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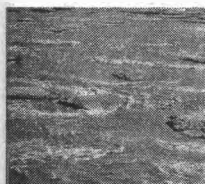


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NORTHERN RIVER BASINS STUDY PROJECT REPORT NO. 75

## WATER RESOURCES USE AND MANAGEMENT ISSUES FOR THE PEACE, ATHABASCA AND SLAVE RIVER BASINS: IMPLEMENTATION OF STAKEHOLDER SURVEYS, FEBRUARY TO APRIL, 1995



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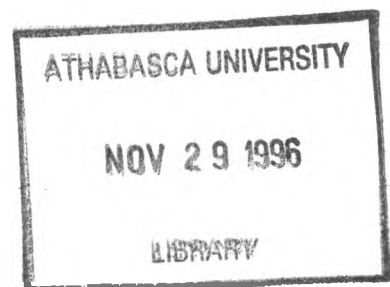
Prepared for the  
Northern River Basins Study  
under Project 4121-D4

by

Philippe Reicher

NORTHERN RIVER BASINS STUDY PROJECT REPORT NO. 75  
**WATER RESOURCES USE AND  
MANAGEMENT ISSUES  
FOR THE PEACE, ATHABASCA AND  
SLAVE RIVER BASINS: IMPLEMENTATION  
OF STAKEHOLDER SURVEYS,  
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## **PREFACE:**

The Northern River Basins Study was initiated through the "Canada-Alberta-Northwest Territories Agreement Respecting the Peace-Athabasca-Slave River Basin Study, Phase II - Technical Studies" which was signed September 27, 1991. The purpose of the Study is to understand and characterize the cumulative effects of development on the water and aquatic environment of the Study Area by coordinating with existing programs and undertaking appropriate new technical studies.

This publication reports the method and findings of particular work conducted as part of the Northern River Basins Study. As such, the work was governed by a specific terms of reference and is expected to contribute information about the Study Area within the context of the overall study as described by the Study Final Report. This report has been reviewed by the Study Science Advisory Committee in regards to scientific content and has been approved by the Study Board of Directors for public release.

It is explicit in the objectives of the Study to report the results of technical work regularly to the public. This objective is served by distributing project reports to an extensive network of libraries, agencies, organizations and interested individuals and by granting universal permission to reproduce the material.



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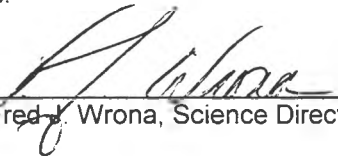
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Whereas the above publication is the result of a project conducted under the Northern River Basins Study and the terms of reference for that project are deemed to be fulfilled,

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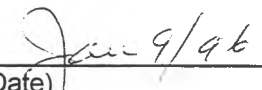
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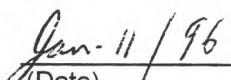
  
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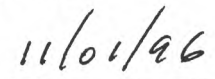
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**WATER RESOURCES USE AND MANAGEMENT ISSUES FOR  
THE PEACE, ATHABASCA AND SLAVE RIVER BASINS:  
IMPLEMENTATION OF STAKEHOLDER SURVEYS  
FEBRUARY TO APRIL, 1995**

**STUDY PERSPECTIVE**

In order to assist the Board in discerning the attitudes and concerns of the basin residents on water management issues and possible recommendations, the Other Aquatic Uses component designed a five-step program to obtain the information. The steps included:

1. Identification of Stakeholders;
2. Development of an information gathering strategy;
3. Implementation of data gathering surveys;
4. Analysis of the survey results; and
5. Final synthesis report.

***Related Study Questions***

3. *Who are the stakeholders and what are the consumptive and non-consumptive uses of the water resources in the river basins?*

This report deals with step three and describes the administration of the stakeholder survey during February to April 1995 and presents the raw results (on diskette). The household survey, which was conducted simultaneously, is described in a companion report "Implementation of a Household Survey, January to April, 1995" (NRBS Report Number 70). The approach and design of the surveys are discussed in "Design of Questionnaire and Survey Methods" (NRBS Report Number 58). This survey was necessary as no data bases existed that could fully describe the water management issues and concerns of the stakeholders and how they made use of present aquatic resources. A survey of stakeholders in the study area appeared to offer the most cost-effective approach to obtain this information. In addition to municipal governments and industries, agriculture associations, agricultural service boards, commercial fishermen, commercial recreation business owners, river transportation operators, trappers, and general stakeholders were included as stakeholders.

The response rate for the survey was 30%. Several reasons were given for not completing the survey by respondents, the most common one being that no one in the office is available or has the time to complete the survey. The effect of non-responses on the accuracy of the survey results will be discussed in "Results of the Household and Stakeholders Surveys" (NRBS Report Number 69), where the results of the household and stakeholders surveys are analyzed in detail. The stakeholder survey marked the first time that the stakeholders in the study area have been surveyed to this extent. The resulting information will be useful for this study and future planning.



## **REPORT SUMMARY**

This report describes the implementation of a survey of : interest groups, industries and municipal governments, agriculture associations, agricultural service boards, commercial fishermen, commercial recreation business owners, river transportation operators, trappers, and general stakeholders such as environmental groups, recreation clubs, Native Friendship centres and professional associations. The objective of this project was to collect information about various stakeholders and their uses of the aquatic resource.

The survey was designed to employ a variety of approaches so that stakeholder concerns, attitudes and values could be assessed in parametric (quantifiable) and non-parametric measures and to minimize the filtering of information by the subsequent analyses. The approach and design of the surveys are discussed in “Design of Questionnaire and Survey Methods” (NRBS Report Number 58).

The questionnaires for each stakeholder group were similar to each other but also contained specific questions for the target stakeholder group. A total of 602 questionnaire packages were sent out and by April 15, 181 completed responses had been received for an average response rate of 30%. The response rate for individual stakeholder groups ranged from 21% for agricultural associations to 46% for industries. A number of reasons were given for not responding, the most common one being that no one was available to complete the survey.

Individual databases were set for each stakeholder group using SPSS/PC+ software. The numerical data was entered directly and the written responses were converted to numerical codes and then entered using the same codes developed for the householder survey. A verbatim transcript of the written comments was also entered into the databases and are included in this report.

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## 1.0 BACKGROUND

The Northern River Basins Study (NRBS) is a joint project between the governments of Canada, Alberta and the Northwest Territories that commenced in September of 1991. The purpose of the NRBS is to “characterize the cumulative effects of development on the water and aquatic environment of the Study Area by coordinating with existing programs and undertaking appropriate new technical studies” To undertake this study, a Study Board, Study Office and Science Advisory Committee were created. The Study Area includes the mainstems and main tributaries of the Peace, Athabasca and Slave rivers.

The Study Board developed a vision statement to provide overall guidance for the various technical activities being conducted in support of the Study and also identified 16 questions that serve to focus study activities. One of these questions is:

#3 *Who are the stakeholders and what are the consumptive and non-consumptive uses of the water resources in the river basins?*

In order to answer this question, the Other Uses Component was established and a five step work program was developed. These steps included:

Identifying stakeholders;

- i. Developing an information collection strategy (survey);
- ii. Implementation of the survey;
- iii. Analysis of survey results; and,
- iv. Preparation of a summary report.

The first two steps of this work program have been completed. Project 4101-B1 was undertaken in the fall of 1993 and produced a partial list of stakeholder groups (about 290) in the study area. This study also identified the general public as a stakeholder. Strategies for collecting information from both stakeholder groups and the general public were developed as part of Project 4121-Do and Project 4121-D2. These projects were completed in 1994 and recommended that a telephone/mail survey be undertaken with a stratified random sample of households in the study area, and that a similar approach be used to survey all stakeholder groups. A separate survey of stakeholders was necessitated by the low probability of getting adequate and reliable facts and value-based information concerning specific types of river uses from a general household survey.

A draft household questionnaire was developed as part of Project 4121-D2. This questionnaire was subsequently reviewed, modified and approved by the Study Board, with modified versions of the questionnaire to be used for the stakeholder survey as well. Project 4121-D3 also undertook an initial screening of stakeholder groups to solicit interest in the study and updated the list of stakeholders.

Implementation of the household survey commenced in December of 1994 as part of Project 4121-D3. This survey of stakeholders was conducted under a separate contract but took place during the same time period to ensure some consistency between the two sets of results.

## **2.0     OBJECTIVES OF PROJECT 4121-D4**

Project 4121-D4 was undertaken to collect information about stakeholders and their uses of aquatic resources. At the outset, three general categories of stakeholders were identified: interest groups, industrial water users and municipal governments. The objectives of the project were to finalize the design of surveys for each of these groups and any other specific subgroups, to prepare a final and updated list of stakeholders, to implement these surveys, and to produce a database that contains the results of each survey.

## **3.0     STUDY METHODS**

### **3.1     IDENTIFICATION OF STAKEHOLDER GROUPS**

The first step in the work program consisted of identifying distinct categories of stakeholders for which separate questionnaires would be required. This involved reviewing the stakeholder lists generated in earlier studies, updating these lists based on contacts with various sources, and then grouping these groups into functional categories based on how they use the aquatic resources of the basin.

In total, nine different categories of stakeholders were identified. Each of these categories is described below.

#### **3.1.1    Agricultural Stakeholders**

Representatives of various agricultural organizations within the study area were identified as part of the initial study to identify stakeholders, Project 4101-B1. This list was expanded during the stakeholder screening process completed as part of Project 4121-Do. However, to broaden the range of contacts with the agricultural community in the NRBS, it was decided that all active agricultural associations within the area be included in the survey. This list of agricultural associations was provided by Alberta Agriculture, Food and Rural Development. In total, 86 different agricultural organizations were identified, and these were assumed to represent the broad range of agricultural stakeholders in the study area. The survey population includes various farm organizations, cattle grazers, horticulturists, religious farming communities and agricultural associations.

### **3.1.2 Agricultural Service Boards**

In discussions with some farm representatives from the basin, it was determined that agricultural organizations may not always be the best groups to contact about agricultural concerns because they are often concerned with recreational and social interests. It was suggested that representatives of various agricultural service boards may be better informed about key agricultural concerns so it was decided to conduct a separate survey of the service boards. Agricultural service boards are agencies created by rural municipal districts to provide technical advice to area farmers. There are 24 such boards in the NRBS study area and the list of these boards was obtained from Alberta Agriculture, Food and Rural Development.

### **3.1.3 Commercial Fishermen**

Very few commercial fishermen were identified on the initial stakeholders list produced by earlier parts of the study. Because of the number of commercial fishermen in the basin and the highly specialized nature of their resource use, it was decided that this group needed special attention. Contact with all commercial fishermen in the area was not possible because of budget limitations, so questionnaires were sent to a representative sample of fishermen in each of the key commercial fishing communities. Lists of key contacts were provided by the NWT Department of Renewable Resources, Fisheries and Oceans Canada, and the Commercial Fisheries Coordinator within Alberta Environmental Protection. Questionnaires were sent to 47 individuals who were asked to respond on behalf of the commercial fishermen in their community.

### **3.1.4 Commercial Recreational Stakeholders**

Only a small number of commercial recreational businesses had been identified in previous studies. Using travel and guide outfitters magazines and brochures, a list of businesses operating in the study area was compiled. These businesses offer recreational and tourism products and services. They include: guides, outfitters, hunting and fishing lodges. A total of 51 individuals or enterprises were identified and asked to respond on behalf of their business.

### **3.1.5 Industrial Stakeholders**

A list of industrial users operating in the study area had not been compiled in previous studies. To develop a comprehensive list of companies that operate in the area, data on groundwater and surface water licences from Alberta Environmental Protection's Water Licence Branch were used to prepare the list. A total of 100 companies were identified representing primarily mining, forestry and oil and gas interests. Each company was contacted by phone to identify the appropriate individual within the organization that would complete the questionnaire. The result of the phone calls identified 5 companies no longer operating or holding water licenses in the area bringing the list of water licensees down to 95. All companies operating in the Study Area at the time of the survey were sent a questionnaire.

### **3.1.6 River Transportation**

Because of the specialized nature of the river transportation business, it was decided to develop a distinct survey for this group. Only three enterprises were identified as being involved in river transportation. Questionnaires were sent to 3 individuals who were asked to respond on behalf of their company.

### **3.1.7 Trappers**

Very few individual trappers were identified on the initial stakeholders list produced by earlier part of the study. The original stakeholder list identified representatives of regional organizations representing individual trappers operating in the Study Area. It was decided that to collect information on specific areas of the basins, individuals trappers needed to be consulted directly. Using the mailing list of the Alberta Trappers Association (ATA) and in concert with ATA's district representatives (Peace, Athabasca and Slave districts), 24 trappers were identified who, according to the ATA's representatives, would be willing and able to complete the questionnaire. All 24 individuals were sent a questionnaire and asked to respond on behalf of trappers operating in their immediate area of operation.

### **3.1.8 Municipal and Local Governments**

Using the Alberta Association of Municipal Districts and Counties Directory in combination with municipal water license information from Alberta Environmental Protection, a list encompassing all municipal governments located in the study area was developed. It includes cities, towns, villages and summer villages. To gather information on Native communities, all Native communities located in the study area were included in this category. A total of 112 municipalities were identified. Questionnaires were sent to the administrator (or other individual identified by the administrator deemed more appropriate to complete the questionnaire) of each municipality and asked to respond on behalf of his or her municipality.

### **3.1.9 General Stakeholders**

This group represents a variety of interests ranging from environmental groups, recreation-based clubs, Native friendship centres and professional associations. Earlier components of the study had identified the majority of groups falling into this category. One hundred and sixty organizations and individuals were identified. All were sent a questionnaire and were asked to respond on behalf of their organization.

## **3.2 QUESTIONNAIRE DESIGN**

The general design of the questionnaires developed for each of the nine stakeholder groups followed the approach and content used for the household survey developed as part of Project 4121-D4. The household questionnaire was initially designed to collect basic information: on use of aquatic resources but, at the request of the Study Board, was expanded to solicit opinions on water management issues and concerns. The questionnaires for each of the stakeholder groups were designed to capture the same types of information. Copies of each questionnaire are provided in the appendices B through J.

### **3.2.1 Use of Aquatic Resources**

The first half of each questionnaire focuses on determining the ways and extent to which stakeholders use the aquatic resources of the study area. These questions were different for each group although common types of questions were asked. In general, respondents were asked to describe how members of their organization used the aquatic resources of the basin, the location of the uses and the amount of this use. For the general stakeholder group, questions focused mainly on recreational activities while trappers and commercial fishermen were asked to describe their annual catch. Industries were asked to describe their water use practices in terms of rates of use, recycling and return flow. Municipal and local governments were asked to describe their water and sewage treatment practices and infrastructure. General questions on the importance of water were asked of agricultural stakeholders and businesses that provide commercial recreation services and facilities. In all cases, respondents were asked to identify the importance of the mainstems of the Peace, Athabasca and Slave rivers relative to other aquatic resources in the basin.

A number of common questions were asked of many of the nine stakeholder groups. Each group was asked to describe any changes in the water quantity, water quality, fish, wildlife or vegetation in the basin during the last 10 years. Each groups was also asked to describe any changes in their water use practices that could occur in the next 10 years. Some groups were also asked whether members of their organization drink water from rivers or lakes and whether they treated the water in any way before drinking it.

The majority of the water use questions employ parametric (quantifiable) measurements of use. However, open-ended questions were used to solicit information on historic and future trends in water use and management.

### **3.2.2 Water Management Issues and Concerns**

The questionnaire used various approaches to identify and characterize the water management issues and concerns of greatest concern to stakeholder groups. One series of questions asked stakeholders to describe in their own words the three factors that have had the greatest effect on water quality or quantity in the NRBS area over the last 20 years and to describe how they or members of their organization have been affected and what actions should be taken to correct these problems. This

relatively unstructured approach was adopted to ensure that respondents had considerable latitude in describing their concerns.

A second approach employed a very structured series of questions that asked stakeholders to identify from various lists, which of 11 possible threats to water quality or quantity in the basin were of most and least concern to members of their organization. A similar question asked respondents to identify the *most* and *least* effective management actions in dealing with these problems. The design of these questions employed a fractional factorial design which forces respondents to make choices but allows estimation of the extent to which some concerns are more important than others. The fractional factorial design required that respondents make choices from 12 different combinations of the 11 threats and management actions, and this was determined to be too onerous for respondents, given the range of other questions being asked. As a result, four different versions of the questionnaire were developed, each having three of 12 possible choice sets. These different versions were sent out in repeating sequence to stakeholders on each list to ensure that a random and representative sample of responses could be received.

A third question asked stakeholders to identify the key factors that should be used to measure the health of northern rivers. While an open-ended approach was used to allow respondents maximum freedom to identify these measure, a series of multiple choice questions related to the frequency of and responsibility for taking these measurements was provided to reduce the overall response burden.

A fourth question asked stakeholders if they would support the concept of establishing an ongoing, inter-governmental and stakeholder committee responsible for the management of the basins, the role the committee could play and if their organization would be interested in participating in such a committee.

The fifth approach simply provided space for respondents to identify the water management issues of greatest concern to them or their organization and to list the most important recommendations that they would like the NRB Study Board to make. Space was also provided for any other comments that respondents would like to make.

In summary, the questionnaire employed a variety of approaches to determine the issues and concerns of importance to stakeholders. This overall strategy was adopted so that stakeholder values and attitudes could be assessed in terms of both parametric (quantifiable) and non-parametric measures and to minimize the extent to which the ensuing analysis would filter the actual information provided by respondents.



### **3.3 SURVEY IMPLEMENTATION**

The procedure recommended for implementation of the household survey proposed that households initially be contacted by telephone to determine their interest in completing the survey. Questionnaires were then sent to interested households which were later contacted by telephone had they not yet responded. While the use of an initial telephone screening makes sense when drawing a sample of individuals from a large population, this was determined to be optional for the stakeholders because in most cases all members of the population were being surveyed and because, with the exception of trappers, commercial fishermen and industrial water users, they had been contacted 9 months earlier as part of Project 4121. Thus, survey implementation for most groups consisted of sending out questionnaires to all individuals named on the final stakeholder lists.

Because the population of trappers and commercial fishermen proved to be quite large, it was decided to send questionnaires to sample of representative individuals located in the region. This sample was drawn from lists and advice provided by the Alberta Trappers Association, the Fisheries Management Division of Alberta Environmental Protection, and the N.W.T. Department of Renewable Resources, Fort Smith Region. Due to delays in compiling this list, questionnaires for these two groups were sent out between March 12 and 16. To ensure that the response rate for these two groups were similar to the rates of other stakeholder groups, trappers and commercial fishermen in the sample were contacted by phone to make them aware of the survey and to encourage their assistance in completing the survey prior to April 15. This led to a number of surveys being completed over the phone.

A slightly different approach was used for the industrial stakeholders. Although the list of licensed industrial water users provided by Alberta Environmental Protection was reasonably current, there was concern that some of the contact names and addresses would be out of date. As a result, all licence holders were contacted by telephone during the first two weeks of February to update the contact list and to inform them about the forthcoming survey. This initial telephone contact proved to be very useful as it determined that five operations no longer existed, thereby reducing the survey population to 95, and that many of the operations now had different corporate names and addresses.

### **3.4 FOLLOW-UP CONTACTS**

A total of 602 questionnaire packages were sent out. Each package contained a copy of the questionnaire, a covering letter from the NRBS Study Office, and a postage-paid return envelope. The majority of the surveys were sent out during the week of February 17. However, because of delays in compiling a list of commercial fishermen and trappers in the area, questionnaires for these two groups were sent out between March 12 and 16.

A follow-up telephone call was made to all stakeholders who were mailed surveys. These calls started in the first week of March and ended on April 10. The telephone calls were used to achieve the following objectives:

- to find out if individuals or organizations had received a copy of the survey;
- to find out if these individuals and organizations were intending to complete the survey;
- to provide the potential respondent with the opportunity to complete the survey over the phone at the time of the follow-up call or schedule an interview for a later date; and
- send them a new survey package in case they had not received the first one or had it misplaced.

Attempts were made to contact all the respondents listed on the mailing lists. If respondents were not reached during the first round of calls because of a busy signal, or a no answer, up to four extra calls were made to ensure that all respondents were contacted personally. If no contacts were made after the fifth call, no further contacts were initiated. Messages left on an answering machine were considered completed calls.

Approximately 800 phone calls were made. Sixty-five individuals and organizations could not be contacted after the fifth call.

**Table 1: Reasons For Not Completing Stakeholder Surveys**

Reasons for Not Completing Survey	% of Total
No one in the organization has the time or is available (sick, on holidays or away on business) to complete this survey.	25
The respondent promised or try his/her best to complete the survey.	20
Not interested.	15
We will only complete the survey if can have input from the general membership.	10
Our organization does not have an opinion on this issue.	10
I don't understand the survey.	10
Organization is too new to be able to provide adequate information on water related issues in the northern basins.	5
We are users of water but we do not have specific concerns regarding water.	5

**Table 2: Stakeholder Survey Response Rates**

Stakeholder Group	Survey Population	Completed Responses	Response Rate
Municipal & Local Governments	112	34	30%
Agricultural Stakeholders	86	18	21%
Agricultural Service Boards	24	8	29%
Commercial Businesses	51	17	33%
Industrial Users	95	44	46%
Trappers	24	9	38%
Commercial Fishermen	47	12	26%
General Stakeholders	160	38	24%
River Transportation	3	1	33%
Total Responses	602	181	30%

The majority of the respondents contacted by phone expressed an interest in completing the survey. Some were in the process of reviewing it, others had started to complete it. A number of organizations were in the process of scheduling meetings to invite key members of their respective organizations to assist in completing the survey to ensure that the responses reflected the organization's views.

During the follow-up calls, a number of reasons were given for not participating in the survey. Table 1 indicates the reasons for not participating in the survey and their approximate percentage as part of the overall non-response rate.

#### **4.0 SURVEY RESPONSE**

Although the intended completion date for the project was March 30, questionnaire were still being returned after that time. Consequently, the date for receiving and processing completed questionnaires was extended by two weeks.

As of April 15, 30 percent of the questionnaires had been completed and returned. As shown in Table 2, response rates range from 21 percent in the case of agricultural stakeholders to 46 percent of industrial water users.

The representativeness of the survey results will be determined in a future step in the overall project by comparing sample results to known characteristics of the overall survey population.

## **5.0     DATA ENTRY AND CODING**

As specified in the terms of reference, information from completed survey from each stakeholder group was entered into nine separate data bases using SPSS/PC+ software. Numerical data were entered directly, but written responses were converted to numerical codes and then entered. To facilitate data analysis and ensure compatibility with the results of the household survey, it was decided that the coding practices developed for the household survey should be employed for the stakeholder surveys as well. While this simplified the coding process, a complete copy of the codes used in the household survey was not yet available at the conclusion of this project, so some information has yet to be coded. A verbatim transcript of all these comments was prepared and is provided in Appendix L. These comments will be coded and entered into the databases as part of future contracts issued by the Other Uses Component. A list of the codes that were used in each of the databases is provided in Appendix K.

Two quality control mechanisms were used to ensure the correct data was entered in the database:

- ▶ The definition of value labels in SPSS provides a useful mechanism to avoid entering the wrong data in a field. Each field is assigned a range of numerical values. If an attempt is made to enter a value that does not meet the range defined for that field, SPSS does not accept the entry and consequently forces the person entering the data to double-check to make sure that the value to be entered corresponds to the values assigned to the field. This mechanism only avoids entering data that are outside the defined range of values of a specific field,
- ▶ To avoid entering the wrong data within the defined range of values of a specific field, each survey was checked a second time to ensure that the data entered in SPSS corresponded to the information found in the surveys.

## **6.0     DATA FILES**

The data files containing the results of the stakeholder surveys are provided in Appendix M. There are nine files, one for each stakeholder group, and these files are in SPSS/PC+ format. The nine files are as follows:

AGRGROUP.SYS: 18 responses from agricultural stakeholders  
AGSERBRD.SYS: 8 responses from agricultural service boards  
COMMFISH.SYS: 12 responses from commercial fishermen  
COMREC.SYS: 17 responses from commercial recreation operations  
ENV&REC.SYS: 38 responses from environmental and recreation groups  
INDUSTRY.SYS: 44 responses from industrial water users

MUNGOVT.SYS: 35 responses from municipal and local governments  
TRANSPRT.SYS: 1 response from river transportation companies  
TRAPPERS.SYS: 9 responses from trappers.

Responses are coded by questionnaire numbers and, in order to maintain confidentiality, there is no information in the files that allows individual respondents to be identified.



## **APPENDIX A**

### **Project 4121-D4 - Terms Of Reference**





# **NORTHERN RIVER BASINS STUDY**

## **DRAFT**

### **SCHEDULE A - TERMS OF REFERENCE**

#### **Project 4121-D4: Surveys of Interest Groups, Industries and Municipal Governments**

##### **I. BACKGROUND & OBJECTIVES**

The Northern River Basins Study (NRBS) is a joint project between the governments of Canada, Alberta and the Northwest Territories that commenced in September of 1991. The purpose of the NRBS is "to characterize the cumulative effects of development on the water and aquatic environment of the Study areas by coordinating with existing programs and undertaking appropriate new technical studies". To undertake this study, a Study Board, Study Office and Science Advisory Committee were created. The study area includes the mainstems and main tributaries of the Peace, Athabasca and Slave rivers.

The Study Board developed a vision statement to provide overall guidance for the various technical activities being conducted in support of the study and also identified 16 questions that serve to focus study activities. One of these questions is:

- #3. Who are the stakeholders and what are the consumptive and non-consumptive uses of the water resources in the river basins?

Eight component groups have since been established to address these 16 questions and the Other Uses Component is primarily responsible for developing and undertaking research and investigations related to the use of water resources. This group is working in close association with the Traditional Knowledge Component, which is responsible for collecting information on resource use and values of indigenous people and long-time residents.

In order to collect information about stakeholders and their uses of aquatic resources, the Other Uses Component is planning to undertake surveys of northern residents, specifically representatives of interest groups, industrial water users and municipal governments. A consultant is required to finalize the design of these surveys, implement them and produce a report that summarizes the results of each survey.

## **II. REQUIREMENTS**

### **A. Stakeholder Survey**

A survey of stakeholders is necessitated by the low probability of getting adequate and reliable facts and value-based information concerning specific types of river uses from a general household survey. Project 4121-D1 identified many of these stakeholder groups and collected some initial background information about these groups and their use of aquatic resources, based on a telephone screening survey. More detailed information on these stakeholder groups is now required.

Completion of the survey will involve six tasks:

1. A stakeholder survey will be developed and will be consistent with the questionnaire used for the household survey, both in content and approach.
2. The list of stakeholders from Project 4121-D1 will be reviewed to determine which of the 172 groups are interest groups and which might be better classified as industrial or municipal water users. This list should be supplemented with the names of other groups that were not included in that study. Particular attention will be paid to identifying interest groups in the upper reaches of the Athabasca and Peace river basins.
3. Contact by telephone any interest groups not contacted by Project 4121-D1 to advise them of the nature of the survey and obtain a mailing address so that the detailed questionnaire can be mailed out.
4. Questionnaires will be mailed to all stakeholder groups. Some additional background information on NRBS will be provided, along with a postage-paid return envelope. Interest groups will be given the option of completing the questionnaire and returning it by mail within a specified time period, or of responding to the questions during a follow-up telephone call. This approach gives stakeholders some time to review the questions before providing answers and to seek input from other members of their organization. This will lead to higher response rates than a standard mail survey and will produce better information.
5. Do a follow-up telephone call with all interest groups to ensure that they have returned the completed questionnaire by mail or collect the survey information over the telephone.
6. Enter the completed survey information into a data base and conduct a preliminary analysis of the information. This analysis should be described in a brief summary report.

## **B. Survey of Industrial/Commercial Water Users**

A separate survey of commercial and industrial stakeholders is required. While information on current water use by industries can be collected from water licence information, a survey is needed to collect information on their water management issues and concerns and to identify the types of recommendations that they think ought to be made by the NRBS.

Completion of the survey will involve six tasks:

1. The list of industrial stakeholders will be developed. This list will include industrial water licence holders plus any industrial/commercial stakeholder groups identified by Project 4121-D1. At the present time about 530 industrial water licences have been issued, although single operations can have more than one licence. These sources can be supplemented with the names of other industrial water users identified using other information sources.
2. An industry survey will be developed and will be consistent with the household questionnaire and the interest group survey. The survey will seek to confirm the accuracy of any existing water use records and to question water users about any plans related to future water use, including changes in plant size or technology. This information will be used to help develop water use forecasts for specific reaches in the basins. For stakeholders without licences, there will be a number of questions that will determine how these people use the resources of the basins, and the extent and location of these uses
3. Contact these industrial water users by telephone to advise them of the nature of the survey and obtain a mailing address so that the detailed questionnaire can be mailed out.
4. Questionnaires will be mailed to all industrial water users. Some additional background information on NRBS will be provided, along with a postage-paid return envelope. Industrial water users will be given the option of completing the questionnaire and returning it by mail within a specified time period, or of responding to the questions during a follow-up telephone call.
5. Do a follow-up telephone call with all industrial water users to ensure that they have returned the completed questionnaire by mail or collect the survey information over the telephone.
6. Enter the completed survey information into a data base and conduct a preliminary analysis of the information. This analysis should be described in a brief summary report.

## **C. Municipal Government Stakeholders**

While water licence records can provide basic information on water use and current technology used by municipal governments, information regarding their perceptions of important river management issues and the types of recommendations they think should be made by the NRBS will have to be collected as part of a separate survey. In addition, representatives of municipal governments will also be asked to describe important water uses - other than domestic water supply - that may occur in their community and to discuss the importance of these uses. In addition, municipal governments will be asked to comment on the adequacy of their water/sewer infrastructure and to identify any potential changes in the size or operations of their plants that may affect future water use. This information will also be used to develop water use forecasts.

Completion of this survey will also involve six tasks:

1. The list of industrial stakeholders will be developed. This list will include all municipal, regional and aboriginal government organizations in the region. Some of these contacts were by Project 4121-D1 and the remainder will need to be determined through contact with Alberta Municipal Affairs and other provincial and territorial government agencies. At the present time, about 150 water use licences have been issued for municipal purposes, although individual municipalities can have more than one licence.
2. A municipal water use survey will be developed and will be consistent with the other surveys.
3. Contact representatives of municipal governments by telephone to advise them of the nature of the survey and obtain a mailing address so that the detailed questionnaire can be mailed out.
4. Questionnaires will be mailed to all municipal governments. Some additional background information on NRBS will be provided, along with a postage-paid return envelope. Municipal governments will be given the option of completing the questionnaire and returning it by mail within a specified time period, or of responding to the questions during a follow-up telephone call.
5. Do a follow-up telephone call with all municipal government representatives to ensure that they have returned the completed questionnaire by mail or collect the survey information over the telephone.
6. Enter the completed survey information into a data base and conduct a preliminary analysis of the information. This analysis should be described in a brief summary

## **D. Summary**

This study must be completed by March 31, 1995. The final products of the project will be:

- computer diskettes containing verified data for each of the three survey populations. These databases must be in a format compatible with SPSPC+; and,
- a summary report that describes the response rates for the three surveys and contains an assessment of whether the results are representative of the survey populations, a brief overview of the survey results, and any other information that will help in subsequent analysis of the information.

Detailed analysis of the survey results will be done under a subsequent and separate contract to be let through a competitive bidding process.

Work will commence in early January once the contract has been signed. The consultant is expected to work in close association with the Component Coordinator who will provide contact lists for interest groups (based on Project 4121-D1 plus any other names provided by the Study Board or Study Office), industrial water users, and municipal water users, plus any other support required to complete the study.

## **III. REPORTING REQUIREMENTS**

- 1) The Contractor is to provide draft and final reports in the style and format outlined in the NRBS Style Manual. A copy of the Style Manual entitled "A Guide for the Preparation of Reports" will be supplied to the contractor by the NRBS.
- 2) Ten copies of the Draft Reports along with an electronic disk copy are to be submitted to the Project Liaison Officer by March 31, 1995.

Three weeks after the receipt of review comments on the draft report, the Contractor is to provide the Project Liaison Officer with two unbound, camera-ready copies and ten cerlox-bound copies of the final report along with an electronic version.

- 3) The final report is to include the following: an acknowledgment section that indicates any local involvement in the project, Project Summary, Table of Contents, List of Tables, List of Figures and an Appendix with the Terms of Reference for this Project.

Text for the report should be set up in the following format:

- a) Times Roman 12 point (Pro) or New Times Roman (WPWIN60) font.
- b) Margins are 1" at top and bottom, 7/8" on left and right.
- c) Headings in the report body are labeled with hierarchical decimal Arabic numbers
- d) Text is presented with full justification; that is, aligns on both left and right margins.

- e) Page numbers are Arabic numbers for the body of the report, centred at the bottom of each page and bold.
- If photographs are to be included in the report text they should be high contrast black and white.
- All tables and figures in the report should be clearly reproducible by a black and white photocopier.
- Along with copies of the final report, the Contractor is to supply an electronic version of the report in Word Perfect 5.1 or Word Perfect for Windows Version 6.0 format.
- Electronic copies of tables, figures and data appendices in the report are also to be submitted to the Project Liaison Officer in a spreadsheet (Quattro Pro preferred, but also Excel or Lotus) or database (dBase IV) format. Where appropriate, data in tables, figures and appendices should be geo-referenced.

#### **IV. DELIVERABLES**

1. All figures and maps are to be delivered in both hard copy (paper) and digital formats. Acceptable formats include: DXF, uncompressed Eoo, VEC/VEH, Atlas and ISIF. All digital maps must be properly geo-referenced.
2. All sampling locations presented in report and electronic format should be geo-referenced. This is to include decimal latitudes and longitudes (to six decimal places) and UTM coordinates. The first field for decimal latitudes/longitudes should be latitudes (10 spaces wide). The second field should be longitude (11 spaces wide).

