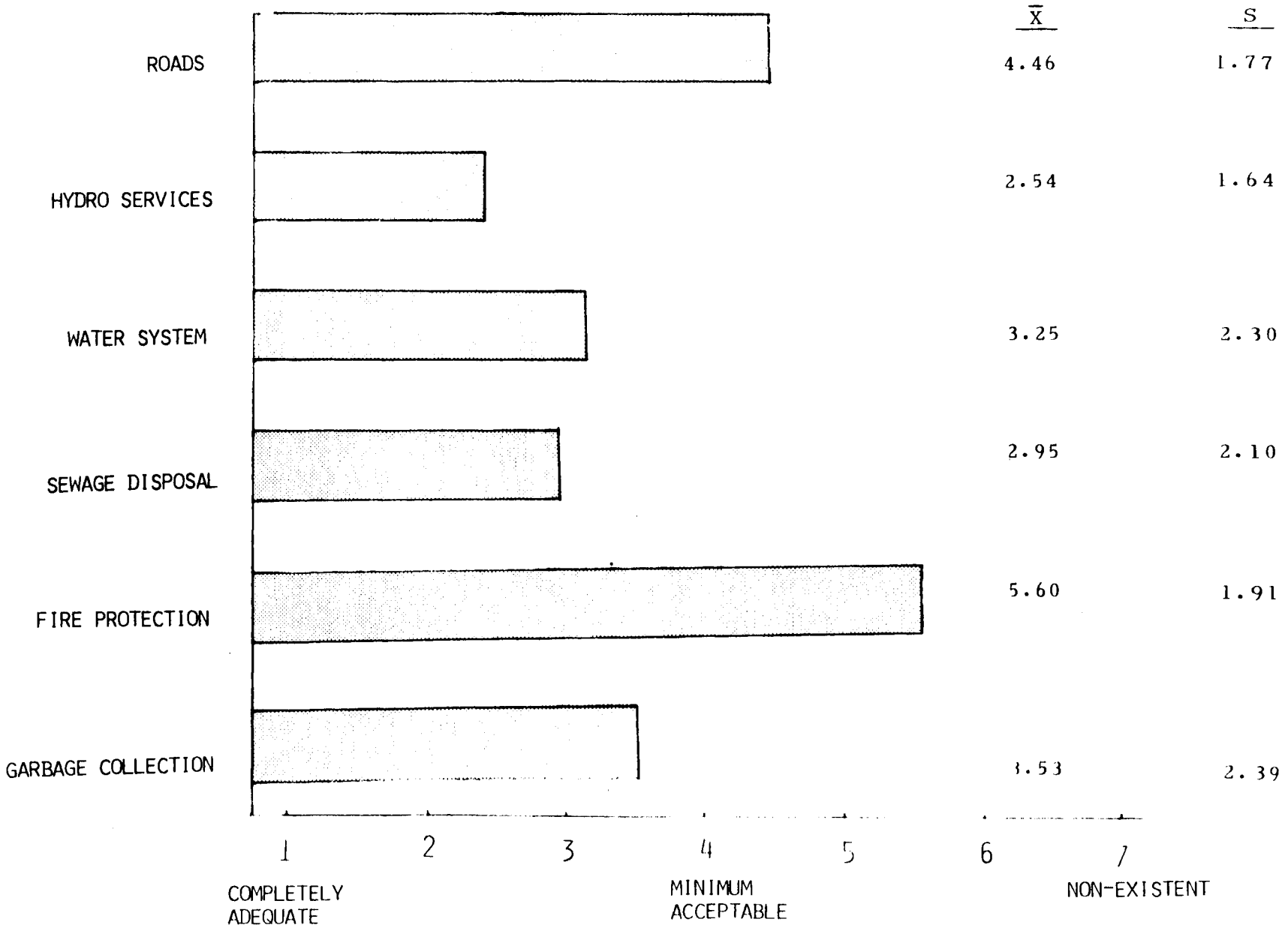
In addition to collecting simple objective indicators of infrastructure quality, occupants were asked to rate the adequacy of on-reserve services and infrastructure. Exhibit 6.4.B presents the results.

- Fire protection services were the salient concern (mean average score of 5.60 on a 1 to 7 scale from good to bad). Next in order of descending adequacy were roads, garbage services, water systems, sewage disposal and hydro services. These scores reflect not only the perceptions of service adequacy but service availability, as 7 meant the service was non-existent.

- The service ratings are very harsh. They indicate a serious set of concerns and perhaps reflect the more urgent nature of infrastructure problems vis-à-vis housing problems.

EXHIBIT 6.4.B

OCCUPANT RATING SCORES OF ADEQUACY OF ON-RESERVE SERVICES AND INFRASTRUCTURE



Inter-Reserve Comparisons

- By reserve, Fort William occupants gave the lowest ratings to the adequacy of roads, followed by fire protection and sewage disposal services. Sakimay occupants were most dissatisfied with fire protection (a mean score of 6.43), followed by roads. White Bear residents rated garbage collection services most severely (mean score of 6.29) followed by fire protection. All Okanagan respondents rated fire protection services as totally inadequate (mean score of 7.0) followed by garbage collection. Canim Lake occupants were generally satisfied with all but fire protection (mean 4.92) and roads (mean 3.65). Exhibit 6.4.C provides the mean scores by reserve.

6.4.3 Band Perceptions

A somewhat different but complementary perspective on infrastructure is produced from the band interviews. In general the band-level responses echo the sentiments of the individual households. Considering the responses of the six bands we find:

- The Fort William band council and occupants agreed roads were the least adequate, but disagreed on other service ratings.

- The Sakimay occupants and band council agreed on the severe inadequacy of fire protection but disagreed on the ranking of other services.

- White Bear occupants and band council agreed garbage collection was the most serious problem but disagreed on other ratings.

EXHIBIT 6.4.C

OCCUPANT RATINGS OF THE ADEQUACY OF ON-RESERVE SERVICES AND INFRASTRUCTURE, BY RESERVE[1]

ON RESERVE SERVICES AND INFRASTRUCTURE	Fort William	Sakimay	White Bear	Okanagan	Canim Lake	All Five Reserves
Adequacy of Fire Protection [2]	3.89	6.43	5.86	7.00	4.92	5.49
Adequacy of Roads	4.45	5.29	4.89	4.75	3.65	4.60
Adequacy of Garbage Collection	2.94	4.30	6.29	4.92	1.76	3.60
Adequacy of Water Services	2.41	3.71	5.00	3.00	1.75	3.20
Adequacy of Sewage Disposal	3.69	2.67	4.08	3.21	1.44	2.92
Adequacy of Hydro Services	3.25	2.41	2.42	2.15	2.41	2.57

[1] Poplar Hill has no roads, hydro or other services.

[2] All Okanagan respondents (n=12) rated fire protection services on the reserve as Non-Existent (7).

- Okanagan band council and residents agreed on fire protection (non-existent) but diverged on the adequacy of the services.

- Canim Lake residents and band council perceptions were identical (first fire protection, then roads).

- In general the objective and perceptual data at all levels (census, household, band) tend to reinforce the view that infrastructure and services are an urgent priority. Fire protection, roads and sanitation services seem to be the most important areas of concern.

- Exhibit 6.4.D indicates the band ratings of adequacy of and extent of band responsibilities for on-reserve services.

EXHIBIT 6.4.D

BAND RATINGS OF RESPONSIBILITY FOR AND ADEQUACY OF SERVICES AND INFRASTRUCTURE ON RESERVE[1]

		Fort William	Poplar Hill	Sakimay	White Bear	Okanagan	Canim Lake
Roads	Adequacy	5	7	3	4	3	3
	Band Responsibility	4	NA	1	1	1	1
Hydro Services	Adequacy	5	7	2	2	1	3
	Band Responsibility	4	NA	1	7	4	1
Water Supply	Adequacy	5	4	3	3	4	2
	Band Responsibility	4	NA	1	1	2	1
Sewage Disposal	Adequacy	4	7	5	6	1	2
	Band Responsibility	1	NA	1	1	2	1
Fire Protection	Adequacy	4	7	7	4	7	7
	Band Responsibility	4	NA	4	1	1	1
Garbage Collection	Adequacy	2	7	4	7	2	2
	Band Responsibility	1	NA	4	1	1	1

[1] Adequacy was rated on a 1 to 7 scale, with 1 being Completely Adequate, 4 the Minimum Acceptable and 7 Non-Existent

Responsibility was rated on a 1 to 7 scale, with 1 being Completely Responsible and 7 Not At All Responsible. A score of 8 means information Not Available.