The Project Liaison Officer (Component Coordinator) for the project is:

Mr. Jim Choles  
Component Coordinator  
690 Standard Life Centre  
10405 Jasper Avenue  
Edmonton, Alberta T5J 3N4

The Co-Leader, Other Uses Component for the project is:

John Thompson  
Co-Leader, Other Uses Component  
Research and Strategic Services  
Alberta Environmental Protection  
3rd Floor, 9820 - 106 Street  
Edmonton, Alberta T5K 2J6  
Bus. Phone (403) 427-0047  
Fax: (403) 422-5136

## **APPENDIX B**

### **Industrial Water Users:**

### **Questionnaire and Survey Population**





## INDUSTRIAL WATER USERS

A GERING RANCHING LTD  
Darryl Gering,  
3024 - 1ST AVE,  
EDSON, ALBERTA, T7E 1N9

AINSWORTH LUMBER CO LTD  
Roy Bickell (Vice President, Operations)  
Bage 6700  
Grande Prairie, AB T8V 6Y9

ALTA ENERGY CO LTD,  
Dan O'Neill (Drilling Manager)  
#3900, 421 - 7 AVE SW,  
CALGARY, ALBERTA, T2P 4K9

ALBERTA NEWSPRINT CO.  
Brian Steinback (Environmental Manager)  
C/O Bag 9000,  
WHITECOURT, ALBERTA T7S 1P9

ALBERTA OIL SAND & RESEARCH  
Doug Komery (Director)  
1800, 700 - 4 AVE SW,  
CALGARY, ALBERTA, T2P 3J4

ALTA POWER LTD  
Joe Kostler (Manager, Environmental Affairs)  
10035 - 105 ST  
EDMONTON, ALBERTA  
T5J 2V6

ALTA SPECIAL WASTE MANAGEMENT  
Scott McClure (Director, AEP)  
6 FLOOR, 10909 JASPER AVE,  
EDMONTON, ALBERTA, T5J 3L9

AMOCO CANADA PETROLEUM CO LTD  
Brad Braun (Environmental Engineer)  
PO BOX 200, STATION M  
CALGARY, ALBERTA  
T2P 2H8

AMOCO CANADA PETROLEUM CO LTD,  
Brigitte Stewart  
Bag 1003  
BONNEYVILLE, ALBERTA, T9N 2J7

APL OIL & GAS LTD,  
Keith Farries  
c/o FARRIES ENGINEERING  
#1200, 630 - 6 ST SW,  
CALGARY, ALBERTA, T2P 0S8

BIG VALLEY ENERGY CORP  
Larry Hofmeister (President)  
#770, 333 - 11 AVE SW,  
CALGARY, ALTA, T2R 1L9

BIRCHILL RESOURCES LTD  
Robin Pearson (Consultant)  
1200, 510 - 5 ST SW,  
CALGARY, ALBERTA, T2P 3S2

BLUE RIDGE LUMBER (1981) LTD  
Henry Lamers  
PO BOX 1079,  
WHITECOURT, ALBERTA, T0E 2L0

CABRE EXPLORATION LTD  
Bill Farquar (Engineering Supervisor)  
1400, 700 - 9 AVE SW,  
CALGARY, ALBERTA, T2P 3V4

CALGARY CRUDE OIL LTD  
Jerry Jelinski (Production Supervisor)  
3940 - 700 - 2 Street SW  
CALGARY, ALBERTA T2P 2W2

CANADIAN GAS GATHERING SYSTEMS  
Dave Karg  
C/O BOX 880  
STETTTLER, ALBERTA T0C 2L0

CANADIAN NATURAL RESOURCES LTD  
Steve Laut (Vice President, Operations)  
2000 , 425 - 1 ST SW  
CALGARY, ALBERTA T2P 3L8  
403 221-2100

CANADIAN OCCIDENTAL PETROLEUM,  
Pat Jackson (Area Supervisor)  
BOX 6689,  
DRAYTON VALLEY, ALBERTA, T7A 1S1

TERRENCE E. CARLSON  
Terrence E. Carlson  
BOX 171,  
TOMAHAWK, ALBERTA, T0E 2H0

CARWALD REDI-MIX (SLAVE LAKE)  
Ken Poriski (Manager)  
PO BOX 724  
SLAVE LAKE, ALBERTA, T0G 2A0

CHAUVCO RESOURCES (OIL & GAS) LTD  
Ray Baird (Manager of Exploration)  
2900, 255 - 5 AVE SW  
CALGARY, ALBERTA T2P 3G6

CHEVRON CANADA RESOURCES  
Ted Spearing (Team Leader, Env. Div.)  
500 - 5 AVE SW  
CALGARY, ALBERTA T2P 0L7

CIMARRON PETROLEUM LTD.  
Gordon Bohrsen (Production Manager)  
#800, 400 - 3RD AVE SW,  
CALGARY, ALBERTA, T2P4 H2

CODY ENERGY CANADA INC.  
(GENTRA ENERGY CO.)  
c/o Drilling Department  
#3300 SCOTIA CENTRE, 700 - 2 ST SW,  
CALGARY, ALBERTA, T2P 2W2

CONMAC WESTERN INDUSTRIES  
Rick Summerfield (Manager)  
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FORT MCMURRAY, ALBERTA T9H3G3

CRESTAR ENERGY INC  
Boyd Nagy (Environmental Technologist)  
700 - 2 ST SW, PO BOX 888,  
CALGARY, ALBERTA, T2P 4M8

CS RESOURCES LTD  
Mark Montemurro  
#2900, 645 - 7 AVE SW  
CALGARY, ALBERTA T2P 4G8

CYNTHIA SHIPPING TERMINAL  
Len Thesen (General Manager)  
c/o DIAL OILFIELD SERVICES  
BOX 6899,  
DRAYTON VALLEY, ALBERTA, T0E 0M0

DENNIS MCGINN HOLDINGS LTD  
Avalee Peck  
BOX 7586  
DRAYTON VALLEY, ALBERTA T0E 0M0

DORSET EXPLORATION LTD.  
(DORSET ENERGY CORP)  
Chris Baker (Vice President, Exploration)  
3600 - 205 - 5 AVE SW,  
CALGARY, ALBERTA, T2P 2V7

E L P CONSTRUCTION  
Sam Lenko (Owner)  
PO BOX 294,  
SANGUDO, ALBERTA, T0E 2A0

TEXACO CANADA RESOURCES LTD  
Miles Shaw (Public Affairs Advisor)  
Room 15-085, Esso Plaza  
237 - 4 AVE SW  
CALGARY, ALBERTA T2P 0H6

FINNING LTD  
Stan Prince (Branch Manager)  
118 MCDONALD CRESCENT  
FORT MCMURRAY, ALBERTA T9H 4B2

FORDING COAL LTD  
Brent Hamilton (Manager)  
PO BOX 5660  
FORT MCMURRAY, ALBERTA T9H 3G6

GASCAN RESOURCES LTD  
Brain Carrigy (Geologist)  
#1700, 801 - 6 AVE SW  
CALGARY, ALBERTA T2P 3W2

GULF CANADA RES INC  
Bill Hunter (Syncrude Canada)  
CO SYNCRUDE CANADA  
PO BAG 4009 MD 3065  
FORT MCMURRAY, ALBERTA T9H 2H5

H. WILSON INDUSTRIES LTD  
John Wilson (President)  
7829 FRANKLIN AVE  
FORT MCMURRAY, ALBERTA T9H 2H5

HEYN CONSTRUCTION LTD  
Chuck Heyn  
PO BOX 127  
GRANDE CACHE, ALBERTA T0E 0Y0

HILLCREST RESOURCES LTD  
Dave Cymbalisty (Operations Engineer)  
#1800, 407 - 2 ST SW  
CALGARY, ALBERTA T2P 2Y3

HOME OIL CO LTD  
Rob Carss (Senior Environmental Advisor)  
HOME OIL TOWER, 1600 - 324 - 8 AVE SW  
CALGARY, ALBERTA T2P 2Z5

J M HUBER CORP  
Glen Hemming (District Production Manager)  
#500, 700 - 9 AVE SW,  
CALGARY, ALBERTA, T2P 3V4

HUSKY OIL OPERATIONS LTD  
Barry Worbets (Manager, Safety, Health, Env.)  
PO BOX 6525, POSTAL STATION D,  
CALGARY, ALBERTA, T2P 3G7

INTERNATIONAL COLIN ENERGY  
Michael Kabanuk (Exploration Engineer)  
1210, 333 - 11 AVE SW  
CALGARY, ALBERTA T2R 1L9

INVERNESS PETROLEUM LTD  
Bert Harvey (Completions Supervisor)  
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CALGARY, ALBERTA, T2P 4H2

RICHARD L. JOHNSON  
Richard L. Johnson  
1009 MILLBOURNE RD.  
EDMONTON, ALBERTA T6K 0T2

KERR-MCGEE CANADA LTD  
Terry Brown (Production Manager)  
1600 BOW VALLEY SQUARE IV,  
250 - 6 AVE SW  
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KOCH EXPLORATION CANADA LTD,  
Dean Britton (Senior Engineer)  
500, 645 - 7 AVE SW,  
CALGARY, ALBERTA, T2P 4G8

LAFARGE CONSTRUCTION  
(CONSOLIDATED CONCRETE)  
Norman Verrault (Manager)  
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LL & E CANADA LTD,  
Terry Krawec (Senior Engineer)  
1800, 530 - 8 AVE SW,  
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OBED MOUNTAIN COAL  
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Dennis Hahn (Prod. Engineering Coordinator)  
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MAXWELL ENERGY CORP,  
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MAXX PETROLEUM LTD,  
Dave Cousins (Senior Engineer)  
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MIRROR LANDING SAND & GRAVEL  
William Freed  
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MOBIL OIL CANADA  
Ron Allen  
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MOBIL OIL CANADA  
Patrick Cabezas  
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MORGAN HYDROCARBONS INC,  
Claire Galvin (Operations Manager)  
2200, 205 - 5 AVE SW,  
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J E NASH ENTERPRISES LTD  
Jenny Nash  
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NEWALTA CORP  
Claire McAuley  
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GRANDE PRAIRIE, ALBERTA T8V 6H6

NORCEN ENERGY RESOURCES LTD  
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NORTHERN ALTA NITROGEN LTD  
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PEACE RIVER PULP  
(DAISHOWA-MARUBEN INTL.)  
Tom Tarpey (Environmental Manager)  
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PEMBINA RESOURCES LTD  
Fred Kuipers (Supervisor, Env. Affairs)  
BOX 1948  
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PENNZOIL CANADA INC  
Dean Butterwick (Operations Manager)  
1600, 530 - 8 AVE SW  
CALGARY, ALBERTA T2P 3S8

PENSIONFUND ENERGY RESOURCES,  
Darren Gillanders (Operations Manager)  
2600, 300 - 5 AVE SW,  
CALGARY, ALBERTA, T2P 3C4

PETRO-CANADA RESOURCES  
Dennis Coleman (Environmental Manager)  
PO BOX 2844  
CALGARY, ALBERTA T2P 3E3

PETROREP RESOURCES LTD,  
Rene Laprade (Production Superintendent)  
10 FLOOR, 630 - 6 AVE SW,  
CALGARY, ALBERTA, T2P 0S8

POCO PETROLEUM LTD,  
Darren Fantin (Supervisor)  
#3500, 250 - 6 AVE SW,  
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PROCOR SULPHUR SERVICES INC,  
Clive Rutland (Environmental Supervisor)  
310 SOUTHPORT ATRIUM,  
10333 SOUTHPORT RD SW,  
CALGARY, ALBERTA, T2W 3X6

RANCHMEN'S RESOURCES LTD,  
Brian Cumming (Operations Engineer)  
1000, 333 - 11 AVE SW,  
CALGARY, ALBERTA, T2R 1L9

REDWOOD TRANSPORT LTD,  
Carl Jocksch  
BOX 1290,  
WHITECOURT, ALBERTA, T0E 2L0

REIMER FOUNDATIONS LTD,  
Gerald Reimer  
BOX 297,  
VALLEYVIEW, ALBERTA, T0H 3N0

REVELSTOKE CONCRETE INC  
John Hudak (Vice President)  
BOX 2568, STATION M  
CALGARY, ALBERTA T2P 4C5

RIGEL ENERGY LTD.  
(TOTAL PETROLEUM CAN. LTD.)  
Gene Severson (Manager, Drilling & Exp.)  
1900 Bow Valley Square 3  
255 - 5 AVE SW  
CALGARY, ALBERTA T2P 3G2

ROCKY MOUNTAINS WATER INC.  
Jeff Fitzner (President)  
15842 - 116 AVEUE  
EDMONTON, ALBERTA T5M 3W1

SAMSON CANADA  
Brent Hepfner (Land Manager)  
BOX 1500, 830 - 800 -5 AVE SW  
CALGARY, ALBERTA T2P 3T6

EDWARD SCHULTE  
BOX 11  
FORT ASSINIBOINE, ALBERTA T0G 1A0

SERENPET INC,  
Jeff Campbell (Production Manager)  
2300, 421 - 7 AVE SW,  
CALGARY, ALBERTA, T2P 4K9

SHELL CANADA LTD,  
Tom Wood (Coord., Env. & Sust. Dev.)  
400 - 4 AVE SW  
BOX 100, STATION M  
CALGARY, ALBERTA T2P 2H5

SIGNALTA RESOURCES LTD,  
Jim Miller (Operations Engineer)  
1000, 605 - 5 AVE SW,  
CALGARY, ALBERTA, T2P 3H5

STERLING PULP CHEMICALS LTD  
James Betts (Env. & Process Engineer)  
BOX 848  
GRANDE PRAIRIE, ALBERTA T8V 3R5

TALISMAN ENERGY INC  
Bob Powell (Areas Superintendent)  
BOX 6840  
EDSON, ALBERTA T7E 1V2

TIGER CALCIUM (1991) LTD  
Daryl Schuster (Director)  
10350 21 STREET  
EDMONTON, ALBERTA, T6P 1W4  
403 279-2616

UMC RESOURCES  
(NORWICH RESOURCES CANADA)  
Glenn Kerr (Production Engineer)  
1000, 350 7 AVENUE SW  
CALGARY, ALBERTA T2P 3N9

UNION OIL CO OF CANADA LTD  
Glen Loewen (manager, Alberta Operation)  
150 - 6 AVE SW,  
CALGARY, ALBERTA, T2P 2K6

UNOCAL CANADA MANAGEMENT LTD  
Lloyd Doyle (Senior Production Manager)  
150 - 6 AVE SW,  
CALGARY, ALBERTA, T2P 3Y7

WELDWOOD OF CANA HINTON DIVISION  
Todd Andrews (Tech. & Env. Manager)  
760 SWITZER DRIVE  
HINTON, ALBERTA T7V 1V7

WEYERHAEUSER CANADA LTD  
Lloyd Steves (Communications Officer)  
PO BAG 1020  
GRANDE PRAIRIE, ALBERTA T8V 3A9

WEYERHAEUSER CANADA LTD,  
Fred McDougall (VP & General Manager)  
11553 - 154 STREET  
EDMONTON, ALBERTA, T5M 3N7

Canada

Alberta



# Northern River Basins Study

## Industrial Water Use Questionnaire

### PART I: INTRODUCTION

Mailing  
Address  
(Please correct  
if necessary)

Name of Respondent \_\_\_\_\_ Position in the Company \_\_\_\_\_

Telephone Number \_\_\_\_\_

The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins, and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how industrial water users use and value the Peace, Athabasca and Slave rivers (see map on page 2).

Provincial records indicate that this branch of your company holds the following water licenses in the Peace, Athabasca and Slave river basins.

	Surface water licences totaling		acre-feet in the Peace River basin
	Ground water licences totaling		acre-feet in the Peace River basin
	Surface water licences totaling		acre-feet in the Athabasca River basin
	Ground water licences totaling		acre-feet in the Athabasca River basin
	Surface water licences totaling		acre-feet in the Slave River basin
	Ground water licences totaling		acre-feet in the Slave River basin
	<b>TOTAL LICENCES</b>		<b>ACRE-FEET</b>

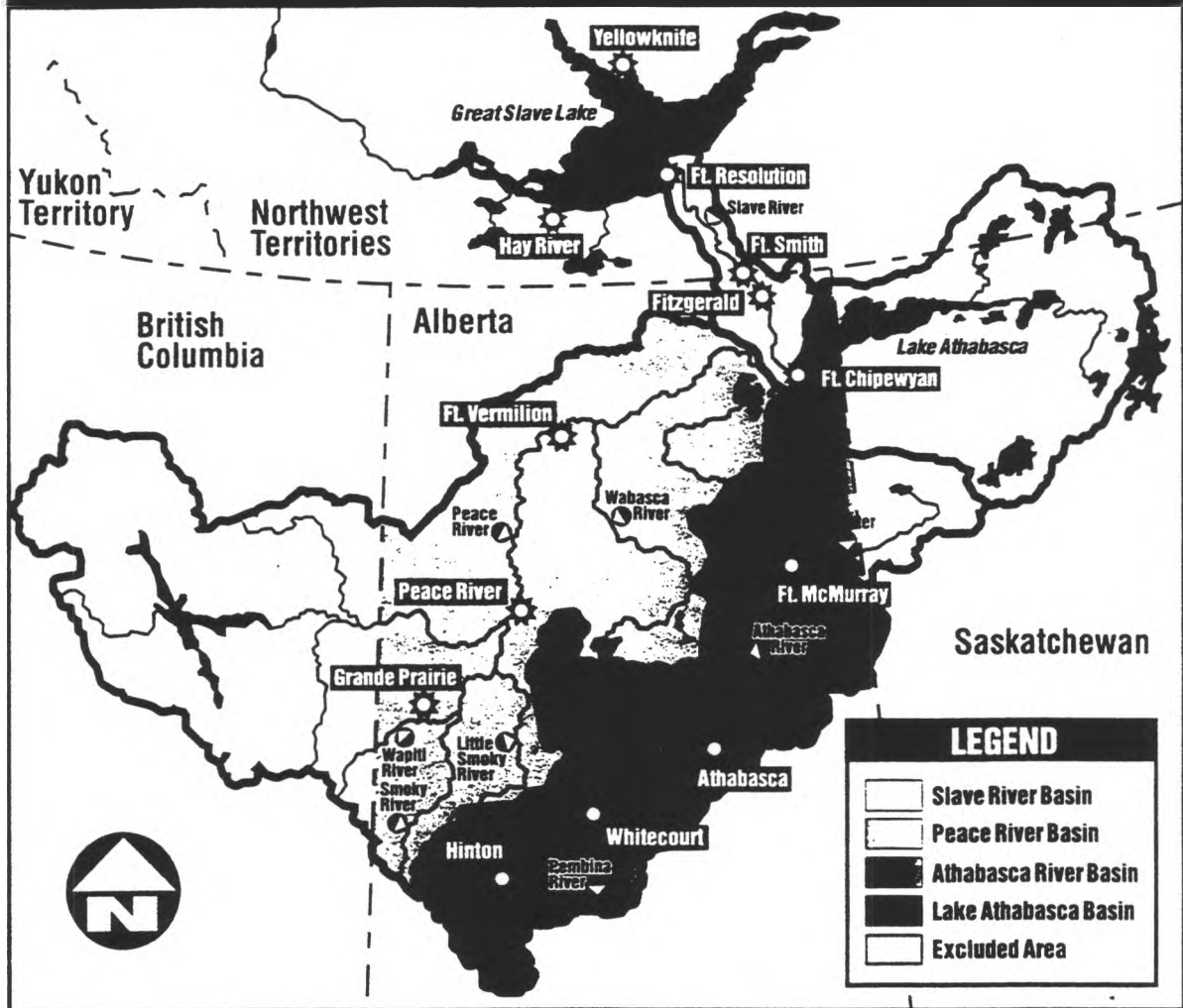
We would like to learn more about how your company makes use of these particular water rights and the water management issues that are of greatest importance to your operations.

Please complete this questionnaire on behalf of your company's operations in the Peace, Athabasca and Slave regions that are affected by these licences.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

ALL RESPONSES WILL BE KEPT CONFIDENTIAL.

# Northern River Basins Study



## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about your company's operations.

1. In terms of the nearest communities, where are the majority of your company's operations located?

Nearest Community	River Basin

2. For approximately how long has your company been operating in these areas?  
(Circle appropriate category)

- a. Less than 1 year
- b. Between 1 and 5 years
- c. Between 5 and 10 years
- d. Between 10 and 15 years
- e. Between 15 and 20 years
- f. Over 20 years

3. Please describe the nature of your company's operations according to the following categories of industrial activities:

- a. Agriculture
- b. Logging
- c. Pulp and Paper
- d. Oil & Gas
- e. Mineral Extraction (including gravel)
- f. Lumber or Building Products
- g. Manufacturing
- h. Power Production
- i. Other (specify) \_\_\_\_\_

4. Please list the major products produced by your company's operations:

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5. Approximately how many people are employed by your company's operations in the Peace, Athabasca and Slave river basins?

- a. Less than 10
- b. Between 10 and 25
- c. Between 26 and 50
- d. Between 51 and 100
- e. Between 101 and 200
- f. Over 200



6. In an average year, what proportion of the your company's total licenced volume of **SURFACE WATER** (see page 1) is actually used? (Circle appropriate category)

- |                        |                         |
|------------------------|-------------------------|
| a. Less than 10%       | f. Between 51% and 60%  |
| b. Between 11% and 20% | g. Between 61% and 70%  |
| c. Between 21% and 30% | h. Between 71% and 80%  |
| d. Between 31% and 40% | i. Between 81% and 90%  |
| e. Between 41% and 50% | j. Between 91% and 100% |

7. In an average year, what proportion of the your company's total licenced volume of **GROUNDWATER** (see page 1) is actually used? (Circle appropriate category)

- |                        |                         |
|------------------------|-------------------------|
| a. Less than 10%       | f. Between 51% and 60%  |
| b. Between 11% and 20% | g. Between 61% and 70%  |
| c. Between 21% and 30% | h. Between 71% and 80%  |
| d. Between 31% and 40% | i. Between 81% and 90%  |
| e. Between 41% and 50% | j. Between 91% and 100% |

8. What percent of the total water used by your company is used for the following purposes:

Purpose	Percent of Total Volume
Process water (i.e. water coming in direct contact with products and/or materials)	
Cooling, condensing and steam (i.e. water not coming in direct contact with products and/or materials)	
Sanitary service (including cleanup)	
Other (specify)	

9. What percentage of water used by your company's operations is recycled before being discharged? (Circle appropriate category)

- |                        |                         |
|------------------------|-------------------------|
| a. Less than 10%       | f. Between 51% and 60%  |
| b. Between 11% and 20% | g. Between 61% and 70%  |
| c. Between 21% and 30% | h. Between 71% and 80%  |
| d. Between 31% and 40% | i. Between 81% and 90%  |
| e. Between 41% and 50% | j. Between 91% and 100% |

10. What percentage of water used by your company's operations is discharged back to rivers, lakes or other surface water bodies? (Circle appropriate category)

- |                        |                         |
|------------------------|-------------------------|
| a. Less than 10%       | f. Between 51% and 60%  |
| b. Between 11% and 20% | g. Between 61% and 70%  |
| c. Between 21% and 30% | h. Between 71% and 80%  |
| d. Between 31% and 40% | i. Between 81% and 90%  |
| e. Between 41% and 50% | j. Between 91% and 100% |

11. Does your company treat this water prior to discharge?

\_\_\_\_\_ No (Go to Question 13)

\_\_\_\_\_ Yes (Go to Question 12)

12. What types of treatment methods are usually used at your company's operations?

(Circle appropriate category)

- a. Primary or mechanical
- b. Secondary or biological
- c. Tertiary or advanced treatment

13. Over the last 10 years have there been any noticeable changes in the quality or quantity of the raw water supply that your company uses?

\_\_\_\_\_ No (Go to Question 15)

\_\_\_\_\_ Yes (Go to Question 14)

14. Describe the types of changes that have been noticed at your company's operations:

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15. Do you foresee any major changes in the quantity or quality of water required by your company's operations in the next 10 years?

\_\_\_\_\_ No (Go to Question 16)

\_\_\_\_\_ Yes (Go to Question 17)

16. What are the major reasons for this expected changes in water requirements?

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17. How much does your company agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

### PART III WATER MANAGEMENT VALUES AND ISSUES

18. In the opinion of your company, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which most of your operations are located ?

Factor 1. \_\_\_\_\_

Factor 2. \_\_\_\_\_

Factor 3. \_\_\_\_\_

**Thinking about the first factor you mentioned:**

19. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1: \_\_\_\_\_

20. Describe the ways in which this factor has affected your company's operations

Factor 1: \_\_\_\_\_

21. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1: \_\_\_\_\_

22. If no steps are taken to control your Factor 1, describe how you think your company's operations will be affected over the next 10 years

Factor 1: \_\_\_\_\_

23. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1: \_\_\_\_\_

**Thinking about the second factor you mentioned:**

24. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2: \_\_\_\_\_

25. Describe the ways in which this factor has affected your company's operations

Factor 2:

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26. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

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27. If no steps are taken to control your Factor 2, describe how you think your company's operations will be affected over the next 10 years

Factor 2:

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28. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

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**Thinking about the third factor you mentioned:**

29. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

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30. Describe the ways in which this factor has affected your company's operations

Factor 3:

---

31. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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32. If no steps are taken to control your Factor 3, describe how you think your company's operations will be affected over the next 10 years

Factor 3:

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33. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

---

34. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to your company, and.
- the one that is of least concern to your company.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	4. Draining wetlands and muskeg	
	5. Discharges of municipal sewage effluent	
	7. Regulation of river flows by dams	

GROUP 2:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	2. Groundwater contamination	
	5. Discharges of municipal sewage effluent	
	8. Discharges of pulp mill effluent	
	9. Airborne pollutants	
	11. Industrial wastes/tailing ponds	

GROUP 3:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	4. Draining wetlands and muskeg	
	5. Discharges of municipal sewage effluent	
	6. Seismic exploration/road and pipeline development	
	7. Regulation of river flows by dams	
	8. Discharges of pulp mill effluent	
	9. Airborne pollutants	
	10. Uranium contamination (Lake Athabasca)	
	11. Industrial wastes/tailing ponds	

35. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that your company thinks would be the most effective in dealing with current problems, and.
- the one that your company thinks would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	4. Protect traditional fishing, hunting & trapping	
	5. More enforcement of existing pollution laws.	
	7. Preserve and maintain ecosystems	

GROUP 2:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	2. Improve municipal wastewater treatment.	
	5. More enforcement of existing pollution laws.	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	9. Improve treatment of municipal drinking water	
	11. Develop management plan for entire basin.	

GROUP 3:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	4. Protect traditional fishing, hunting & trapping	
	5. More enforcement of existing pollution laws.	
	6. Reduce industrial effluent loads.	
	7. Preserve and maintain ecosystems	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	9. Improve treatment of municipal drinking water	
	10. Increase monitoring of water quality	
	11. Develop management plan for entire basin.	

36. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that your company would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

37.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

38. Does your company support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

39. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40. Would your company be willing to participate on this committee?  
*(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how your company would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

41. What does your company foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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42. From your company's point of view, what are the three most important recommendations that the Northern River Basins Study should make?

#1 

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#2 

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#3 

---

43. Do you have any other comments that you would like to make on behalf of your company that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 10, 1995.**



## **APPENDIX C**

### **Municipal and Local Governments**

### **Questionnaire and Survey Population**



## **Municipal and Local Governments**

City of Fort McMurray  
Mayor Guy Boutilier  
9909 Franklin Ave  
Fort McMurray, AB  
T9H 2K4

M.D. of East Peace  
Reeve Walter Gacek  
Bag 900-12  
Peace River, AB  
T8S 1T4

City of Grande Prairie  
Mayor Gordon Graydon  
P.O. Bag 4000  
Grande Prairie, AB  
T8V 6V3

M.D. of Fairview  
Reeve Stan Burkholder  
Box 189  
Fairview, AB  
T0H 1L0

County of Athabasca  
Reeve Berkley Ferguson  
Box 540  
Athabasca, AB  
T0G 0B0

M.D. of Peace  
Reeve Starr Bulmer  
Box 400  
Berwyn, AB  
T0H 0H0

County of Barrhead  
Reeve George Visser  
5306 49 St.  
Barrhead, AB  
T7N 1N5

M.D. of Smoky River  
Reeve Donald Dumont  
Box 210  
Falher, AB  
T0H 1M0

County of Grande Prairie  
Reeve Borstad  
8611 - 108 Street  
Grande Prairie, AB  
T8V 4C5

M.D. of Spirit River  
Reeve Thelma Dreger  
Box 389  
Spirit River, AB  
T0H 3G0

County of Lac St. Anne  
Reeve Don Purdy  
Box 219  
Sangudo  
T0E 2A0

M.D. of Westlock  
Reeve Peter Stasiuk  
Box 219  
Westlock, AB  
T0G 2L0

M.D. of Brazeau  
Reeve Wes Tweedle  
Box 77  
Drayton Valley, AB  
T0E 0M0

M.D. of Yellowhead  
Reeve Ken Albrecht  
2716 - 1st Ave  
Edson, AB  
T7E 1N9

M.D. of Woodland  
Reeve Doug Borg  
201 5020 - 52 Ave  
Whitecourt, AB  
T7S 1N2

M.D. of Greenview  
Reeve Ken Mulligan  
Box 1079  
Valleyview  
T0H 3N0

M.D. of Birch Hills  
Reeve Ben Boettcher  
Box 157  
Wanham, AB  
T0H 3P0

M.D. of Saddle Hills  
Reeve Ken Tiford  
Box 69  
Spirit River, AB  
T0H 3G0

M.D. of MacKenzie  
Reeve William Neufeld  
Box 1110  
High Level, AB  
T0H 1Z0

M.D. of Lesser Slave River  
Reeve Duane Kerik  
101 Main Street S.  
Slave Lake, AB  
T0G 2A0

M.D. of Big Lakes  
Reeve Alvin Billings  
Box 239  
High Prairie, AB  
T0G 1E0

I.D. #17  
Chairman Paul Sinclair  
General Delivery  
Wabasca, AB  
T0G 2K0

I.D. #143  
Chairperson Pat Flett  
Box 147  
Fort Chipewyan, AB  
T0P 1B0

I.D. #143  
Chairman Shawn Hebblethwaite  
50 Freestone Way  
Fort McMurray, AB  
T9H 5B4

I.D. #22  
Chairman Alan Godkin  
Box 17  
Keg River, AB  
T0H 2G0

I.D. #4, 6, 24 and 25  
Mgr Rick Grimson  
15th Floor 10155 - 102 Street  
Edmonton, AB  
T5J 4L4

Town of Athabasca  
Mayor Ole Hermanson  
Box 450  
Athabasca, AB  
T0G 0B0

Town of Barrhead  
Mayor Mlton Lawrence  
Box 4189  
Barrhead, AB  
T7N 1A2

Town of Beaverlodge  
Mayor Esdale Gaudin  
Box 30  
Beaverlodge, AB  
T0H 0C0

Town of Grimshaw  
Mayor John Woodburn  
P.O. Box 377  
Grimshaw, AB  
T0H 1W0

Town of Edson  
Mayor Ivan Strang  
P.O. Box 6300  
Edson, AB  
T7E 1T7

Town of High Level  
Mayor Gordon Burnell  
Box 485  
High Level, AB  
T0H 1Z0

Metis Local #53  
Ms. Violet Beaulieu  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Town of High Prairie  
Mayor Diana Oliver  
P.O. Box 179  
High Prairie, AB  
T0G 1E0

Town of Fairview  
Mayor Rick Nicholson  
Box 730  
Fairview, AB  
T0H 1L0

Town of Hinton  
Mayor Bruce Deal  
813 Switzer Drive  
Hinton, AB  
T7V 1V1

Town of Fahler  
Mayor Margaret Tardif  
P.O. Box 155  
Fahler, AB  
T0H 1M0

Town of Manning  
Mayor Ken MacVicar  
Box 125  
Manning, AB  
T0H 2M0

Town of Fox Creek  
Mayor Merv Zadderey  
Box 149  
Fox Creek, AB  
T0H 1P0

Town of Mayerthorpe  
Mayor Walter Myndiuk  
P.O. Box 420  
Mayerthorpe, AB  
T0E 1N0

Town of Grande Cache  
Mayor Floyd McLennan  
P.O. Box 300  
Grande Cache, AB  
T0E 0Y0

Town of McLennan  
Mayor Lawrence Meardi  
Box 356  
McLennan, AB  
T0H 2L0

Town of Peace River  
Mayor Michael Procter  
Box 6600  
Peace River, AB  
T8S 1S4

Town of Sexsmith  
Mayor Robert Zahara  
Box 420  
Sexsmith, AB  
T0H 3C0

Town of Slave Lake  
Mayor Peter Moore  
P.O. Box 1030  
Slave Lake, AB  
T0G 2A0  
Town of Spirit River  
Mayor Keith Moore  
Box 130  
Spirit River, AB  
T0H 3G0

Town of Swan Hills  
Mayor Dallas Stevens  
P.O. Box 149  
Swan Hills, AB  
T0G 2C0

Town of Valleyview  
Mayor Dick Gillespie  
Box 270  
Valleyview, AB  
T0H 3N0

Town of Wembley  
Mayor Keith Tourand  
Box 89  
Wembley, AB  
T0H 3S0

Town of Westlock  
Mayor J. Doug Rice  
Box 2220  
Westlock, AB  
T0G 2L0

Town of Whitecourt  
Mayor George VanderBurg  
P.O. Box 509  
Whitecourt, AB  
T7S 1N6

Village of Boyle  
Mayor Ray Tannas  
Box 9  
Boyle, AB  
T0A 0M0

Village of Donnelly  
Mayor Lucienne Boucher  
Box 200  
Donnelly, AB  
T0H 1G0

Village of Eaglesham  
Mayor Ed Kowalczyk  
Box 209  
Eaglesham, AB  
T0H 1H0

Village of Entwistle  
Mayor Jack A. Smith  
Box 270  
Entwistle, AB  
T0E 0S0

Village of Evansburg  
Mayor Jerry Dick  
P.O. Box 39  
Evansburg, AB  
T0E 0T0



Village of Girouxville  
Mayor H. Paul Blanchette  
Box 276  
Girouxville, AB  
T0H 1S0

Village of Hines Creek  
Mayor Joan Smith  
Box 421  
Hines Creek, AB  
T0H 2A0

Village of Hythe  
Mayor Frank Webb  
Box 219  
Hythe, AB  
T0H 2C0

Village of Kinuso  
Mayor Josephine Griffin  
P.O. Box 57  
Kinuso, AB  
T0G 1K0

Village of Nampa  
Mayor Frank Gaydosh  
Box 69  
Nampa, AB  
T0H 2R0

Village of Plamondon  
Mayor Kathy Plamondon  
Box 96  
Plamondon, AB  
T0A 2T0

Village of Rycroft  
Mayor Patricia Sydoruk  
Box 360  
Rycroft, AB  
T0H 3A0

Village of Sangudo  
Mayor Raymond Friend  
Box 190  
Sangudo, AB  
T0E 2A0

Village of Wanham  
Mayor Leon Gouchee  
Box 189  
Wanham, AB  
T0H 3P0

South Baptiste (SV)  
Mayor Edward Appleby  
P.O. Box 339  
Boyle, AB  
T0A 0M0

Village of Berwyn  
Mayor E. May Rowe  
Box 250  
Berwyn, AB  
T0H 0E0

Island Lake (SV)  
Mayor Tom Davison  
#1 - 10865 - 96 St.  
Edmonton, AB  
T5H 2K2

Island Lake South (SV)  
Mayor Duncan Reid  
15035 - 80 Street  
Edmonton, AB  
T5C 1M4

Larkspur (SV)  
Mayor Frank Atkinson  
P.O. Box 339  
Boyle, AB  
T0A 0M0

Mewata Beach (SV)  
Mayor Barry Walker  
P.O. Box 339  
Boyle, AB  
T0A 0M0

Sunset Beach (SV)  
Mayor Wayne Black  
Box 39, Site 1, R.R. #1  
Onoway, AB  
T0E 1V0

West Baptiste (SV)  
Mayor Hugh Fraser  
15035 - 80 Street  
Edmonton, AB  
T5C 1M4

White Gull (SV)  
Mayor Phyllis Umbach  
P.O. Box 339  
Boyle, AB  
T0A 0M0

Beaver First Nations  
Chief Harvey Bulldog  
Box 270  
High Level, AB  
T0A 2C0

Beaver Lake Band  
Chief Emile Cardinal  
Box 960  
Lac la Biche, AB  
T0A 2C0

Bigstone Cree Nation  
Chief Gordon Auger  
General Delivery  
Desmarais, AB  
T0G 0T0

Driftpile Band  
Chief Clifford Freeman  
General Delivery  
Driftpile, AB  
T0G 0V0

Duncan's Band  
Chief Irvin Knott  
P.O. Box 148  
Brownvale, AB  
T0H 0L0

Fort McKay Band  
Chief Mel Granjambe  
Box 5360  
Fort McMurray, AB  
T9H 4W1

Fort McMurray First Nation  
Chief Bernice Cree  
Box 6130  
Fort McMurray, AB  
T9H 4W1

Grouard Band  
Chief Frank Halcrow  
General Delivery  
Grouard, AB  
T0G 1C0

Heart Lake First Nation  
Chief Eugene Monias  
P.O. Box 447  
Lac la Biche, AB  
T0A 2C0

Horse Lake Band  
Chief Robert Horseman  
Box 303  
Hythe, AB  
T0H 2C0

Janvier Indian Band  
Chief Fred Black  
General Delivery  
Chard, AB  
T0P 1Z0

Little Red River Cree Tribe  
Chief Johnsen Sewepagaham  
Box 1165  
High Level, AB  
T0H 1Z0

Loon River Cree Band  
Chief Paddy Noskey  
General Delivery  
Red Earth, AB  
T0G 1X0

Lubicon Lake Band  
Chief Bernard Ominiyak  
Box 6731  
Peace River, AB  
T8S 1S5

Mikisew Cree First Nation  
Chief Archie Waquan  
Box 90  
Fort Chipewyan, AB  
T0P 1B0

Kapawe'No First Nation  
Chief Frank T. Halcrow  
General Delivery  
Grouard, AB  
T0G 1C0

Sawridge Band  
Chief Walter Twimn  
Box 326  
Slave Lake, AB  
T0G 2A0

Sturgeon Lake Band  
Chief Alfred Gooseswimmer  
Box 757  
Valleyview, AB  
T0H 3N0

Sucker Creek Band  
Chief James Badger  
Box 65  
Enilda, AB  
T0G 0W0

Swan River Band  
Chief Bernard Meneen  
Box 270  
Kinuso, AB  
T0G 1K0

Tallcree Band  
Chief Bernie Meneen  
Box 367  
Fort Vermillion, AB  
T0H 1N0

Whitefish Lake Band  
Chief Eddie Tallman  
General Delivery  
Atikameg, AB  
T0G 0C0

Woodland Cree Band  
Chief Billy Thomas  
General Delivery  
Cadotte Lake, AB  
T0H 0N0

Fort Fitzgerald Dene Band  
Chief Magloire Paulette  
Box 1470  
Fort Smith, NT  
XOE OPO

Deninu K'ue First Nations  
Chief Don Balsillie  
P.O. Box 1899  
Fort Resolution, NT  
X0E 0M0

Metis Local #50  
Mr. Kurszeweski  
P.O. Box 1107  
Fort Smith, NT  
X0E 0P0

Salt River First Nations #195  
Chief Jerry Paulette  
P.O. Box 960  
Fort Smith, NT  
X0E 0P0

Fond du Lac Band  
Chief Joe Martin  
General Delivery  
Fond du Lac, SK  
S0J 0W1

Big C Band  
Chief Roy Cheecham  
Box 389  
La Loche, SK  
S0M 1G0

Black Lake Band  
Chief Dan Robillard  
General Delivery  
Black Lake, SK  
S0J 0H0

Metis Settlement - Buffalo Lake  
Chairperson Bruce Gordon  
Box 20  
Caslan, AB  
T0A 0R0

Metis Settlement - East Prairie  
Chairperson Harold Bellerose  
Box 1289  
High Prairie, AB  
T0G 1E0

Metis Settlement - Elizabeth  
Chairman Wilfred Collins  
Box 420  
Grande Centre, AB  
T0A 1T0

Metis Settlement - Gift Lake  
Chairman Allan Lamouche  
General Delivery  
Gift Lake, AB  
T0G 1B0

Metis Settlement - Kikino  
Chairman Harold Cardinal  
General Delivery  
Kikino, AB  
T0A 2B0

Metis Settlement - Paddle Prairie  
Chairman Greg Calliou  
Box 58  
Paddle Prairie, AB  
T0H 2W0

Metis Settlement - Peavine  
Chairman Elmer Anderson  
Box 238  
High Prairie, AB  
T0G 1E0

Fort McMurray Metis Nation 1935  
Carl Frank  
Box 6181  
Fort McMurray, AB  
T9H 4W1





Canada

Alberta



# Northern River Basins Study Municipal/Local Government Questionnaire

## PART I: INTRODUCTION

Mailing  
Address  
(Please correct  
if necessary)

Name of Respondent \_\_\_\_\_ Position: \_\_\_\_\_

Telephone Number \_\_\_\_\_

The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how municipalities such as yours use and value the Peace, Athabasca and Slave rivers. Please complete this questionnaire on behalf of your municipality or local government.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study





## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about your municipality or the local government that you represent.

1. Please describe the economic base of your community by indicating the two types of industries that are the most important sources of employment in your community. (Circle two only)

- |                   |                               |
|-------------------|-------------------------------|
| a. Agriculture    | g. Tourism                    |
| b. Logging        | h. Commercial trade           |
| c. Oil and Gas    | i. Government                 |
| d. Pulp and Paper | j. Service industries         |
| e. Lumber         | k. Fishing, trapping, hunting |
| f. Mining         | l. Other (describe) _____     |

2. Approximately how many people reside on lands within the jurisdiction of your municipal or local government?

people

3. What proportion of your population draws water from the following sources:

Water Source & Treatment	Percent of Population
Groundwater wells with a water treatment plant	
Surface water with a water treatment plant	
Untreated groundwater	
Untreated surface water	
Other (describe)	

4. Does your municipal or local government own or operate a municipal water supply system?

\_\_\_\_\_ No (Go to Question 18)

\_\_\_\_\_ Yes (Go to Question 5.)

5. Please provide us with some information on your municipal water systems(s). Please specify the units of measurement in terms of cubic feet or cubic metres.

	Plant #1	Plant #2	Plant #3
a. What year did this plant start operating?			
b. What is the total volume of raw water intake in a typical year?			
c. Will your water plant be expanded or upgraded in the next 10 years? (Please describe future plans.)			