7.0 REFORMULATION OF ISSUES AND ANALYSIS

7.1 Analysis Plan

Following is a tabular summary of the recommended analysis plan for Phase I. In general, the analytic approach recommends that each evaluation issue be examined with data from each survey instrument separately before providing a synthetic conclusion based on the multi-source evidence.

The illustrative analyses presented in Section 6.0 follow this format. In addition the Phase II analysis will start with descriptive univariate statistics, then build up to more complex bivariate and multi-variate tests of statistical association and significance. Structural equation models will be of particular interest for purposes of establishing program effectiveness. However, a rigourous demonstration of causality will be difficult given the lack of a control group.

The following Exhibit 7.1 presents the linkages between evaluation issues, research concepts, indicators and proposed analytical treatments.

EXHIBIT 7.1

Summary of Issues, Concepts, Data Elements and Analysis Approaches

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
1.0 What impacts and effects, both intended and unintended, result from carrying out the program?			
1.1 Quantitative and qualitative improvements in housing over time	Housing Stock Characteristics	- 1977/81 & 1984 census count of units - 1977/80 types of units - annual starts & completions 1981 to 1984 - number & type of renovations - 1977/81 & 1984 need for repairs - % substandard stock 1977, 1984 - trained interviewer's technical skim (ratings of physical house condition)	- measure increases in number of units over time, changes in distribution of unit types & need for repairs - breakdown of starts & completions by location, program, year - linear composite measures of sub-dimensions and overall physical house condition - descriptive statistics & break-downs
1.2 Adequacy and suitability of housing	Physical Condition (Objective)	- validation through expert ratings of condition of exterior, interior, mechanical systems & facilities relative to recognised standards (e.g., RRAP)	- multiple regression analysis to identify variables which predict level of adequacy. Analysis of covariance to test effects of categorial variables (e.g., region, settlement types, etc.)

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
1.2 Continued	Physical Condition (Perceptual)	- resident rating of house conditions (need for repair) - resident satisfaction with the condition of the property and on-rserve services - perception of improvement after program participation - reasons for intended move	- comparison of perceived condition & satisfaction ratings with expert condition assessment - breakdowns by location, program imputs - determine important predictive variables by multiple regression.
	Health and Safety	- presence/absence of egress (fire escapes) - presentation and reliabiity of facilities - fire and safety hazard ratings - threats to occupant safety and health - morbidity & mortality rates at band level (community health officer)	- measure improvements through time - comparisons to other housing stock - descriptive statistics - breakdowns by location - relationship to physical condition - relationship to program inputs
	Suitability (Objective)	- number of families per unit - number of persons per room, bedroom and liveable floor area	- compare crowding indices to 1977/81 - compare indices to 1981 census A/O CMHC social housing
	Suitability (Perceptual)	- resident satisfaction with amount of space - resident participation in design process	- comparison of satis-faction ratings with program inputs

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
1.2 Continued	Socio-Demographic Profile of Occupants	- household type (census & economic families) - lifecycle stage/dependency ratios - tenure/ownership - length of occupancy - residence off reserve	- descriptive statistics/market profile - breakdowns & comparisons with satisfaction, suitability & condition rating
1.3 Maintenance, renovation & housing longevity	Quality of Workmanship	- normative assessment of quality of workmanship of construction or rehabilitation (global rating)	- descriptive and inferential statistical models - correlation with need for repair and maintenance practices
	Appropriateness of Materials	- normative assessment of appropriateness of materials for the purpose of which they are being used (global rating)	- descriptive & inferential statistical models - correlation with need for repair and maintenance practices
	Maintenance Practices	- awareness of maintenance needs/practices - practices reported by band and occupants - expenditures for maintenance and minor repairs - practices as assessed by inspectors	- correlation of maintenance practices & physical house condition - qualitative assessment of band & district office information - linear and cross-tabular analysis of expenditures & practices with physical condition & satisfaction ratings

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
1.3 Continued	Responsiblity for Maintenance and Repairs	- actual locus of responsibility - expectations of band and individual occupants re suitable levels and locus of responsibility	- correlation between expectations and actual responsibilities - correlation between individual and band expectations
	Renovation and Repair Activities	- work undertaken 1980-84 by type and cost	- assessment of types and costs - relationship to adequacy, suitability and affordability
	Longevity/Rate of Obsolescence	- expert opinions of longevity - rate of abandonment and demolition (completions minus these losses yields net increase in housing stock)	- analysis of band & district office data
1.4 Financial requirements to secure adequate levels of housing	Need for Replacement/Rehabilitation/ Additions	- present condition - future requirements (longevity, net new household formation rates) - extent of over-crowding	- estimate of current levels of adequacy and suitability - linear modelling and regression analysis using condition ratings, cost estimates & adequacy/ suitability ratings
	Cost Estimates	- average spending required to renovate or build	- relationship to demographic changes (projected needs defined under alternate scenarios)

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
1.5 Reduction of affordability problems	Household Financial Situation	- household income by source - occupancy cost and services - amounts and sources of house financing and other subsidies - non-shelter expenditures and needs	- descriptive statistics - calculation of objective ratings of affordability using alternative procedures (e.g. rent-to-income, % discretionary income after necessities, etc.)
	Affordability to Occupant (Objective)	- shelter-to-income ratios - utility cost-to-income ratios - gross debt service ratios/ non-shelter needs, discretionary income	- comparison between objective & perceived ratings of affordability - comparison with non-Native Canadian ratios, accepted social housing and welfare ratios
	Effectiveness of Household Subsidisation	- band-allocated income supplementation or subsidisation of shelter costs - by household characteristics	- occupant satisfaction with amount & type of subsidisation - correlation of subsidy assistance with household needs
	Affordability (Perceptual)	- occupant perception of shelter affordability - band perception of shelter affordability	- breakdowns by reserve - comparisons with household financial situation, subsidisation levels
	Effectiveness of Allocative Mechanisms	- average income and household size of program participants by condition of housing - average band income	- comparisons across bands, regions

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
1.6 Development of house construction skills	Construction Skills Development	- band assessment of development of skilled members over time - level of sweat equity - individual assessment of construction skills - use of Indian on-reserve construction labour and sweat equity over time	- qualitative assessment - comparisons of skills development with program inputs for starts & renovations - estimates of amounts & changes over time
1.7 Construction-related job creation	Direct Native Employment (labour)	- number, type and duration of employment - net impact on welfare rolls	- band assessment of employment and economic benefits - relationship to type of program inputs
	Indirect Native Involvement	- use of local materials - other spill-over effects	
2.0 In what manner and to what extent are objectives with regard to amelioration of housing conditions achieved as a result of the program?			
2.1 Household funding sources and their coordination	Capital Funding and Operating Subsidies	- average funding levels by source - program combinations	- descriptive statistics - create index of total inputs for other analyses

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
2.1 Continued	Coordination of Funding	- responsibility for steps in process according to program documents and participants - perception of problems in delivery or coordination of funds by program participants, delivery agents, DIAND officers	- band & district office assessment & comparison with band & occupant satisfaction - breakdowns of ratings by band and program input (type and level)
	Timeliness and Expeditiousness	- length of time from application to approval approach and disbursement - number of disbursements over construction season	- calculate average processing time - comparison with other housing programs - calculate % of funds disbursed at appropriate time
2.2 Program contribution to housing condition improvement	Individual Program Component Activity	- component activity 1980-84 - change in housing conditions 1980-84	- correlation between activity and reduction of housing need
3.0 To what extent are appropriate objectives with regard to improving band management of housing delivery achieved?			
3.1 Band delivery issues	Native Involvement (in planning and management)	- description of steps in delivery process - change in level or manner of involvement 1980-84	- band & district office assessment of extent & changes

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
3.1 Continued	Cost Effectiveness of Native Involvement	- level of Native involvement - unit capital costs - unit subsidy costs - occupant satisfaction - housing conditions and affordability - average band income	- association between level of involvement and housing conditions, capital costs, attainment of unit targets, resident satisfaction, program activity
3.2 Management Issues	Effectiveness of Program Publicity	- occupant awareness of subsidy assistance - band awareness of programs	- breakdown of awareness by band, region, household/occupant type (income, age, etc.) - comparison between band and individual awareness
	Adequacy of Program Criteria	- official program criteria (community and household selection, choice between renovation and new construction, accountability for use of program funds) - band understanding of criteria	- comparison of band understanding with occupant satisfaction - correlation between official criteria and band understanding
		- characteristics of household & communities selected 1980-84	- compare with characteristics for total on reserve population

EVALUATION ISSUES	RESEARCH CONCEPTS	INDICATORS/DATA ELEMENTS	ANALYSIS
3.2 Continued	Effectiveness of Training and Technical Assistance	- Native use of assistance programs - assessment by participants/ users - perceptions of value of inspection process	- band & district office assessment - levels of training program take-up by band, region - association with house condition
	Cost-Effectiveness of Delivery Process	- description of steps involved - cost of program delivery tasks - delivery costs for similar programs	- calculation of cost per step, per unit, per program dollar - comparison with similar programs
4.0 Are there alternative program designs which might better achieve program objectives and intended effects?			
	Cost-Effectiveness of Subsidies	- average cost per unit of DIAND, CMHC, etc. housing subsidies - cost-effectiveness of housing allowances	- calculation & comparison of total program costs to eliminate substandard housing and meet future needs
	Program Overlaps, Duplications and Gaps in Coverage	- objectives, criteria, target population and level and form of support for programs which can be utilized by target population	- comparison of eligibilit criteria, support levels and program resources
	Alternatives: Status Quo, Status Quo with Improvements, CMHC Responsibility, Band Responsibility	- backlog & downstream costs for program alternatives - assessment of program benefits for target population of program alternatives	- costing of various program mixes

7.2 Residual Issues

Representatives of Indian groups concerned with housing have informally expressed their desire to see the survey methodology revised so as to provide more specific information of direct interest to Indian people. We feel confident that the evaluation requirements of DIAND can be addressed by the pre-tested study methodology with the refinements and adjustments discussed above. To address these concerns, the study will need to include a forward orientation to provide the knowledge which can assist in generating solutions.

The following is our understanding of some of the concerns expressed by Indian officials and how these are being or could be addressed by the study methodology.

1. The instruments and study should give high priority to Indian views and perceptions. This should occur at all levels - individuals, households, bands and the representatives of Indian interests. While the instruments already place great emphasis on this approach, discussions could be held with Indian organisations on how to better reflect this underlying concern in the instruments to be used in Phase II.

2. Satisfaction should be viewed as a major performance indicator for the study. Satisfaction in itself is only a preliminary question which leads to more detailed and useful questions on sources of satisfaction/dissatisfaction and the perceived solutions to problems affecting

satisfaction. This approach is currently enployed in the band-level instruments and could be used to a greater degree at the household level. Once again suggestions for revisions would be welcome.

3. Indian perceptions of shelter priorities and aspirations should be a major topic for the study. This topic is treated by the current methodology but could receive increased emphasis in Phase II.

4. The appropriateness of housing design is a currently neglected research issue of considerable importance to Indian people. The relationships between building design and function and the unique physical and cultural environments for on-reserve housing demand consideration of a more flexible approach to house form and design. This topic is not dealt with in any depth in Phase I. Siginficant revisions would be necessary to address this issue.

5. The question of the projected lifespan/rate of obsolescence of dwelling units is a significant issue. Once again, revisions to the existing method may be necessary to satisfy this concern.

6. An empirical analysis of the relationship between house rehabilitation cost and the current geo-code system (urban, semi-urban, rural, remote) could be conducted. It might be possible to expand this issue to include new construction costs as well. This issue would require a larger sub-sample of technical inspections and additional cost estimation data.

8.0 WORK PLAN AND RESOURCE REQUIREMENTS FOR PHASE II

Introduction

In this section we identify a detailed work plan and estimate of project resources for Phase II of the evaluation. The following outline is based on five assumptions;

- that Phase II will be conducted in the autumn of 1984;
- that the country is divided into seven regions to reflect the location of sample Bands;
- that each region will have its own field supervisor hired from that area;
- that each region will have its own interview team of two interviewers supported by a technical inspector;
- the inspectors will be provided by DIAND Technical Services.

This section is presented in sequential order. The time duration and period is given in brackets before each sub-section. The costing for professional services for for each sub-section is provided at the end of the sub-section. However, the supervisor, liaison and interviewer field cost are presented separately at the end of the description of tasks.

8.1 Commence General Field Logistics

(Weeks 1 to 6)

- Contact, through the District Office when necessary, the respective Bands to (a) forward consent

(letter from Minister) and (b) provide notification of field supervisor visit and arrange a meeting with the Band Manager, or Chief or Housing Program Officer;

- Contact all 40 District and 7 Regional Offices involved and notify them as to the field supervisors visit;
- Book airfares and car rentals for supervisors and field force;
- Arrange hotels for supervisors and field force;
- Produce a letter of introduction for the Band Council to sign, addressed to the Band introducing the survey team. Also develop other communication packages;
- Inform the Band that a Band member will be hired as a liaison person by the field supervisor during his/her visit;
- Develop contract for liaison person;
- Arrange through Band, or District Office in the case of remote reserves, to have a potential liaison person selected and sent to the nearest (or most cost effective) site of a supervisor visit. This is to establish direct contact with a liaison person to ensure Census training is completed properly. The field supervisior **will not be going to remote reserves**;

- Development of census maps for all reserves;
- Development of contingency plans in case of band withdrawl;
- Produce census packages and ship to reserves;
- Contact local DIAND District offices to develop schedule for inspectors. Provide a detailed work plan and arrange for inspectors;
- Development of contingency plans in case of Band withdrawl;
- Contact local CMHC offices if a CMHC inspector are being used;
- Arrange for all Inspectors to participate in training session;
- Request that CMHC be prepared to provide funding information for reserves by component.

Estimated cost:	Professional Fees	$ 8,000
	Materials (shipping cost, phone, printing etc.)	$ 3,500
		11,500

8.2 Commence Training Course - For Supervisors

(Weeks 1 - 6)

- Select field supervisors from designated regions of the evaluation;
- Mail necessary training package to supervisor;
- Arrange facilities and equipment;
- Develop lectures;
- Print manuals;
- Confirm lecturors and schedule;
- Confirm travel and accommodation.

Estimated cost:	Professional Fees	$3,000
	Materials	800
		$3,800

8.3 Training of Supervisors

(Week 7)

- Train seven field supervisors for four days. Training to cover, background to evaluation, methodology, eight survey instruments with heavy concentration on District/Region, Band and occupant, schedule of field logistics,

interviewer training, quality control, J circulars and contingency plans.

Estimated cost:	Professional Fees	$ 8,500
	Training Salaries for Supervisors	8,400
	Materials (rooms, equipment rental)	700
		$17,600

8.4 Staffing

(Weeks 1 - 7)

- Advertise for interviewer position;
- Screen and interview qualified applicants and hire twenty Indian people for training course;
- Answer all applicants with letter.