6. What percentage of treated water from your plants goes to the following uses:

	Percent of Treated Water
Households (including apartments)	
Commercial buildings	
Industries	
Government (recreation, parks)	
Unaccounted/Leakage	

7. In your opinion, does the water produced by your water treatment facility meet the water quality requirements set out in the licences for these facilities? (*Check appropriate answer.*)

\_\_\_\_\_ Yes                      \_\_\_\_\_ No                      \_\_\_\_\_ Don't Know/Uncertain

8. At the present time, which of the following three factors poses the greatest problem in meeting these water quality requirements? (*Circle one only*)

- a. Raw water supplies
- b. Plant design/construction
- c. Plant operations/maintenance
- d. Don't Know/Uncertain

9. In the near future, does your municipal or local government have any plans to change or modify the operation of its water treatment facilities or to construct new facilities?

\_\_\_\_\_ No (*Go to Question 11*)                      \_\_\_\_\_ Yes (*Go to Question 10*)

10. Describe the types of changes in facilities or operations being planned.

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11. Over the last 10 years has your municipal or local government noticed any changes in the quality or quantity of its raw water supplies?

\_\_\_\_\_ No (*go to Question 13*)                      \_\_\_\_\_ Yes (*Go to Question 12*)

12. Describe the types of changes that have been noticed.

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13. Do you foresee any major changes in the quantity or quality of water required by your municipal or local government in the next 10 years?

\_\_\_\_\_ No (*Go to Question 15*)                      \_\_\_\_\_ Yes (*Go to Question 14*)

14. What are the major reasons for these expected changes in water requirements?

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15. What percentage of water used by your water supply system is discharged back to rivers, lakes or other surface water bodies? *(Circle appropriate category)*

- |                        |                         |
|------------------------|-------------------------|
| a. Less than 10%       | f. Between 51% and 60%  |
| b. Between 11% and 20% | g. Between 61% and 70%  |
| c. Between 21% and 30% | h. Between 71% and 80%  |
| d. Between 31% and 40% | i. Between 81% and 90%  |
| e. Between 41% and 50% | j. Between 91% and 100% |

16. Does your municipal or local government treat this water prior to discharge?

\_\_\_\_\_ No *(Go to Question 18)*

\_\_\_\_\_ Yes *(Go to Question 17)*

17. What types of treatment methods are usually used ?  
*(Circle appropriate category)*

- a. Primary or mechanical
- b. Secondary or biological
- c. Tertiary or advanced treatment

18. Aside from municipal water supplies, are there any other water uses or water management issues that are of importance to local residents?

\_\_\_\_\_ No *(Go to Question 20)*

\_\_\_\_\_ Yes *(Go to Question 19)*

19. Please describe these water uses or water management issues.

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20. How much does your municipal or local government agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

### PART III WATER MANAGEMENT VALUES AND ISSUES

21. In the opinion of your municipal or local government, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which your local or municipal government is located?

Factor 1.

Factor 2.

Factor 3.

Thinking about the first factor you mentioned:

22. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1:

23. Describe the ways in which this factor has affected your municipal or local government.

Factor 1:

24. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

25. If no steps are taken to control your Factor 1, describe how you think your municipal or local government will be affected over the next 10 years

Factor 1:

26. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

Thinking about the second factor you mentioned:

27. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

28. Describe the ways in which this factor has affected your municipal or local government.

Factor 2:

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29. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

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30. If no steps are taken to control your Factor 2, describe how you think your municipal or local government will be affected over the next 10 years

Factor 2:

---

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31. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

---

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**Thinking about the third factor you mentioned:**

32. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

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33. Describe the ways in which this factor has affected your municipal or local government.

Factor 3:

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34. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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35. If no steps are taken to control your Factor 3, describe how you think your municipal or local government will be affected over the next 10 years

Factor 3:

---

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36. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

---

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37. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to your municipal or local government, and.
- the one that is of least concern to your municipal or local government.

*(Answer each group on its own. Overlap among groups has been done on purpose)*

GROUP 1:

<u>Most Concern</u> (Check only one)	Threat to Water Quality/Quantity	<u>Least Concern</u> (Check only one)
	2. Groundwater contamination	
	6. Seismic exploration/road and pipeline development	
	7. Regulation of river flows by dams	
	9. Airborne pollutants	

GROUP 2:

<u>Most Concern</u> (Check only one)	Threat to Water Quality/Quantity	<u>Least Concern</u> (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	6. Seismic exploration/road and pipeline development	
	10. Uranium contamination (Lake Athabasca)	
	11. Industrial wastes/tailing ponds	

GROUP 3:

<u>Most Concern</u> (Check only one)	Threat to Water Quality/Quantity	<u>Least Concern</u> (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	2. Groundwater contamination	
	3. Forestry harvesting practices	
	5. Discharges of municipal sewage effluent	
	6. Seismic exploration/road and pipeline development	
	7. Regulation of river flows by dams	
	8. Discharges of pulp mill effluent	
	10. Uranium contamination (Lake Athabasca)	

38. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that your municipal or local government thinks would be the most effective in dealing with current problems, and.
- the one that your municipal or local government thinks would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	2. Improve municipal wastewater treatment.	
	6. Reduce industrial effluent loads.	
	7. Preserve and maintain ecosystems	
	9. Improve treatment of municipal drinking water	

GROUP 2:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	6. Reduce industrial effluent loads.	
	10. Increase monitoring of water quality	
	11. Develop management plan for entire basin.	

GROUP 3:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	2. Improve municipal wastewater treatment.	
	3. Provide more flood protection.	
	5. More enforcement of existing pollution laws.	
	6. Reduce industrial effluent loads.	
	7. Preserve and maintain ecosystems	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	10. Increase monitoring of water quality	

39. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important measures that your municipal or local government would like to see used to describe the health of these rivers.

Measure #1	Measure #2	Measure #3

40.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other



Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

41. Does your municipal or local government support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

42. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

43. Would your municipal or local government be willing to participate on this committee?  
*(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how your municipal or local government would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

44. What does your municipal or local government foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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45. From the viewpoint of your municipal or local government, what are the three most important recommendations that the Northern River Basins Study should make?

#1 

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#2 

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#3 

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46. Do you have any other comments that you would like to make on behalf of your municipal or local government that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed, postage-paid envelope provided before March 10, 1995.**

## **APPENDIX D**

**General Stakeholders (Environmental and Recreation Groups):**

**Questionnaire and Survey Population**



## Recreation Groups

Helen Rice, Owner  
Game Country Tourist Association  
9845 - 99th Avenue  
Grande Prairie, AB  
T8V 4B2

Margaret Steel  
Chairperson, Alberta Camping Association  
2111 72 Avenue NE  
Calgary, AB  
T2K 0N8

Gordon Harris  
Alberta Canoe Association  
11759 Groat Road  
Edmonton, AB  
T0H 2X0

Darrell Smith  
Env Chair, Alberta Fish and Game  
Association  
6924- 104 Street  
Edmonton, AB  
T6H 2L7

Judi Frank  
Alberta Recreational Canoe Association  
14234 103 Ave  
Edmonton, AB  
T5N0S8

Glen Kingdon  
Alberta Snowmobile Association  
Box 1914  
Whitecourt, AB  
T0E 2L0

Bruce Lord  
Alberta Whitewater Association  
11759 Groat Road  
Edmonton, AB  
T5M 3K6

Fred Kuzik  
President, Athabasca County Recreation  
Board  
Box 1177  
Athabasca, AB  
T0G 0B0

Gordon Christensen  
President, Athabasca Fish and Game  
Association  
P.O Box 1926  
Athabasca, AB  
T0G 0B0

Phil Holgate  
President, Barrhead Fish and Game  
Association  
P.O. Box 4126  
Barrhead, AB  
T0G 0E0

Scott Dudley  
Beaver River Fish and Game Association  
Box 8024  
Bonnyville, AB  
T9W 2J3

Priscilla Haskin  
Ceyana Canoe Club  
Box 72023 Ottewell Post Office  
Edmonton, AB  
T6B 0P0

President  
Chinook Valley Recreation Society  
Box 176  
Grimshaw, AB  
T0H 1W0

Eugene Deford  
Chairman, Clandonald and District Fish and  
Game Association  
P.O. Box 584  
Clandonald, AB  
T0B 0X0

Deadwood Recreation Society  
c/o Deadwood Post Office  
Deadwood, AB  
T0H 1A0

Michael Cardinal  
President, Delta Roughriders  
General Delivery  
Fort Chipewyan, AB  
T0A 1G0

Chuck Friesen  
President, Dunvegan Fish and Game  
Association  
Box 1626  
Fairview, AB  
T0H 1L0

Robin Hooper  
President, Edgerton Fish and Game  
Association  
P.O. Box 112  
Edgerton, AB  
T0B 1K0

Al Wright  
Past President, Edmonton Fish and Game  
Association  
2345 139 Avenue  
Edmonton, AB  
T5Y 1S1

Frank Wood  
Edmonton Trout Fishing Club  
5319 145th Avenue  
Edmonton, AB  
T5A 4E9

Dale O'Brien  
Edmonton Whitewater Paddlers  
11215 - 53 Avenue  
Edmonton, AB  
T6H 0S6

John Kramer  
Fairview River Rats Association  
Box 1831  
Fairview, AB  
T0H 1L0

Grant Henry  
President, Fort McMurray Field Naturalist  
Society  
152 Cote Bay  
Fort McMurray, AB  
T9H 4R9

Ian Parkinson  
President, Fort McMurray Fish and Game  
Association  
P.O. Box 5114  
Fort McMurray, AB  
T9H 3G2

David Lammerce  
President, Fort Smith Canoe and Kayak  
Club  
Box 1257  
Fort Smith, NT  
X0E 0P0

Pat Ward  
Fox Creek Fish and Game Association  
P.O. Box 934  
Fox Creek, AB  
T0H 1P0

Paul Otto  
President, Friends of the River Recreation  
Association  
9726 - 158 Street  
Edmonton, AB  
T5P 2X1

Tom Wilkenson  
Grande Cache Fish, Game and Gun Club  
P.O. Box 967  
Grande Cache, AB  
T0E 0Y0

Grande Prairie Fish & Game Association  
10238-110 Avenue  
Edmonton, AB  
T8V 1F7

Tim Holler  
Grande Prairie River Rats  
RR #1  
Wembley, AB  
T0H 3S0

Nancy Magram  
President, Hay River Paddling Club  
Box 1720  
Hay River, NT  
XOE ORO

Dave Thompson  
President, High Level Sporting Association  
P.O. Box 1606  
High Level, AB  
T0H 1Z0

Jim Berry  
High Prairie Fish & Game Association  
P.O. Box 713  
High Prairie, AB  
T0G 1E0

Earl Scott  
Hillcrest Fish & Game Protective  
Association  
General Delivery  
Hillcrest, AB  
T0K 1C0

Steve Courtoreille  
President, Kewatinok Recreation Society  
Box 343  
Fort Chipewyan, AB  
T0P 1B0

Ron Wild  
Kinuso & District Fish & Game Association  
P.O. Box 181  
Kinuso, AB  
T0G 1K0

Ed Krahn  
President, La Crete Recreation Society  
Box 29  
La Crete, AB  
T0H 2H0

Ted Johnson  
Chairman, Lac La Biche Fish and Game  
Association  
P.O. Box 181  
Lac La Biche, AB  
T0A 1C0

Dan Anderson  
Lac La Biche Regional Fisheries Advisory  
Committee  
Box 1246  
Lac La Biche, AB  
T0A 2C0

Donna Lee Ost  
Lakeland Tourist Association  
Box 1016,  
Lac La Biche, AB  
T0A 2C0

Pat  
President, Land of the Mighty Peace  
Tourism Association  
Box 6627  
Peace River, AB  
T8S 1S4

Elon Johnson  
Mayerthorpe & District Fish & Game  
Association  
P.O. Box 1377  
Mayerthorpe, AB  
T0E 1N0

President  
Midnight Twilight Tourist Association  
#1 Sturgeon Road  
St. Albert, AB  
T8N 0E8

Jim Friesen  
President  
Mighty Peace Fish and Game Association  
General Delivery  
La Crete, AB  
T0H 2H0

Don Nelson  
Monkman Fish and Game Association  
Box 810  
Beaverlodge, AB  
T0H 0C0

Muskeg Munchers 4 Wheel Drive Club  
320 Grey Crescent  
Fort McMurray, AB  
T9H 2N8

Harold Manson  
NW Voyageurs Canoe and Kayak Club  
12937 124 Street  
Edmonton, AB  
T5L 0P6

Dave Lindsay  
Nampa and District Recreation Board  
Box 1162  
Saint Isidore, AB  
T0H 3B0

Ken VanBuul  
President, Northern Alberta Recreation  
Association  
Box 1030  
Slave Lake, AB  
T0G 2A0

Victor Melenka  
President, Onoway & District Fish and  
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Canada

Alberta



# Northern River Basins Study Stakeholders Questionnaire

## PART I: INTRODUCTION

Mailing  
Address  
(Please  
correct if  
necessary)

Name of Respondent \_\_\_\_\_ Position in Organization: \_\_\_\_\_

Telephone Number \_\_\_\_\_

The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how people in environmental, recreation and community associations and organizations, like yours, use and value the Peace, Athabasca and Slave rivers. Please complete this questionnaire on behalf of your organization.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study



## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about your organization.

1. How long has your organization been in existence? *(Circle the appropriate category)*

- |                           |                            |
|---------------------------|----------------------------|
| a. Less than 1 year       | d. Between 10 and 15 years |
| b. Between 1 and 5 years  | e. Between 15 and 20 years |
| c. Between 5 and 10 years | f. Over 20 years           |

2. How many members does your specific organization have?

*(Circle the appropriate category, do not include members from parent or affiliated organizations)*

- |            |             |
|------------|-------------|
| a. 0 - 10  | e. 51 - 70  |
| b. 11 - 20 | f. 71 - 100 |
| c. 21 - 30 | g. Over 100 |
| d. 31 - 50 |             |

3. What proportion of your members reside within the Peace, Athabasca or Slave river basins, including tributaries? *(Give a percentage)*

\_\_\_\_\_ %

4. Do you have a parent organization?

\_\_\_\_\_ No \_\_\_\_\_ Yes *(Name parent organization)*

\_\_\_\_\_

5. Are you affiliated with any other organizations?

\_\_\_\_\_ No \_\_\_\_\_ Yes *(Name organization)*

\_\_\_\_\_

6. What is the purpose of your organization in terms of its goals, objectives or interests?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Describe a typical member of your organization.

\_\_\_\_\_  
\_\_\_\_\_

8. In which of the following major rivers basins do the majority of the members of your organization reside?  
*(Read list. Circle appropriate response.)*

- |                          |                             |
|--------------------------|-----------------------------|
| a. Athabasca River Basin | f. Smoky River Basin        |
| b. McLeod River Basin    | g. Little Smoky River.Basin |
| c. Pembina River Basin   | h. Wabasca River Basin      |
| d. Peace River Basin     | i. Slave River Basin        |
| e. Wapiti River Basin    |                             |

**PART III****RECREATIONAL USE OF WATER RESOURCES**

9. How many trips do members of your organization take in an average year anywhere in the Northern River Basins for the following outdoor recreation activities?

Please indicate the average length of trips in days and the average number of members participating on these trips. (Read list. Enter appropriate response for each activity)

Primary Activity on Trip	Number of Trips in an Average Year	Average Length of trip (Days)	Average Number of Members Participating
Fishing			
Boating			
Swimming (lakes/river)			
Canoeing			
Camping			
Skiing (water or snow)			
Snowmobiling			
Horseback riding			
Rafting			
Kayaking			
Hunting			
Other			
Other			

10. List in order of importance, the five sites on rivers and lakes that members of your organization most frequently use for recreational purposes.

Also, indicate the usual recreational activity on these trips, the number of trips to each site in an average year, and the main reason for preferring this site.

	Site #1	Site #2	Site #3	Site #4	Site #5
Site Name					
Usual Activity					
Number of Trips per year					
Main Reason for Choosing Site					

11. Do members of your organization use the mainstems of the Athabasca, Peace or Slave rivers, or any of their major tributaries for recreational purposes?

\_\_\_\_\_ No (Go to Question 12) \_\_\_\_\_ Yes

If yes, please indicate the three locations along these rivers that members of your organization most frequently and indicate the usual recreational activity at each site and the number of trips taken to each site in an average year.

	Site #1	Site #2	Site #3
Site Description			
Usual Activity			
Number of Trips per year			

12. When involved in subsistence fishing, trapping or hunting do members of your organization ever consume or use river or lake water? (Check appropriate response.)

\_\_\_\_\_ No (Go to Question 14) \_\_\_\_\_ Yes (Go to Question 13)

13. Do members of your organization treat this water in any way before drinking it?  
(Check appropriate response.)

\_\_\_\_\_ No \_\_\_\_\_ Yes (Describe Treatment) \_\_\_\_\_

14. Over the last 10 years, have members of your organization noticed any changes in the water, fish, wildlife or plants along the mainstems of the Athabasca, Peace or Slave rivers or any of their major tributaries?

\_\_\_\_\_ No (Go to Question 15) \_\_\_\_\_ Yes

If yes, describe the types of changes that you members of your organization have noticed.

Water: \_\_\_\_\_  
 Fish: \_\_\_\_\_  
 Wildlife: \_\_\_\_\_  
 Plants: \_\_\_\_\_  
 Other: \_\_\_\_\_

15. Do members of your organization foresee any changes in the next ten years that may affect water resources in your area?

\_\_\_\_\_ No (Go to Question 16) \_\_\_\_\_ Yes

If yes, describe the types of changes that may affect water resources in your area.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

16. Do members of your organizations have specific concerns with the way northern rivers are managed?

\_\_\_\_\_ No (*Go to Question 17*)

\_\_\_\_\_ Yes

If yes, describe the specific concerns of your organization:

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17. How much do members of your organization agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

#### PART IV WATER MANAGEMENT VALUES AND ISSUES

18. In the opinion of members of your organization, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which most of your operations are located ?

Factor 1.

Factor 2.

Factor 3.

#### Thinking about the first factor you mentioned:

19. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1:

20. Describe the ways in which this factor has affected members of your organization.

Factor 1:

21. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

22. If no steps are taken to control your Factor 1, describe how you think members of your organization will be affected over the next 10 years

Factor 1:

23. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

#### Thinking about the second factor you mentioned:

24. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

25. Describe the ways in which this factor has affected members of your organization.

Factor 2:

---

26. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

---

27. If no steps are taken to control your Factor 2, describe how you think members of your organization will be affected over the next 10 years

Factor 2:

---

28. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

---

**Thinking about the third factor you mentioned:**

29. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

---

30. Describe the ways in which this factor has affected members of your organization.

Factor 3:

---

31. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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32. If no steps are taken to control your Factor 3, describe how you think members of your organization will be affected over the next 10 years

Factor 3:

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33. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

---



34. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to members of your organization, and.
- the one that is of least concern to members of your organization.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	3. Forestry harvesting practices	
	7. Regulation of river flows by dams	
	8. Discharges of pulp mill effluent	
	11 Industrial wastes/tailing ponds	

GROUP 2:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	3. Forestry harvesting practices	
	4. Draining wetlands and muskeg	
	6. Seismic exploration/road and pipeline development	
	8. Discharges of pulp mill effluent	
	9. Airborne pollutants	

GROUP 3:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	2. Groundwater contamination	
	3. Forestry harvesting practices	
	4. Draining wetlands and muskeg	
	5. Discharges of municipal sewage effluent	
	6. Seismic exploration/road and pipeline development	
	11 Industrial wastes/tailing ponds	

35. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that members of your organization think would be the most effective in dealing with current problems, and,
- the one that members of your organization think would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	3. Provide more flood protection.	
	7. Preserve and maintain ecosystems	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	11. Develop management plan for entire basin.	

GROUP 2:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	3. Provide more flood protection.	
	4. Protect traditional fishing, hunting & trapping	
	6. Reduce industrial effluent loads.	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	9. Improve treatment of municipal drinking water	

GROUP 3:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	2. Improve municipal wastewater treatment.	
	3. Provide more flood protection.	
	4. Protect traditional fishing, hunting & trapping	
	5. More enforcement of existing pollution laws.	
	6. Reduce industrial effluent loads.	
	11. Develop management plan for entire basin.	

36. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that members of your organization would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

37.

	Measure #1	Measure #2	Measure #3
• How do you think this measure of river health has changed over the last 20 years?			
• How often do you think this measure of river health should be monitored?	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
• Who do you think should be responsible for monitoring this measure of river health?	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
• Who do you think should be responsible for paying for monitoring this measure of river health?	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART V

## FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

38. Do members of your organization support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? (Check one)

YES ☐

NO ☐

Don't Know ☐

39. If such a committee were established, should it play the lead role to:  
(Check only one answer for each question)

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40. Would members of your organization be willing to participate on this committee?  
(Check one)

YES ☐

NO ☐

Don't Know ☐

If yes, describe how members of your organization would be prepared to be involved:

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**PART VI      GENERAL COMMENTS**

41. What do members of your organization foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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42. From the viewpoint of members of your organization, what are the three most important recommendations that the Northern River Basins Study should make?

#1 

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#2 

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#3 

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43. Do you have any other comments that you would like to make on behalf of members of your organization that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 10, 1995.**



## **APPENDIX E**

### **Commercial Recreation Businesses Questionnaire and Survey Population**





## Commercial Recreation Businesses

Black Cat Guest Ranch  
PO Box 6267  
Hinton, AB  
T7V 1V6

Dan's Rafting  
128 Sunset Trailer Court  
Hinton, AB  
T7V 1R8

Scott Jumbo-Fraser  
Jumbo Fort Chipewyan Wilderness Tours  
General Delivery,  
Fort Chipewyan, AB  
T0P 1B0

Mistahi Seepee Wilderness Tours Ltd.  
Box 90  
Fort Chipewyan, AB  
T0P 1B0

John Rodgers  
Northern Sport Fishing Ltd.  
P.O. Box 5921  
Fort McMurray, AB

Scott Flett  
Peace Althabasca Delta Tours  
Box 147,  
Fort Chipewyan, AB  
T0P 1B0

Bob Allen  
Peace Valley Guest Ranch  
Box 38  
Berwyn, AB

Don Balsillie  
Res Delta Tours  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Clayton Bourke  
River Trails North  
Box 852  
Fort Smith, NT  
X0E 0P0

Howard Simpson  
Simpson River Tours  
Box 7458,  
Peace River, AB  
T8S 1T1

Herb Setz Jr.  
Smoky River Tours  
9503 98th Avenue  
Peace River, AB  
T8S 1G8

Jacques Van Pelt  
Subarctic Wilderness Adventures  
Box 685  
Fort Smith, NT  
X0E 0P0

Charles Crawford  
Tar Island River Cruises and Camps  
Box 5070  
Peace River, AB  
T8S 1R7

Robert Boos  
Whispering Wind Ranch  
Box 456  
Manning, AB  
T0H 2M0

W. Firmsite  
Wilderness Adventures International Inc.  
RR1,  
Spirit River, AB  
T0H 3G0

Alex Hall  
Canoe Arctic Inc.  
Box 130 H  
Fort Smith, NT  
X0E 0P0

Hoffman  
Big Pine Narrows Camp  
Box 364  
Fort Smith, NT  
X0E 0P0

Wayne Stirling  
North Star Resort  
Box 71  
Fort Smith, NT  
X0E 0P0

Ray Beck  
Taltson Bay Outfitters  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Bob & Lois Allen  
Peace Valley Guest Ranch  
Box 38  
Berwyn, AB

Randy Babala  
Randy Babala Outfitting Inc.  
Box 34  
Cadomin, AB  
T0E 0E0

Laurier Delorme  
Larry's Riding Stables  
Box 6131  
Hinton, AB  
T7V 1X5

Wm Gosney  
Highland Outfitting  
Box 6297  
Hinton, AB  
T7V 1X6

Dale Hale  
Bar SN Guiding & Outfitting  
403 Pineridge Village  
Hinton, AB  
T7V 1S9

George Kelley  
Box 6135  
Hinton, AB  
T7V 1X5

Gary Kruger  
Big Smokey Outfitting  
Box 1654  
Westlock, AB  
T0G 2L0

Bazil Leonard  
High Country Vacations  
Box 818  
Grande Cache, AB  
T0E 0Y0

Dave Manzer  
Wild Rose Outfitting Inc.  
Box 113  
Peers, AB  
T0E 1W0

Peter McMahon  
Sherwood Outfitting  
1, 22322 Wye Road  
Sherwood Park, AB  
T8A 4S9

Ed Regnier  
Saracen Head Outfitters  
Box 7622  
Edson, AB  
T7E 1V7

Vic Stapleton  
Sheep Creek Guides & Backcountry  
Experiences LTD.  
Box 195  
Grande Cache, AB  
T0E 0Y0

Miles Stern  
Chimney Creek Outfitters  
Box 6934  
Edson, AB  
T7V 1V3

Sandra Nerada  
Box 1288  
Grande Cache, AB  
T0E 0Y0

Rocky Notnes  
Athabasca Trail Rides  
Box 6117  
Hinton, AB  
T7V 1X5

Wald & Lavone Olson  
Amethyst Lakes Packtrips LTD.  
Box 23  
Brule, AB  
T0E 0C0

Tom Vinson  
Horseback Adventures LTD.  
Box 73,  
Brule, AB  
T0E 0C0

Ed Lightfoot  
Nose Mtn. Outfitter's Guiders, Trail Riders  
10412 109 Ave.  
Grande Prairie, AB  
T8V 1S1

Paul & Duane Reum  
Easy Rider Outfitters  
Box 95  
Wanham, AB  
T0H 3P0

Bill Sinclair  
Daimond & a Half Outfitter's  
Box 504  
Grande Prairie, AB  
T8V 3A7

Ed Warkentin  
Peace Country Pioneer Camps  
Box 6811  
Peace River, AB  
T8S 1S6

Glen Wettlaufer  
Andrew Lake Lodge and Camps  
Box 5846 Station L  
Edmonton, AB  
T6C 4G3

Fred & Marge Thom  
Christina Lake Lodge  
General Delivery  
Conklin, AB  
T0P 1H0

Jeff Dodds  
Gypsy Lake Lodge  
Box 5508  
Fort McMurray, AB  
T9H 3G5

Chuck Whipple  
Margaret Lake Lodge  
Box 113  
Grande Prairie, AB  
T8V 3A1

Don Turnbull  
Namur Lake Lodge  
Box 5941  
Fort McMurray, AB  
T9H 4V9

Jack & Margaret Halvorson  
Tapawingo Lodge  
Box 900,  
Manning, AB  
T0H 2M0

George & Ricky Maunder  
Winstrod Lake Lodge  
Conklin, AB  
T0P 1H0

Blue Lake Adventure Inn  
Box 6150  
Hinton, AB  
T7V 1X5

Points North Adventures  
c/o: John Semple  
Box 6066  
Ft. McMurray, AB  
T9H 4W1

Lakeshore Sports  
Box 181  
Ft. Chipewyan, AB  
T0P 1B0

Magic Country Wilderness Tours  
Box 5242  
Fort McMurray, AB  
T9H 3G3





Canada

Alberta



# Northern River Basins Study Commercial Recreation Stakeholder Survey

## PART I: INTRODUCTION

Mailing  
Address  
(Please correct  
if necessary)

Name of Respondent \_\_\_\_\_ Position in the Company: \_\_\_\_\_

Telephone Number \_\_\_\_\_

The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how commercial recreation companies and their clients use and value the Peace, Athabasca and Slave rivers. This survey is being sent to lodges, outfitters, guides and tour operators that provide commercial recreation and tourism services within the basin. Please complete this questionnaire on behalf of your company.

If you need any assistance in completing this questionnaire, call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study





## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about your company's operations.

1. How long has your company been doing business in this area? (Circle correct response)

- |                           |                            |
|---------------------------|----------------------------|
| a. Less than 1 year       | d. Between 10 and 15 years |
| b. Between 1 and 5 years  | e. Between 15 and 20 years |
| c. Between 5 and 10 years | f. Over 20 years           |

2. How many employees does your company normally have during peak operating season?  
(Circle correct response)

- |                      |                      |
|----------------------|----------------------|
| a. Less than 5       | d. Between 15 and 20 |
| b. Between 5 and 10  | e. Over 20           |
| c. Between 10 and 15 |                      |

3. In a typical year how many recreationists/tourists use your facilities and/or services?

recreationists/tourists.

4. What percentage of these recreationists/tourists live:

Within northern Alberta/southern NWT	%
Southern Alberta	%
The rest of Canada	%
United States	%
Europe	%
Asia/Japan/China	%
Other	%

5. What percentage of these recreationists/tourists use your facilities and services during:

January	%	July	%
February	%	August	%
March	%	September	%
April	%	October	%
May	%	November	%
June	%	December	%

6. Please describe the five main types of recreational/tourism services and facilities that your business provides:

	Major Activity	Location	Duration of Trip or Length of Stay	Percent of Annual Business
1.				
2.				
3.				
4.				
5.				

7. How important are water resources in relation to the experience or products you offer your clients?  
(Circle the appropriate category)

- |    |                      |                       |
|----|----------------------|-----------------------|
| a. | Very important       | Please explain: _____ |
| b. | Important            | _____                 |
| c. | Somewhat important   | _____                 |
| d. | Not important at all | _____                 |

8. When on trips or activities in the region, do you or your clients ever drink lake or river water?

\_\_\_\_\_ Yes \_\_\_\_\_ No (Go to Question 9)

If yes, do you treat this water in any way before drinking it?

\_\_\_\_\_ Yes \_\_\_\_\_ No (Go to Question 9)

If yes, describe how the water is treated prior to drinking it?

\_\_\_\_\_  
\_\_\_\_\_

9. Over the last 10 years (or since you began operation), has your company's business:  
(Circle appropriate category)

- |    |                   |                           |
|----|-------------------|---------------------------|
| a. | Decreased         | Please explain why: _____ |
| b. | Increased         | _____                     |
| c. | Remained the same | _____                     |

10. Over the next 10 years, do you expect your company's business to: (Circle appropriate category)

- |    |                 |                           |
|----|-----------------|---------------------------|
| a. | Decrease        | Please explain why: _____ |
| b. | Increase        | _____                     |
| c. | Remain the same | _____                     |

11. How important are the mainstems of the Peace, Athabasca and Slave rivers and their major tributaries in relation to the experience or products you offer your clients?  
(Circle the appropriate category)

- |    |                      |                       |
|----|----------------------|-----------------------|
| a. | Very important       | Please explain: _____ |
| b. | Important            | _____                 |
| c. | Somewhat important   | _____                 |
| d. | Not important at all | _____                 |

12. Over the last 10 years have you, members of your company or your clients noticed any changes in the water, fish, wildlife or plants along the mainstems of the Athabasca, Peace or Slave rivers or any of their major tributaries?

\_\_\_\_\_ No (Go to Question ) \_\_\_\_\_ Yes

If yes, describe the types of changes that have been noticed:

Water: \_\_\_\_\_

Fish \_\_\_\_\_

Wildlife \_\_\_\_\_

Plants \_\_\_\_\_

Other \_\_\_\_\_

13. How much do you and your company agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

### PART III WATER MANAGEMENT VALUES AND ISSUES

14. In the opinion of your company and its clients, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which most of your operations are located ?

Factor 1.

Factor 2.

Factor 3.

**Thinking about the first factor you mentioned:**

15. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1:

16. Describe the ways in which this factor has affected your company and its clients.

Factor 1:

17. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

18. If no steps are taken to control your Factor 1, describe how you think your company and its clients will be affected over the next 10 years

Factor 1:

19. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

**Thinking about the second factor you mentioned:**

20. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

21. Describe the ways in which this factor has affected your company and its clients.

Factor 2:

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22. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

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23. If no steps are taken to control your Factor 2, describe how you think your company and its clients will be affected over the next 10 years

Factor 2:

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24. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

---

---

**Thinking about the third factor you mentioned:**

25. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

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26. Describe the ways in which this factor has affected your company and its clients.

Factor 3:

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27. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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28. If no steps are taken to control your Factor 3, describe how you think your company and its clients will be affected over the next 10 years

Factor 3:

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29. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

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30. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to your company and its clients, and.
- the one that is of least concern to your company and its clients.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	4. Draining wetlands and muskeg	
	5. Discharges of municipal sewage effluent	
	7. Regulation of river flows by dams	

GROUP 2:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	2. Groundwater contamination	
	5. Discharges of municipal sewage effluent	
	8. Discharges of pulp mill effluent	
	9. Airborne pollutants	
	11 Industrial wastes/tailing ponds	

GROUP 3:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	4. Draining wetlands and muskeg	
	5. Discharges of municipal sewage effluent	
	6. Seismic exploration/road and pipeline development	
	7. Regulation of river flows by dams	
	8. Discharges of pulp mill effluent	
	9. Airborne pollutants	
	10. Uranium contamination (Lake Athabasca)	
	11. Industrial wastes/tailing ponds	

31. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that your company and its clients think would be the most effective in dealing with current problems. and.
- the one that your company and its clients think would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	4. Protect traditional fishing, hunting & trapping	
	5. More enforcement of existing pollution laws.	
	7. Preserve and maintain ecosystems	

GROUP 2:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	2. Improve municipal wastewater treatment.	
	5. More enforcement of existing pollution laws.	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	9. Improve treatment of municipal drinking water	
	11. Develop management plan for entire basin.	

GROUP 3:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	4. Protect traditional fishing, hunting & trapping	
	5. More enforcement of existing pollution laws.	
	6. Reduce industrial effluent loads.	
	7. Preserve and maintain ecosystems	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	9. Improve treatment of municipal drinking water	
	10. Increase monitoring of water quality	
	11. Develop management plan for entire basin.	

32. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that your company and its clients would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

33.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other



## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

34. Does your company support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

35. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. Would you or members of your company be willing to participate on this committee? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how you or your company would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

37. What does your company and its clients foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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38. From the viewpoint of your your company and its clients, what are the three most important recommendations that the Northern River Basins Study should make?