Professional Fees	$3,500
Materials	100
	$3,600

8.5 Commence Training Course Setup

(Weeks 7 - 8)

- Print manuals;
- Arrange facilities and equipment;
- Confirm lectures and schedule;
- Confirm demonstration dwellings;

- Arrange transport and when necessary accommodation for inspector and interviewers;
- Prepare contracts for trainees.

Professional Fees	$3,500
Materials	900
	$4,400

8.6 Training Course for Interviewers and Inspectors

(Week 9)

- Train seven inspectors for two days;
- Train twenty interviewers for three days. Training to cover background to evaluation, methodology, eight survey instruments with heavy concentration on household and technical skim for the interviewers and the technical for the inspectors, quality control and field work schedule;
- Test and select the best fourteen interviewers;
- Equip the interviewers with necessary implements (i.e., flashlights, clipboards, etc.);
- Brief interviewer on schedule and their role.

Professional Fees	$10,000
Materials (rooms, transport)	1,000
Student fees	9,000
	$20,000

8.7 Field Entry - Supervisor

(Weeks 7 - 9)

- Print and distribute necessary survey instruments;
- Field supervisors enter field according to survey plan;
- Meet with respective District/Regional Offices to conduct survey instruments;
- Brief DIAND officials as to Band interviewing schedule and make alterations on their recommendations;
- Arrange inspectors schedule and co-ordinate with inspector chosen to go to training course;
- Notify central headquarters as to changes to plan and reasons;
- Meet with Bands contacted in advance;
- Pick up census package;
- Contact Bands in remote areas not previously contacted;
- Follow planned route of interviewers, going from Band to Band arranging schedules for interviewing with bands;
- Meet with local Bands and hire liaison person;
- Train liaison person for census;

- Arrange where possible "seminar" for liaison persons where several liaison trainees can be grouped at a District level and trained all at once:
- Arrange for District Office personnel to train those liaison persons not directly contacted by the supervisor;
- Conduct Band interviews;
- Conduct nurse interviews;
- Verify, and if necessary arrange, accommodation and transport for interviewers;
- Quality control census instrument;
- Ensure communication package has been distributed on-reserve;
- Provide update on advance work and provide warnings of problem areas;
- Develop definative schedule;
- Meet interviewer team at end of route.

* Professional Fees	$2,500
* Material	
- printing	800
- shipping/handling	600
- phoning	200
	$4,100

* These represent office and management costs only. See 8.12 for cost of advance field work by (a) Supervisor, and (b) Liaison person.

8.8 Interviewer Field Entry

(Weeks 10 - 16)

- Print and distribute necessary forms to field supervisors;
- Seven teams of two interviewers enter field and meet with field supervisors;
- Team is briefed on schedule and arrangements and modifications to original plans by field supervisors;
- Field supervisor issues sample for reserves and instruments;
- Enter reserve and commence interviewing.

  NOTE: for remote reserves the Band and Community Nurse Instruments will be administered by the interviewer and **not the field supervisor;**
- Field supervisor manages team and quality controls work for the completion of one reserve;
- Errors in data collection and interviewing are corrected and survey procedures are finaliszed;
- By the fourth day of interviewing, field supervisor returns to his/her home in the region and coordinates from this central point;
- Interviewers continue on route previous done by supervisors to all targeted reserves;

- On completion of reserve the forms are delivered to the field supervisor directly or to the Supervisor through District Offices;
- Quality control of all instruments by supervisor and notification of problems are done*;
- Residual information captured;
- Interviewers keep daily record of results and other pertinent information (i.e., expenses);
- Interviewers expenses are handled by field supervisor under auspices of headquarters;
- Interviewers finish route and send all field notes to supervisor;
- When interviewers complete tasks the field supervisor will send by insured mail all completed instruments to headquarters;
- Exit interviewer team once all instruments have been checked and verified;
- Field Report by field supervisor;
- Invoice by liaison person, forwarded with instruments.

* Professional Fees	$2,500
* Material	
- printing	2,000
- equipment	150
	$4,650

* These represent office and management costs only. See 8.13 for interviewer costs.

8.9 Data Base Management

Step 1 (Weeks 17 - 20)

- Preliminary editing/coding of Band, Region instruments;
- Translate hard copy to machine-readable format;
- Categorize all open end questions;

Step Two

- Preliminary editing of coding of remaining survey instruments;
- Categorize open-end questions;
- Data entry (100% verification) for all instruments;
- Fully-documented computer system file creation;
- Linkage to other data bases;
- File integration and purification;
- Creation of statistical programs;
- Execution of computer runs;
- Examination of output format and content;
- identification of residual research issues;
- Execution of clarifying runs.

Professional Fees	$15,000
Materials (machine cost)	15,000
	$30,000

8.10 Data Analysis/Interpretation

(Weeks 20 - 25)

- Descriptive statistical analysis;
- Qualitative analysis;
- Breakdowns/cross-tabulations;
- Correlations/multivariate analysis.

Professional Fees	$28,000
Materials (machine cost)	5,000
	$33,000

8.11 Report Writing/Presentations

(Weeks 24 - 28)

- SPSS flexible report program;
- Technical report;
- Summary non-technical report;
- Presentation;
- Review/revisions;
- Presentation of final report.

Professional Fees	$26,000
Materials	1,000
	$27,000

8.12 Supervisor Field Costs

A. Supervisor (Costs based on seven teams for seven designated regions)

Team	Time	Travel Airfare	Accommodation and Food	Car/Gas & Milage	Fees	Incidental	Total
1	20 days	$ 305	$1,350	630	$6,000	250	$8,545
2	18	400	975	510	5,400	250	7,535
3	10	430	375	200	3,000	250	4,255
4	15	610	750	500	4,500	250	6,610
5	18	605	975	510	5,400	250	7,740
6	17	800	750	460	5,100	250	7,360
7	17	1,420	375	460	5,100	250	7,605
TOTAL	115	4,580	5,550	3,270	34,500	1,750	49,650
					10% Contingency		5,000
					Total Cost of Supervisory Work		54,650

B. Liaison Person

Cost based on an average of 180 housing units per reserve (15,000 in sample) with an enumeration rate of four per hour. Therefore it would take 5.5 days to enumerate the average reserve. With the addition of half a day for training the total number of man days to enumerate a reserve would be six. Total cost can be estimated than by:

83 reserves x 6 mandays	=	498 mandays
Cost per day	=	x 90
Cost of Census enumeration		44,820
Cost of incidental travel for enumerator in remote areas	=	5,000
Cost of Liaison Personnel	=	49,820
10% Contingency	=	5,000
Total Cost of Liaison Personnel	=	54,820

8.13 Interviewer Field Work Cost

Based on double occupancy and regular airfares for 2 interviewers.

Team	Time (in days)	Travel (air, bus, train)	Accommodation and Food	Car/Gas & Milage	Fees 150/per diem	Incidental $10 cost per day	Total
1	42	$ 375	$6,300	1,560	$12,600	420	$21,255
2	45	2,100	6,700	1,750	13,500	450	24,500
3	24	2,860	3,600	1,180	7,200	240	15,080
4	38	1,020	5,700	1,700	11,400	380	20,200
5	28	1,400	4,200	1,340	8,400	280	15,620
6	38	2,180	5,700	1,740	11,400	380	21,400
7	48	5,740	7,200	1,650	14,400	480	29,470
Total	263	15,675	39,400	10,920	78,900	2,630	147,525
					10% Contingency		14,752
					Total Estimated Interviewer Cost		162,277

8.14 Total Estimated Cost for Phase II

8.1	Commence General Field Logistics	= 11,500
8.2	Commence Training Course - For Supervisors	= 3,800
8.3	Training of Supervisors	= 17,600
8.4	Staffing	= 3,600
8.5	Commence Training Course Setup	= 4,400
8.6	Training Course for Interviewers and Inspectors	= 20,000
8.7	Field Entry - Supervisor	= 4,100
8.8	Interviewer Field Entry	= 4,650
8.9	Data Base Management	= 30,000
8.10	Data Analysis/Interpretation	= 33,000
8.11	Report Writing/Presentation	= 27,000
8.12 (a)	Supervisor Field Costs	= 54,650
8.12 (b)	Liaison Person	= 54,820
8.13	Interviewer Field Work Cost	= 162,227

Total Estimated Cost $431,447

8.15 Breakdown of Sample Reserves per Team

TEAM	REGION	NO. OF RESERVES	NO. OF SAMPLES
1	New Brunswick, Nova Scotia, Southern Quebec, Southern Ontario	12	18
2	Northeastern Ontario, Northern Quebec	12	12
3	Northwestern Ontario, Northeastern Manitoba	9	9
4	Southern Manitoba, Southern Saskatchewan	11	11
5	Northern Saskatchewan, East Central Alberta	13	13
6	Southern Albert, West Central Alberta, Northern Alberta	9	10
7	British Columbia, Yukon	17	19
*TOTAL		83	92

* Excludes 6 reserves in pilot phase.

ESTIMATED PHASE II COSTS BY TASK

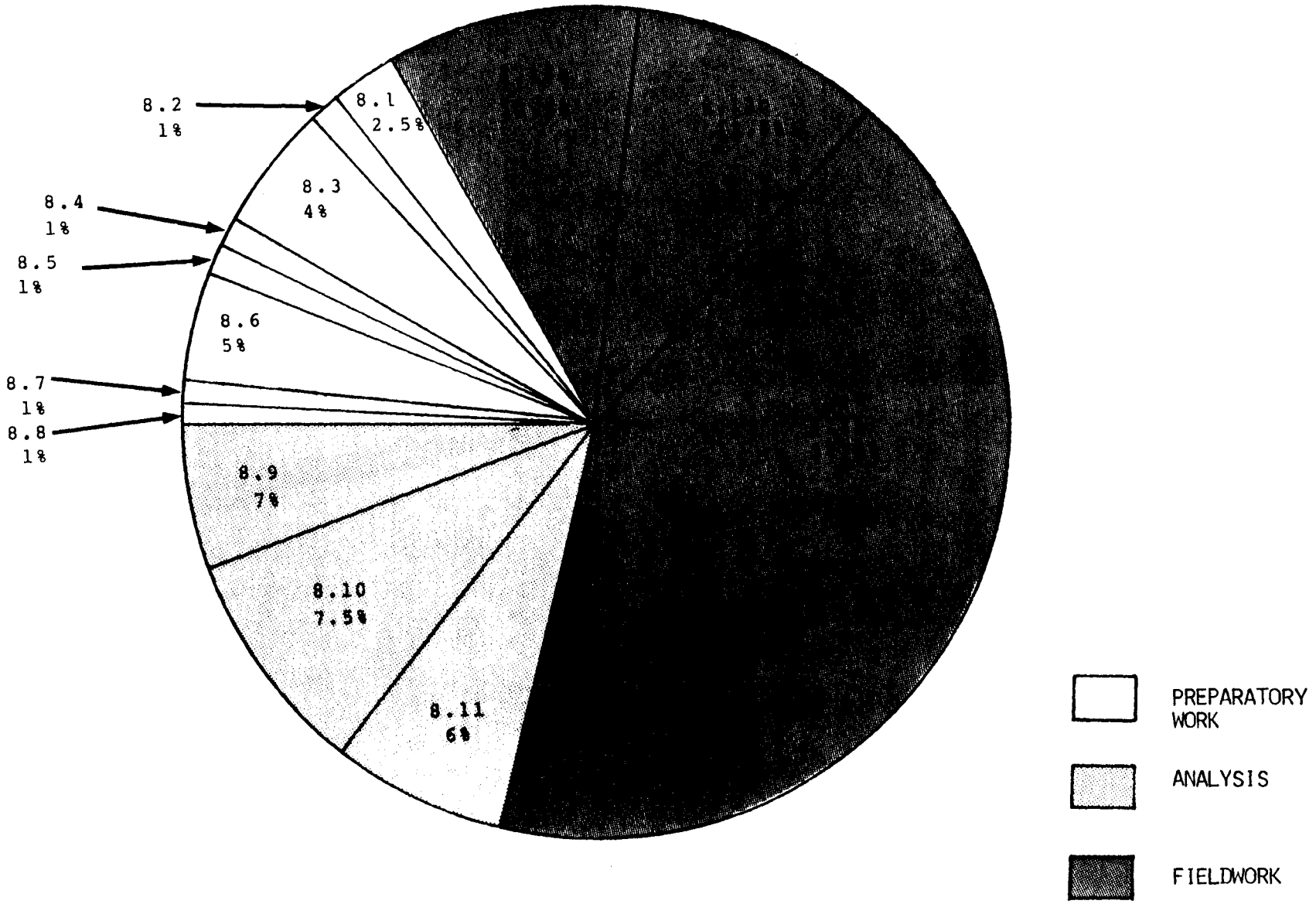
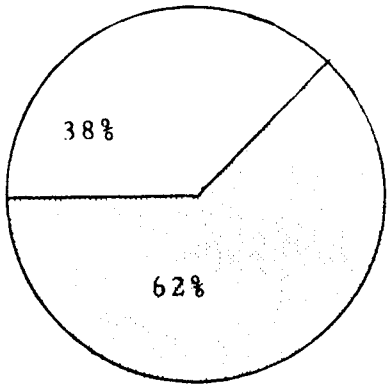