#1 

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#2 

---

#3 

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39. Do you have any other comments that you would like to make on behalf of your company and its clients that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 10, 1995.**

## **APPENDIX F**

### **Agricultural Associations**

#### **Questionnaire and Survey Population**



## **Agricultural Associations**

John Fraser, President  
Alberta Association of Agriculture Societies  
Rm 201, 700-113 St.  
Edmonton, AB  
T6H 5T6

Robert Boos  
Alberta Game Growers Association  
Box 456  
Manning, AB  
T0H 2M0

Grant Gillund, President  
Alberta Institute of Agrologists  
8506 - 104 Street  
Edmonton, AB  
T6E 4G4

Alex Cameron  
Campbell Creek Grazing Association  
RR #2  
Grande Prairie, AB  
T8V 2Z9

John Fraser  
Grande Prairie County Agriculture Society  
Box 370  
Grande Prairie, AB  
T8V 3A5

High Level Agricultural Society  
General Delivery  
High Level, AB  
T0H 1Z0

Ernie Hills  
South Peace Forage Association  
10320 99 Street  
Grande Prairie, AB  
T8V 6J4

Eli Gross, Boss  
Hutterian Brethern of Athabasca  
Box 1110  
Athabasca, AB  
TOG 0B0

Fred Walters  
Hutterian Brethern of Debolt -  
Rich Valley Colony  
Box 90  
Crooked Creek, AB  
T0H 0Y0

Birch Hills Colony  
c/o Sam Walters  
Box 235  
Wanham, AB  
T0H 3P0

Eli  
Hutterian Brethern of Valleyview  
Box 1193  
Valleyview, AB  
T0H 3N0

Harvey Kosheiff  
North Peace Forage Association  
Box 1819  
Fairview, AB  
T0H 1L0

Gary Scorgie, President  
Northern Alberta Grazing Association  
Box 33 RR #1 Site 7  
Beaverlodge, AB  
T0H 0C0

Ken Othen, Chairperson  
Peace River Lamb Association  
Box 1 Site 8, RR #1  
Spirit River, AB  
T0H3G0

George Morrison  
Peace River Stock Growers Association  
RR #1  
Debolt, AB  
T0H 1B0

Cliff Whitelock, President  
Pembina Agricultural Protection Association  
Box 6997  
Drayton Valley, AB  
T0E 0M0

Jodi Karlowsky  
Pembina Forage Association  
Box 2350  
Westlock, AB  
T0G 2L0

George Freisen, Board Member  
Preserve Agricultural Land Society  
c/o J. Hainsworth RR# 4  
Lacombe, AB  
T0C 1S0

Peter Crown  
Soil and Water Conservation Society,  
Alberta Chap.  
Box 41103, Petrolia Area  
Edmonton, AB  
T6J 2M7

Darlene Gacek  
Three Creeks Grazing Association  
Box 1406  
Peace River, AB  
T0H 2X0

Joyce Penno, Chairperson  
Whitemud Grazing Association  
Box 133  
Dixonville, AB  
T0M 1E0

Glen Moodie, Secr./Treasurer  
Windsor Creek Grazing Association  
RR #1  
Sexsmith, AB  
T0H 3C0

Lawrence Ross  
Wolf Lake Grazing Reserve  
Box 717  
Hoselaw, AB  
T0A 1Y0

Robert Balay, President  
Rochester & District Agricultural  
Association  
Box 226  
Rochester, AB  
T0G 1Z0

Guy Belanger, President  
Smith & Hondo Agricultural Society  
Smith, AB  
T0G 2B0

Al Benwood, President  
Pembina Agricultural & Recreational  
Society  
Box 173  
Evansburg, AB  
T0E 0T0

Fred Bradley, President  
Fort Assiniboine Agricultural Society  
Box 360  
Fort Assiniboine, AB  
T0G 1A0

Daryl Forbes, President  
Westlock & District Agricultural Society  
Box 485  
Westlock, AB  
T0G 2L0

Peter Greschuk, President  
Drayton Valley & District Agricultural  
Society  
Box 7808  
Drayton Valley, AB  
T0E 0M0

Nick Grygus, President  
Grasslands & Districts Agricultural Society  
Box 53  
Atmore, AB  
T0A 0E0

Peter Kowalchuk, President  
Boyle & District Agricultural Society  
Box 189  
Boyle, AB  
T0A 0M0

Ken Groat, President  
Yellowhead Agricultural Society  
Box 5138  
Edson, AB  
T7E 1T4

Rick Johnston, President  
Pibroch & District Agricultural Society  
Box 730  
Westlock, AB  
T0G 2L0

Ron Kryski, President  
Mayerthorpe & District Agricultural  
Society  
Box 975  
Mayerthorpe, AB  
T0E 1N0

Milton Lawrence, President  
Barrhead Exhibition Association &  
Agricultural Society  
Box 4268  
Barrhead, AB  
T7N 1A3

Wilbert Meunier, President  
M.T.M Agricultural Society  
R.R. #2  
Barrhead, AB  
T7N 1N3

John Ohnysty, President  
Wildwood & District Agricultural Society  
Box 255  
Wildwood, AB  
T0E 2M0

Terry O'Toole, President  
Peers & District Cultural & Agricultural  
Society  
Peers, AB  
T0E 1W0

Dave Shalapay, President  
Athabasca District Agricultural Society  
Box 1688  
Athabasca, AB  
T0G 0B0

Walter Shukaliak, President  
Beaver Meadow & District Agricultural  
Society  
Box 24, Ste. 1, RR 1  
Niton Junction, AB  
T0E 1S0

Alan Thompson, President  
Sangudo & District Agricultural Society  
Box 477  
Sangudo, AB  
T0E 2A0

Ms. Valerie Henry, President  
Highridge & District Agricultural Society  
R.R. #1  
Pickardville, AB  
T0G 1W0

Ms. Maureen Kubinec, President  
Linaria & District Agricultural Society  
R.R. #1  
Westlock, AB  
T0G 2L0

Ms. Toni Meyer, President  
Anselmo Recreation & Agricultural Society  
Box 1192  
Mayerthorpe, AB  
T0E 1N0

Ms. Barbara Clark, President  
P.A.C.O. Agricultural Society  
Fawcett, AB  
T0G 0B0

Marvin Brown, President  
Beaverlodge & District Agricultural Society  
Box 303  
Beaverlodge, AB  
T0H 0C0

Russell Christenson, President  
La Glace & District Agricultural Society  
Box 185  
La Glace, AB  
T0H 2J0

Jim Davies, President  
Rocky Lane Agricultural Society  
Box 582  
Fort Vermilion, AB  
T0H 1N0

Joseph Dickmann, President  
Whitelaw Agricultural Society  
Box 1  
Whitelaw, AB  
T0H 3T0

Ernest J. Dyck, President  
La Crete Agricultural Society  
Box 791  
La Crete, AB  
T0H 2H0

Gerald Cameron, President  
Valleyview & District Agricultural Society  
Box 1226  
Valleyview, AB  
T0H 3N0

Basil Cooper, President  
Grimshaw & District Agricultural Society  
Grimshaw, AB  
T0H 1W0

Frank Debogorski, President  
Berwyn Agricultural Society  
Box 456  
Berwyn, AB  
T0H 0E0

Adrian Dutkevich, President  
Five Mile Community Agricultural Society  
RR 1, Ste 18, Box 4  
Grande Prairie, AB  
T8V 2Z8

Jeff Fehr, President  
Dixonville L.I.F.E. Agricultural Society  
Box 1382  
Grimshaw, AB  
T0H 1W0

Clarence Gabert, President  
Sexsmith & District Agricultural Society  
Box 209  
Sexsmith, AB  
T0H 3C0



Andrew Gregg, President  
Savanna Agricultural Society  
Box 6, Ste. 7, RR #1  
Spirit River, AB  
T0H 3G0

Orest Hrab, President  
Hines Creek & District Agricultural Society  
Box 21  
Hines Creek, AB  
T0H 2A0

Garth Juneau, President  
High Level Agricultural Exhibition  
Association  
Box 1530  
High Level, AB  
T0H 1Z0

Edward May, President  
Battle River Agricultural Society  
Box 272  
Manning, AB  
T0H 2M0

Ken Gour, President  
Nampa & District Agricultural Society  
Box 254  
Nampa, AB  
T0H 2R0

Marc Houle, President  
Smoky River Agricultural Society  
Box 221  
Donnelly, AB  
T0H 1G0

Lewis Johnston, President  
Harmon Valley Agricultural Society  
Box 6252  
Peace River, AB  
T0H 2X0

Anton Kirtio, President  
Central Slave Lake Agricultural Society  
Box 58  
Kinuso, AB  
T0G 1K0

William Milkovich, President  
Rycroft Agricultural Society  
Box 478  
Rycroft, AB  
T0H 3A0

Rod Neufeld, President  
Grovedale Community Club Agricultural  
Society  
Grovedale, AB  
T0H 1X0

Baldur Ruecker, President  
Worsley & District Agricultural Society  
Box 35  
Worsley, AB  
T0H 3W0

Owen Smith, President  
Wembley & District Agricultural Society  
Box 238  
Wembley, AB  
T0H 3S0

Glen Sutley, President  
Debolt Country Club & Agricultural  
Society  
Box 388  
Debolt, AB  
T0H 1B0

Mrs. Pat Monner, President  
Fairview Agricultural Society  
Box 1586  
Fairview, AB  
T0H 1L0

Pete Nykolyshyn, President  
Eureka River Agricultural Society  
Box 533  
Hines Creek, AB  
T0H 2A0

John Simpson, President  
Fort Vermilion Agricultural Society  
Box 556  
Fort Vermilion, AB  
T0H 1N0

Creston Stewart, President  
Bezanson Agricultural Society  
Box 192  
Bezanson, AB  
T0H 0G0

Danny Yasinski, President  
Hawk Hills Agricultural Society  
Box 747  
Manning, AB  
T0H 3M0

Ms. Shelley Alstad, President  
Saskatoon Lake Agricultural Society  
Box 488  
Wembley, AB  
T0H 3S0

Ms. Barb Chandonnet, President  
Eaglesham & District Agricultural Society  
Box 207  
Eaglesham, AB  
T0H 1H0

Ms. Clara Girvan, President  
Clairmont & District Agricultural Society  
Box 119  
Clairmont, AB  
T0H 0W0

Ms. Nannette Morissette, President  
Cleardale Agricultural Society  
Box 27  
Cleardale, AB  
T0H 3Y0

Ms. Brenda Radke, President  
Bonanza & District Agricultural Society  
Bonanza, AB  
T0H 0K0

Ms. Shirley Wells, President  
C.O.C.O. Plowing Match & Agricultural  
Society  
Box 160  
Wanham, AB  
T0H 3P0

Ms. Linda Dika, President  
Spirit River & District Agricultural Society  
Box 927  
Spirit River, AB  
T0H 3G0

Ms. Lorna Jensen, President  
Cherry Canyon Agricultural Society &  
Recreation Board  
Bear Canyon, AB  
T0H 0B0

Ms. Sue Packer, President  
Peace River Agricultural Society  
Box 6432  
Peace River, AB  
T8S 1S3

Ms. Margaret Sharkey, President  
Hythe & District Agricultural Society  
Box 271  
Hythe, AB  
T0H 2C0

Ms. Louise Zahacy, President  
High Prairie Agricultural Society  
Box 1773  
High Prairie, AB  
T0G 1E0



Canada

Alberta



# Northern River Basins Study

## Agriculture Stakeholders Questionnaire

### PART I: INTRODUCTION

Mailing  
Address  
(Please correct  
if necessary)

Name of Respondent \_\_\_\_\_ Position in Organization: \_\_\_\_\_

Telephone Number \_\_\_\_\_

The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how agricultural stakeholders use and value the Peace, Athabasca and Slave rivers. This questionnaire is being sent to agricultural societies and agricultural service boards throughout northern Alberta, as well as various other agricultural organizations. Please complete this questionnaire on behalf of your organization or the farmers in your area.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study



## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about your organization

1. How long has your organization been in existence? *(Circle the appropriate category)*

- |                           |                            |
|---------------------------|----------------------------|
| a. Less than 1 year       | d. Between 10 and 15 years |
| b. Between 1 and 5 years  | e. Between 15 and 20 years |
| c. Between 5 and 10 years | f. Over 20 years           |

2. How many members does your specific organization have?

*(Circle the appropriate category, do not include members from parent or affiliated organizations)*

- |            |             |
|------------|-------------|
| a. 0 - 10  | e. 51 - 70  |
| b. 11 - 20 | f. 71 - 100 |
| c. 21 - 30 | g. Over 100 |
| d. 31 - 50 |             |

3. What proportion of your members reside within the Peace, Athabasca or Slave river basins, including tributaries? *(Give a percentage)*

\_\_\_\_\_ %

4. Do you have a parent organization?

\_\_\_\_\_ No \_\_\_\_\_ Yes *(Name parent organization)*

\_\_\_\_\_

5. Are you affiliated with any other organizations?

\_\_\_\_\_ No \_\_\_\_\_ Yes *(Name organization)*

\_\_\_\_\_

6. What is the purpose of your organization in terms of its goals, objectives or interests?

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7. Describe a typical member of your organization.

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8. Describe the ways members of your organization use water for agricultural purposes.

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9. What is the most common source of water used by members of your organization?  
(Circle the appropriate category)

- |    |                                       |        |       |
|----|---------------------------------------|--------|-------|
| a. | Major Rivers ( Athabasca/Peace/Slave) | (Name) | _____ |
| b. | Major Tributaries                     | (Name) | _____ |
| c. | Small Creeks                          | (Name) | _____ |
| d. | Lakes                                 | (Name) | _____ |
| e. | Dug out                               |        |       |
| f. | Groundwater                           |        |       |
| g. | Well                                  |        |       |
| h. | Other                                 |        |       |

10. What impacts do members of your organization think they might be having on other water uses in the basins? (Describe)

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11. Have members of your organization noticed a change in the quality or quantity of water in the area over the last ten years?

\_\_\_\_\_ No (Go to Question 13)      \_\_\_\_\_ Yes (Go to Question 12)

12. Describe the types of changes that members of your organization have noticed.

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13. Do members of your organization foresee any changes to agricultural practices in the next ten years that may affect water resources in your area?

\_\_\_\_\_ No (Go to Question 15)      \_\_\_\_\_ Yes (Go to Question 14)

14. Describe the types of changes that may affect water resources in your area.

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15. How much do members of your organization agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

**PART III****WATER MANAGEMENT VALUES AND ISSUES**

16. In the opinion of members of your organization, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which most of your operations are located ?

Factor 1.

Factor 2.

Factor 3.

**Thinking about the first factor you mentioned:**

17. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1:

18. Describe the ways in which this factor has affected members of your organization.

Factor 1:

19. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

20. If no steps are taken to control your Factor 1, describe how you think members of your organization will be affected over the next 10 years

Factor 1:

21. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

**Thinking about the second factor you mentioned:**

26. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

25. Describe the ways in which this factor has affected members of your organization.

Factor 2:

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24. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

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25. If no steps are taken to control your Factor 2, describe how you think members of your organization will be affected over the next 10 years

Factor 2:

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26. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

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**Thinking about the third factor you mentioned:**

27. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

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28. Describe the ways in which this factor has affected members of your organization.

Factor 3:

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29. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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30. If no steps are taken to control your Factor 3, describe how you think members of your organization will be affected over the next 10 years

Factor 3:

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31. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

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32. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to members of your organization, and.
- the one that is of least concern to members of your organization.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	2. Groundwater contamination	
	6. Seismic exploration/road and pipeline development	
	7. Regulation of river flows by dams	
	9. Airborne pollutants	

GROUP 2:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	6. Seismic exploration/road and pipeline development	
	10. Uranium contamination (Lake Athabasca)	
	11. Industrial wastes/tailing ponds	

GROUP 3:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	2. Groundwater contamination	
	3. Forestry harvesting practices	
	5. Discharges of municipal sewage effluent	
	6. Seismic exploration/road and pipeline development	
	7. Regulation of river flows by dams	
	8. Discharges of pulp mill effluent	
	10. Uranium contamination (Lake Athabasca)	

33. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that members of your organization think would be the most effective in dealing with current problems, and.
- the one that members of your organization think would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	2. Improve municipal wastewater treatment.	
	6. Reduce industrial effluent loads.	
	7. Preserve and maintain ecosystems	
	9. Improve treatment of municipal drinking water	

GROUP 2:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	6. Reduce industrial effluent loads.	
	10. Increase monitoring of water quality	
	11. Develop management plan for entire basin.	

GROUP 3:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	2. Improve municipal wastewater treatment.	
	3. Provide more flood protection.	
	5. More enforcement of existing pollution laws.	
	6. Reduce industrial effluent loads.	
	7. Preserve and maintain ecosystems	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	10. Increase monitoring of water quality	

34. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that members of your organization would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

35.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

36. Do members of your organization support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

37. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. Would members of your organization be willing to participate on this committee?  
*(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how members of your organization would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

39. What do members of your organization foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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40. From the viewpoint of members of your organization, what are the three most important recommendations that the Northern River Basins Study should make?

#1 

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#2 

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#3 

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41. Do you have any other comments that you would like to make on behalf of members of your organization that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 10, 1995.**



## **APPENDIX G**

### **Commercial Fishermen**

#### **Questionnaire and Survey Population**



## Commercial Fishermen

Larry Beauchamp  
Box 33  
Joussard, AB  
T0G 1J0

Lawrence Bittman  
Box 125  
Faust, AB  
T0G 0X0

James Bowzaylo  
Box 55  
Athabasca, AB  
T0G 0B0

Henry Brown  
Box 592  
High Prairie, AB  
T0G 1E0

Gordon Caudron  
Box 27  
Joussard, AB  
T0G 1J0

Richard Caudron  
Box 39  
Joussard, AB  
T0G 1J0

Syd Caudron  
Box 62  
Joussard, AB  
T0G 1J0

Ron Cook  
Box 63  
Faust, AB  
T0G 0X0

Regis Courtoreille  
Box 11  
Faust, AB  
T0G 0X0

Blain Cunningham  
Box 137  
Joussard, AB  
T0G 1J0

Wayne Cunningham  
Box 159  
Joussard, AB  
T0G 1J0

Murray De Alexandra  
Box 28  
Widewater, AB  
T0G 2M0

Les Enes  
Box 1277  
Slave Lake, AB  
T0G 2A0

Robert Heroux  
Box 91  
Faust, AB  
T0G 0X0

Ralph Johnson  
Box 1772  
Athabasca, AB  
T0G 0B0

Guy L'Heureux  
Box 68  
Joussard, AB  
T0G 1J0

David Lamarche  
Box 41  
Joussard, AB  
T0G 1J0

Victor Plamondon  
Box 1536  
High Prairie, AB  
T0G 1E0

David Rochon  
Box 21  
Faust, AB  
T0G 0X0

Harold Schafer  
Box 608  
Slave Lake, AB  
T0G 2A0

Walter Thibeault  
Box 118  
Joussard, AB  
T0G 1J0

Tom Tomkins  
Box 106  
Joussard, AB  
T0G 1J0

James Twin  
Box 124  
Joussard, AB  
T0G 1J0

Betty Bateman  
Box 209  
High Level, AB  
T0H 1Z0

Cameron Beaverbones  
Box 433  
High Level, AB  
T0H 1Z0

Peter Bergen  
Box 351  
La Crete, AB  
T0H 2H0

Joe Sokoloski  
Box 272  
High Level, AB  
T0H 1Z0

Rod Porter  
9653 - 124 Avenue  
Grande Prairie, AB  
T8V 5Y6

Darryl Smith  
Box 1650  
Valleyview, AB  
T0H 3N0

Bob Tait  
9671 - 87 Avenue  
Grande Prairie, AB  
T8V 0A8

Jack Trepanier  
RR #1  
Wembley, AB  
T0H 3S0

Gordon Pischinger  
121 Wilderness Street  
Fort Smith, NT  
X0E 0P0

Philip Kennedy  
General Delivery  
Fort Smith, NT  
X0E 0P0

Karl Hoffman  
42 Pelican Street  
Fort Smith, NT  
X0E 0P0

Earl Evans  
70 Field Street  
Fort Smith, NT  
X0E 0P0

Edward McKay  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Kevin Antoniak  
144 Primrose Lane  
Fort Smith, NT  
X0E 0P0

Philip Beaulieu  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Ernie Villebrun  
General Delivery  
Fort Smith, NT  
X0E 0P0

Danny Beaulieu  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Ken Hudson  
221 McDougal Road  
Fort Smith, NT  
X0E 0P0

Gaby Lafferty  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Rocky Lafferty  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Robert Ekinla  
General Delivery  
Fort Resolution, NT  
X0E 0M0

James Norn  
General Delivery  
Fort Resolution, NT  
X0E 0M0

Henry McKay  
General Delivery  
Fort Resolution, NT  
X0E 0M0



# Northern River Basins Study Commercial Fishing Survey

## PART I: INTRODUCTION

Mailing  
Address  
(Please  
correct if  
necessary)

Telephone Number \_\_\_\_\_

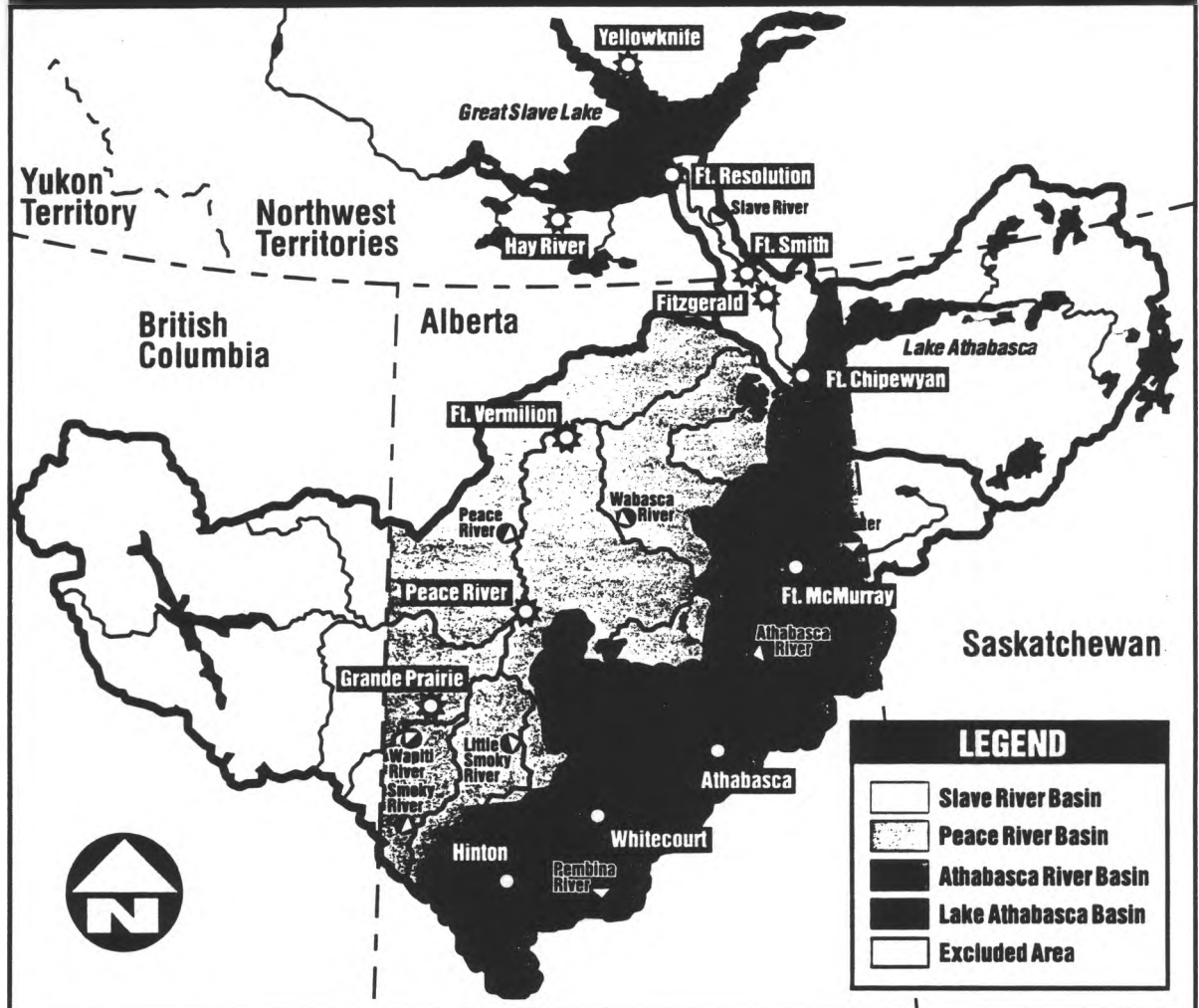
The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how stakeholders, including commercial fishermen, use and value the Peace, Athabasca and Slave rivers. This survey is being sent to a sample of commercial fishermen that operate within the basin, and we would like you to complete this questionnaire on behalf of commercial fishermen in your area.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study





**PART II GENERAL QUESTIONS**

The first part of our survey asks some general questions about commercial fishing in your area.

1. How many people in your area participate in commercial fishing activities.? (Circle the appropriate category)

- |    |         |    |          |
|----|---------|----|----------|
| a. | 0 - 10  | e. | 51 - 70  |
| b. | 11 - 20 | f. | 71 - 100 |
| c. | 21 - 30 | g. | Over 100 |
| d. | 31 - 50 |    |          |

2. List in order of importance, the five species of fish that commercial fishermen in your area prefer to catch, and indicate how many pounds or kilograms of these fish that commercial fishermen in your area catch in an average year:

Importance	Name of Species	Average Annual Catch - Pounds
#1		
#2		
#3		
#4		
#5		

OR

Average Annual Catch - Kilograms

3. List in order of importance, the three main bodies of water in which commercial fishermen in your area usually fish and indicate the proportion of total catch that comes from each water body.

Importance	Name of Water Body	Percent of Annual Catch
#1		
#2		
#3		

4. Do commercial fishermen in your area fish in the mainstems of the Athabasca, Peace or Slave rivers, or any of their major tributaries?

\_\_\_\_\_ No (Go to Question 5) \_\_\_\_\_ Yes

If yes, please indicate the three most important sites along these rivers and indicate the proportion of total catch that comes from each location.

Importance	Name of Site	Percent of Annual Catch
#1		
#2		
#3		

5. Do commercial fishermen in your area eat any of the fish that they catch?

\_\_\_\_\_ No (Go to Question 7) \_\_\_\_\_ Yes (Go to Question 6)

6. If commercial fishermen do eat part of their own catch, please indicate the types of fish, the parts of the fish that are eaten, and the amount (in pounds or kilograms) of fish that they would eat in an average year:

Species	Parts Eaten	Amount Eaten - Pounds	OR	Amount Eaten - Kilograms

7. Over the past 10 years have commercial fishermen in your area noticed any changes in the number, quality or health of the fish you caught?

\_\_\_\_\_ No (Go to Question 8) \_\_\_\_\_ Yes

If yes, describe the types of changes that have been noticed.

Number: \_\_\_\_\_

Quality: \_\_\_\_\_

Health: \_\_\_\_\_

8. When involved in commercial fishing, do commercial fishermen in your area ever consume or use river or lake water? (Check appropriate response.)

\_\_\_\_\_ No (Go to Question 9) \_\_\_\_\_ Yes

If yes, do commercial fishermen in your area treat this water in any way before drinking it? (Check appropriate response.)

\_\_\_\_\_ No \_\_\_\_\_ Yes (Describe Treatment) \_\_\_\_\_

9. How much do commercial fishermen in your area agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

**PART III WATER MANAGEMENT VALUES AND ISSUES**

10. In the opinion of commercial fishermen in your area, over the last 20 years what three factors (things) have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which most of your operations are located ?

Factor 1.

Factor 2.

Factor 3.

**Thinking about the first factor you mentioned:**

11. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the rivers.

Factor 1:

12. Describe the ways in which this factor has affected commercial fishermen in your area.

Factor 1:

13. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

14. If no steps are taken to control your Factor 1, describe how you think commercial fishermen in your area will be affected over the next 10 years

Factor 1:

15. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

**Thinking about the second factor you mentioned:**

16. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

17. Describe the ways in which this factor has affected commercial fishermen in your area.

Factor 2:

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18. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

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19. If no steps are taken to control your Factor 2, describe how you think commercial fishermen in your area will be affected over the next 10 years

Factor 2:

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20. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

---

---

**Thinking about the third factor you mentioned:**

21. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

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22. Describe the ways in which this factor has affected commercial fishermen in your area.

Factor 3:

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23. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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24. If no steps are taken to control your Factor 3, describe how you think commercial fishermen in your area will be affected over the next 10 years

Factor 3:

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25. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

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26. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to commercial fishermen in your area, and.
- the one that is of least concern to commercial fishermen in your area.

*(Answer each group on its own. Overlap among groups has been done on purpose)*

GROUP 1:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	3. Forestry harvesting practices	
	5. Discharges of municipal sewage effluent	
	9. Airborne pollutants	
	10. Uranium contamination (Lake Athabasca)	

GROUP 2:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	2. Groundwater contamination	
	4. Draining wetlands and muskeg	
	8. Discharges of pulp mill effluent	
	10. Uranium contamination (Lake Athabasca)	

GROUP 3:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	2. Groundwater contamination	
	3. Forestry harvesting practices	
	4. Draining wetlands and muskeg	
	7. Regulation of river flows by dams	
	9. Airborne pollutants	
	10 Uranium contamination (Lake Athabasca)	
	11 Industrial wastes/tailing ponds	

27. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that commercial fishermen in your area think would be the most effective in dealing with current problems, and.
- the one that commercial fishermen in your area think would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Effective (Check only one)	Management Action	<u>Least</u> Effective (Check only one)
	3. Provide more flood protection.	
	5. More enforcement of existing pollution laws.	
	9. Improve treatment of municipal drinking water	
	10. Increase monitoring of water quality	

GROUP 2:

<u>Most</u> Effective (Check only one)	Management Action	<u>Least</u> Effective (Check only one)
	2. Improve municipal wastewater treatment.	
	4. Protect traditional fishing, hunting & trapping	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	10. Increase monitoring of water quality	

GROUP 3:

<u>Most</u> Effective (Check only one)	Management Action	<u>Least</u> Effective (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	2. Improve municipal wastewater treatment.	
	3. Provide more flood protection.	
	4. Protect traditional fishing, hunting & trapping	
	7. Preserve and maintain ecosystems	
	9. Improve treatment of municipal drinking water	
	10. Increase monitoring of water quality	
	11. Develop management plan for entire basin.	

28. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that commercial fishermen in your area would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

29.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

30. Would commercial fishermen in your area support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

31. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. Would commercial fishermen in your area be willing to participate on this committee?  
*(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how members of your organization would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

33.    What do commercial fishermen in your area foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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34.    From the viewpoint of commercial fishermen in your area, what are the three most important recommendations that the Northern River Basins Study should make?

#1 

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#2 

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#3 

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35.    Do you have any other comments that you would like to make on behalf of commercial fishermen in your area that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 17, 1995.**



## **APPENDIX H**

### **Agricultural Service Board**

#### **Questionnaire and Survey Population**



# Northern River Basins Study Commercial Fishing Survey

## PART I: INTRODUCTION

Mailing  
Address  
(Please  
correct if  
necessary)

Telephone Number \_\_\_\_\_

The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how stakeholders, including commercial fishermen, use and value the Peace, Athabasca and Slave rivers. This survey is being sent to a sample of commercial fishermen that operate within the basin, and we would like you to complete this questionnaire on behalf of commercial fishermen in your area.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**



## **Agricultural Service Board**

County of Athabasca  
Agricultural Service Board  
Allan Johnson, Chairperson  
Box 540  
Athabasca, AB  
T0G 0B0

County of Barrhead  
Agricultural Service Board  
Alex Fluet, Chairperson  
5306 49 St.  
Barrhead, AB  
T7N 1N5

County of Grande Prairie  
Agricultural Service Board  
Everett McDonald, Chairperson  
8611 - 108 Street  
Grande Prairie, AB  
T8V 4C5

County of Lac St. Anne  
Agricultural Service Board  
George Turk, Chairperson  
Box 219  
Sangudo, AB  
T0E 2A0

M.D. of Brazeau  
Agricultural Service Board  
Bart Guyon, Chairperson  
Box 77  
Drayton Valley, AB  
T0E 0M0

M.D. of East Peace  
Agricultural Service Board  
Walter Gacek, Chairperson  
Box 480  
Nampa, AB  
T0H 2R0

M.D. of Fairview  
Agricultural Service Board  
Elden McLachlan, Chairperson  
Box 189  
Fairview, AB  
T0H 1L0

M.D. of Peace  
Agricultural Service Board  
Brian Grant, Chairperson  
Box 34  
Berwyn, AB  
T0H 0E0

M.D. of Smoky River  
Agricultural Service Board  
Fern Doucet, Chairperson  
Box 210  
Falher, AB  
T0H 1M0

M.D. of Spirit River  
Agricultural Service Board  
Robert Peacock  
Box 389  
Spirit River, AB  
T0H 3G0

M.D. of Westlock  
Agricultural Service Board  
Peter Stasiuk, Chairperson  
Box 219  
Westlock, AB  
T0G 2L0

M.D. of Yellowhead  
Agricultural Service Board  
Fred Priestly-Wright, Chairperson  
Box 100  
Evansburg, AB  
T0E 0T0

M.D. of Woodlands  
Agricultural Service Board  
Louis Santin, Chairperson  
Box 33  
Fort Assiniboine, AB  
T0G 1A0

M.D. of Big Lakes  
Agricultural Service Board  
Will Marx, Chairperson,  
Box 239  
High Prairie, AB  
T0G 1E0

M.D. of Greenview  
Agricultural Service Board  
Wayne Drysdale, Chairperson  
Box 1079  
Valleyview  
T0H 3N0

I.D. #22  
Agricultural Service Board  
Leonard Anderson, Chairperson  
Bag 900-30  
Peace Riverr, AB  
T8S 1T4

M.D. of Birch Hills  
Agricultural Service Board  
Dmitri Boychuk, Chairperson  
Box 157  
Wanham, AB  
T0H 3P0

Paddle Prairie Metis Settlement  
Glen Belerose, Chairperson  
General Delivery  
Paddle Prairie, AB  
T0H 2W0

M.D. of Saddle Hills  
Agricultural Service Board  
Larry Holthe, Chairperson  
Box 69  
Spirit River, AB  
T0H 3G0

M.D. of MacKenzie  
Agricultural Service Board  
Peter Hawryliuk, Chairperson  
Box 1110  
High Level, AB  
T0H 1Z0

M.D. of Lesser Slave River  
Agricultural Service Board  
Glen Vekved, Chairperson  
P.O. Box 722  
Slave Lake, AB  
T0G 2A0







Canada

Alberta



# Northern River Basins Study

## Agriculture Stakeholders Questionnaire

### PART I: INTRODUCTION

Mailing  
Address  
(Please correct  
if necessary)

Name of Respondent \_\_\_\_\_ Position in Organization: \_\_\_\_\_

Telephone Number \_\_\_\_\_

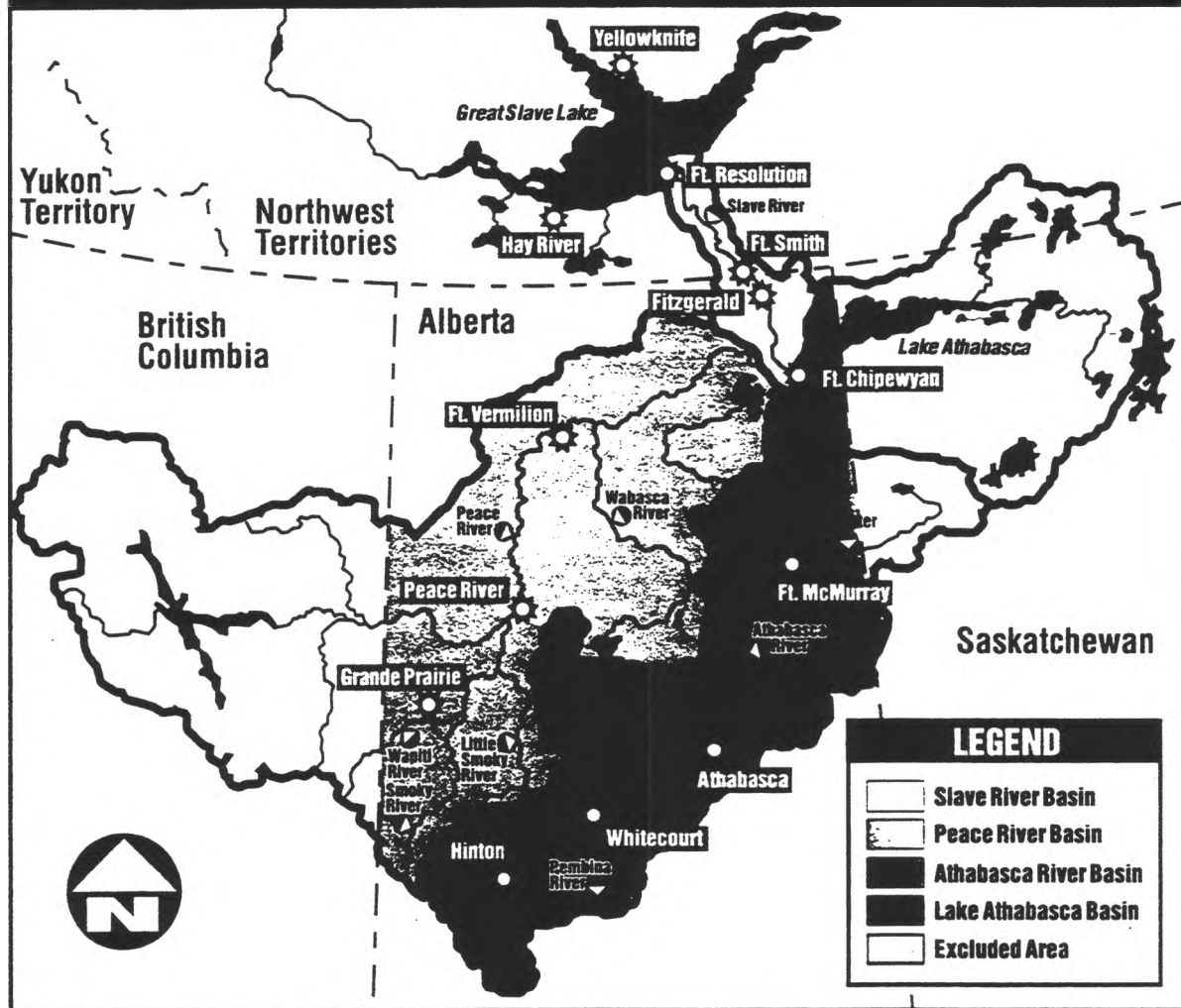
The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see map on page 2), and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how agricultural stakeholders use and value the Peace, Athabasca and Slave rivers. This questionnaire is being sent to agricultural societies and agricultural service boards throughout northern Alberta, as well as various other agricultural organizations. Please complete this questionnaire on behalf of your organization or the farmers in your area.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study



## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about the farmers in your area.

1. Approximately how many farmers are located within the jurisdiction of your agricultural service board?  
(Circle the appropriate category)

- |            |             |
|------------|-------------|
| a. 0 - 10  | e. 51 - 70  |
| b. 11 - 20 | f. 71 - 100 |
| c. 21 - 30 | g. Over 100 |
| d. 31 - 50 |             |

2. What proportion of farmers in your area reside within the Peace, Athabasca or Slave river basins, including tributaries? (Give a percentage)

\_\_\_\_\_ %

3. Describe the ways in which farmers in your area use water for agricultural purposes.

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4. What are the most common sources of water used by farmers in your area?  
(Circle the appropriate categories.)

- |  |        |       |
|--|--------|-------|
| a. Major Rivers ( Athabasca/Peace/Slave) | (Name) | _____ |
| b. Major Tributaries                     | (Name) | _____ |
| c. Small Creeks                          | (Name) | _____ |
| d. Lakes                                 | (Name) | _____ |
| e. Dug out                               |        |       |
| f. Groundwater                           |        |       |
| g. Well                                  |        |       |
| h. Other                                 |        |       |

5. What impacts do farmers in your area think they might be having on other water uses in the basins?  
(Describe)

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6. Have farmers in your area noticed a change in the quality or quantity of water in the area over the last ten years?

\_\_\_\_\_ No (Go to Question 7)      \_\_\_\_\_ Yes

If yes, describe the types of changes that members of your organization have noticed.

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7. Do farmers in your area foresee any changes to agricultural practices in the next ten years that may affect water resources in your area?

\_\_\_\_\_ No (Go to Question 8)

\_\_\_\_\_ Yes

If yes, describe the types of potential changes in agricultural practices that may affect water resources in your area.

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8. How much do you think that farmers in your area would agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

### PART III WATER MANAGEMENT VALUES AND ISSUES

- 9 In the opinion of farmers in your area, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which they are located ?

Factor 1.

Factor 2.

Factor 3.

**Thinking about the first factor you mentioned:**

10. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1:

11. Describe the ways in which this factor has affected farmers in your area.

Factor 1:

12. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

13. If no steps are taken to control your Factor 1, describe how you think farmers in your area will be affected over the next 10 years

Factor 1:

14. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

**Thinking about the second factor you mentioned:**

15. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

16. Describe the ways in which this factor has affected farmers in your area.

Factor 2:

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17. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

---

---

18. If no steps are taken to control your Factor 2, describe how you think farmers in your area will be affected over the next 10 years

Factor 2:

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---

19. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

---

---

**Thinking about the third factor you mentioned:**

20. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

---

---

21. Describe the ways in which this factor has affected farmers in your area.

Factor 3:

---

---

22. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

---

---

23. If no steps are taken to control your Factor 3, describe how you think farmers in your area will be affected over the next 10 years

Factor 3:

---

---

24. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

---

---



25. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to farmers in your area, and.
- the one that is of least concern to farmers in your area.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Concern</u> (Check only one)	Threat to Water Quality/Quantity	<u>Least Concern</u> (Check only one)
	3. Forestry harvesting practices	
	7. Regulation of river flows by dams	
	8. Discharges of pulp mill effluent	
	11. Industrial wastes/tailing ponds	

GROUP 2:

<u>Most Concern</u> (Check only one)	Threat to Water Quality/Quantity	<u>Least Concern</u> (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	3. Forestry harvesting practices	
	4. Draining wetlands and muskeg	
	6. Seismic exploration/road and pipeline development	
	8. Discharges of pulp mill effluent	
	9. Airborne pollutants	

GROUP 3:

<u>Most Concern</u> (Check only one)	Threat to Water Quality/Quantity	<u>Least Concern</u> (Check only one)
	2. Groundwater contamination	
	3. Forestry harvesting practices	
	4. Draining wetlands and muskeg	
	5. Discharges of municipal sewage effluent	
	6. Seismic exploration/road and pipeline development	
	11. Industrial wastes/tailing ponds	

26. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that farmers in your area think would be the most effective in dealing with current problems, and.
- the one that farmers in your area think would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Effective (Check only one)	Management Action	<u>Least</u> Effective (Check only one)
	3. Provide more flood protection.	
	7. Preserve and maintain ecosystems	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	11. Develop management plan for entire basin.	

GROUP 2:

<u>Most</u> Effective (Check only one)	Management Action	<u>Least</u> Effective (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	3. Provide more flood protection.	
	4. Protect traditional fishing, hunting & trapping	
	6. Reduce industrial effluent loads.	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	9. Improve treatment of municipal drinking water	

GROUP 3:

<u>Most</u> Effective (Check only one)	Management Action	<u>Least</u> Effective (Check only one)
	2. Improve municipal wastewater treatment.	
	3. Provide more flood protection.	
	4. Protect traditional fishing, hunting & trapping	
	5. More enforcement of existing pollution laws.	
	6. Reduce industrial effluent loads.	
	11. Develop management plan for entire basin.	

27. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important measures that farmers in your area would like to see used to describe the health of these rivers.

Measure #1	Measure #2	Measure #3

28.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

29. Would farmers in your area support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

30. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31. Would farmers in your area be willing to participate on this committee? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how you think farmers in your area would be prepared to be involved:

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---

32. What do farmers in your area foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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33. From the viewpoint of farmers in your area, what are the three most important recommendations that the Northern River Basins Study should make?

#1

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#2

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#3

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34. Do you have any other comments that you would like to make on behalf of farmers in your area that would be of interest to the Northern River Basins Study?

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Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 10, 1995.



## **APPENDIX I**

### **Trappers**

#### **Questionnaire and Survey Population**





## Trappers

Mr. Murray Lenik  
Alberta Trappers Association  
216 Cockerill Crescent  
Ft. McMurray, AB  
T9K 2J2

Mr. Onysyk  
Alberta Trappers Association  
13 Bennett Crescent  
Ft. McMurray, AB  
T9H 1H4

Mr. Ricky Snooks  
Alberta Trappers Association  
167 Grenoble Crescent  
Ft. McMurray, AB  
T9H 3Y1

Mr. Joe Tremblay  
Alberta Trappers Association  
324 Gregoire Crescent  
Ft. McMurray, AB  
T9H 2L5

Mr. Joe Blake  
Alberta Trappers Association  
116 Beaverlodge Close  
Ft. McMurray, AB  
T9H 2V7

Mr. Gary Brooks  
Alberta Trappers Association  
Box 5717  
Ft. McMurray, AB  
T9H 4V9

Mr. William Cody  
Alberta Trappers Association  
193 Becker Crescent  
Ft. McMurray, AB  
T9K 1M6

Mr. Larry Comrau  
Alberta Trappers Association  
220 Greely Road  
Ft. McMurray, AB  
T9H 3V6

Mr. Joe Gauthier  
Alberta Trappers Association  
27 Rae Crescent  
Ft. McMurray, AB  
T9H 1H2

Mr. Rollo Goodwin  
Alberta Trappers Association  
Box 44  
Anzac, AB  
T0P 1J0

Mr. William Horne  
Alberta Trappers Association  
255 Berens Place  
Ft. McMurray, AB  
T9K 2C7

Mr. Phil Jean  
Alberta Trappers Association  
7118 Bulyea Ave  
Ft. McMurray, AB  
T9H 1B1

Mr. Michael Zelman  
Alberta Trappers Association  
Box 933  
Athabasca, AB  
T0G 0B0

Mr. James McConnell  
Alberta Trappers Association  
Box 61  
Smith, AB  
T0G 1G0

Mr. Leo F. Raessler  
Alberta Trappers Association  
Box 27  
Hondo, AB  
T0G 1G0

Mr. Kevin Robinson  
Alberta Trappers Association  
Box 14  
Athabasca, AB  
T0G 0B0

Mr. Donald Weinrich  
Alberta Trappers Association  
Box 35  
Hondo, AB  
T0G 1G0

Mr. Floyd Kuffa  
Alberta Trappers Association  
Box 2098  
Athabasca, AB  
T0G 0B0

Mr. Dwight Chernish  
Alberta Trappers Association  
Box 3458  
Athabasca, AB  
T0G 0B0

Mr. Hugo Coli  
Alberta Trappers Association  
Box 25  
Athabasca, AB  
T0G 0B0

Mr. Dennis Potter  
Alberta Trappers Association  
Box 40  
Manning, AB  
T0H 2M0

Mr. John Fillion  
Alberta Trappers Association  
Box 240  
Kinuso, AB  
T0G 1K0





Canada

Alberta



# Northern River Basins Study Trappers Survey

## PART I: INTRODUCTION

Mailing  
Address  
(Please  
correct if  
necessary)

Telephone Number \_\_\_\_\_

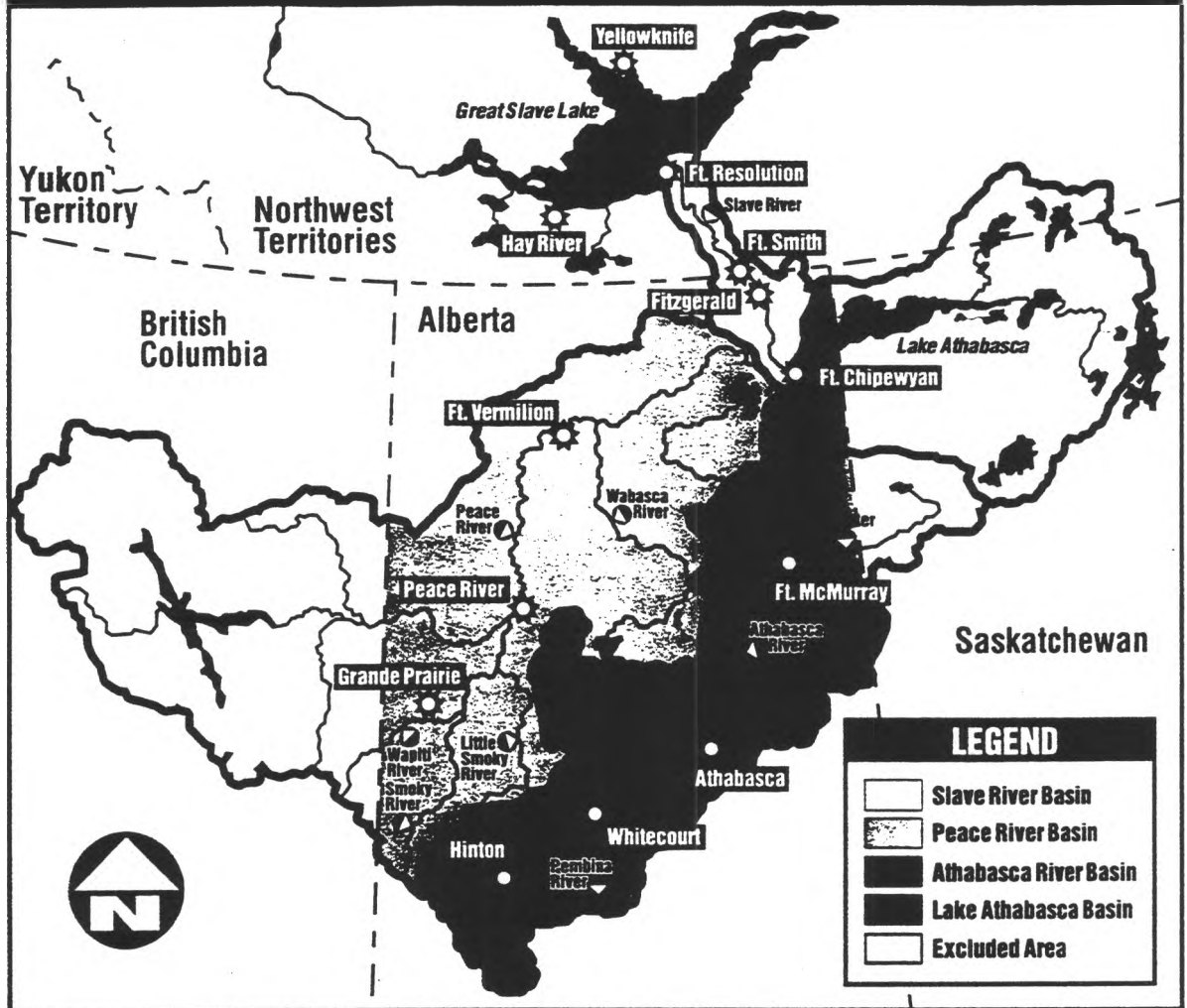
The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins, and is being conducted on behalf of the governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to determine how trappers use and value the Peace, Athabasca and Slave rivers. This survey is being sent to a sample of trappers that operate within the basins.

If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study



## PART II GENERAL QUESTIONS

The first part of our survey asks some general questions about trapping in your area.

1. How many people in your area participate in trapping?  
(Circle the appropriate category)

- |            |             |
|------------|-------------|
| a. 0 - 10  | e. 51 - 70  |
| b. 11 - 20 | f. 71 - 100 |
| c. 21 - 30 | g. Over 100 |
| d. 31 - 50 |             |

2. List the five species of furbearers that trappers in your area usually trap and indicate about how many of these animals are trapped in an average year.

Importance	Name of Species	Number Trapped per Year
#1		
#2		
#3		
#4		
#5		

3. What percent of trappers within your area have their traplines within 10 kilometres (6 miles) of the mainstems of the Peace, Athabasca or Slave rivers or any of their major tributaries?

Percent

4. In an average year, what percent of the total number of animals trapped by trappers in your area are taken from:

Source:	Percent
Mainstems of the Peace, Athabasca or Slave rivers	
Major tributaries to the Peace, Athabasca or Slave rivers	
Minor creeks and stream	
Large lakes	
Small lakes	
Wetlands, beaver ponds and sloughs	
Upland area	

5. Over the past 10 years, have trappers in your area noticed any changes in the number, quality or quantity of the furbearers that are trapped?

\_\_\_\_\_ No (Go to Question 6) \_\_\_\_\_ Yes

If Yes, describe the types of changes you have noticed.

Number: \_\_\_\_\_

Quality: \_\_\_\_\_

Health: \_\_\_\_\_

Other: \_\_\_\_\_

6. Do trappers in your area eat any parts of the animals they trap?

\_\_\_\_\_ No (Go to Question 7) \_\_\_\_\_ Yes

If Yes, please indicate the types of animal, the parts of the animal that are eaten, and the number of animals that would be eaten by an average trapper in an average year.

Species	Parts Eaten	Number Eaten per Year

7. When involved in trapping, do trappers in your area ever consume or use river or lake water? (Check appropriate response.)

\_\_\_\_\_ No (Go to Question 8) \_\_\_\_\_ Yes

8. If Yes, do they treat this water in any way before drinking it? (Check appropriate response.)

\_\_\_\_\_ No \_\_\_\_\_ Yes (Describe Treatment) \_\_\_\_\_

9. How much do trappers in your area agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure



## PART IV WATER MANAGEMENT VALUES AND ISSUES

10. In the opinion of trappers in your area, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave)?

Factor 1. \_\_\_\_\_

Factor 2. \_\_\_\_\_

Factor 3. \_\_\_\_\_

Thinking about the first factor you mentioned:

11. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1: \_\_\_\_\_

12. Describe the ways in which this factor has affected trappers in your area.

Factor 1: \_\_\_\_\_

13. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1: \_\_\_\_\_

14. If no steps are taken to control your Factor 1, describe how trappers in your area will be affected over the next 10 years

Factor 1: \_\_\_\_\_

15. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1: \_\_\_\_\_

Thinking about the second factor you mentioned:

16. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2: \_\_\_\_\_

17. Describe the ways in which this factor has affected trappers in your area.

Factor 2:

---

18. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

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19. If no steps are taken to control your Factor 2, describe how trappers in your area will be affected over the next 10 years

Factor 2:

---

20. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

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**Thinking about the third factor you mentioned:**

21. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

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22. Describe the ways in which this factor has affected trappers in your area.

Factor 3:

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23. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

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24. If no steps are taken to control your Factor 3, describe how trappers in your area will be affected over the next 10 years

Factor 3:

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25. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

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26. Below are three groups of things that are a potential threat to water quality and water quantity in the northern river basins. For each of the three groups, please indicate in the side boxes:

- the one that is of most concern to trappers in your area, and.
- the one that is of least concern to trappers in your area.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	3. Forestry harvesting practices	
	5. Discharges of municipal sewage effluent	
	9. Airborne pollutants	
	10. Uranium contamination (Lake Athabasca)	

GROUP 2:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	2. Groundwater contamination	
	4. Draining wetlands and muskeg	
	8. Discharges of pulp mill effluent	
	10. Uranium contamination (Lake Athabasca)	

GROUP 3:

<u>Most</u> Concern (Check only one)	Threat to Water Quality/Quantity	<u>Least</u> Concern (Check only one)
	1. Agricultural run-off (pesticides, herbicides, fertilizers)	
	2. Groundwater contamination	
	3. Forestry harvesting practices	
	4. Draining wetlands and muskeg	
	7. Regulation of river flows by dams	
	9. Airborne pollutants	
	10. Uranium contamination (Lake Athabasca)	
	11. Industrial wastes/tailing ponds	

27. For each of the three groups of management actions listed below, please indicate in the side boxes:

- the one that trappers in your area think would be the most effective in dealing with current problems, and.
- the one that trappers in your area think would be the least effective.

(Answer each group on its own. Overlap among groups has been done on purpose)

GROUP 1:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	3. Provide more flood protection.	
	5. More enforcement of existing pollution laws.	
	9. Improve treatment of municipal drinking water	
	10. Increase monitoring of water quality	

GROUP 2:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	2. Improve municipal wastewater treatment.	
	4. Protect traditional fishing, hunting & trapping	
	8. Make polluters pay an annual fee based on the volume of effluent they produce.	
	10. Increase monitoring of water quality	

GROUP 3:

<u>Most Effective</u> (Check only one)	Management Action	<u>Least Effective</u> (Check only one)
	1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.	
	2. Improve municipal wastewater treatment.	
	3. Provide more flood protection.	
	4. Protect traditional fishing, hunting & trapping	
	7. Preserve and maintain ecosystems	
	9. Improve treatment of municipal drinking water	
	10. Increase monitoring of water quality	
	11. Develop management plan for entire basin.	

28. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that trappers in your area would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

29.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

30. Would trappers in your area support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

31. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. Would trappers in your area be willing to participate on this committee?  
*(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how you would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

33. What do trappers in your area foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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34. What are the three most important recommendations that trappers in your area think the Northern River Basins Study should make?

#1 

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#2 

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#3 

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35. Do you have any other comments that trappers in your area would like to make that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 10, 1995.**





## **APPENDIX J**

### **River Transportation Companies: Questionnaire and Survey Population**



## RIVER TRANSPORTATION COMPANIES

Andy Frame  
Owner, A-Frame Contractors  
Box 6647  
Fort McMurray, AB

John Inglis  
Athabasca Transportation  
Box 150  
Fort Chipewyan, AB  
T0P 1B0

Rod MacDonald  
MacDonald Marine Transport Ltd.  
Box 6280  
Fort McMurray, AB  
T9H 4W1

Bishop River Hauling and Charters  
Box 5844  
Ft. McMurray, AB  
T9H 4V9



# Northern River Basins Study

## River Transportation Survey

### PART I: INTRODUCTION

Please verify if the  
information in the  
box is correct.

Name of Company \_\_\_\_\_ Telephone Number \_\_\_\_\_

Name of Respondent \_\_\_\_\_ Position in the Company \_\_\_\_\_

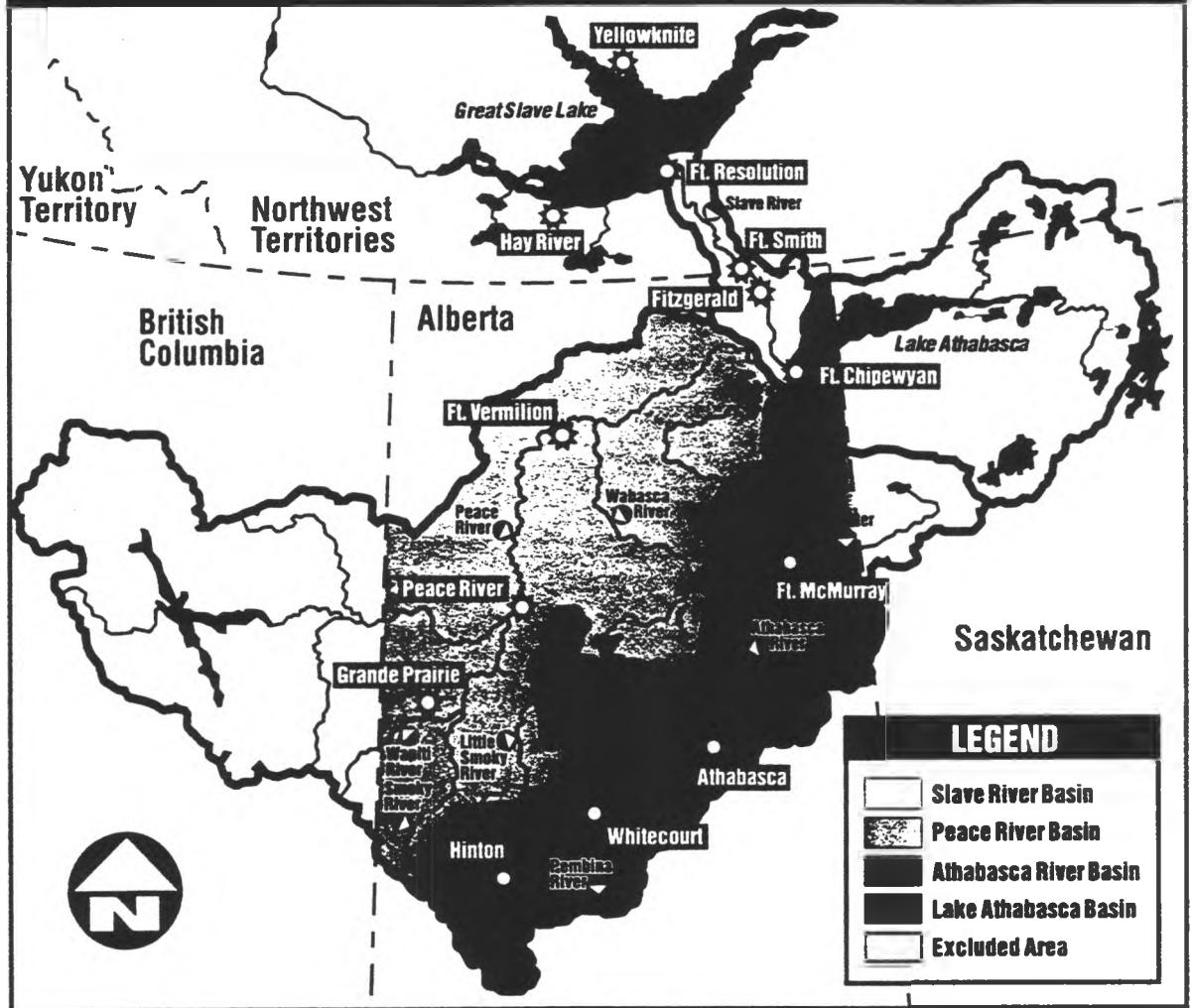
The Northern River Basins Study is a four year study of the effects of development on the aquatic resources of the Peace, Athabasca and Slave river basins (see page 2), and is being conducted on behalf of the Governments of Alberta, Northwest Territories and Canada.

One of the objectives of the study is to find out how transportation companies like yours use and value the Peace, Athabasca and Slave rivers.

We would appreciate if you could take the time to complete this questionnaire on behalf of your company. If you need any assistance in completing this questionnaire, you can call us toll-free at 1-800-267-6727.

**YOUR RESPONSES WILL BE KEPT CONFIDENTIAL.**

# Northern River Basins Study



## PART II      GENERAL QUESTIONS

The first part of our survey asks some general questions about your company's operation.

1. How long has your company been involved in river transportation on the northern rivers?  
(Circle appropriate category)

- |                           |                            |
|---------------------------|----------------------------|
| a. Less than 1 year       | d. Between 10 and 15 years |
| b. Between 1 and 5 years  | e. Between 15 and 20 years |
| c. Between 5 and 10 years | f. Over 20 years           |

2. How many employees does your company normally have during peak operating season?  
(Circle appropriate category)

- |                      |                      |
|----------------------|----------------------|
| a. Less than 5       | d. Between 15 and 20 |
| b. Between 5 and 10  | e. Over 20           |
| c. Between 10 and 15 |                      |

3. We would like to identify which parts of which rivers are used for river transportation. In the space below, please describe the river routes most frequently used by your company in an average year.

Origin (Name)	Destination (Name)	No. Of Trips per Year	Frequency (check one)				General Types of Cargo (Describe)
			Daily	Weekly	Monthly	Occasionally	

4. Please describe what proportion of your river transportation activities, in terms of number of trips taken, occurs during the following months.

April	%
May	%
June	%
July	%

August	%
September	%
November	%
December	%

5. In an average year, how many tonnes of freight does your company transport by water?

\_\_\_\_\_ tonnes

6. Over the last 10 years, has your tonnage: *(Circle appropriate category)*

- a. Decreased      b. Increased      c. Remained the same

Explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Over the next 10 years, do you foresee tonnage to: *(Circle appropriate category)*

- a. Decrease      b. Increase      c. Remain the same

Explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. Has the type of freight that you transport changed over the last 10 years? *(Circle appropriate category)*

- a. Remained the same *(Go to Question 10)*  
b. Changed

9. Describe the changes that have occurred in the type of freight that you have transported over the last 10 years.

\_\_\_\_\_  
\_\_\_\_\_

10. Over the next 10 years, do you expect changes in the type of freight you will be transporting?  
*(Circle appropriate category)*

- a. No *(Go to Question 12)*  
b. Yes

11. What types of new freight do you expect to transport over the next ten years?

\_\_\_\_\_  
\_\_\_\_\_



12. Over the last 10 years have there been any noticeable changes in the rivers you have been using?  
(Circle appropriate category)

\_\_\_\_\_ No (Go to Question 13)

\_\_\_\_\_ Yes

If yes, please describe the types of changes (i.e., quantity, quality, flows) you have noticed.

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13. Have these changes had any effects on your company's operations?

\_\_\_\_\_ No (Go to Question 14)

\_\_\_\_\_ Yes

If yes, please describe these effects:

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14. Do you foresee any changes to the way your company will use the rivers in the next few years?

\_\_\_\_\_ No (Go to Question 15)

\_\_\_\_\_ Yes

If yes, please describe these potential changes:

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15. How much do you and your company agree with each of the following statements? (Please check correct answer.)

1. Water quality in the Peace, Athabasca and Slave rivers is not really a major issue at the moment so no new restrictions on industrial or municipal water use are required.
2. Pollution of northern rivers is only a concern in a few locations and more enforcement of existing standards will solve these problems.
3. Contamination of northern rivers is a major problem and some industries or municipalities should be forced to reduce effluent discharges, even if it means closing some operations.
4. Existing water management regulations are interfering with economic development in the region and should be reduced or eliminated.
5. No new effluent discharges should be allowed until a river basin plan has been completed.

Agree Completely	Partly Agree	Disagree	Unsure

16. In the opinion of your river transportation company, over the last 20 years what three factors have had the greatest effect on water quality or quantity in the major river basin (Peace, Athabasca or Slave) in which most of your operations are located ?

Factor 1.

Factor 2.

Factor 3.

Thinking about the first factor you mentioned:

17. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 1:

18. Describe the ways in which this factor has affected your river transportation company.

Factor 1:

19. If no steps are taken to control your Factor 1, describe how you think the health of the rivers will be affected over the next 10 years

Factor 1:

20. If no steps are taken to control your Factor 1, describe how you think your river transportation company will be affected over the next 10 years

Factor 1:

21. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 1:

Thinking about the second factor you mentioned:

22. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 2:

23. Describe the ways in which this factor has affected your river transportation company.

Factor 2:

---

---

24. If no steps are taken to control your Factor 2, describe how you think the health of the rivers will be affected over the next 10 years

Factor 2:

---

---

25. If no steps are taken to control your Factor 2, describe how you think your river transportation company will be affected over the next 10 years

Factor 2:

---

---

26. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 2:

---

---

**Thinking about the third factor you mentioned:**

27. Describe the ways in which this factor has affected water quality, fish, wildlife, vegetation or the health of the river

Factor 3:

---

---

28. Describe the ways in which this factor has affected your river transportation company.

Factor 3:

---

---

29. If no steps are taken to control your Factor 3, describe how you think the health of the rivers will be affected over the next 10 years

Factor 3:

---

---

30. If no steps are taken to control your Factor 3, describe how you think your river transportation company will be affected over the next 10 years

Factor 3:

---

---

31. If the Northern River Basins Study were to suggest ways for managing this problem, what actions do you think they should recommend.

Factor 3:

---

---

32. Below is a list of things that are a potential threat to water quality and water quantity in the northern river basins. Please indicate how concerned you and your river transportation company are about each of these potential threats, using a scale from 1 to 7 where 1 is extremely concerned and 7 is no concern at all.

	Extremely Concerned			Moderate Concern		No Concern	
	1	2	3	4	5	6	7
1. Agricultural run-off (pesticides, herbicides, fertilizers)							
2. Groundwater contamination							
3. Forestry harvesting practices							
4. Draining wetlands and muskeg							
5. Discharges of municipal sewage effluent							
6. Seismic exploration/road and pipeline development							
7. Regulation of river flows by dams							
8. Discharges of pulp mill effluent							
9. Airborne pollutants							
10. Uranium contamination (Lake Athabasca)							
11. Industrial wastes/tailling ponds							

33. Below is a list of some of the things that the Northern River Basins Study could recommend for management of the river basins and their water resources. Please indicate which of these management actions you and your river transportation company think will be most effective in addressing current problems, using a scale from 1 to 7 where 1 is extremely effective and 7 is completely ineffective.

	Extremely Effective		Moderately Effective			Completely Ineffective	
	1	2	3	4	5	6	7
1. Change land use practices (forestry, agriculture) to reduce erosion and non-point pollution.							
2. Improve municipal wastewater treatment.							
3. Provide more flood protection.							
4. Protect traditional fishing, hunting & trapping							
5. More enforcement of existing pollution laws.							
6. Reduce industrial effluent loads.							
7. Preserve and maintain ecosystems							
8. Make polluters pay an annual fee based on the volume of effluent they produce.							
9. Improve treatment of municipal drinking water							
10. Increase monitoring of water quality							
11. Develop management plan for entire basin.							

34. One of the responsibilities of the Northern River Basins Study is to assess the health of northern rivers. Describe the three most important ways that your river transportation company would like to see used to measure the health of these rivers.

Measure #1	Measure #2	Measure #3

35.

	Measure #1	Measure #2	Measure #3
<ul style="list-style-type: none"> <li>How do you think this measure of river health has changed over the last 20 years?</li> </ul>			
<ul style="list-style-type: none"> <li>How often do you think this measure of river health should be monitored?</li> </ul>	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years	a. hourly b. daily c. weekly d. monthly e. yearly f. every 5 years g. every 10 years
<ul style="list-style-type: none"> <li>Who do you think should be responsible for monitoring this measure of river health?</li> </ul>	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other	a. government b. industry c. universities d. independent agency e. public f. other
<ul style="list-style-type: none"> <li>Who do you think should be responsible for paying for monitoring this measure of river health?</li> </ul>	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other	a. government b. all water users c. industrial water users d. other

## PART IV FUTURE RIVER BASIN MANAGEMENT OPTIONS

Currently, the fish, wildlife and water resources of the Peace, Athabasca and Slave river basins are managed separately by the governments of Alberta, the Northwest Territories and Canada, and each government has different management priorities. The Northern River Basins Study would like to determine if some sort of group or committee consisting of representatives of the three governments and various stakeholder groups should be established to help coordinate resource management in the three basins and to provide a way for northern residents to participate in management decisions.

36. Would your river transportation company support the idea of establishing an ongoing, inter-governmental and stakeholder committee responsible for the protection and use of the river basins? *(Check one)*

YES ☐

NO ☐

Don't Know ☐

37. If such a committee were established, should it play the lead role to:  
*(Check only one answer for each question)*

	YES	NO	Don't Know
a. Develop resource regulations in the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Oversee enforcement of existing regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conduct and coordinate research?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Issue licences and permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prepare resource management plans for the basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Provide policy advice to provincial, federal and territorial governments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Develop education programs for basin residents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. Would you or members of your river transportation company be willing to participate on this committee?  
*(Check one)*

YES ☐

NO ☐

Don't Know ☐

If yes, describe how you or your company would be prepared to be involved:

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**PART V      GENERAL COMMENTS**

39. What does your company foresee to be the most significant water-related issues in the Northern River Basins in the next ten years?

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40. From the viewpoint of your company, what are the three most important recommendations that the Northern River Basins Study should make?

#1

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#2

---

#3

---

41. Do you have any other comments that you would like to make on behalf of your company and its clients that would be of interest to the Northern River Basins Study?

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**Thank you for completing this survey. Please return it in the self-addressed postage paid envelope provided before March 22, 1995.**





## **APPENDIX K**

### **Coding For SPSS Files**

Information contained in this appendix provides information on the coding system used to code the survey results in an SPSS format.



## INDUSTRIAL STAKEHOLDERS CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 2,3,5,6,7,9,10,12 AND 37

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 1

SPSS Numerical Code	Name of Basins
1	Peace
2	Athabasca
3	Slave
4	Smoky
5	Pembina

SPSS Numerical Code	Name of Communities
2	Peace River
4	Valleyview
17	Edson
20	Drayton Valley
26	Slave Lake
27	High Prairie
35	Spirit River
37	Fairview
38	Bonanza
39	Whitecourt
43	Grande Prairie
45	Grande Cache
47	Fort McMurray
50	Hinton
54	Swan Hills
59	Entwistle
71	Red Earth
74	Barrhead
81	Cherhill
86	Wabasca
107	Fort McKay
108	Cynthia
109	Bear Canyon
110	Rainbow Lake
111	Dawson Creek
112	Loon Lake

### QUESTION 3

SPSS Numerical Code	
1	agriculture
2	logging
3	pulp & paper
4	oil & gas
5	mineral extraction
6	lumber or building products
7	manufacturing
8	power production
9	oil & gas/mining
10	logging/pulp & paper/lumber & building products
11	logging/pulp & paper/building products

### Other Activities

SPSS Numerical Code	
1	bottled water
2	sulphur processing

### QUESTION 4

SPSS Numerical Code	
1	electricity
2	oil
3	concrete, aggregate
4	sand & gravel
5	natural gas
6	natural gas
7	sub-bituminous high volatile coal
8	ADMT of alkaline peroxide pulp
9	condensate
10	pentanes
11	natural spring water
12	demineralized spring water
13	distilled water
14	premium drinking water
15	bleached kraft pulp
16	dimensional lumber
17	sulphur granules
18	coal
19	paper OSB

### QUESTION 11, 13, AND 15

SPSS Numerical Code	Survey code
1	no
2	yes

## INDUSTRIAL STAKEHOLDERS CODING LIST

### QUESTION 17

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 18 - 33

will be codified during the analysis component

### QUESTION 34 AND 35

SPSS codes same as survey codes

### QUESTION 36

see coding of Question 75 in Household Survey

### QUESTION 37

will be codified during the analysis component

### QUESTION 38-40

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 41-43

will be codified during the analysis component

## MUNICIPAL STAKEHOLDERS CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1,8,15,17 AND 40

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 1

SPSS Numerical Code	Survey Code
1	agriculture
2	logging
3	oil & gas
4	pulp & paper
5	lumber
6	mining
7	tourism
8	commercial trade
9	government
10	service industries
11	fishing, trapping, hunting
12	government/other
13	agriculture/oil & gas
14	agriculture/lumber
15	agriculture/service industries
16	oil & gas/pulp & paper
17	government/railway transportation
18	logging/lumber/other
19	agriculture/pulp & paper
20	logging/oil & gas
21	lumber/mining
22	oil & gas/lumber

### QUESTION 4,9,11, 13,16

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 7

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 10, 12, 14 AND 19

will be codified during the analysis component

### QUESTION 20

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 21-36

will be codified during the analysis component

### QUESTION 37-38

SPSS codes same as survey codes

### QUESTION 39

see coding of Question 75 in Household Survey

### QUESTION 40

will be codified during the analysis component

### QUESTION 41-43

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 44-46

will be codified during the analysis component.

## GENERAL STAKEHOLDERS CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1,2,8 AND 37

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 4,5,11,12,13,15,16

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 10

SPSS Numerical Code	Site Name
---------------------	-----------

see coding of Question 40 in Household Survey

SPSS Numerical Code	Usual Activity
---------------------	----------------

see coding of Question 40 in Household Survey

SPSS Numerical Code	Main Reasons
---------------------	--------------

see coding of Question 40 in Household Survey

### QUESTION 11

SPSS Numerical Code	Site Description
---------------------	------------------

see coding of Question 40 in Household Survey

SPSS Numerical Code	Usual Activity
---------------------	----------------

see coding of Question 40 in Household Survey

### QUESTION 13

will be codified during the analysis component

### QUESTION 14

will be codified during the analysis component

### QUESTION 15 AND 16 - DESCRIPTION

will be codified during the analysis component

### QUESTION 17

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 18-33

will be codified during the analysis component

### QUESTION 34-35

SPSS codes same as survey codes

### QUESTION 36

see coding of Question 75 in Household Survey

### QUESTION 37

will be codified during the analysis component

### QUESTION 38-40

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 41-43

will be codified during the analysis component.

## COMMERCIAL RECREATION STAKEHOLDERS CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1,2

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 3,4, and 5

SPSS code same as survey

### QUESTION 6

SPSS Numerical Code	Major Activity
---------------------	----------------

see coding of Question 40 in Household Survey

SPSS Numerical Code	Location
---------------------	----------

see coding of Question 40 in Household Survey

### QUESTION 7<sup>1</sup>

SPSS Numerical Code	Survey code
1	very important
2	important
3	somewhat important
4	not important at all

### QUESTION 8

SPSS Numerical Code	Survey Code
1	yes
2	no

### QUESTION 9-11

SPSS Numerical Code	Survey code
1	decrease
2	increase
3	remain the same

### QUESTION 12

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 13

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 14-29

will be codified during the analysis component

### QUESTION 30-31

SPSS codes same as survey codes

### QUESTION 32

see coding of Question 75 in Household Survey

### QUESTION 33

will be codified during the analysis component

### QUESTION 34-36

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 37-39

will be codified during the analysis component.

---

<sup>1</sup> The coding of description and explanation given by respondents for questions 7-12 will be coded during the analysis component.

## AGRICULTURE STAKEHOLDERS CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1,2 and 9

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 3

SPSS code same as survey

### QUESTION 4,5,11 and 13

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 6-8, 10, 12 and 14

will be codified during the analysis component

### QUESTION 15

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 16-31

will be codified during the analysis component

### QUESTION 32-33

SPSS coding same as survey coding

### QUESTION 34

see coding of Question 75 in Household Survey

### QUESTION 35

will be codified during the analysis component

### QUESTION 36-38

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 39-41

will be codified during the analysis component.



## COMMERCIAL FISHERMEN STAKEHOLDERS CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1 AND 29

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 2

SPSS Numerical Code	Name of Species
1	whitefish
2	northern pike
3	walleye
4	perch
5	tullibe
6	pike
7	pickerel
8	jackfish
9	catfish

### QUESTION 3

SPSS Numerical Code	Name of Water Body
---------------------	--------------------

see coding of Question 40 in Household Survey

### QUESTION 4

SPSS Numerical Code	Name of Site
---------------------	--------------

see coding of Question 40 in Household Survey

### QUESTION 5

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 6

SPSS Numerical Code	Parts Eaten
1	whole fish
2	tail
3	muscle
4	flesh
5	fillets/liver/cheeks
6	fillet and liver
7	fillet
8	strip along back

### QUESTION 7 AND 8<sup>2</sup>

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 9

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 10-25

will be codified during the analysis component

### QUESTION 26 and 27

SPSS codes same as survey codes

### QUESTION 28

See coding of Question 75 in Household Survey

### QUESTION 29

will be codified during the analysis component

### QUESTION 30-32

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 33-35

will be codified during the analysis component.

---

<sup>2</sup> textual portion of this question will be codified during the analysis component.

## AGRICULTURE SERVICE BOARD CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1 and 4

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 2

SPSS code same as survey codes

### QUESTION 3

To be coded during the analysis component

### QUESTION 6 AND 7<sup>3</sup>

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 8

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 9-24

will be codified during the analysis component

### QUESTION 25-26

SPSS codes same as survey codes

### QUESTION 27

see coding of Question 75 in Household Survey

### QUESTION 28

will be codified during the analysis component

### QUESTION 29-31

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 32-34

will be codified during the analysis component.

---

<sup>3</sup> text portion of these questions will coded during the analysis component

## TRAPPERS SURVEY CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1 AND 29

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 2

SPSS Numerical Code	Name of Species
1	coyote
2	beaver
3	wolf
4	lynx
5	fox
6	muskrat
7	fisher
8	martin
9	squirrel
10	mink
11	weasel
12	otter

### QUESTION 3 AND 4

SPSS code same as survey

### QUESTION 5<sup>4</sup>

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 6

SPSS Numerical Code	Survey Code
1	no
2	yes

---

<sup>4</sup> textual portion of this question will be codified during the analysis component.

SPSS Numerical Code	Parts Eaten
1	back quarters
2	whole
3	back and thighs
4	legs

### QUESTION 7

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 8<sup>5</sup>

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 9

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 10-25

will be codified during the analysis component

### QUESTION 26 AND 27

SPSS codes same as survey codes

### QUESTION 28

see coding of Question 75 in Household Survey

### QUESTION 29

will be codified during the analysis component

### QUESTION 30-32

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 33-35

will be codified during the analysis component.