EXHIBIT 8C

PERCENTAGE OF FUNDS ESTIMATED TO BE SPENT ON INDIAN JOB CREATION



COST OF PROJECT

Percent of Administration Cost

Percent of Manpower Cost

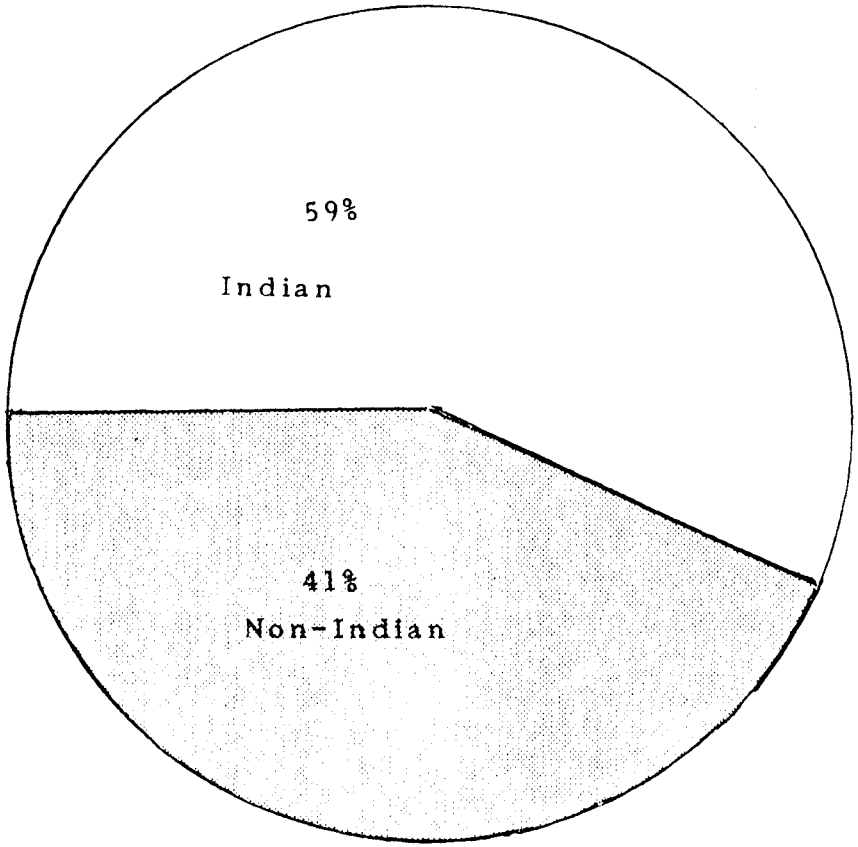
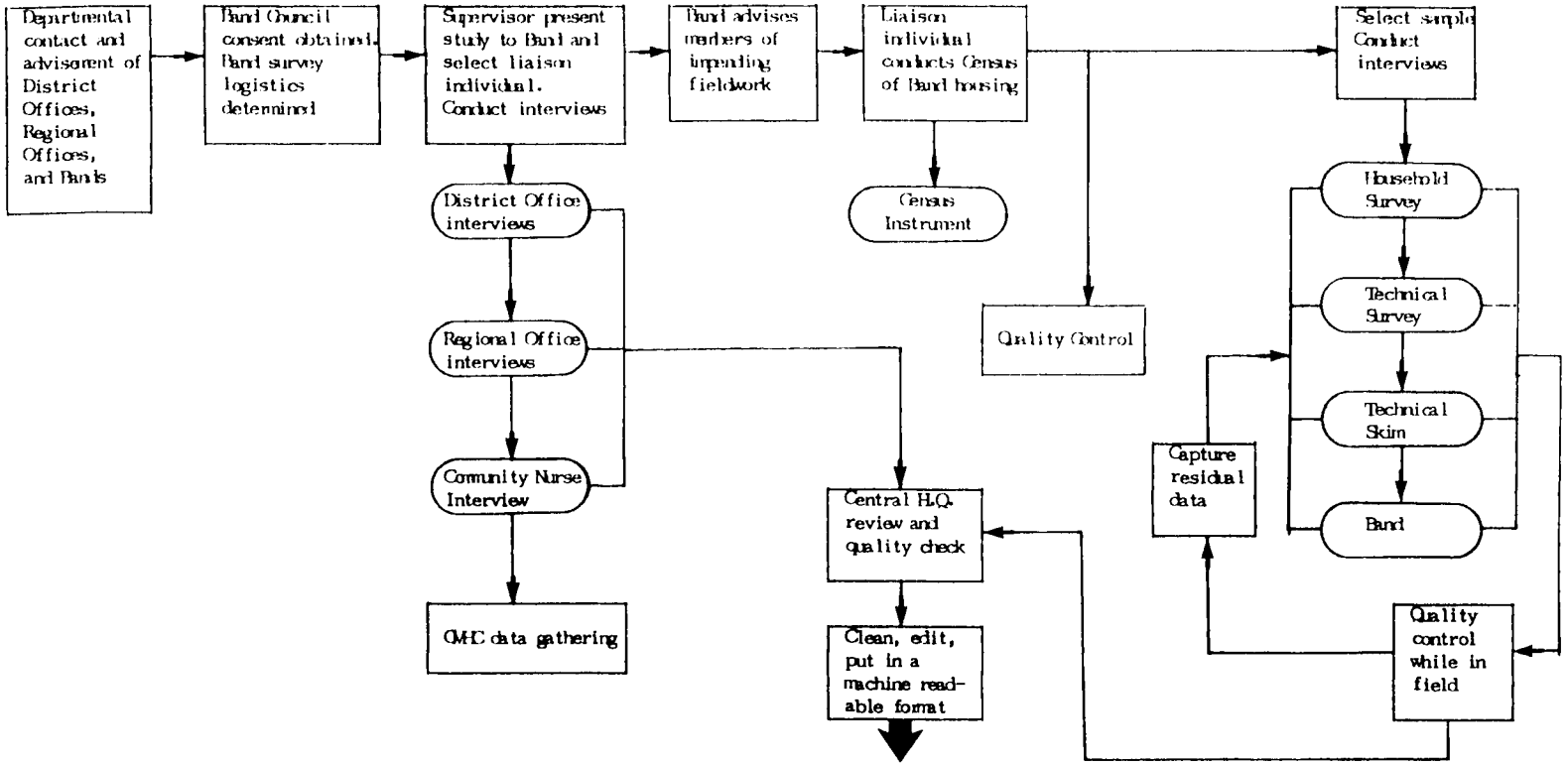
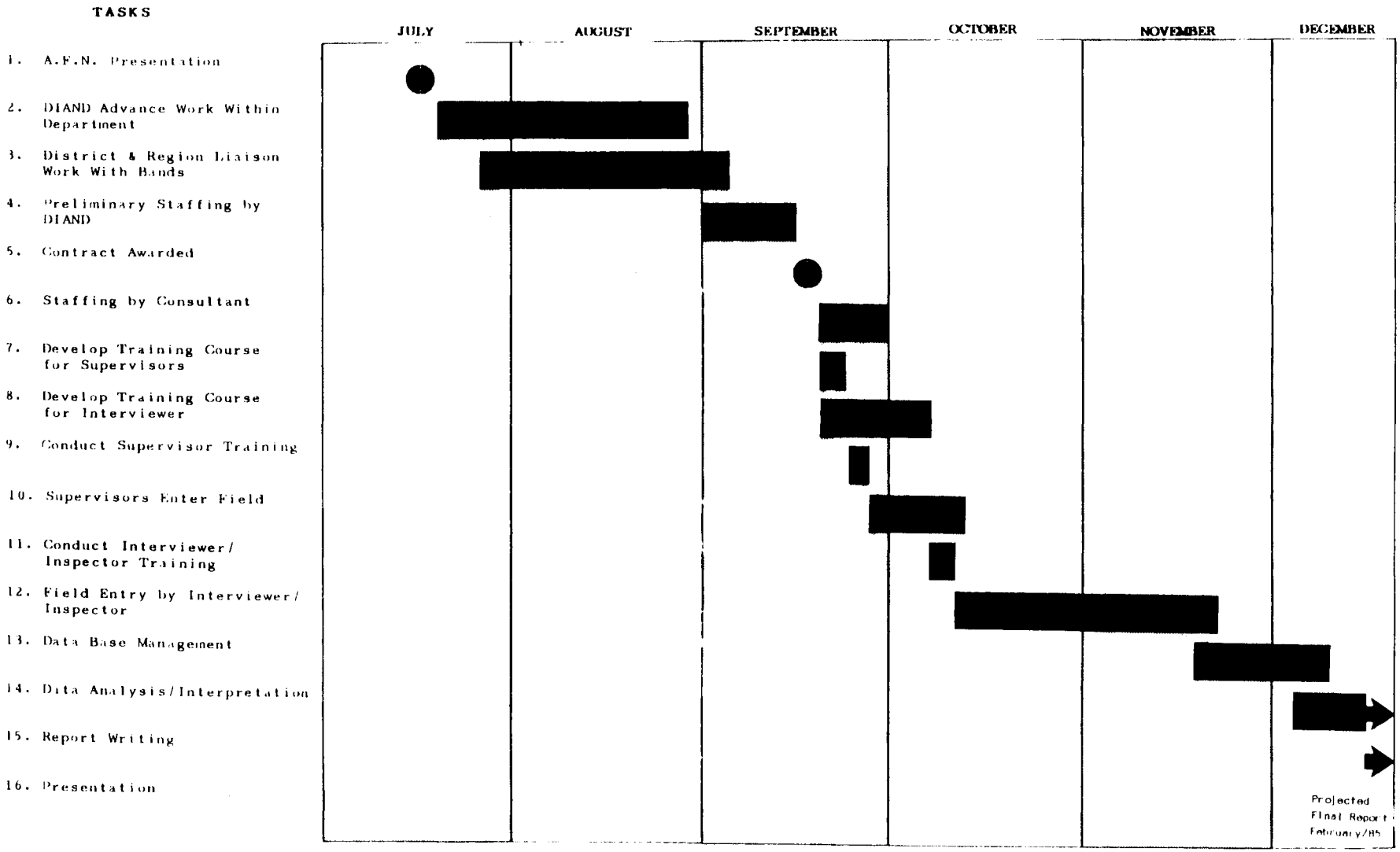