---

<sup>5</sup> textual portion of this question will be codified during the analysis component.

## RIVER TRANSPORTATION CODING LIST

All questions using letters in an alphabetical order to categorize responses in the survey are converted into ascending numerical values in SPSS.

### QUESTION 1,2

SPSS Numerical Code	Survey Code
1	a
2	b
3	c
4	d
5	e
6	f
7	g
8	h
9	i
10	j

### QUESTION 3

SPSS Numerical Code	Origin
---------------------	--------

see coding of Question 40 in Household Survey

SPSS Numerical Code	Destination
---------------------	-------------

see coding of Question 40 in Household Survey

SPSS Numerical Code	Types of Cargo
---------------------	----------------

will be codified during analysis component

### QUESTION 4 AND 5

SPSS codes same as survey

### QUESTION 6 AND 7<sup>6</sup>

SPSS Numerical Code	Survey code
1	decrease
2	increase
3	remain the same

### QUESTION 8

SPSS Numerical Code	Survey Code
1	remained the same
2	changed

---

<sup>6</sup> textual portion of these questions will be codified during the analysis component.

### QUESTION 9

will be codified during the analysis component

### QUESTION 10,12,13 and 14<sup>7</sup>

SPSS Numerical Code	Survey Code
1	no
2	yes

### QUESTION 11

will be codified during the analysis component

### QUESTION 15

SPSS Numerical Code	Survey code
1	agree completely
2	partly agree
3	disagree
4	unsure

### QUESTION 16-31

will be codified during the analysis component

### QUESTION 32-33

SPSS codes same as survey codes

### QUESTION 34

see coding list of Question 75 in Household Survey

### QUESTION 35

will be codified during the analysis component

### QUESTION 36-38

SPSS Numerical Code	Survey code
1	yes
2	no
3	don't know

### QUESTION 39-41

will be codified during the analysis component.

---

<sup>7</sup> textual portion of questions 12, 13 and 14 will be codified during the analysis component.

## **APPENDIX L**

### **Verbatim Transcripts of Written Comments and Open-ended Questions**

The information contained in this appendix contains the verbatim transcripts of comments on the factors affecting the health of northern rivers.



## RESPONSES COMMON TO ALL SURVEYS

Survey #	Factor #1:	Factor #2:	Factor #3
001	No major factors since our operations are upstream of other operations (pulp mills etc.)		
002	industrial development - pup and paper	municipal development	agricultural development
004	Not qualified to answer this section		
005	No effect	No effect	No effect
006	Community ? Discharge		
008	Agricultural Expansion	Pulp and paper production operations	Road development
010	Annual precipitation	Dams	Industrial Effluent Discharge
011	Quantity: Climate - drying out.	Quality: Factories, i.e. pulp mills	Quality: Oil and Gas Industries
012	New, cleaner technologies for pulp mills to retrofit.	Better enforcement of existing guidelines and limits.	More public pressure on industry to clean up backyard.
013	Dissolved oxygen sags during winter	Organic input (agricultural, industrial and municipal).	
014	Oil Sands		
015	Forest industry activity coupled with logging of private land.	Naturally low water levels particularly in lakes.	
016	The water flows through natural coal formations.	There is little population density.	There is relatively little industrial activity.
017	Recent rapid industrial development.	Nutrient loading (point and non-point sources).	Natural seasonal and annual variations.
018	The clean up of the P & G mill on the Wapiti	The proliferation of pulp mills in the basin.	The control of the flow of water with the WAC Bennett Dam
019	Quantity is declining		
021	Economic Development	Climate	Regulations
023	Precipitation	Clear cutting of forests.	Mega pulp and paper mills.
025	Pulp mills upriver.		
026	Agricultural activities.	Logging (clear cutting).	Effluent discharge.
029	untreated discharge into rivers	rainfall	
030	pulp mills	forestry harvesting practices	
031	pulp & paper industry	agriculture	acid rain
032	natural events - flood, drought, major rain events	increasing number of road crossings near river	forest harvesting and production of forest products (mills)
036	industrial development	agricultural development	municipal growth
039	pulp mills	agriculture	municipalities
040	industrial development	population encroachment	farming
042	agricultural chemical/manure	pulp mill and oil & gas operations	logging
043	Hydro dam, Pulp mills, Industrial Development on Peace River		
100	pulp mills	herbicides used farmers	Discharge or rural septic tanks
101	industrial mill effluents		
102	Change in flow characteristics	water quality	
103	Bennett Dam construction		
104	W.A.C. Bennett dam, Hudson Hope, B.C.	D.M.T. pulp mill, Peace River	farm chemicals (pesticides & herbicides)
105	industry (pulp & paper, gas & oil)	logging	lack of precipitation

106	Pulp & paper effluent discharge		
107	water level of Kimiwan Lake	algae build up in Wanagami Lake	amount of chemical draining into rivers as by-product
108	farming	oil patch	
109	emission from plants	raw water quantity	raw water quality
115	Logging (pulp mills)	Fertilizers (Agricultural)	Over development
116	impact of industry	climatic changes	
117	dams	agriculture development	
118	farmland clearing and draining of land	farmland chemical	oil and other upstream development
119	dams	pulp mills	human use like diversion
120	improved controls and technology at Hinton have decreased discharge problems	Discontinue use of chlorine at Hinton facilities	New facilities downstream from Hinton impact downstream from Hinton
121	industrial development but not applicable because water source is Freeman lake		
122	clearing the trees	chemicals from farming	
123	lumber industry: erosion during run-off		
124	logging in Saddle Hills		
125	population growth	industrial development	
127	timber harvesting	chemical use in farming	industrial and municipal waste
128	Farming - Clearing land and water diversion	Logging - Clearing trees, water shed is different.	General dry conditions
130	Evaporation	Increased level of farming on Paddle River	Weir near Thunder Lake
131	Unknown		
200	pulp mills		
202	pulp mills and logging		
204	look at government test results		
205	poor road development	agricultural expansion	poor industrial activity (forestry/petroleum)
206	logging	oil field	agriculture
207	agriculture pesticide loading increased	Siltation	
208	pulp effluent	municipal and agricultural effluent and run-off	dams (W.A.C. Bennett)
209	pulp mills	heavy oil development	clear cutting
210	resource development: power dams and pulp mills	agriculture: cattle operations and pesticide use	Human consumption and effluent waste
211	Al-Pac Development	old pulp mills	Bennett Dam
212	clear cutting	amount and size of pulp mills along the Athabasca	
213	industrial development	municipal discharge	infrastructure development
214	logging	pulp mills	dams
216	industrial waste	agricultural chemicals and use	
217	forestry operations	industrial development	
218	pulp mills (Daishawa, Weyerhaeuser)	Bennett Dam	
219	dams (Bennett Dam)	logging and agriculture on embankments	
220	Paddle River Dam		
221	climate	industrial development	
222	pulp and paper mills	deforestation	global warming on boreal forest
223	pulp mills	clear cutting	farming
224	pulp mill pollution	clear cut logging	sewage dumping
225	pulp and paper	logging	oil & gas



226	pulp mill effluent	forestry practices	seismic and road development
227	Industrial Waste	Lack of water	
228	Agriculture - Quality		
229	Logging Industry	Less Trapping - Increase beaver population damage.	
230	Bennett Dam (B.C.)	Daishowa Pulp Mill and operations (logging) and Weyerhaeuser etc.	ALPAC Pulp Mill and Operations (logging) and Weldwood etc. and agricultural clearing
231	Industrial Development	Municipal Development	
233	Clearing of the land by logging and agriculture	Pulp Mills	Run off from agriculture/Town sewage and Bennett Dam
234	Major drought fro at least last 10 years	New roads have ditched a lot of runoff - increased siltation.	Industrial access across tributaries has caused stream bed damage.
236	Pulp Mill effluent	Logging	Dams
237	Increased drainage of wetlands.	Reduction of vegetation	Chemical Pollution
238	WAC Bennett Dam and Peace Valley Dam	Pulp Mills/Logging operations	
239	Pulp Mills	Logging	
300	pulp and paper industry plants	logging	
301	Hinton pulp Mill (Weldwood)		
303	pulp mills	farming	ranching
304	The P & G (Weyerhaeuser) mill in Grande Prairie	DMI mill n Peace River	
306	industry on the Athabasca and Hinton	sewage in Jasper	
307	pulp mills	Hudson Hope Dam	
308	pulp mills	sewage	recreation
309	Bennett Dam	unpredictable fluctuations of water levels	effluent
310	Bennett Dam	floods	
311	Hope Dam	pulp mills	Town of Peace River's sewage system
312	logging	oil & gas activity	
313	coal mine at Grande Cache	pulp mill at Grande Prairie	power plant at Grande Cache
314	Bennett Dam	industry and agriculture	
315	Fort McMurray Tar Sand Plants	pulp mills	
316	Industrial Waste	Farming	
401	Industries are the ones to check		
402	1979-80 government hearing on the Dickson Dam		
403	pulp mill development, timber harvesting	oil and gas development	municipal development and land clearing
404	flooding		
405	Bennett Dam	industry	sewage discharge
408	pulp mills	sewage disposal	dams
409	logging	tillage of land close to rivers	lack of effluent management
410	pulp mills	dams	weather
411	pulp mill		
412	Weyerhaeuser (pulp & paper industry)		
413	land clearing	drainage ditches	increased population and industry
414	Grande Prairie pulp mill	Bennett Dam	
415	pulp mills		
416	Lowering of water table	Pulp mill at Hinton	Clear cutting of timber.
417	Industries		
500	clear cut logging	seismic activities	oil fields

501	farming	pulp mills	oil company
504	pulp mills	chemicals in rivers	
506	pulp mills	logging	illegal dumping
507	pulp mills		
508	oil and gas	agricultural and municipal spraying (pesticides and herbicides)	
509	cleaning of river of deadfall	cattle farming	
601	over fertilization	sewage	industrial pollution
602	wood and paper industry	erosion	
603	Logging	Industrial Operations	Road construction and Farm clearing
604	Industry	Land clearing	Livestock operations
605	More people (municipal waste)	Industrial pollution	Clearing of forest cover.
606	Increase in Industrial Development on River System	Forestry practices - movement toward clear cutting.	Municipal sewage discharge.
700	pulp mills	town discharge sewage	tributaries running into Athabasca river like Baptiste Creek
701	damming of the Peace River	pulp mills discharging effluents	oil sands plants with broken pipelines
702	industry (mills, oils and gas)	logging	discharges from cities and towns
703	pulp mills	poor runoff	general pollution
704	industrial discharge	acid rain	logging
705	snow and rainfall	obsession with cleanliness and desire for beautiful gardens and lawns	increased discharges into rivers
706	snow and rainfall	too many special interest groups	too many radical people, over-reacting
707	WAC Bennett Dam	effluent from pulp mills	sewage, farm waste from towns and cities going through storm sewers to the river
708	Bennett Dam restricts flow to our area making travel hard to get around	islands are not getting flooded	pulp mills
800	pollution	slowdown of the flow of the Athabasca River from Mile 138 due to the Creed Creek outflow	Lower water levels in the Peace/Athabasca Delta (climate change and possibly Bennett Dam

Survey #	Description of how Factor 1 has affected water quality, fish etc.
002	Minimal effects on volumes. Local effects on water quality (BOD & nutrient loading)
006	Increased weed growth in river.
008	Siltation and reduction in water quality resulting from surface run-off, erosion and herbicide use.
011	Lower water levels have created warmer lakes and streams; changing vegetation type, killing fish, acting as a catalyst for contaminants that might otherwise have been inert.
012	Less chemicals into river system, better all around.
013	Less oxygen available for aquatic life, primarily in the winter under heavy ice cover conditions.
014	I have flown over the oilsands project, sitting on the banks of the Athabasca. Very major impact compared to any other activity I have seen.
015	Increased runoff and siltation affecting water quality and fish populations.
016	It provides a natural filtering mechanism.
017	River dissolved oxygen sags in the winters were probably increased though not to the extent of harming aquatic life. Improved industrial performance has minimized this impact.
018	When the water tasted bad we were concerned about the taste and other as yet unknown health hazards.
019	No effect.
021	Diminished flexibility and sustainability.
023	Water levels are affected which affects the volume of water flowing through the basin and so affects how often the system is flushed or lies stagnant.
025	Mercury contamination and other pollutants.
026	Erosion and nutrients.
030	water quality - just shouldn't be allowed to discharge into a river
031	increased temperature and chemical release
032	major cause of sedimentation and high suspended sediment loads
036	has not reduced fish populations. Wildlife: has affected quantity of life - enjoyment of river
039	have detected low level of dioxins/furans in monitoring studies
040	consumption, effluent quality
042	general deterioration of water quality and health of river ecology
043	Fluctuating water levels and flows
100	Discharge into river from pulp mill operation and using higher toxin levels
101	Poor quality fish - high mercury levels, fish are not safe to eat in Smoky River
102	not in position to comment
103	restricted flow and contamination
104	lower water table plus occasional flooding
105	people are afraid of contaminants in the waters of the Smoky River
107	fluctuations have reduced fish and wildlife
108	fertilizers and other chemicals, plus watershed run-off increase (shorter)
109	less fish and loss of health water for direct consumption
115	pollution (pulp mills)
116	not certain, but impact may be somewhat negative.
117	unusual water fluctuations, debris
118	erosion as water comes quicker and less chance of natural filtration
119	lowered water levels
120	assumed benefited quality of river in Hinton area
122	not as much water. More chemicals in water from farming.
123	poor raw water quality resulting in higher treatment costs and reduced plant output
125	strain on resources, disposal of effluents increase
127	clear cutting rather than select destroy
128	Chemicals from farming. Land clearing and drainage leads to fast water shed and poorer water quality
130	More plant growth. This requires more water, results in invasion of plant life, migration of fish populations.
200	contaminated water and fish growth
202	introduction of effluent into water - loss of wildlife due to logging as well as loss of habitat - erosion issues
205	increased run-off, sedimentation, irregular discharge of water
206	run-offs in excess causing unnecessary contamination

207	encourages weed growth and choking system
208	carcinogens (dioxins, furons etc.) increased BOD, other contaminants change the species comp. Of rivers ?, and some distance from discharge point. Bio-accumulation is one of a long term concern.
209	negative impact on all, also on human health
210	lower water levels , no natural floods to replenish wetlands, pulp mills have affected water quality and fish health
211	discharge: dioxins and furons and other organochlorine compounds
212	faster run-off and higher erosion
213	siltation, chemicals, nutrient loading, decreased oxygen, visible discolouration, fewer fish, smaller fish
214	more silt is washed into the river
216	We feel provincial controls have not been strict enough. Economic development seems to take precedent.
218	can't say that anyone specifically noticed any effects
219	Spring: they hold water back in BC and normal Spring run-off is not there - more siltation
220	A dam on a river causes everything to deteriorate
221	low river levels in dry years
222	siltation: reduction of oxygen
223	effluents have ill effects
224	decreasing fish and wildlife, increasing vegetation
225	increased contaminants
226	increase in dioxins and other contaminants, reduced dissolved oxygen, change in colour of Wapiti River
227	Five new plants increase capacity of old plant.
228	Toxic chemicals used by farmer are leached and run off into the rivers/
229	Has opened up huge portions of land allowing more farming/chemicals, cattle to walk into water and silt/sand to blow into water channels.
230	Destruction of Peace-Athabasca delta. Riparian habitats in jeopardy?
231	Decreased quality and increased vegetation and decreased fish?
233	Siltation of river channels and fish spawning areas, destruction of wilderness.
234	Mostly relates to lakes and tributaries, increased algae growth in the lower water has had some impact on rivers.
236	Toxins released detrimental to fish/riparian habitat not just locally but all the way to the arctic.
237	Spring runoff or heavy precipitation runoffs are uncontrolled, carrying debris, silt and chemicals.
238	Water table erratic - makes too much mud in river resulting in no fish. Animals have to move feeding, breeding, calving areas.
239	Dioxins/Chlorinated hydrocarbons. Poison in the food chain!
300	chemical additives to river system (pollutants)
301	fish consumption bans, drinking water downstream
303	pulp mill effluent has affected the quality of the water and may be damaging fish stocks
304	serious toxins, smell in the water, water unfit to drink
307	More contaminated fish and wildlife. I would not eat a fish from the Peace River.
308	effluent
309	Water fluctuation keeps silt suspended constantly silts in boat launches, leaves boats grounded, adversely affects fish
310	low water levels
311	The dam has slowed down our spring run-off causing tons of muddy water to settle out.
312	pulp mill: depletion of watershed
313	excess of coal dust in the immediate area and downstream
315	water pollution and deposits of dirty water on shield lakes from air pollution
316	Industrial waste when hazardous to our environment should never be allowed to dump in our water ways.
402	none
403	increased nutrient load down stream of mills leads to oxygen deficiency for fish growth and improved nutrients for excess algae growth
404	devastation of wildlife and vegetation
405	contamination is harmful to all forms of life who consume in live in the water
408	pulp mill discharge
409	clearcutting and erosion effect quality of water
410	making unfit for human consumption

411	discharges from mill into river
412	pollution
413	land clearing has decreased wildlife and vegetation has not affected water quality or fish
414	water pollution
415	some pollution in the water
416	With lower water levels (rainfall) and more beavers the tributaries are not delivering clean water.
417	Decrease the water quality
500	to ? runoff causing silting of lakes and rivers
503	water runoff of chemicals and pesticides. Clearing of land creating erosion, silting in spawning beds
504	pollution's from mills
506	? river smell, undrinkable even for wildlife
507	pollution from mills
508	fish are smaller and have an oily taste
509	water level has decreased, more siltation because river is clear now and sediment builds up
601	they feel that the use of nitrogen is causing more algae growth
602	chemicals discharged into river
603	Reduction of surface habitat and removal of filtration system for run off flow of snow melt and rain is now in river faster.
604	Toxicity in water has increased according to some of the water samples - effects are obvious
605	Municipal waste entering waterways has increased and more people fishing and hunting than I think resources can sustain.
606	Reduced water quality, fish populations, and overall health of the river.
700	the fish hook, sick out of the river, big sores
701	we have totally lost the use of the Lake Athabasca Delta for muskrat trapping
702	water is not fit for consumption unless treated in a water plant. Fish are inedible in Athabasca River. Less wildlife frequenting the river bottom level
703	can't eat the fish, fewer furbearers (beaver and mink)
704	discharge of pollution into river (Athabasca)
705	the decrease water leads to concentration of contaminants and leads to decrease in fish and reproduction rates
706	decrease in rainfall and snowfall results in normal decrease in fish and wildlife (normal cycle)
707	low water in Lake Athabasca
708	The river dam does not flood and back up the creeks therefore the creeks and the island lakes are drying up from lack of water. This means less ? and beavers to hold back water reducing the food chain to grow.
800	Industrial, agricultural and municipal discharge have affected the quality of fish and the food chain, reducing wildlife population.

Survey #	Description of how Factor 1 has affected the respondent's organization
002	not affected
006	Do not affect our company's operations.
008	Not applicable
010	Nil
011	General water table has lowered, but not significantly. Basically no effect.
012	Not really applicable
013	Studies initiated and costs incurred to identify causes. Increase in awareness of problem.
014	No effect
015	Has not.
016	Natural spring water is fast becoming the product of choice among health conscious consumers.
017	More stringent licence standards were applied to our operation to allow these projects to proceed.
018	Not at all.
019	Oil production had to be cut back because our waterflood volume is declining.
021	Increased requirements.
023	Little to no affect. At Carrot Creek if precipitation is low the water table will drop.
025	Not applicable.
026	No.
032	shut down water intake when sediment loads are too high
036	has caused us to improve the quality of effluent discharged
039	no impact
040	very little effect
043	Nil
100	unknown
102	not applicable. Not located near river
104	no effect directly
105	No effect
107	reduced/changed tourism potential, can cause flooding of the town
108	higher content each year in raw water analysis
109	less access to wildlife foods sources for survival
115	clear cutting of trees, creeks over flowing to lake and rivers
116	heightened awareness not to pollute. Considering residential metering of water
118	costs to repair roads and coulees
119	water travel more difficult
120	no effect
122	We generally pump in winter when there are the least chemicals in water.
123	greater silting of lakes and rivers
125	must upgrade water systems
127	First Nation's depends on wildlife and the river for fishing
128	Fast water shed results in flooding conditions resulting in such things as coabion work.
130	Higher water level at treatment. End water quality is decreased.
200	some fish in some rivers can only be eaten once a week (recommended) due to mixing content.
202	for the present time it is more aesthetic
205	increased erosion on private land, sediment build-up in creeks, loss of fish habitat
206	unstable water levels
207	more weeds, less spawning grounds
208	won't drink water, eat fish, loss of feeling that we are using natural resources in a safe and sustainable manner.
210	they will not fish in these areas because of contamination. Also, we will not drink any untreated water.
211	Some people in Fort Fitzgerald used to draw water from the river. Not now!
212	possible climatic changes
213	shame, anger, disgust at human activities and government 's inaction to protect the ecosystem
214	sort of flush flooding on tributaries makes river trips hazardous

216	On the Beaverlodge River, there are very few anymore. Effluent along the River maybe part of the Basin.
218	uncertain
219	Winter: can't use the river because it used to be flat but now its surface is frozen irregularly.
220	lower water levels
221	dry years: recreational fishing is poorer
222	uncertain
223	no
224	providing own potable water and inedible fish
225	increased concerns with drinking water
226	part decline in total ecosystem
227	Higher percentage of contamination
228	Water quality is mostly blamed on economic development. We never hear any reports on how agriculture affects the water quality.
229	No effect directly to uses due to geographic area of residence.
230	Reduction of enjoyment of the Peace River and nature studies.
231	Noxious or disagreeable odors, surface soap.
233	Stress from observing environmental destruction.
234	Less use of rivers and streams and not so good fishing. However, access has been easier.
236	It's pretty sad when you can not even eat fish from a truly wilderness river, e.g. Kakwa.
237	Water levels and quality change rapidly.
238	Makes for poor boating - no consistent beaches, cud hard on equipment, hard to plan for outings.
239	Reduced interest in fishing! Use side streams for water sources.
301	negative connotation for tourism relating to the pulp mill in Hinton surrounding areas outside of 10 Km radius not as affected.
303	Some potential clients have voiced concerns as to the safety of eating fish from the rivers
304	people no longer sense that this a trip into the pristine wilderness. It is polluted
307	Not a big effect on our business at this point.
308	people are afraid to eat fish because of high levels of contamination
309	We have had to move boats to deeper level at intervals all night, the water has
310	river unusable due to mud and debris
311	muddy water longer, poor docking due to deep mud deposits, poor swimming, poor fishing,
312	ugly, logging scares deface the landscape
313	strip mining has destroyed some scenery fish quantity has been affected
316	Fishing and clean water is a big factor for a river tour
402	arrival of industry on agricultural land which drove up land prices; causing the bankruptcy, of some organization members
403	poorer quality of fish out of river, poorer water quality for recreational users of river
404	portion of land and 3 horses
405	hasn't yet
408	fish in these rivers are not fir for food
409	water table low
410	none directly
411	water quality for cattle
412	none
413	increased wind and agricultural production
414	it has not
416	It hasn't except for fishing.
417	More treatment
500	feed beds are getting silted over
503	same as above
504	we are at head waters. L.S.L. feeds Slave River
506	no effect
507	no effect
508	negligible
509	no effect yet
601	has produced a black colour to their dug out water. Also an odour as resulted from the decomposing plant

	material.
602	little other than knowing the damage to nature which is taking place
603	The improved opportunities for expanded grazing, but feel that it may have negative consequences on water quality and quantity.
604	The quality of the water has dropped. This in turn affects weight gains in cattle and is questionable for crop usage.
605	Forest development has helped farmers with winter source of very high income. Many trees being harvested from private land.
606	No visible or measurable effects, but there is a fear of the unknown.
701	no income, had to get help for social services. We cannot be ourselves
702	Smaller fur harvested in these areas, poorer fur quality, loss of parts of our food chain, i.e. fish
703	fewer beaver
704	Reduced furbearer populations. I do not believe this has affected trapping directly as river is frozen during trapping season.
705	Only obsession is decreased animal population but this may not be due to changes in quantity or quality alone
706	less fur and too many radical environmentalists blaming the wrong people, making matters worse
707	loss of muskrats and water fowl
708	No small animals for the foxes, lynxes, fishers, etc.
800	This factor has affected shipping



Survey #	Description of Factor 1 and how it affects rivers if no steps are taken
002	Slight (minimal) degradation in water quality (effects localized)
006	Reduced fish populations
008	Reduced quality for downstream users.
011	Control over this factor is difficult, however the effect over the next 10 years could be frightening.
012	Health of river will decrease and any gains would be for nothing.
013	No change, but confirmation of study results required.
014	Unknown
015	Will get worse, particularly if private land owners are allowed to continue unrestricted logging.
016	Removal of the natural coal seams would eliminate the filtering capabilities and allow both organic and inorganic materials to be introduced into the river systems.
017	Depends on extent and type of future developments on the basin over the next 10 years. Could result in similar problems if the basins assimilative capacity is exceeded.
019	Our water flood will be complete in a couple of years.
021	Complex - many items are factored into this answer.
023	It is nature. There is no way to control it.
025	Destroyed by pollution.
026	Biological demand will be greater than water can handle.
030	drastically
031	unqualified to answer
032	cannot control
036	no regulated steps are necessary. The public (local community) is demanding further improvements. The company will respond.
039	steps have already been taken
040	cumulative effects must be examined
42	It will get worse.
043	Nil
100	contamination will escalate
101	eventually no aquatic life
102	negatively
104	potential of environmental problems - erosion and loss of arable land along river
105	Adverse effects on fish and wildlife and some cattle operations
107	levels have been stabilized so no effect is anticipated
108	increase
109	very drastic
115	completely polluted - fish etc.
116	slow deterioration of quality and quantity
117	damage has already been done
118	poorer quality of water coming in.
119	quality will slowly decline
120	The Athabasca at Hinton will improve in quality with Weldwood's water management programs to reduce emissions.
122	increased silt in river and erosion
123	increasing water treatment operational costs
125	without education on conservation, the resource will be strained
127	obvious
128	Chemical uses and fertilizer uses will continue to affect the water.
130	Continuation of problem.
200	will get worse
202	adversity
205	loss as suitable habitat particularly for cold water fish, higher sediment loads
206	will continue to deteriorate the quality of water and fish
207	rapidly decrease
208	There will still be concerns over chlorinated organic that have a considerable half life within water systems, other concerns would be reduced.

209	worsen
210	the fish contamination will get into the food chain. The wetlands will dry up and all plant animal will be stressed.
211	fish will disappear
212	same
213	Life in river will diminish: fewer fish, siltation. Perhaps attempts to artificially "fix" through technology oxygen levels. This is an insult o nature and to us.
214	build up of sediment throughout the water system
216	The river will be polluted and fish & other animals that depend on the river will be harmed.
218	will deteriorate in quality
219	uncertain
220	can't get any worse
221	uncertain
222	organic chlorine increase affects fish and communities downstream
223	could change
224	rapid devastation
225	moderately, deteriorate
226	continued decline in total system
227	Lack of fish and wildlife.
229	Poor quality water, less spawn area for fish, contamination of water for human use down river.
230	Ultimate destruction of the delta. Loss of reproduction events for riparian forestry.
231	Decreased
233	Significantly reduced
234	Nil
236	Increased destruction of whole ecosystem.
237	River flows may vary greatly from extreme to almost nil.
238	With water tables raising and lowering erratically, there will be no consistent vegetation growth, no consistent fish hatching, etc.
239	Decreased, worse. These poisons accumulate in both organic and inorganic materials.
300	slow deterioration of the water quality
301	river quality will continue to deteriorate causing further pollution
303	situation will get worse
304	Fish will not be consumed. The Smoky River will be unfit to drink and too smelly to canoe on.
307	The beautiful mighty Peace River will become a dirty contaminated river.
308	The rivers will be dead
309	It will probably stay the same
311	more flooding due to mud displacements
312	reforestation will improve landscape
313	a worsening situation
316	We have the proof already. Look at Eastern Canada and the United States. We have to stop before it is too late.
402	pollution will increase
403	higher nutrient loads and poisons (dioxins, furons) will over time render fish populations unfit for human conditions
404	none
405	If the water level becomes to lower the rivers will be unable to sustain life
408	people's health could be affected
409	severe erosion and quality of water
410	get totally polluted
411	the quality of the water
412	pollute more and more water down stream
413	won't be affected
414	I believe remedial measures are underway to solve the problem.
415	more fish and wildlife pollution
417	Decrease of ecosystem.
503	don't know possibly catch per net improve

504	Pollution will be building up in rivers
506	yet worse
507	will be worse
508	will get worse
509	will get worse
601	could change the quality for the worst
602	continue to lose fish from those rivers
603	Silt loads will increase, eutrophication of backwaters.
604	Naturally things will get worse.
605	I do not think it (population) can be controlled but waste management from towns and cities could be improved and increased standards on sources of pollution (industrial and municipal) will help.
606	We will see an increase in the rate at which water quality is declining.
700	don't know
701	the delta will die
702	situation will become worse as it stands now, it is terrible
703	it will get worse
704	I believe water quality will suffer as will fish and furbearers who use river
705	unable to control snow and rainfall ? hard to predict outcome
706	no one can control rainfall or snow fall nothing that man has done has any effects on them
707	lakes and slews in the delta will dry up completely
708	All our land is drying up and no small animals to support larger animal growth.
800	If pollution is not reduced it will destroy the fishery and limit the potential of ecotourism. The Peace/Athabasca Delta is recognized as one of Alberta's most important tourist assets.

Survey #	Description of Factor 1 and how it affects organization if no steps are taken
002	not affected
006	Will not be affected.
008	Not applicable.
010	Nil
011	Not substantially regarding gravel washing. Could be significant for fish.
012	Minimally unless through public image or enacted legislation.
013	No effect.
014	No effect.
015	Our filtration, water treatment systems may be taxed, but primarily, we often get blamed for natural occurrences or from impacts that are caused by others because we make direct withdrawals.
016	Other spring locations would have to be researched.
017	Having to achieve more restrictive discharge standards than our major competitors which could put us at a cost disadvantage.
019	None.
021	Unsure.
023	Little to no effect.
025	Not applicable.
026	No.
032	cannot control
036	The quantity and quality of effluent will improve, i.e. better quantity effluent & less of it.
039	steps have already been taken
040	very little effect
042	not affected
043	Nil
100	greater public concern
101	no fishing, no tourism new people will not come to community
102	not affected except tourism run-offs
103	reduced quantity and increased turbidity
104	no effect
106	no effect
107	no action needed now
108	cost of treatment
109	contamination
116	not certain
118	municipal costs for erosion repair on hills and roadways. One already been closed
119	economic tragedy
120	not affected
122	treat the water more & this will cost more.
123	control erosion around creeks and river located in higher elevation in this region.
125	water systems will be further strained
127	unknown
128	We will have greater costs to treat this water as it slowly but surely becomes more contaminated.
130	Requires more treatment, costs of treatment will increase. More chemicals in water.
200	quality of life, reduce fishing activities to our members
205	loss of fishing & loss of aesthetics along river
206	fish quantity and quality will continue to decline
207	enjoyment of waterways will decrease
208	won't drink water, eat fish, loss of feeling that we are using natural resources in a safe and sustainable manner.
210	We won't be able to fish and even consume it. Also wetlands will disappear which will cause extinction of some species
211	drinking water, fishing, tourism such as rafting
212	same

213	perhaps some will take direct action against government and industry
214	less use of local rivers will go elsewhere
216	won't use the river for recreation
217	further deteriorate the health of the rivers
218	If quality decreases, people will stop recreating on the Peace
219	uncertain
220	can't get any worse
221	uncertain
221	uncertain
223	no
224	adverse boating tourism
225	marginally
226	the natural environment which we enjoy will continue to deteriorate
227	Will not use river for recreation.
229	May not affect us much but anyone living on or near river systems may not be able to use the water
230	Will not visit the areas mentioned.
231	Take our tourist dollars elsewhere!
233	Continued stress over environmental destruction.
234	No change
236	We will still probably canoe, but it will be a markedly less pleasurable experience and certainly not attractive to increased tourism.
237	Fishing and recreational activities nil. Some members live along the peninsula and suffer the consequences of high or low water tables.
238	Outings will have to be planned depending on water content, will not be able to hold fund raising projects as planned,
239	Less willing to paddle reaches below pulp mills.
300	tourism will decline
301	fishing potential will be reduced, negative impression about the pulp mill will continue. Could deter tourism
303	It will limit the growth of our company
304	No one wants to canoe a river that wrecks of pulp.
307	The reputation of the Peace River is what attracts tourists to our business - fish, wildlife, birds etc.
308	Part of the reason people want to enjoy the clean, pristine environment that will be gone
309	Camping site will be limited to deep water, boat launch maintains, will be more costly.
311	just more mud and mess, lower water levels due to dam closures
312	unknown
316	It will definitely have a major impact on us, but very minor compared to the rest of Canada and the world.
402	Agricultural stakeholders and industries will have to cooperate so that they can share the resources while bearing equal burden of the costs
403	denied use of fish resources and drinking quality of the Peace River
404	none
405	Not affected directly, Peace not our main source of water
408	People's health could be affected
409	poor quality water
410	increased health problems
411	it will affect the drinking water of the cattle
412	none
413	won't be affected
416	Not a factor
417	Decrease in water treatment, less economic spin off from tourism i.e. fishing, hunting.
500	there will be no fish
503	Check to see if our fish are affected by fertilizers and pesticides positive or negative to humans
504	minimal
506	no effect
507	no effect
508	bad effect
509	spawning grounds are deteriorating

601	could change the water quality for the worst and may have to go to treated municipal water supplies
602	little
603	Increased pressure from environmental factions to limit access to rivers: reduced or restricted ability to water livestock.
604	Farmers in our area will have to start looking at other sources of water which cost a great deal of money.
605	I don't think this will hurt farmers in area; probably will help (more people - more markets).
606	Unknown, but since most farmers do not use water directly from the river they would be affected very little.
700	don't know
701	damn hard to make an honest living!
702	Loss of furbearers and food chain related to furbearers in river bottoms
703	no furbearers to trap
704	I would expect a reduction in fur bearers who feed on fish etc. From river and use river during summer.
705	if water levels fall then wildlife will decrease
706	no one can control rainfall or snowfall but there will a normal decrease
707	more loss of habitat
708	A lot of river ? all drying up meaning less beaver houses and no water backing up to support muskrats.
800	this factor will not affect shipping

Survey #	Recommendations for Factor 1
002	No recommendations
008	Buffer zones adjacent to agricultural areas, control of herbicide use in potential areas adjacent to water courses.
011	Replenish Ozone.
012	Ones that limits damage to the environment yet still allows for development and use of natural resources at sustainable levels.
013	Determine real cause of oxygen depletion.
014	Unknown.
015	Establish watershed protection zones that industry and public have to comply with.
016	Establish control areas where natural coal beds would be maintained around existing spring sites.
017	Now that a larger and more complete river baseline has been established, more accurate environmental impact assessments should be possible. A river management plan identifying river assimilative capacities should be produced.
018	Continue implementing reasonable but rigid standards for water ?
021	Not sure there are any new answers.
023	Nothing to do.
025	Clean up.
026	Enforce near bank activity. Leave protective zones near rivers (buffer zones).
030	same as required with oil and gas companies . No discharge into rivers
032	can't take action but should recognize this is the dominant factor and that man-caused factors are relatively minor in comparison
036	suggest all company's become more directly accountable to operating communities, i.e. Environmental Advisory Committee
039	steps have already been taken
040	better understanding of cumulative effects based on sound model
042	difficult to control without decreasing agricultural activity
100	stricter regulations on discharging ? into river systems and
101	strict guidelines, more frequent monitoring
102	should reconsider minimum flow requirements for Peace River (Bennett Dam release)
104	regulation of outflow of water release from dam. Studies before other dams put on rivers.
106	More monitoring of effluent discharge by government (not industry)
107	Keep lake stable at current levels
108	Banning of all chemicals (chemical free farming) and total forest clearing
109	some control over emissions from plants
115	stop
116	not certain
118	control of drainage sloughs
119	no more dams & remove the pulp mills
122	Buffer zone between rivers & logging activities
125	educate people about the precious value of water resources
127	More stringent environment regulations and enforcement
130	Uncertain
200	set mandate for pulp mills to reduce effluent discharge close to zero
202	put some "teeth" into the regulations keep politics out
205	ecosystem designed in terms of all activities in basin
206	strict limitations in areas logged and the type of logging allowed
207	reduce amount of channeling in area which allow more pesticide direct access. Encourage "green" herbicides
208	upgrade mills, close the loop (? Possible), shut the mill down if they can't do a better job, higher fines for non-compliance and more monitoring
210	Ban all dioxins and furons in pulp effluent to reach our water courses, get power dams to at least restore some of the historic water levels.

211	More control at the community level and zero-discharge for pollutant's policy
212	selective cutting and smaller annual cut
213	Eliminate all classes of organochlorines reduce suspended solids to 10% of current levels - regulate nutrient loading from AGF and forest industry activities - Vegetation on drainage courses. Stop draining wetlands
214	no clear cutting smaller wood lots
216	Problems need to be determined so people, groups and government (along with industry) will take action or have it forced on them.
218	Enforce current legislation more strictly, government must monitor industrial users more carefully
219	get pollution-wide control
220	- stop all pollution - better monitoring of resources
221	none
222	restructuring the entire system
223	more stringent control on release of effluent
224	effluent discharges to water systems clear cutting control
225	guidelines on maximum contaminant levels and regulate existing effluents
226	call for closed-system mills and a ban on chlorine used in bleaching
227	Clean up effluent discharges from plants.
228	Results published should include total amount of contamination with how much is contributed by industry, agriculture, etc.
229	Stiffer control of effluent discharges to river by logging industry, towns, cities.
230	Dismantling Bennett Dam (first choice) or changing its operation.
231	Preservation of water quality number 1!
233	Restrict logging to selective techniques.
234	Can not do anything.
236	Moratorium on any further pulp mill/mining development unless shown to have zero discharge.
237	Establish and buffer zone to control the rate of unfiltered drainage into systems.
238	Consistent water flow, clean up of discharge from dam (logs, etc.), and introduction of schedule of water release program.
239	Pulp mills should not be allowed to dump wastes into rivers!
300	tighter controls and reduce allowable emission levels of pollutants
301	Elimination of pollutants from industry that affect the Northern River basins. Strict pollution controls
303	No new bleach Kraft pulp mills to be allowed. Existing mills must be forced to clean-up their discharges.
304	Smell and toxin monitoring and severe reduction
307	Definitely monitor effluent discharges from industries etc. Penalties for any one not obeying the rules
308	should go to coloured paper to eliminate the bleaching process
309	B.C. Hydro should be restricted to use the natural flow of the river or at least not be flowed to make drastic fluctuations
311	more normal run-offs. Let the river have its own way
312	No logging in or near these recreation spots
313	better reclamation, coal dust control
315	We must have clean air and water
316	No industrial waste that can not be treated to a 100% satisfaction. No more diluting theory.
403	More enforcement of existing regulations regarding effluents from mills. Put mill water intake downstream of discharge point.
404	review logging practices
405	The dam should be controlled so that they release water in a timely manner for wildlife existence, e.g., McKenzie delta
408	No discharge of any sewer or any pulp mills wastes
409	better logging policies, i.e. cut one, take one
410	tighter controls
411	to keep a close watch on the discharges of the mill
412	heavier government control
413	make incentives to leave shelterbelts



414	stronger environmental policing to ensure that it does not happen again
415	less mills, more on stronger regulations
417	Rigid regulations on industries.
500	Selected logging, more water diversion ditches on roads and cut lines
503	Check to see if our fish are affected by fertilizers and pesticides positive or negative to humans
504	tough pollution laws and fines
506	continue monitoring
507	make pulp mills more aware
508	uncertain
509	unknown
601	the use of settling ponds before allowing water into dugouts
602	the necessary factors
603	Boarder (leave) strips, maximum cut block sizes, impact study in sensitive areas.
604	Some of existing regulations could be enforced more. Getting the costs of water sampling down would be an asset in helping at the experimental stage and in monitoring potential problems.
605	Wish I had chosen deforestation as having greatest impact but farmers wouldn't support this as their opinion. I'd like to see more regulation of clearing farmland, matching soil quality to crop production.
606	Increased monitoring and more stringent regulations. No new industrial projects until the effects of the current ones are known.
700	make industries clean up
701	Help get the Athabasca Delta back to where it was. High and productive.
702	eliminate or greatly reduce the amount of pollutants discharged in river
703	make sure there is no water pollution
704	Stricter enforcement for violators. Industry should continuously monitor discharges into river.
705	- rain dance - cloud seeding really don't know how one can ensure the quantity of water available other decrease consumption
706	impossible (act of God category)
707	need more water in Spring
708	Let the river run its natural cause. In the spring, there is so little water coming down the ice ? on the bank instead of flooding like it should into streams and lakes.
800	eliminate all pollutant inflows to the rivers

Survey #	Description of how Factor 2 has affected water quality, fish etc.
002	Increased industrial and municipal run-off Increased discharge from municipal sewage facilities Greater hunting and fishing pressure
008	Effluent discharge and loading rates: Are river ecosystems capable of maintaining current and future demands?
010	?
011	Contaminates vegetation and fish. Kills fish. Food chain is contaminated. Warms the water, slowly killing the river
012	Maintained at current levels or even increased health a bit.
013	Organic enrichment. Species diversity changes.
015	Lower precipitation levels have led to low water level, thus freezing solid of small sloughs, less habitat. Warmer temperatures impact fish habitat.
016	Harmful pollutants and bacteria are not produced or stockpiled (e.g. landfills).
017	Potential to impact river D.O. (algae blooms, increased invertebrate populations).
018	We are concerned about the overall amount of pollution affecting a fragile environment base and an even more fragile environment further north.
021	Causes fluctuation from "norms".
023	Run off pollutes the rivers and lakes with mud and silt and chokes them off.
031	pesticide & herbicide contamination
032	Increased sediment loads which sometimes impact on fish and fish habitat. Increased access has also substantially increased pressures on fish and wildlife from increased fishing and hunting
036	perceived effect - nutrient run-off and increased siltation
039	have detected low levels of pesticides 5-10 yrs ago, not presently.
040	sewage, fishing, population, noise and pollution
042	general deterioration of water quality and health of river ecology
100	run-off into rivers causing higher toxin levels
104	effluent
107	reduced fish population water quality and reduces recreation activities
108	silt content and spills
109	There is a major decrease in wildlife in quantity and quality
115	under water dams causing flooding and carrying soil etc. To river
117	siltation - contamination by fertilizers and chemicals
118	has to have effect but not sure of the exact effect.
119	will kill everything
120	Water quality improved due to Weldwood's attention to ? ? water emissions
122	there is no more any graylings in the river
125	decrease in water usage
127	obvious
128	All the factors involved with clear cutting.
130	Overall more impurities from farm animals, from runoff as well. Not healthy for fish.
202	introduction of chemicals and fertilizers into water streams
205	erosion, changing run-off patterns, build up of nutrients
206	wildlife numbers are declining especially big game
207	reducing spawning areas and water clarity
208	increased organic/nutrient input puts a demand on O <sub>2</sub> in water supply, also insecticide/pesticide run-offs.
209	negative impact on all, also on human health
210	cattle ranching or pastures near watercourses introduce fertilizers, herbicides into our water system
211	same as Factor one
212	higher pollution
213	Chemical and salt run-off into river - change in vegetation variety and amount. Fewer and smaller fish. Nutrient loading

214	chemicals returned to the river
216	run-off and cattle have had an impact on the smaller rivers
218	less water flow
219	more siltation
221	reduced water quality
222	siltation
223	more sediment - disturbing fish hatchery and rivers, faster run-offs and more debris in rivers
224	silt run-off, erosion, increase mercury levels
225	clearcutting along river beds resulting in "blowdown", partially blocking waterway - impediment to fish migration
226	Increased siltation, changes in water temperature, fragmentation of wildlife habitat. River corridors become islands of habitat and put wildlife in direct conflict with mills, urbanization etc.
227	Concentration level of contamination too high.
229	Less trapping means more beaver - causes back up of small creeks which flow from lake to lake and decreases water levels and does not allow fish to reach spawn areas.
230	Extensive logging/clearcuts on upland water quality diminished with effluent. It may meet the standards but is not like it was.
231	Decreased quality and increased vegetation.
233	All have been reduced.
234	Silted spawning beds, increased nutrients.
236	Increased siltation probably affecting fish spawning etc., riparian habitat for shore birds, etc. Volume of noise level can not be good for wildlife.
237	Allows for uncontrolled snow melt and precipitation runoff not allowing for filtration or percolation over a longer period of time.
238	Less fish, more shore growth of small trees, less game, water pollution, water smell, pulp crap floating on water.
239	Greater flow variability. More high water damage, except the Peace River.
300	higher siltation in river system due to uncontrolled runoff
303	has added chemical fertilizers to the waters
304	This mill is much better and the river is much bigger so the impact is less sever.
307	The river is constantly very dirty (muddy) with much debris (trees). When water is released to quickly. When water is withheld too long sand bars are a real problem.
308	I think the major problem should be taken care of before the small problems
309	Keeps silt suspended, disrupts spawning unusual amounts of debris and drift wood is floating.
311	More chlorine and dioxins in the water
312	Mainly wildlife because opening up of roads increases hunted kills
313	discharge of effluent has poisoned the river system
315	Major decline of fish in Slave River
316	Chemical run off, garbage etc.
403	Increased road and lease building creates more runoff and higher silt loads on rivers. Drilling fluid and production fluid spills, increase pollution
405	If the contamination becomes too great the rivers will be unable to sustain life
409	cause further erosion
410	low ecosystem
413	there is less wildlife and fish. Drainage ditch will change the vegetation
414	No adverse effect. Keep water quantity constant in most cases
416	Things like do not eat the fish in the Athabasca River - makes you wonder.
500	erosion
503	We do not commercial fish in the rivers but other people fish in lakes downstream
504	People up river of Athabasca should not have to have polluted river water
506	turbidity is higher
509	cannot drink near water
601	reduce the amount of fish
602	dirty water, silted spawning beds
603	Volume reduction via injection waterflood of all field decreased fish habitat, lowering of water table and reduced wetland habitat.

604	Increased flow off the land is increasing erosion and breaking down the natural filtration system into the rivers.
605	Just unsure of what all is going into rivers and how much the river can be expected to clean it up. Could be biggest effect is psychological effect on people and their attitude to rivers. Is oxygen depletion of river water a problem?
606	Reduced water quality as a result of siltation from soil erosion. Also has an effect on rate of runoff which may affect water supply at certain times of the year.
700	fish are sick , big sores
701	effluent kill
702	same as factor 1
703	fish and wildlife need lots of water to flourish
704	polluting groundwater. Killing acid rain
705	same as factor 1
706	These groups have almost destroyed the fur industry. An environmental backlash is coming. It is these people with their arrogance, ignorance and conceit that is doing the most damage and it is most certainly detrimental to fish, wildlife and vegetation.
707	caused the water to be unfit for drinking
708	The islands are drying up because the sloughs are not getting flooded therefore the beavers and rats cannot stay on the islands to continue the food chain going thus reducing small animals.
800	Slowdown of the flow from Mile 138 of the Athabasca River to Lake Athabasca has resulted in heavy sedimentation of the Embarras Channel and Richardson Lake, reducing spawning success.

Survey #	Description of how Factor 2 has affected the respondent's organization
002	not affected
008	Not applicable
010	Nil
011	Not at all.
012	More monitoring of water related usage on site.
013	Reduced nutrient discharges (phosphorous and nitrogen). BOD removal efficiencies of 97% +
015	We have been blamed for natural fluctuations.
016	Due to the remoteness of the location, vandalism has been manageable at present.
017	May have resulted in more stringent BOD standards.
018	Not at all.
021	Not applicable.
023	No effect as we no longer take surface water.
032	no effect
036	it has not
039	No impact
040	industry is generally singled out as polluter
100	unknown
104	no effect, not on the river
107	reduced tourism opportunities for residents creates some problems for water treatment
108	higher cost in treating of raw water
109	sources of income went down
115	flooding
117	more demand for land and associated drainage costs. More demand for good quality water for spaying livestock
118	had to change water source for Bluesky
119	people not as healthy
120	no effect
122	More water treatment, more testing on chemicals and hydrocarbons.
125	positive effect: gives stability to municipality and planning for area
127	same
128	Great income to the area. Roads damaged from trucking logs, jobs.
130	More difficult to treat water.
202	reduced quality of water - water-based activities
205	loss of habitat, loss of fisheries, costly drainage programs
206	decreased game means less sport hunting and subsistence hunting
207	reduced fish stocks
208	won't drink water, eat fish, loss of feeling that we are using natural resources in a safe and sustainable manner.
210	quality of fishing has diminished, draining of lowlands has stressed reptiles and birds
211	same as Factor one
212	no fish can be eaten
213	shame, anger, disappointment with democratic process
214	no direct effect just general concerns
215	30 yrs ago, people fished in the Red Willow and the Beaverlodge Rivers, now no one knows that these rivers used to be fishing rivers.
219	none
221	uncertain
222	uncertain
223	changes water levels, it is now faster
224	restricted boating and recreation
225	decreased angling opportunities and diminishing of river experience
226	loss/changes in habitat affect numbers of species and abundance of wildlife
227	No water, no boats

229	Poor catch, limited numbers of fish.
230	Have to lobby to get this changed (time away from families, etc.)
231	Contact on trips - odors, surface soaps, slicks.
233	Stress and reduced use of river.
234	River fishing - less use.
236	Noise level unpleasant for wilderness camping, e.g. Little Sundry. Access roads - some better, some worse.
237	Wildlife in these areas change, some disappearing altogether.
238	Can't eat fish (only one or two at a time). Water not fit for human consumption. More animal abnormalities. Hard on equipment.
239	Reduces scenic enjoyment. Muddy water on more paddling days.
300	to date mainly by the aesthetics of "logged out" areas. (Eyesores in remote areas)
303	Smell is an issue as is the sense that our wilderness has been stolen by big business
307	If the river has too much debris, it is dangerous to have guests on our boat with logs coming down the river or the pump on the boat full of debris. Our boat has been stuck on sand bars.
309	unsightliness of floating debris and silty water
313	We are upstream quite a ways so this has affected fish mitigation only
316	Polluting of water.
403	Pollution of surface water (dugouts) due to spills and increased runoff creates higher silt loads
405	danger to our wildlife
409	pesticides and fertilizers contamination
410	none directly
413	improved production on farm land. Cut down on mosquitoes
414	none
416	Limited recreation
500	same as factor 1
503	It has not yet but check the quality of fish in Lake Athabasca and Great Slave Lake
504	N/A
506	no effect
509	no effect
601	contaminated water supplies
602	little effect and erosion in dugouts cause algae problems
603	Access to standing water is being preserved.
604	Erosion and flooding are the major concerns.
605	No impact on farmers.
606	Forest harvesting in upstream areas - increased rate of runoff, smaller streams dry up or are silted in.
701	loss of furbearing animals
702	same as factor 1
703	Again, fewer animals to catch
704	Do not know - Reduce food for animals
705	same as factor 1
707	can't use water from Athabasca, limits the amount of fish eaten.
708	no small animals to trap
800	this has not yet had much impact on transportation

Survey #	Description of Factor 2 and how it affects rivers if no steps are taken
002	Increase chemical loading Decrease wildlife and fish populations
008	Reduced quality due to long term bio-accumulation.
010	?
011	There are warnings now not to eat over a certain amount of fish per week for the Mcleod River. Ten years could kill the river completely.
012	Minimal effect.
013	If cumulative, eutrophication.
015	Little can be done.
016	Undoubtedly, unrestrained dumping or inconsistent sewage treatment would result in deteriorating the water ecosystem.
017	Increased river D.O. sags and algae blooms expanding.
018	Yes, the general health will deteriorate if we are dumping treated effluent in larger quantities.
021	Not applicable.
023	Start to plug up with mud and silt. Erosion scars will be created that will continue to erode.
032	will not be affected if proper road construction methods are used and roads are maintained properly.
036	do not think health will be affected
040	overfished, water quality decreased, wildlife habitat altered
042	The health of the rivers will continue to decrease.
100	contamination will escalate
102	negatively
104	river pollution is a great possibility
107	no effect
108	increase
109	There won't be any good water quality. More problems in health
117	difficult to determine rates of contamination
118	It will be dependent on what chemicals agriculture is allowed to use
119	will decline slowly
120	Hopefully continuous improvement
122	They are as bad as they are going to get.
125	All major players (industry, municipality, agriculture) must work together or water resources will be destroyed.
127	same
128	The water shed will mostly pick up color and deposit it in the river.
130	Will decline
202	adversely
205	irregular flows, high sediment loads, agricultural pollution (fertilizer etc.)
206	possible spills would contaminate
207	Slave Lake will be two lakes
208	see 21
209	worsen
210	Lower water levels means less animal life, also contamination of fish will work into the food chain
211	same as Factor one
212	water quality will decrease, fish and wildlife will be affected
213	see 21
214	killing fish
219	uncertain
221	water quality will be affected
222	siltation: ill effect on fish and reduction in tourism
223	more erosion
224	reduced fish quantity and quality, reduced wildlife habitat
225	moderate impact on fisheries
226	As more areas are logged, river buffers will have greater pressure for logging and wildlife will be squeezed

	further.
227	Cutting of forests reduces rainfall. Forest mills causing contamination.
229	Poor run off, quality of water not reaching river system, lowered water levels in rivers and less fish spawn.
230	Increased sedimentation. Fish diseases/mortality/loss of reproduction/inedibility.
231	Decreased.
233	Much worse.
234	More damage to tributaries. More siltation possibly serious erosion.
236	Logging to the river edge would mean erosion, increased run off and destruction of habitat
237	Trash and silting of rivers. Increased leaching of chemicals both natural and man applied.
238	We will be boating on a mess like the Wapiti River.
239	Muddy water.
300	increasing soil loss due to massive clearcutting and runoff removing top soil
303	not a lot of change
307	It would probably eventually kill off the fish and would become to dangerous a river to operate a business on.
312	Landscape and scenery are ruined in our business by road and big sites
313	terribly
315	worse
316	Water won't be fit for healthy environment.
403	Higher pollution and silt loads will decrease water quality
405	the problem of contamination will be worse
409	further pollution of rivers, damage fish and vegetation
410	won't
413	not affected
503	Obviously with more and more pulp mills being built we are going to have more pollution in the water
504	can only get worse
506	turbidity will increase
509	will create more weeds, decrease in ? levels
601	could reduce the recreational use of the river
602	lower fish populations
603	Drastic effects as water tables and wetlands decrease.
604	This increases the pollutants into the rivers affecting quality.
605	More timber industry and deforestation - more erosion and siltation and mill effluents.
606	Reduced health of the river in general.
701	we will have a poisoned water system
702	same as factor 1
703	will get better if more run-off
704	they will become polluted. Kill off fish and wildlife
705	same as factor 1
707	that will get worse
708	the drying trend will continue and the islands will not contain as much fur.
800	The Athabasca Delta will continue to dry out and silt in, reducing spawning success, causing changes in forest types and reducing migratory staging areas. Lake Mamawi will sit in until it becomes a major river channel and the whole PAD will drain much more quickly directly in the Peace River.



Survey #	Description of Factor 2 and how it affects organization if no steps are taken
002	Not affected
008	Not applicable.
010	Nil
011	Not at all.
012	Should not change too much.
013	Tertiary treatment to remove nutrients. Possible zero effluent of some form.
016	The spring's value as a naturally pure water source would be eliminated.
017	Possible nutrient limits. Lower BOD limits.
018	Not at all.
021	Not applicable.
023	Little to no effect at our 2 locations for water use. The erosion scars will force agencies to enforce stricter regulations which will affect clean up and reclamation of well sites and battery sites.
032	probably no effect
036	there will be pressure on us to improve no matter what
040	demand to meet higher (artificially yet) standards often to deal with perception
042	not affected
100	greater public concerns
104	no effect (does not effect our water supply)
107	increased water treatment costs
108	cost of treatment much higher
109	less income
118	If land and water quality go down, the ability for agriculture viability goes down.
119	No people may be left to govern
120	no effect
122	Water quality will deteriorate
125	increased
125	same
128	Added costs to remove the organic color from the water
130	Increased costs for treating. May have to look for alternative water source.
202	fewer water-based activities
205	loss of fishing/hunting activities, high water treatment costs, deteriorating water quality
206	hunting will become very restricted
207	reduced enjoyment and income from commercial fisheries
208	won't drink water, eat fish, loss of feeling that we are using natural resources in a safe and sustainable manner.
210	water quality: drinking will affect us, also the enjoyment of wildlife, nature watching will be affected and higher cancer rates
211	same as Factor one
212	same
213	see 22
214	less fishing
219	uncertain
221	No one wants to waste time for polluted fish
222	uncertain
223	rapids will likely level out, no more fun
224	hunting, fishing and boating reduction
225	large impact on aesthetic value
226	Continued degradation of natural environment
227	No forest, no rain, no river
229	Less places to fish and hunt putting more and more strain on local lakes.
230	Will not visit the basin.

231	Less river use
233	Increased stress. Move to a less polluted area. The possibility of violence against those responsible.
234	Stream fishing will disappear.
236	Less pleasurable experience, again, not attractive to visitors (tourism, etc.)
237	Unknown as to what species may be able to adapt depending upon revegetation.
238	Less outings, less swimming for our children, less activities , less fishing for all concerned.
239	Less likely to paddle these streams.
300	declining interest in fly-in fishing due to clearcutting operations
307	If we can not run our boat - our guests are unable to come - lost revenue
309	It will limit the number of clients and quality of experience
311	can't drink the water or eat the fish poor water rec.
312	No oil or gas activity near these areas
313	unknown
315	No resource avalanche from sports fishing
316	No one would want to take a tour if the water and surrounding area was polluted.
403	poorer drinking water quality
405	If no control steps are taken the river water will be a deadly, hazardous to all life
409	poor quality water
413	not affected
500	same as factor 1
503	Don't know may be we won't have any trees left for pulp mills.
504	fish may come from Bl River into Lesser Slave Lake
506	no effect
509	eventually will affect fishing, more algae
601	same as #13
602	recommended necessary changes
603	Pressure for access control.
604	With the increased flooding farmers will suffer financial loss.
605	Out of mainstream Peace, don't think farmers will be impacted.
606	May have disruptive water supplies from smaller streams, i.e. rapid runoff instead of slow release.
701	no more life, social services is not a solution
702	same as factor 1
703	some furbearers will disappear
704	reduction in furbearer populations
705	same as factor 1
707	loss of fish and waterfowl in turn loss of predator furbearers which prey on these species
708	They will not trap because of a lack of fur. This is true now over the last ten years.
800	Over the next 10 years sedimentation will increase in the Athabasca Delta and ultimately channels will be plugged off as the river diverts directly to the Quatre Fourches River. Shipping will require extensive dredging. The Athabasca will ultimately be diverted to Creed Creek directly to the Quatre Fourches River

Survey #	Recommendations for Factor 2
008	Establish sustainable levels for water management in concerned basins based on scientific methodology.
010	No more dams.
011	Money talks. Shut the factories and mills down until they are at an appropriate level of discharge. Zero contaminants are appropriate.
012	Need to work with industry to develop practical and enforceable limits.
013	Recommended nutrient limits.
015	Publicize natural variation to note for impacts.
016	Contain population centers and recreation centres to manageable levels in pre-defined areas.
017	Focusing on not only point sources but also non-point sources of nutrients and ways to reduce.
018	There should be an upper limit placed on the total amount of pollutants allowed. An environmental credits system should be allowed wherein over-polluters would be allowed to purchase credits from under-polluters.
021	Not applicable.
023	More control on the amount and location of clear cutting. More requirements for re-vegetation after clear cutting along with stricter enforcement. Possible clear cut in strips perpendicular to drainage flow (reduce erosion) instead of in big blocks parallel to drainage flow.
032	Higher standards for erosion control particularly for forestry operations
036	increased education and communication
040	industry and communities must to learn to co-exist
042	industrial discharge of damaging effluents should be prohibited or heavily toned down.
100	encourage more controlled use of herbicides in the agricultural industry
102	review all minimum requirements for industry, farm, municipal operations into river basins
104	monitor and regulate discharge of effluents
108	lessen cut lines or right-of-way per section, removal of less forests and less pipeline
118	Look at the compounding effects of chemical on land
119	take down the pulp mills
122	no idea
125	Look at ways at economizing use of water Be aware of effects on watersheds
125	same
128	Use other methods than clear cutting.
130	Control over water licensing
202	required setbacks from water courses No grazing leases which include water bodies
205	in arable land (existing private) environmentally sensitive areas must be protected
206	limited access should become the norm for production
207	reduce channeling and encourage less fish farm methods
208	better municipal treatment of water, higher fines for illegal discharge, reduce biocide usage within agricultural lands, provide incentives to farmers to grow lower yields less contaminated products
210	Do a study on the effects of agricultural chemicals on fish, check the abnormal cancer rates
211	same as Factor one
212	less industrial development more enforcement of environmental regulations
213	- effluent pipes up river from intake tertiary treatment - alternate for snow/ice removal on roads - storm sewers into treatment ponds
214	better control for plant's effluents
219	none
221	No more expansion without public input - More environmental impact studies
222	shelter wood cutting - selective logging - to maintain soil quality and environmental system diversity
223	larger buffer zone between forests and rivers

224	selective logging
225	increase corridors where no logging is allowed
226	Increase stream-side buffers, better enforcement of winter road and other crossings, regulations for logging on private land
227	Slow down. Stop outsiders from hauling our resources away.
229	Increases to price of beaver pelts to make it worthwhile to control beaver populations.
230	Use effluent-free agripulp on prairies to offset and reduce northern pulp operations
231	Insure no raw sewage enters rivers.
233	Eliminate the use of chlorine and reduce mills capacities.
234	Better control of summer industrial and governmental activities in the water sheds (government road building is one of the major problems.)
236	Cooperation with forestry/mining departments to ensure their practices are compatible with sustainable healthy rivers.
237	Limit clear cutting. Cultivate along tributaries which carry significant flows.
238	Limit pulp mill effluent to none, take pulp mills off the river.
239	Less clear cutting. Smaller clear cuts. Wider stream (all) buffers.
300	more restraint on the raping of our wilderness areas
303	no more mills, no more expansion
307	A level control should be possible without the drastic changes there are now.
309	Control the flow, stabilize to amount, reduce fluctuations
311	No more dumping from pulp mills
313	total clean-up
315	clean air and clean water
316	Make people more aware of damages and results. More education for everyone. Stiffer penalties for abuses.
403	more enforcement of existing regulations
405	clean up your present problems and a tighter control for future
409	no tillage area a certain distance from river's edge
413	we do not want the study to dictate use of drainage ditches
416	Less pollution
503	There has to be a way to process this material pollution free. No matter what the cost.
506	smaller cut blocks
509	better control of herds, don't allow drinking in the river
601	improve sewage treatment techniques
603	No potable surface of ground water should be used for injection.
604	Buffer zones for shorelines. Possible limit on clearing.
605	Maintain strict regulation of industry (forestry).
606	Controlled logging in upstream areas on streams that flow through agricultural areas.
700	make industries clean up
701	No more dumping of effluent in our river -very simple
702	Smaller cur blocks. Greater restrictions or larger buffer zones along streams and drainage. Buffer zone restrictions are not being followed in some instances. More enforcement required .
703	Some types of water conservatory
704	Reduce discharges. Have industry pay to restock fish and trees
705	same as factor 1
707	No effluent to be allowed from pulp mill being discharged into river
708	allow natural runoff in spring and summer
800	put in a rock control structure at Dog Camp on the Quatre Fourches River and rock wires on the other outflows from the delta. Clean out the old channel from the Richardson River to Richardson Lake and allow clean water to flash out the spawning grounds in Richardson Lake.

Survey #	Description of how Factor 3 has affected water quality, fish etc.
002	Increased chemical loading
008	Siltation primarily.
010	?
011	Other than the odd spill, most of the contamination here is through leaching into ground water. Beyond this I am not sure. Air contamination that subsequently falls into water bodies contributes to sickness of fish and vegetation and lake or river.
012	Uncertain.
16	Industrial pollutants have not been introduced into the water system.
017	Not applicable - natural.
018	This factor only affects us locally when we flush. We are concerned about the wetlands.
021	Marginally, positive towards sustainable activities.
023	Large plants have large effluent discharges into the water system which may pollute (depending on chemicals used and recovery systems in place) and definitely do not heat the water up.
031	total vegetation and wildlife destruction
032	Increasing chemical loads in the rivers with mills, although effects not demonstrated
036	as growth increases, more contaminants are discharged, not only cities but acreage as well.
039	Fort McMurray has had a number of sewage spills over the years.
040	farm effluents: fertilizers, residual from machinery
042	contributed to deterioration of water quality through increased cloudiness and mineral and organic content of river.
100	unknown
104	toxins into water potential for affecting human and animal health
107	kills fish, wildlife, vegetation and has long term implications for human health
115	over use casing pollution
118	dams effect water levels - draining of pools I am not sure
119	lowered water levels
120	No effects at Hinton. Need ? discharge guidelines by facilities downstream
125	same
128	A good flood would be welcome, but flash floods do not flush the system.
130	Minimal
205	loss of fishing/hunting opportunities, less fish game, destruction of forest ecosystems
206	pesticide/herbicide and animal waste runoffs are contaminating and polluting the rivers
208	loss of spring flooding has been a concern on the Peace/Athabasca delta for many years now.
209	negative effect on all
210	sewage effluent contaminates water and its quality is affected. Also consumption might affect water levels.
211	Peace-Athabasca Delta is drying up, wildly fluctuating levels
212	1) impoverished the land, water and people, 2) regulated water from dams, 3) change in water temp, 4) change in fish diversity, amount size - same with waterfowl and vegetation
214	changes natural course and flooding of the rivers
222	complex: climate change
223	cattle by the river banks, banks are eroded. More effluent in fish hatchery
224	increased vegetation, undrinkable water, algae increase (green slime)
225	increase in access to fishing, installation of open-cut crossing across creeks
226	increased siltation, damage to stream beds and adjacent vegetation
230	Extensive logging/clearcutting on upland water quality diminished with effluent (may meet standards but is not like it was).
233	Reduced above factors
234	Silted spawning beds, increased nutrients.
236	I understand the Peace River delta has changed wildlife/vegetation etc. drastically. Dams have unforeseen consequences.
237	Discoloration of water. Increase toxin levels in water and fish. Algae and oxygen content.
303	Spraying for insects has entered water systems in Spring of the year. It may affect human population in communities along the rivers.

309	Fish numbers, water dirty too scummy. Wildlife and vegetation not affected as much
313	a major oil spill didn't do much good
403	more sewage load and silt load on rivers has decreased water quality
408	an unsteady amount of water
409	too much waste from further up stream - affects us
413	definitely affected water quality, fish and wildlife, vegetation with population
416	Not really sure
500	too many water spills (salt water)
503	It was never proven but we suspect oil companies to be responsible for killing large amounts of fish by salt water poisoning.
506	more toxins in rivers
601	reduction in water quality and amount of fish and wildlife by destroying the vegetation
603	Silt loads increase rate of water transported to water body after moisture events.
604	Manure levels are decreasing quality of water (animal and human) resulting in an increase of nitrates.
605	Removal of trees - change in climate and soil erosion, removal of habitat, increased access leads to increased pressure on fish and wildlife resources.
606	Increased pressure on river to deal with added nutrients to the system
700	fish are sick , big sores
701	oil will do the same damage as effluents will
702	same as factor 1
703	by killing and destroying breeding habitat
704	runoff from logging polluting streams and rivers
705	same as factor 1
707	caused river ice not to become as thick as it should be
708	Pulp mills have had a definite upstream (effect) in the Fort Chip area but cannot speak for the water quality in our area because I am not aware of long tests that were done.
800	Lower water levels have all but eliminated muskrats, the most important link in the predator food chain. Thus wildlife populations are down. Staging area for all migrations have been greatly reduced. Nesting habitat for waterfowl is reduced. Spawning grounds have been impaired by siltation and lower water levels. Willows have colonized much of the once productive marshes.

Survey #	Description of how Factor 3 has affected the respondent's organization
002	not affected
008	We must develop comprehensive, pro-active programs to minimize our impact.
010	Nil
011	Our source of water for our fish is ground water. We may be putting contaminants into our pond. The air source is a concern as well.
012	Move to be more aware of public perception and our image
016	It ensures our water source remains contaminant-free.
017	High turbidity during run off has caused mill outages. High winter harness causes increased scaling. Low flow has caused curtailment of water intake volume (these are extremes).
018	Not at all.
021	More paper work.
023	No affect as there are no mega plants near our facilities.
032	no effect
036	has not yet affected company's operations
039	no impact
040	perceived ground level sulfur deposition
100	unknown
104	minimal effect to date
107	not applicable at this time
115	over crowding, peace and quiet gone
118	concern only
119	less to work with
120	no effect
125	same
128	Extra water storage has had to be put in place, extra equipment has been and will have to be installed.
130	No effect
205	effect on quality of life, dramatic changes to landscape, poorer hunting, fishing etc.
206	decline in quantity and quality of fish species
208	concern over the decline of the largest inland delta in the world; wood bison that ran there.
210	Water quality has been a problem as more effluent reaches our water supply
212	same as 25
214	flooded tributaries that can be used for kayaking
222	uncertain
223	no
224	carrying our own water and inedible fish
225	allowed more access to fishing holes, impact negatively on bull trout populations
226	damages to ecosystem affect fish, invertebrates, birds etc.
230	Have to lobby to get this changed (time away from family, etc.)
233	Stress
234	Poorer fishing - less use.
236	Major effects in the river basins, not so much in this one yet.
237	Changes in fish and wildlife areas.
309	Less valuable experience, for clients pictures useless when water is muddy
313	not much
403	poorer water quality for fish, drinking water, recreational use
408	no fishing
409	water quality decreased for animals and recreation
413	don't eat fish out of the river. Increased opportunities for farmers in our area
500	some lakes have been killed (Winter killed) ?
503	We have had lakes die off because of lack of oxygen. Surrounded by pumpjack and having saltwater spills.
506	no effect
601	reduced water quality
603	Increased agricultural land via access, increasing area in annual crops.

604	Lower weight gains in animals and difficulty in getting passable drinking water.
605	Effects have been more positive (\$) than negative but poor conservation attitude may be happening.
606	Not a major effect in our area but as centers of population along the river grow so does the problem.
702	same as factor 1
703	fewer animals to catch
704	reduced trapping areas
705	same as factor 1
707	low water levels in Spring (failure of small lakes and slews along river to be flooded in Spring)
708	They are afraid to eat some of the fish especially the livers.
800	not much change to river transport yet



Survey #	Description of Factor 3 and how it affects rivers if no steps are taken
002	Decrease in water quality
008	Overall reduction in water quality due to suspended sediment loads. Reduction in fishery.
010	Water quality may deteriorate
011	From this factor alone the rivers and lakes may not be noticeably affected. However, this source remains a factor.
012	Unsure.
016	Deterioration of water quality would be inevitable.
017	Do not recommend any controls.
018	A semblance of nature must be maintained with the water discharged from dams. Spring flooding is required in the wet lands.
021	Decline in quality/quantity of flow.
023	A hazardous chemical release (usually due to human error) could kill off (poison) the wildlife. The hot effluent release will raise the river water temperature which will promote algae growth, ducks winterizing by the plant, warm water animals and fish promoted, bacterial growth promoted.
032	Existing control and criteria probably adequate to maintain good water quality, it enforced
036	without concurrent municipal discharge improvements, more pressure will be placed on companies
039	Already , largely under control from AEPEA and AEP
040	cumulative effects from farm effluents
042	will contribute to further deterioration of water quality
100	tighter controls and enforcement
104	adverse effect
107	deterioration expected
118	more potential for damage
119	will decline
120	Negative on health of river. However expect all facilities to zero river will cautiously enhance quality control
125	same
128	What river?
130	Minimal
205	increased sedimentation, irregular flows industrial pollution
206	fish stocks will begin to deplete very rapidly
208	continued encroachment on rich sedge/grass meadows of Peace/Athabasca delta
210	over-use will cause lower water levels. Effluent will contaminate water supplies
211	no more delta
212	same as 21
222	uncertain
223	could change river beds
224	reduced tourism, reduced boating, fishing and general use
225	minimal
226	continued loss of habitat for fish and other species
230	Increased sedimentation; fish diseases/mortality/loss of reproduction/inedibility.
233	Reduced
234	More damage to tributaries. More siltation, possibly serious erosion.
236	Waterfowl already decimated, will be further endangered especially migratory patterns.
237	Toxic water may eliminate fish or the use of fish or fishing particularly under minimum flow conditions.
309	water quality will get a little worse each year. The Peace used to be a clear mountain river and you could drink the water
313	a worsening situation
403	downstream water users will suffer due to increased pollution
409	increase in disease from water source
413	going to get worse
416	We see more run off, more silt in rivers with
500	won't be fit for anything

503	Whenever there is a saltwater spill of any kind of spill there should be a sense of responsibility by oil companies
506	uncertain
601	reduce all recreational activity for the area also reduces tourism
603	Without control siltation is possible as is eutrophication of standing water.
604	Slow worsening.
605	Siltation/erosion but these seem to be natural occurrences in the river anyway.
606	Decrease in the health of the river.
702	same as factor 1
703	lots of wildlife won't be there
704	increased pollution
705	same as factor 1
707	water will be polluted to the point animals will no longer be able to live along the river
708	Water quality will deteriorate to a point where we have to treat it before we use. We will not be able to eat the fish, rats and beavers.
800	The PAD will become less and less productive as it dries out

Survey #	Description of Factor 3 and how it affects organization if no steps are taken
002	not affected
008	More stringent rules and regulations governing operations involving exploration and production.
010	Nil
011	It could very well affect the fish.
012	More public scrutiny, which we are up to, but it will cost more for the Public Relations end of business.
016	The spring's value as a naturally pure water source would be eliminated.
018	Not at all.
021	Negative impact on availability.
023	No effect.
032	no effect
036	Yes, our improvements will need to be greater
040	likely very little effect
042	not affected
104	local water supply could be greatly affected
107	no effect anticipated
118	ability to try to respond to disaster
119	may have to move somewhere else
120	no effect
125	same
128	Just more expensive to treat water.
130	Possibly
205	loss of quality drinking water, loss of hunting and fishing opportunities, poor quality of life
206	sportsfishing will become limited to only certain areas increasing the fishing pressure at these selected spots
208	continued concern over demise of World Heritage Site
210	Health of our own members may be a problem - higher treatment costs
211	loss of significant biological area
212	same as 22
222	uncertain
223	no
224	no boating due to increased vegetation
225	minimal
226	continued degradation of natural environment
230	Will not visit the basin
233	Increased stress
234	Stream fishing will disappear.
236	Lose further recreation rivers.
237	Any increase in chemicals may render rivers unusable for any purpose except industrial.
309	negatively
313	unknown
403	increased pollution and silt load in dugouts
409	same as above
413	adversely - we have to protect our water resources
500	no fishing
506	no effect
601	same as #13
603	Decreased access to rivers and streams.
604	Financially a great deal.
605	No impact I suspect.
606	Not a significant effect.
702	same as factor 1
703	some furbearers will disappear
704	trapping areas will be greatly reduced. Furbearer populations will decrease.
705	same as factor 1
707	loss of habitat and furbearers

708	We will have to find other food sources and water sources
800	The PAD will become less and less productive as it dries out