EXHIBIT 8.B

SCHEMA OF FIELD LOGISTICS



PROPOSED SCHEDULE FOR PHASE II FIELD TASKS



APPENDIX A

Source: Phase I Final Report (Ekos)
Appendix "A" - July, 1984

Revised Sample of Indian Bands for On-Reserve Housing Program Evaluation

BAND I.D.	PROVINCE	BAND NAME	POPULATION*
03	N.B.	Big Cove	1,360
05	N.B.	Burnt Church	802
26	N.S.	Sydney (Membertou)	438
25	N.S.	Shubenacadie	1,017
76	Que.	Montagnais du Lac St. Jean	1,947
59	Que.	Nemaska	130
79	Que.	Obedjiwan	1,145
81	Que.	Naskapis de Schefferville	395
85	Que.	Bersimis (Betsiamites)	2,087
51	Que.	Restigouche	1,668
74	Que.	Barrière Lake	291
70	Que.	Kahnawake	5,235
73	Que.	River Desert	1,178
143	Ont.	Attawapiskat	1,451
158	Ont.	Whitefish Bay	556
236	Ont.	Poplar Hill (Done in Phase I)	172
210	Ont.	Kasabonika Lake	425
211	Ont.	Deer Lake (at Red Lake)	300
199	Ont.	Garden River	795
179	Ont.	Spanish River	1,101
219	Ont.	Matachewan	143
166	Ont.	Chippewas of the Thames	1,109
171	Ont.	Chippewas of Kettle and Stoney Point	960
159	Ont.	Iroquois of St. Regis	3,782
141	Ont.	Beausoleil	710
120	Ont.	Mississaugas of the Credit	681

These figures represent the registered Indian band population totals (for on-reserve, on crown land and off-reserve) as of December 31, 1980. (Source; DIAND, August 1982)

BAND I.D.	PROVINCE	BAND NAME	POPULATION
121	(Comprised of 13 Bands)	Six Nations	10,367
132	Ont.	Seine River	394
187	Ont.	Fort William (Done in Phase I)	524
195	Ont.	Pic Mobert	350
307	Man.	Shamattawa	602
305	Man.	Fox Lake	334
287	Man.	Long Plain	1,101
262	Man.	Fort Alexander	2,767
271	Man.	Lake Manitoba	650
292	Man.	Valley River	515
283	Man.	Sandy Bay	1,972
296	Man.	God's Lake	1,154
289	Man.	Oak Lake	336
266	Man.	Berens River	990
270	Man.	Little Grand Rapids	930
269	Man.	Peguis	2,666
285	Man.	Waywayseecappo	942
346	Sask.	Red Pheasant	730
345	Sask.	Poundmaker	615
344	Sask.	Onion Lake	1,545
342	Sask.	Moosomin	619
359	Sask.	Stony Rapids	689
355	Sask.	Peter Ballantyne	2,316
353	Sask.	Lac La Ronge	2,823
365	Sask.	White Bear (Done in Phase I)	1,250
364	Sask.	Sakimay (Done in Phase I)	651
369	Sask.	Beardy's & Okemasis	1,175
375	Sask.	Muskeg Lake	625
385	Sask.	Piapot	854
380	Sask.	Nikaneet	155
387	Sask	Star Blanket	198
398	Sask.	Buffalo River	405
400	Sask.	English River	495

BAND I.D.	PROVINCE	BAND NAME	POPULATION
447	Alta.	Little Red River	1,385
448	Alta.	Dene Tha'	1,324
457	Alta.	Swan River	216
458	Alta.	Bigstone Cree	1,688
430	Alta.	Blackfoot	3,115
438	Alta.	Alexander	648
436	Alta.	Peigan	1,847
465	Alta.	Frog Lake	814
462	Alta.	Saddle Lake (at Saddle Lake)	3,598
435	Alta.	Blood	5,608
536	B.C.	Gitwangak	471
532	B.C.	Kispiox	681
605	B.C.	Shuswap	136
616	B.C.	Okanagan (Done in Phase I)	817
618	B.C.	McLeod Lake	219
614	B.C.	Necoslie	699
678	B.C.	Greenville (Lakalzap)	852
673	B.C.	Metlakatla	262
674	B.C.	Port Simpson (LaxKw- alaams)	1,448
556	B.C.	Anderson Lake	131
713	B.C.	Canim Lake (Done in Phase I)	331
722	B.C.	Ulkatcho	409
642	B.C.	Cowichan	1,861
623	B.C.	Cape Mudge	389
637	B.C.	Turnour Island (Tlowitsis-Mumtagila)	159
557	B.C.	Mount Currie (Pemberton)	1,117
551	B.C.	Sechelt	602
502	Yukon	Liard River	602
496	Yukon	Old Crow	220

CMHC PRIMARY SAMPLE OF BANDS

Province	Band	Band I.D.	Population
Quebec	Temiskaming	064	447
	Mingan	082	306
	Waswanipi	056	835
Ontario	Walpole Island	170	1,919
	Islington	150	834
	Wikwemikong	175	3,258
Manitoba	The Pas	315	1,411
	Fisher River	264	1,341
Saskatchewan	Ochapowace	363	581
	Poorman	393	1,123
	Montreal Lake	354	1,298
	Cowessess	361	1,347
Alberta	Cold Lake	464	1,026
	Cree	461	946
	Samson	444	2,539
	Stoney Bearspaw	473	795
British Columbia	Boston Bar	701	89
	Bella Coola	539	1,301
	Pavilion	594	224
Yukon	Selkirk	498	286

APPENDIX B

ON-RESERVE HOUSING EVALUATION

S.W.1 INTRODUCTION

In 1981-82 the enclosed Evaluation Assessment of the On-Reserve Housing Program was completed. The Assessment provides a program component profile, evaluation issues and evaluation options. The On-Reserve Housing Program is designed to ensure that all Indians residing on reserves are adequately housed and more specifically to achieve the following impacts and effects:

- elimination of substandard housing through renovation and maintenance;
- supply of adequate housing units;
- assist Indians in planning, building and managing their own houses on reserves;
- assist in co-ordination of housing inputs;
- development of Indian housing skills;
- affordability of housing; and,
- job creation.

The Program provides the following types of funding support to Indian people resident on-reserve:

Individually Owned House (New)

1. DIAND Subsidy
2. DIAND Subsidy plus CMHC Loan
3. DIAND Subsidy plus Approved Lender
4. Other combinations

Individually Owned House (Renovation)

5. DIAND Subsidy
6. CMHC RRAP
7. Combination of (5) and (6)

Band Owned Housing

8. DIAND Subsidy
9. DIAND Subsidy plus CMHC Loan (CMHC Section 56.1 Operating Subsidy)
10. DIAND Subsidy plus Approved Lender (CMHC Section 56.1 Operating Subsidy)
11. Other combinations

Each of these programs receive additional funding through CEIC as well as inputs from Indian people (individuals and/or bands).

Early in 1983 alternative methodologies, evaluation options and survey instruments were developed and are described in the following two enclosed reports: Methodology for the Evaluation of the On-Reserve Housing Program, Volumes I and II.

The survey instruments (Volume II)cover quite comprehensively house conditons and household characteristics. They do not, however, address all of the issues identified in the Assessment, e.g. "What is the extent of, and how successful are skills development and job creation efforts?" These will need to be developed as described in these terms of reference.

Subsequent to the completion of the above named reports significant changes were made to the Program. These changes are described in the following two enclosed documents: T.B. Submission dated 14-08-83 and Memorandum to Regions dated May 16, 1983.

The major features of the evaluation are described by Option B in the Methodology, Volume I report. Option B requires a comprehensive survey of 1980 houses and their occupants on 89 difference reserves across Canada. (The Yukon has been excluded) The survey is to be done by trained personnel (using Indian people as much as possible) with a 10% subsample (as described by Option IIIB) done by certified inspectors within DIAND.

In addition to Option B the following work will be undertaken and is to be costed separately:

1. a total inventory of all houses and their occupants on the 89 reserves;

2. the water, sanitation, electrification, roads and fire protection services provided to all houses on the 89 reserves; and,

3. further methodological work will need to be done to ensure that all CMHC programs on-reserve are done in sufficient numbers to draw statistically significant conclusions. A second stage selection procedure is required.

These additional requirements are described in greater detail within these terms of reference.

S.W.2 STUDY SCOPE

The work requirements of this study are therefore threefold.

Total Community Information (89 reserves)

This includes the total number of houses, their occupants and the services to housing being provided (water, sanitation, electrification, roads and fire protection).

Program Evaluation (89 reserves) DIAND

This is an in-depth program evaluation of 1980 houses and their occupants as described by Option B and the additonal requirements identified in these terms of reference.

Program Evaluation (89 reserves) CMHC

This is an in-depth program evaluation of a further number of units (the precise number is to be determined in Phase I) focussing on CMHC programs.

All analysis and presentation will be done as a minimum on the basis of both funding support type and the stratification variables of the sample, namely:

1) nationally and regionally;
2) by population size;
3) by north/south division; and,
4) by general location, namely, urban, semi-urban, rural and remote (the relationship between this sample classification and the classification used in the TB Submission (urban, rural, remote and special access) is to be clarified in Phase I).

S.W.3 PROGRAM EVALUATION ISSUES (QUESTIONS (1980 Units)

The following issues will be addressed:

1. What impacts and effects, both intended and unintended, result from carrying out the various programs?

   i) What is the extent of the quantitative and qualitative improvements in Indian housing on reserves over time?

   ii) What is the adequacy and suitability of Indian housing on reserves? Evaluation indicators used in the CMHC social housing evaluation are to be used and if necessary refined and modified following the field test.

iii) What are the financial requirements to bring the units up to an adequate level in terms of both renovations (using 1982 Housing Facilities and Equipment Survey categorization), new units and total cost?

iv) How much maintenance and renovation of deteriorated housing units is carried on? Are there particular attributes in the programs resulting in a longer life span?

v) To what extent are the programs successful in eliminating or reducing housing affordability problems of Indian people on reserves? What subsidies are provided and how effective are they? "Affordability" is to be defined in advance using CMHC standards initially and refined if necessary.)

vi) What is the extent of skills development for house construction, e.g. use of Indian plumbers, carpenters, etc.?

vii) What is the extent of jobs created for Indian people by house construction? This will be categorized, for example, by whether the houses were built locally, by outside contractors, prefabricated elsewhere and the amount of employment generated by each. Where materials are provided locally, using Indian people (e.g. local sawmill) this will also be identified. What is the extent of occupant participation in house construction? (Note: The focus of this issue is on-reserve. It is not intended to address the question of a "viable housing industry" identified in the Assessment.)

2. In what manner and to what extent are objectives with regard to amelioration of housing conditions achieved as a result of the programs?

i) What are the total funding and/or equity sources to each house? How effective is the co-ordination of funding sources? (Audit precision of the financial information is not a requirement. The availability of this information is to be included in the field test.)

ii) In what manner and to what extent do the programs

contribute to improvements in on-reserve housing conditions by facilitating the provision of adequate, suitable and affordable housing?

3. In what manner and to what extent are appropriate objectives with regard to improving band management of housing delivery achieved as a result of the programs?

   i) What type of technical assistance and/or training assistance is provided to Indian people and/or bands for house construction? (1982-83 and 1983-84 years only). How effective is it?

   ii) What assistance is provided bands in developing delivery mechanisms? How effective is it? (1982-83 and 1983-84 years only).

   iii) To what extent do Indians and band councils carry out the primary responsibility for planning, building and managing housing?

4. What alternative program designs are there which might better achieve the objectives, intended impacts and effects? (1982-83 and 1983-84 years only).

   i) Who prepares plans and priorities?

   ii) Who administers the programs?

   iii) Who provides the labour?

   iv) How do finances flow to the projects?

   v) Who provides technical advice?

   vi) Who inspects and audits the project?

   vii) Who manages the housing?

S.W.4 TOTAL COMMUNITY INFORMATION (ALL HOUSING)

A total inventory of all housing at each band by program type will be obtained. This will provide both an accurate source of information of the total universe and a base from which the random sample on the reserve can be taken.

The total number of families and occupants in each house are to be obtained.

For the 1983-84 fiscal year only the allocation process for new units and renovations will be obtained using a structured questionnaire approach.

Basic data on electrification, water, sanitation, roads and fire protection services to each house are to be provided. The extent of time that the services were not operational during the previous 12 month period is to be determined. This is not intended to be an evaluation of the systems but rather an inventory of the services and whether or not they are fully operational.

Information on the general health of the reserve is to be obtained from the medical services officer or equivalent, e.g. most serious health problems, outbreaks of communicable diseases, etc.

S.W.5 STUDY APPROACH

The work will be done as shown below:

i) the most up-to date information will be obtained on the programs and their variations and a revised program component profile will be prepared. Existing data sources will be reviewed;

ii) survey instruments will be expanded and refined to ensure that all of the requirements described heren will be addressed. This will include any method or instruments required to answer the issues described in S.W.4;

iii) methods of analysis will be defined, e.g. adequacy, suitability, affordability definitions;

iv) there were a total of 1700 CMHC Section 56.1 units at all reserves in 1982. The sample of 89 reserves would capture 467 of them. There are also 4458 RRAP units and 1659 CMHC Section 59 on all reserves. The precise number of these latter two programs in the sample of 89 bands is not available. More precise information needs to be obtained and a second stage selection procedure developed to ensure a sample size that would result in a statistically valid result for CMHC programs;

V) interviewers will be hired, trained and used for a field test;

vi) the instruments will be field tested with six bands (two in each of the Ontario, Saskatchewan and B.C. Regions and the District/Service Offices serving them) following procedures described by Option IIIB and further refined (CMHC are currently doing some field testing and this information will be available to the evaluator);

vii) the refined instruments, together with detailed work and data analysis plans, will be presented to the Evaluation Advisory Committee. This work plan should fully integrate the evaluation methodological requirements, draw explicit linkages between individual evaluation questions, indicators, source of data and collection/analysis methods. It should also include a complete and detailed work plan for Phases II and III specifying tasks, responsibility centres, time frame, and resource requirements.

viii) Potential data base linkages between the new information that will become available and data existing at Headquaters (DIAND and CMHC) and the three regions will be described. Linkages between the data bases is a desired objective.

S.W.6 MINIMUM METHODOLOGICAL REQUIREMENTS

The methodology to be used is as described under Option B in the enclosed Methodology Volume I report, with the following modifications:

1. the 10% sub-sample of technical inspections will be done by DIAND staff;

2. training of interviewers is crucial to the project and a greater focus may need to be provided to this aspect than identified in Option B;

3. there will be a need for a Mail-Telephone Survey of District Offices and some field visits (currently shown only under Option C);

4. the Yukon Region has been excluded from the sample reducing the number of bands from 90 shown in Option B to 89;

5. the number of houses required to meet DIAND need is 1980. The random approach will be used (as described in the report) for 1980 units. The additional number required to meet CMHC requirements and the sampling mechanism is to be developed in Phase I.

6. there is additional work identified in these terms of reference, currently not specified within Option B, for which the methodology needs to be developed.

S.W.7 EVALUATION REPORT

A comprehensive report, following the OCG format, will be prepared in both official languages.

At least three debriefings of the final report will be required, one each for senior management at DIAND and CMHC and one for a National Housing Conference.

The evaluation will follow the Guide on the Program Evaluation Function and Principles for Evaluation of Programs prepared by the Office of the Comptroller General.

S.W.8 EVALUATION ADVISORY COMMITTEE

General direction to the evaluation will be provided by an Evaluation Advisory Committee consisting of members as follows:

Jean-Guy Hébert, TBS
Maeve Hancey, MSSD
Murray Town, CMHC
Jamie Angus, CMHC
Ken Goodwill, AFN
Ron Baird, DIAND
William Clevette, DIAND
Monique Boyd, DIAND
David Moynagh, OCG
Peter Fillipoff, DIAND
Gregor MacIntosh, DIAND