Survey #	Recommendations for Factor 3
008	Monitor current levels and track offending companies who do not pro-actively develop programs and systems to minimize long term damage.
010	Minimize discharge. Strict limits on pollutants.
011	Alberta Environment is cracking down on "leaching" aspect, but control over effluent into air is limited. This area should be focussed on.
012	Cooperative approach.
016	Effluent/discharge management controls with mandatory compliance. External monitoring.
017	None.
018	Spring flooding is required.
021	Continue to monitor but increase information dissemination, and report with industry.
023	Requirements to go to processing methods with less hazardous chemicals involved (lower chance of damage when there is a spill). Requirements to have plants be more energy efficient so less heat is dumped into the lakes and rivers. More energy saved should help the pocket book of the plant owner.
026	Water usage should be taken down from the effluent discharge.
032	Enforce existing water quality standards
036	expect a certain percentage improvement per certain population level
040	understand long term effects
042	careful management of logging operations near streams and restrictions on clearcutting
043	ecosystem based management zero effluent discharge (no dilution)
107	control amount of chemicals farmers can use
115	green belt enforced
118	guidelines for use on river with effects of usage looked at
119	stop water diversion projects
120	Continuously monitor and reduce acceptable levels of discharge as industry has ability to comply.
125	same
130	None
206	place restrictions against those activities in relationship to distance from rivers
208	B.C. Hydro should allow greater spring water flow and damming/burning of habitat in Peace/Athabasca delta to reduce brush encroachment
209	reduce clearcutting and reduce timber allocations
210	Better treatment facilities and encourage water conservation at school level
211	more control at the local level
213	no more dams
214	do not allow any more dams
222	energy efficiency system
223	keep livestock off my banks and pump water from river to cattle instead of allowing cattle to river
224	zero dumping in river from sewage, feedlots and farms
225	define sensitive areas for access and possibly restrict access for these sensitive areas.
226	Increased enforcement of existing regulations. Consideration of this factor when looking at cumulative effects of various development within the system.
230	Use effluent-free agripulp on prairies to offset and reduce northern pulp operations.
233	Better control of agriculture and town (especially agriculture).
234	Better control of summer industrial and governmental activities in the water sheds (governmental road building is one of the major problems).
236	Comprehensive EIA's for all major and minor dams. Examine all possible alternatives, especially the "no dam" option. Take all associated costs into consideration.
237	Monitor rivers and try to limit chemicals to as close to natural levels as can be defined.
309	Restrict domestic and industrial waste, control water flow to its natural flow and not flow controlled by the power grid.
311	move it off the water
313	stricter controls on discharges

403	strict enforcement of existing regulations
408	steady release of water day and night
409	increased regulation on amount discharged and treatment of waste
413	keep pollutants out of water systems
500	No drilling near lakes or major streams
503	Oil companies should be fined for not repeating any type of spill
506	better control of oil companies and more monitoring
601	set tighter standards for industrial pollutants
603	Riparian area management guidelines
604	Fencing shorelines and leaving buffer zones.
605	I'd like to see establishment of sizable wildlife and fish refuges strategically located where trees are not harvested (at least to extent at present) and access not just restricted, but not built at all.
606	Promote better sewage treatment systems or alternative uses for sewage - land spreading, etc.
700	make industries clean up
701	Keep pipelines away from rivers
702	tighter guidelines regarding effluents being dumped in rivers
703	make sure no manmade contamination
704	Industry to reforest. Some areas should be set aside for buffer zones for wildlife
705	same as factor 1
707	More monitoring and less discharge into rivers
708	Stiffest regulations and complete shutdown for the smallest infractions to show that we will not put up with intentional infractions and expect to pay a small fine and keep operating.
800	see 26. above

# Question on Measures

Survey #	TYPE			CHANGE TO RIVER HEALTH		
	Measure #1:	Measure #2	Measure #3	Measure #1:	Measure #2	Measure #3
001	Drinking water measurements			Not sure		
002	chemical studies on the river	biological studies in river basins	effluent monitoring at source	More sensitive techniques are able to detect lower levels	More sensitive techniques are able to detect lower levels	No change
005	No effect at our location yet	No effect at our location yet	No effect at our location yet			
008	Quality	Quantity	Sustainability			
011	Control	Monitor closely	Strict Measures, Stiff Discipline	Acceptable levels are far to lenient.	Has slowly become better.	Improved, but not nearly enough.
012	Biodiversity of plant and animal communities	Chemistry (Organic and Inorganic)	Aesthetics (Visual and Smell)	Less of certain species and more of others. Balance has shifted and is in flux.	Uncertain, but it is apt to change with additional development. Bio-accumulation.	Unsure.
013	Fish health and habitat	Surface water quality	Benthic, SOD studies			Some organic enrichment is occurring.
016	Fecal bacteria testing	TDS testing	Water analysis testing	Bacteria increase	Dissolved solids increase	Chemical increase.
017	Fish populations	River D.O.	River management plan	Not known.	Not known.	No plan.
018	Water quality. Water lab.	I do not know.		It should be improved.		
019	Water analysis for contaminants	Depth monitoring	Fish health	Unsure.		
021	Water supply	Water quality		Diminished	Reduced	
023	Analysis of water for hazardous chemicals and bacterial contaminants.	Wildlife surveys for fish health and populations, etc.	Effluent temperature from plants	Chemical and bacterial counts have probably increased.	Fish are probably less healthy.	River temperatures increasing locally.
025	Water testing	Health of fish and wildlife	Erosion	Deteriorated	Deteriorated	
026	Water quality	Shoreline exposure (erosion)		Slight decrease.	Slight increase.	
028	water quality monitoring	benthic invertebrates monitoring	fish studies			
032	man-caused chemical loading	biological diversity	sediment loading	slight increase	slight decrease	slight increase
034	water quality	fish stocks				
035	ecosystem measures	water quality	water flows			
036	fish population	benthic invertebrates	water quality	improved	improved	improved
042	clarity, chemical pollutants, organic content	ecological health of surrounding draining basin	direct measure of effluent discharge from	decreased	decreased	decreased significantly

## Question on Measures

	water quality	water quantity	chemical and pulp mills	deteriorated because of pollution	more consumption by industry	
100	water quality	water quantity				
101	downstream of testing of plants and mills	Measure of industrial waste				
102	quality monitoring	quantity monitoring	development control	poorer quality due to pollution & erosion	flow reduced substantially	poorly controlled
103	manage quality & quantity	pollution contamination	regulation	improved	improved	improved
104	effluent	toxins	oxygen level			
106	monitoring effluent discharge of industries	testing water quality	Erosion of siltation of rivers	improved under new Act	has improved some but need better control of testing	More erosion occurring as farmland and forestry opens land.
108	pollution	erosion	flood control	increased	increased	increased
109	improve the system	less wastewater to go into water sources	less logging	More pollutants, less water quantity and quality		
117	water quality			a perceived lowering of quality		
118	water quality	wildlife capabilities in valley		I don't know	gone down	
120	complete study & identify problems	review effluent level guidelines	Enhance public awareness	- At Hinton health has been enhanced Total river basin additional facilities have impacted negatively.	Positive change as rules continuously tighter.	No impact Needs improvement
123	coliform bacteria contamination	VOC contamination	erosion, silt deposits, run-offs from agricultural lands	increased steadily in proportion to population increase	increased industrial activity in the North, i.e. pulp & paper, oil, waste management	Increased exploitation of renewable resources (are they being renewed?)
124	quantity of fish	colour of river		pulp mills are affecting the health of fish		
125	water quality					
127	testing of health of wildlife and fish	water testing				
200	P <sup>n</sup> measure	mercury levels	oxygen level	survival rate of fish	has gone up in the last 20 years	
202	water quality	fish populations		dirtier fewer fish fish meal not good	fewer fish measuring levels in fish	
205	biological monitoring	chemical monitoring	flow and sedimentation monitoring	increased contamination level - fewer number of some species	- increased chemical loads	



## Question on Measures

	water level	water clarity	level of pollutants	increased	decreased	increased
206	monitor water quality	monitor siltation loads	enforce pollution regulations	slight increase	slight increase	drastic decrease
207	IBI	organic contaminants		it has been reduced significantly	increased load in last 20 years	
208	decommission and reclaim Bennett Dam	reduce clearcutting reduce timber allocations				
209	cumulative effects of toxins and pollutants on fish	traditional river flow and floods - water levels	Census over a period of time on the # of animal species	Yes, we are starting to see more toxins in fish, especially whitefish	Yes, Peace River does not flood as much and the Peace delta has been drying up.	Yes, I believe that less animals are present along watercourses, especially waterfowl
210	fish survey	sediment contamination	chemical loading	deteriorated	deteriorated	deteriorated
211	baseline study	river ecosystem	enforcement of environmental laws	no baseline study has been done	never been monitored	poor enforcement of environmental laws especially of large operations
212						
213	total organochlorine in river	volume of water use	siltation and nutrient loading	gone up dramatically	gone up dramatically	gone up dramatically
214	run-off flows	water quality		increased faster run-off	more pollution	
216	fish studies	water purity	erosion studies	some being done, need a long term base line	don't know	increased
220	level of oxygen			uncertain		
221	amount of fish			uncertain		
222	level of oxygen chloride			has definitely gone up		
223	overall water quality			uncertain		
224	independent studies and monitoring	public concerns and reporting system	continuous water sampling	last 4-5 years studies are improving	appears this area is improving	restricted public info
225	quality of angling	contaminant level	amount of deadfall in rivers	diminished somewhat	increased	increased
226	monitor riverine ecosystem -wildlife and fish	measure water quality		loss of riverine habitat, decline in numbers, health of fish and wildlife	increased contaminants, quality has declined	
300	sample and water analysis of water quality	fish health	vegetation and annual health survey	slow deterioration	reduced fish quality	not noticeable yet
301	water quality	fish quality	air quality and airborne pollutants that contaminate the water	reduced	reduced	improved
302	water quality	fish and wildlife quality	water quantity	very little	very little	very little since WAC Bennett in operation
303	discharge of pulp mill	forestry harvesting	agricultural runoff	it has gotten worse	more erosion is going to occur	it has gotten worse

## Question on Measures

	effluent	practices				due to all the clearcutting	
304	Compare river of 25 years ago and now	police the mills. No government intervention	Make mills reestablish rivers and remove pollution				
307	zero tolerance of pollution	More control of the river flow by dams		The river has become much more polluted	The river has become very erratic		
309	water levels	silt and debris	chemical pollution	same the dam has been in place over 20 years	increased each year		increased with each new plant or mill
313	check pollution levels	water levels	clearcutting should be monitored	terribly	nothing gas been done it		
403	dissolved oxygen content	nutrient load	drinking quality standard	it has decreased	it has decreased		it has decreased
409	water quality	industrial effluent					
410	water testing	sediment testing					
411	effluent discharges		monitor the dumps where oil companies bury their waste	drastically	The States won't allow this burning		You see buried
413	water quality testing	flow rate	wildlife and fish				
415	water sample	fish sample	plant sample	more pollution	same		same
500	over stocked	small fish	silting of feed beds	not enough fishing to control the stock			
503	quality of fish	quality of water	quantity of water				
504	tougher pollution laws	more enforcement of pollution laws	daily checking of polluters and shut them down if not within standards				
601	fish	amount of algae growth	water quality	decrease in the amount	increase in the amount of water vegetation growth		decrease
702	water quality should be tested	biologists and environmental personnel should monitor habitat of wildlife	All water users should be monitored more closely				
703	furbearing animal populations	water quality	small fish , snails and frog life	seems to be more pollution	low water levels		fewer beaver
704	fish condition	water quality	water volume	decreased	decreased		don't know
705	fish and animal counts	water quality		unsure	unsure		
706	animal counts	greater monitoring of water		don't know	don't know		
707				made the water unfit to drink without treatment			
043	Water levels Snow Packs Precipitation	Fish Stocks					
416	Testing water	Educate those users and	Maintain our muskegs				

## Question on Measures

		farmers	and wetlands.	Improved	Improved	Improved
417	Monitoring pollution level, PH level and mineral level	Monitoring living organisms	Measure waste water contamination from industries.			
604	Improve monitoring of industry	Regulate land clearing	Regulate livestock access	Systems are in place to improve industrial release into rivers. Monitoring downstream will act as an alarm system if something fails.	Some land can be cleared but the amount should be monitored to retain a filtration system.	Getting slightly worse.
605	How relates to a baseline of no development	Numbers of fish and wildlife.	Monitor pollutants in water	Dams and pulp mills have had negative impacts	Not sure of fish resource but less wildlife due to more people.	More pollutants - salts, city and town run off, mills.
606	Water quality for humans and animal consumption	Amount of siltation of rivers and tributaries	Changes in aquatic plant and animal populations	Decreased	Increased	Decreased number of species and population.
239	Organic poisons, i.e. dioxins	Inorganic poisons, i.e. mercury/leads	BOD Oxygen demand	More/Worse	More/Worse	More/Worse
506	fish stock			deteriorated due to turbidity		
507	fish health	general water quality		quality has decreased	oily filth on water	
508	water quality					
509	quantity of water			water levels are lower		
800	water quality	measure siltation and changes in the Athabasca Delta	monitor health of fish and wildlife populations	has decreased greatly in the last 20 years	siltation has caused loss of spawning grounds and drying has reduced wildlife	fish and wildlife populations are lower

## PARTICIPATION IN COMMITTEE

### DESCRIPTION IN PARTICIPATION IN COMMITTEE

Question 40 - industrial  
 Question 40 - general stakeholder  
 Question 36 - commercial  
 Question 38 - agriculture  
 Question 32 - commercial fishing  
 Question 31 - service board  
 Question 32 - trappers  
 Question 43 - municipal

Survey #	Description of Involvement in Committee #1	Description of Involvement in Committee #2
002	provide industry representation on policy board	Assist in development of recommendations and policies
08	Participation as both a forester and as an oil and gas industry representative.	
012	Limited manpower.	No money donations.
013	Provide representative to present industry perspectives.	
015	Send a representative to participate as part of a large group (member at large).	
016	Our usage of the water systems is generally unique from the majority, therefore, we would appreciate participating in all areas affecting management of the basin.	
017	Technical support and coordinating our river studies so they are not done in isolation from what is being done or deemed desirable basin wide.	Also, participating in voluntary programs to reduce discharges of compounds identified by the committee as of concern.
023	There are several oil and gas firms operating in those river basins with a lot more operations than Chauvco.	
026	Depending on the level of effects.	Corporate decision required on such matter.
028	membership or supplying data from monitoring programs	
030	could be an advisor	
032	provide a representative as required	
036	- representative on board/body - make company data available - participate in education/forums etc.	
039	representation on committee, joint research funding	
104	personnel support by local government official	
110	Representation of personnel on possible committee. Personnel to assist in research	
112	member of committee	
119	Fully involved with all aspects of the committee's work	
120	We would be prepared to be a resource to provide input at the local level, i.e. Participates in Weldwood's Advisory Committees	
121	member of committee or input	
122	depends on what you need us to be involved in	
125	provide information to committee about how water is "maintained"	
128	In an advisory position only.	
130	Provide resources and relevant background (through people)	
200	to sit on meetings	
201	only if action	
205	would only be involved if had real power - must not be advisory in nature	

## PARTICIPATION IN COMMITTEE

206	conduct studies in our area	
207	members of panels and information gatherers/ water quality monitoring in the area	
210	to help educate the public by holding open public meetings. Also provide input to the committee from a user point of view	
211	board member, newsletter, research, advocacy and monitoring	
212	as local resource person	
213	research, organize community groups	analysis and networking
214	field studies	information
217	willing to assist in providing scientific advice	
218	putting society's position forward for	
220	organization environment chairperson that would contribute	to sit on such a committee to give local input
221	public input and public representative	access to resources and working groups
224	advisory, commission members	
225	sit on task forces	
238	In any capacity from giving local knowledge to actual enforcement of policies	
239	Recreational advisors from Ceyana or ARCA.	
300	provide information	sit as a committee member (stakeholder)
303	What is needed. I would gladly speak for outfitters	
307	If there was some way we could help monitor	sit on a board
308	Most of my time is spent at the headwaters of the Athabasca, I would be prepared to give input.	
309	Help make policy	Help in monitoring Peace and Athabasca. We spent 62 days on the rivers last summer, we are in a position to make valuable reservations.
311	Do boat work on the river's to enforce this research	
312	I would be prepared to become personally involved.	
316	Whatever it takes.	
400	The NRBS does not affect us	
405	We were unable to call a general meeting (due to calving time) but it is very possible that someone would be interested. A few of our members were able to help with this survey	
407	More information would be required before members would be involved	
413	would be prepared to put on a committee member	
414	community involvement	
503	advisory	If there is a problem with a lake we are usually the first know.
504	Being commercial fishermen make their living from the resource in these basins they would be and headwaters	
506	by providing local knowledge on commercial fishing in the area	
600	to help develop policies to maintain good quality water	
601	to sit on the committee	
605	Politically, Advisory. Some professionally possibly	Probably part time as farming has time requirements
606	Provide input into programs and planning with respect to agricultural uses of water.	
700	I think most trappers along the river would be interested	
701	in enforcing regulations for big corporations	
702	provide input to committee; monitor furbearer cycles in river basins	Assist in future studies of river basins
703	to participate in wildlife population check ups.	
704	Trappers' Association can appoint a representative to sit on committee	

## PARTICIPATION IN COMMITTEE

705	could use the trapping scores to aid in the compilation of statistics	trappers could provide water samples in various areas for analysis
707	to provide information on what I think are the problems and the solutions	
708	I would like to be updated on any information available on the health of the animals and rivers and general quality.	I would like to be able to assist by guiding because I trap on the Slave northwest of Fort Smith and have a cabin there and have lived and trapped here all my life and know the river very well. I have assisted on a river study in the past. I have the river boat and all the equipment to do a good job.
800	Pickup and deliver water samples on the run from Fort Chip to Shell Landing	

### THREE MOST SIGNIFICANT ISSUES

Question 41 - general stakeholders  
 Question 33- trappers & commercial fishermen  
 Question 41 - industrial  
 Question 39 - river transportation  
 Question 37 - commercial  
 Question 39 - general agriculture  
 Question 32 - agricultural service board  
 Question 44 - Municipal

Survey #	Description of Most Significant Issue #1	Description of Most Significant Issue #2	Description of Most Significant Issue #3
001	Any regulated flows which could preclude the installation of an hydro electric facility (large or small scale).		
002	Increasing development will result in greater municipal and industrial discharge.		
006	Protection of quality of water.		
008	Declining quality due to municipal, agricultural and industrial development		
010	Pollution from industrial effluent.		
011	Pollution		
012	Additional Industrial Development.	Cumulative Effects.	Use and Quality.
013	Protection and maintenance of basin ecosystems.	Increased understanding of interactions, i.e. industry, community, health issues, etc.	
015	Northern basins do not have problems in South.	Greatest challenge will be to ensure that mechanisms are in place to avoid conflict and unmet demand for the resource.	Plan ahead.
016	Maintaining the natural purity of the water supply for the benefit of wildlife, vegetation and people.		
017	Nutrient loading.	Accumulative impacts.	Developing long term management plans.
019	Quality/Quantity of underground water supply as potable water for now and the future.		
020	Pollution	Shortage of Water in South Basin	Injection of water for enhanced oil recovery.
023	Pollution of the lakes and rivers (either chemicals, silt build up or excess hear).	Who has the rights to use the water (and how much and where).	
025	Water quality		
026	Shoreline exposure.	Effluents.	
030	forest harvesting practices		
036	water quality as affected or perceived to be affected by any discharge		
039	greater water level fluctuations in the Athabasca as a result of de-forestation	managing increased usage	
040	water quality	water volume	
042	Extent and methods of logging and effects on water quality	pulp mill and industrial discharge	agricultural run-offs
100	Contamination due to pulp mills and forestry activity increasing		

### THREE MOST SIGNIFICANT ISSUES

101	water quality in Smoky River and Peace River		
102	quality and quantity control and monitoring		
103	exporting of water		
104	soil erosion due to forestry/oil practices	future quality of water supply	
108	raw water quality		
110	Use of surface or portable well water by oil companies	soil erosion	industrial pollution
116	industrial impact		
118	pollution caused by agriculture and other industries		
119	Keep the water clean		
120	Complete study	Identify responsibility for ongoing enforcement, education, monitoring etc.	
121	river pollution by mainly pulp mills		
122	water quality		
123	Accelerated erosion	increased industrial activity	waste
124	The export of our water resources outside the country		
125	water use: try to conserve more	maintain water quality	
127	industrial effluent - must incorporate stricter regulations regarding environmental issues		
200	pulp mill and logging		
201	water quality		
202	water quality due to introduction of effluents		
205	ecosystem-based management on all lands including green, white zones		
206	logging		
207	water quality		
208	- decline of aquatic communities (and contamination thereof)	loss of wilderness ? of our northern rivers	decreased ability of northern residents to acquire resources they need from water basins
210	industrial and recreational development along water ways.	We believe that water courses are the life link to all living creatures including humans.	We must not take our water as unlimited source. We must use conservation and preservation of our quality water resources
211	inter-jurisdictional water management	management as a basin not as governments	
212	industrial pollution and groundwater contamination		
213	Impact of massive forest destruction on watersheds and ecosystems		
214	dams	pollution	run-off
216	contamination: chemical, oil & gas activity		
218	pulp mill effluent		
219	logging along watersheds (embankments)	agriculture along watersheds (larger buffer zone needed)	
300	resource management		
301	pollution		



### THREE MOST SIGNIFICANT ISSUES

302	deterioration of water quality		
303	Pulp mill effluent will increase causing long term damage to fishing industry and health problems in the population living along the affected rivers		
304	The possibility of major water contamination and smell		
307	industrial pollution		
308	water quality affected by pulp mill effluent		
309	control of water flow on the Peace		
311	pulp mill effluent	weed sprays	dams
312	over cutting of our forests		
313	water levels	dams	pollution
315	pollution		
314	The monitoring of what flows and waters are being affected by human and climatic reactions	The elimination of that which is downright abusive	The provision, speaking of preventative measures that should have been implemented when we started in Canada with industry, metropolitan, political and agrarian practices imported from Europe.
400	control pollution in our waters		
401	So far the Northern River Basin has not been affected. But if we get more industries and would not know what would happen in the next 10 years.		
402	Inter-basin water transfer will be greater concern over the next 10 years. Government might resort to selling water.		
403	Development of pulp mills,	timber harvesting	tar sand plants, oil and gas plants
404	flooding		
405	quality	quantity	erosion
407	pollution	lumbering, paper mills	oil & gas
408	pulp mill effluent	oil & gas	
409	pollution by industry		
413	preserve northerly (natural) flow of rivers		
414	strong industrial demands		
415	pollution from mill	agricultural chemicals	
500	clear-cut logging	too many pulp mills	
503	pulp mills		
504	new industries	poor forestry practices	
600	pollution of industrial water		
601	industrial pollution		
602	pollution		
701	bring health water back to standards		
702	use of rivers by more industry		
703	more pulp mills	more human populations	more pollution
704	Industrial pollution from tailing ponds	Industrial pollution from pulp mills	Industrial pollution from forestry
705	maintaining levels of water	maintaining quality of water	

### THREE MOST SIGNIFICANT ISSUES

706	maintain water levels		
707	effluent from industry (pulp mills, oil sands plants)	ongoing damage from Bennett Dam	
220	pollution		
221	industrial pollution		
222	pulp and paper development		
223	erosion of watersheds especially around Edson and Hinton		
224	pulp mill effluent	sewage discharge	clear-cut logging
225	clear-cut logging		
226	cumulative effects of continued resource development (logging, mills, roads, agriculture etc.)		
043	Accelerated levels of extraction in the forest industry		
128	The quality of the water shed	The quality of water	
130	Water supply to municipalities		
416	Lower pollution to preserve the quality of water.		
417	Industry discharge		
603	Ground water vs. water for industrial injection, silt loading from logging, land clearing, or tillage and road construction.		
604	Pollution of the rivers and use of the water in the rivers.		
605	Exports of water	Restricted legislation on use of surface water i.e. in how they conduct their farming operations.	
606	Increased industrial development and demand for water	Increased runoff rates and reduced water retention and result of forestry activities.	Multiple use of limited resource.
238	Control of water flow by dams.	Pollution by pulp mills	Logging practises. Loss of wildlife habitat.
249	Industrial pollution	Forestry Mismanagment	Water transfer to southern Alberta.
708	pollution control		
506	limited access to fisheries		
507	uncertain		
508	loss of water		
509	pollution		
800	clean up water discharges into every stream		

## RECOMMENDATIONS

Survey #	Recommendation #1	Recommendation #2	Recommendation #3
001	Don't preclude hydroelectric development in the basin.	If flow regulation of some type is identified as a requirement ? hydro opportunity is explored.	Identify areas where industrial development (& type) can happen within basin.
002	Ongoing research is required to better understand the river's biodiversity and variability.		
008	Interdisciplinary committee	Research on modeling water quality with increasing demands	Push the "polluter pay" principle to ensure optimum technology is used in pollution reduction.
011	Stiffer regulations and lower acceptable levels of pollution.	More vigorous monitoring.	Penalties that will have an immediate effect.
013	Communication improvement to the public on issues, studies, concerns (positive and negative).	Scientific validity of previous studies.	
016	Maintain natural water quality	Determine maximum tolerance for natural water quality maintenance.	Restrict/regulate/enforce stake holders and users of the basin to ensure future safety of ecosystem.
017	A system for ongoing review and study.	A system for public participation in developing and reviewing management plans.	Relieving of any restrictions on consumption that the science shows to be reasonable.
019	Continuous monitoring.	Enforcement of existing regulations.	
020	Monitor pollution to protect system.	Examine possibilities of transfer of water from north to south basin.	Injection of water for oil recovery or the use of potable water that cannot be recovered should be stopped.
022	Develop enforceable regulations for managing the NRBS		
023	Charges to logging (clear cutting) practices to reduce erosion.	Charges to effluent discharges from plants and municipalities to reduce heat discharge and reduce the chance of hazardous chemical spills.	Protect areas with no use by anybody other than fishermen (recreational, not commercial).
025	Clean up	Pollution control.	
026	Set guidelines to control access to shorelines and run run-offs		
030	address private landowner's timber harvesting practices		
032	a proposal for a multi-stakeholder committee to assist regulators on policy issues in each river basin.	Appropriate enforcement program to ensure compliance	setting a basin specific standards and measurement parameters to monitor performance
034	The ecosystems should be preserved and maintained	A multi-stakeholder management plan be developed with residents and recreational users ?	Government to have ?
036	require environmental advisory committees	require resource management plans for each basin	communicate, communicate, communicate
042	on logging practices	on pulp mill and industrial discharge	on agricultural practices that reduce run-offs
100	Enforcement of existing regulations	Development of resource management plan	Develop new regulations and education programs
101	Stronger guidelines for waste disposal	More frequent testing of effluent from mills	Stiffer penalties for violators of pollution laws
102	strict control on development	a comprehensive plan for	set stringent regulations for all

## RECOMMENDATIONS

	which may influence the quality or quantity of water resources	monitoring both quantity and quality of river basins	water users both on water users and on effluents
104	Have a management plan to ensure the future quality of these important water systems.		
106	Monitoring of pollution factors in rivers	protection of fish and wildlife along in rivers	creation of ? area's along rivers.
108	change land use practices	better flood control	monitoring of water quality
110	creation of committee to interact with all government	develop management plan	control the drainage of wetlands and muskeg
116	recommendation for present use and regulations	recommendation for improving future river management	
118	management plan for use of valley areas	control of draining farmland	control of water quality from upstream usages
120	industry's responsibility for program costs	Government to set guidelines and issue licenses	Industry to be ? for delivering programs
124	No export of water to outside interests, i.e. USA	control pollution better	
125	some mechanisms to measure amount of water used	set up mechanism to see what basin can supply water	set up system to aid in the conservation of water
127	Who should be responsible for monitoring basins	Where should funds come from to keep monitoring	What types of events are causing the problems and what alternatives are available
128	Study the quality of the water shed to determine what effect farming, logging and drought conditions are having	See that all regulations are being met and enforced.	See that local input is present in recommendations.
130	Water users should have a mechanism in place to facilitate conservation.	Improve water quality by controlling effluent, either punitive or positive.	
200	need to coordinate regulations for the whole basin		
201	zero discharge by industry to rivers	no dams	no sale of water
202	set strict regulations and enforce these		
203	issue licences and permits	prepare resource management plans	provide policy advice to provincial, federal and territorial governments
205	ecosystem-based	sustainable-based	protection/preservation of some intact ecosystems
206	downsize logging operations	eliminate discharge	educate public about the use and abuse
207	encourage greener agriculture practices	make offenders pay	monitor water quality
208	No logging in river corridors or on a site near lakes (e.g. buffer) minimize crossing of all industrial activities, prohibit them in some areas	reduce industrial discharges into water basins, monitor, enforce regulations of non-compliance costs (make it hurt)	allow northern residents to have a real voice of power over land/water decisions if it is not too late
209	decommission Bennett Dam and restore	reduce clearcutting and timber allocations	get rid of tailing ponds
210	to stop any further development along these water ways until an environmental impact study is done	to setup educational programs for the public so that this group of people will understand the importance of our own water	to have the public voice their concerns and to have the power to overturn industrial development based on environmental assessments not economical impacts.

## RECOMMENDATIONS

212	monitoring of total ecosystem	enforcement of environmental regulations	mandatory environmental impact studies before any major development and compliance with recommendations
213	effluent pipes above intake for all municipal and industrial users	drastically reduce forest destruction	clean up existing polluters, enforce regulations and permits, prosecute violators
214	control logging	better water quality	
216	determine what and where problems exist	determine plan and regulate and minimize impacts	develop long term plan to clean up problem areas
218	enforcement by government and monitoring of water quality	more consultation with the public	more studies before more industrial development occurs
219	controlled burns	inter-provincial agreement on levels of Bennett Dam	
220	monitor (gov't) industrial waste more closely	Instead of fines, abusers should have license revoked by gov't	
221	existing water quality standards must be maintained or exceeded		
222	to abolish current forestry practices code	to prevent the development of any new pulp mills	to adjust forestry practices in favour of small sustainable harvesting operations
223	Better control of watershed in terms of land use		
224	pollution control	logging restrictions	develop management plan
225	increase corridors for no logging adjacent to rivers	regulate effluents more effectively	user pay for pollutants and other mitigative measures
226	new development must pass regional not just site specific environmental review (cumulative effects)	Ensure adequate protection of stream and river basins from increased logging	regulate logging on private land
238	Get some control over business using water supply (dams/pulp mills).	Listen to people that use the rivers and listen to what they say should be done to get a handle on pollution/destruction of habitat.	Crack down harder on polluters - close them down periodically.
239	Stop industrial pollution.	Reduce clear cutting.	No dams.
300	reduce pollution levels from all sources with primary focus on industry	review logging practices to minimize impact on the ecosystem	
301	preserve the quality of water for the future. It is the most important resource on earth.		
302	preserve high standard of water quality	reduce amount of harmful pollutants discharged to water courses	monitor water quality/quantity indicators
303	do not allow any increase in discharge of pulp mill effluent. . Work to reduce existing discharge	Limit amount of erosion by limiting amount of clearcutting allowed in proximity to rivers and streams.	Limit amount of fertilizers and other agricultural runoff by improved farming methods
307	zero pollution	water level control	
308	more restrictions on large extraction's industry	better sewage treatment	
309	water flows be controlled for the best health of the river	reduce effluent	monitoring be done, levels, silt, pollutants
311	stop any mill effluent		
312	moderate harvesting of trees	pulp mills	
314	downsizing all abusive practices that threaten the integrity of our	help to establish inter-disciplinary, inter-basin,	hang in there - Don't just file your report, collect you pay, and

## RECOMMENDATIONS

	basic, God-given resources water	transboundary	immigrate to China or resign
400	Eliminate industrial pollution	control good water quality for the future	
402	The preservation of hunting and fishing rights should be maintained	Industry should be located on land that is prime for agriculture	
403	have provinces and feds give control of resource management to river basin committees which are elected by basin residents	river basins cross provincial boundaries so only way to have an effect on quality is to have all basin members have a stake in development	Enforce current regulations better by increasing monitoring frequency
404	better allocation for water		
405	Dams must allow enough water to flow to maintain wildlife, e.g., McKenzie Delta	better enforceable regulations and enforce them	better monitoring of sewage discharge. Discharges should not be allowed in rivers till discharge contaminants are at a safe level
407	monitor the above activities closely		
408	pulp mills should build big ponds and keep reusing the water	no sewer discharge in rivers	
411	monitor effluent in rivers and creeks	monitor oil activity before and after	monitor the dioxins
413	ensure water quality and quantity	ensure natural flow of rivers	preserve provincial natural park
414	very strong zero pollution controls		
415	regulate water pollution from mills	regulate erosion from forestry	
417	Regulation of industries	Protection of the ecosystem	General awareness
500	erosion problems	oil field practices	pipeline and seismic work
503	no pollution	no pollution	no pollution
504	tough law	tougher enforcement of laws	allows no pollution in these basin rivers
506	monitor to find out exactly what is going into our river systems		
507	uncertain		
508	The amount of effluent going into the river should be monitored for composition	study the combined effect of different effluents (i.e. industry, agriculture)	prevent any form of water export whatsoever
509	control siltation	better control of cattle farming near rivers and other water sources	
600	stop pollution of water	maintain better water quality	preserve good water for the future
601	provide policy advice	development of education programs	prepare resource management plan
602	quantity of pollution	damages	repairs
603	Enforce existing regulations.	Limit instream contaminated loads.	Reduce free access to river in resource extraction operations.
604	Monitoring the quality of water.	Limit clearing of land.	Monitoring direct access to water.
605	There is no problem here. Do not regulate us because there are problems in southern Alberta.	Monitor water bodies and control potential sources of pollution (my opinion).	Develop an ecosystems approach to the river basins with a strong commitment to preserving integrity.
606	Develop water management plans for each river basin.	Develop conservation - education program for water use.	Encourage developed land use plans that have implications of land use on water resources.

## RECOMMENDATIONS

700	control pesticides and herbicides in creeks	control effluent in mills	control dumps along rivers and creeks
701	stiff regulations	heavy fines if you pollute	stop blockage of rivers (dams)
702	develop management plans for Northern River Basins	Reduce industrial effluent loads, eliminate them if possible	Preserve and maintain ecosystems
703	some way to keep water clean. No danger chemicals in water	some type of water conservation	some major land and water protection
704	Industry to be policed and fined for violations	Industry to pay for river monitoring	Industry to pay for fish stocking and reforestation
705	maintain water levels	maintain acceptable water quality	maintain program for wildlife management experts
706	maintain water levels	maintain good quality water	maintain fur management specialists
707	water in rivers should be cleaned up so it is fit to drink	Peace-Athabasca Delta water levels should be restored	Effluent from industry should not be discharged into river
708	involve local trappers in all aspects of studies	keep a clear examination of water quality	allow more natural run-offs
800	monitor all discharge into the rivers	check all fish for parasites, cysts, mercury or any other waterborne bug or contaminant	dredging to get clean water onto the spawning areas, For One, open Richardson River to Richardson Lake and dredge the outflow channel from Richardson lake to the Athabasca River

## LAST QUESTION ON EACH SURVEY

Survey #	Comment #1	Comment #2	Comment #3
001	Don't over-regulate the system and maintain sufficient flexibility in the basin plan to allow development to happen while minimizing its effluent impacts or achieving "0" discharge.	The NRBS should act as a policy advisory group, coordinate research, prepare resource plans and provide advice to regional and federal regulators.	
002	The new AEPEA regulations and Water Resources Act provide regulatory control of industrial and municipal discharges.		
009	Anderson draws groundwater from one well which is re-injected into a lower, oil producing formation as pressure maintenance.	Since surface water is not used, and waste water is not released to surface, most of this survey does not apply.	
011	Truthfully, I may not be as harsh on other industries if I was making my living from them.	However, profit is of little help when our health is gone.	
013	In the initial stages of the NRBS, we as an industry felt that our previous studies, view points, etc. were not welcome and represented a "biased" standpoint.	The studies performed by NRBS to date have shown that industry work and performance has been better than expected.	
015	Good luck.		
016	We draw off up to 30 acre feet per year from a remote artesian spring source. This is bottled and sold to thousands of customers locally and abroad who have determined the quality of municipal water supplies to be unacceptable and/or unhealthy.	We feel it essential to protect our naturally pure water sources as a safe alternative to conventional water supplies.	
027	The quality and quantity of water does not affect the operation of our company and by answering this questionnaire it would be personal feelings only		
029	Very little to comment on at this time.		
031	There were many mistakes in the info on the front of this form. One of these licenses is in Drayton valley which isn't in the study area. One of our licenses is listed three times.		
038	Creator's water requirements and impacts in the area are very small due to the minor use required by our facility.		
042	General support for practices which improve quality of water and health of river basins ecology.		
102	This study can set a precedent for all future river basin users. Government must take the results of this study, implement them immediately and enforce the resulting regulations. Time is of the essence if we truly want to protect our river basins for future generations.		
103	can't speak for council but would imagine continuation of an adequate sufficient source of raw water for the purpose of providing potable water		
119	The recommendations will be made on their findings to date. I do not have all that information so you should not be asking for recommendations		
120	Let government provide policy and guidelines and let industry provide costs and program delivery.		



### LAST QUESTION ON EACH SURVEY

122	We do not feel that there should be new taxes or user fees on water.	Water should not exported out of our country	We feel that the laws for municipal water supplies are working fine right now, Why do they need to be changed?
127	Our Band is making a strong commitment to the quality of our water sources. We have our own environmental officer and we are currently educating others in water treatment/ quality. However rules and regulations regarding environmental issues (water quality) are weak and in may cases difficult to monitor and enforce.		
128	We are having more water quality problems each year. Some of these is due to drought conditions but not all problems by far are for this reason. We know the major rivers are being monitored but not enough attention is being paid to the smaller rivers which feed into the major ones.		
130	Study is important to show water should not be taken for granted.		
210	The water belongs to everybody, we drink, use it for recreational purposes etc. We have taken this for an endless supply, however, we can see that the health of our rivers has deteriorated. Wetlands are drained and drying up, pollutants still filter into the ecosystem, and yet there is still development and abuse of this precious resource. I feel sorry for the future generations that have to clean up and live with our abuses and misuses.		
211	The NRBS seems to have been a fairly inefficient organization in meeting the demands of the communities in the north. The consultation process has been unidirectional and somehow useless		
212	we think that government should not have the power to overrule any well researched recommendations simply because they do not fit their predetermined plan		
213	must stop using river as a sewer	re-think resource extraction industry - who benefits short and long term	move tar sands tailing ponds from location area near river
214	try promoting recreation on the rivers		
218	Government should be monitoring and enforce more strictly	Look at long-range effects of industrial development	
225	We support all efforts to reduce pollution and develop plans to improve management and to act on the recommendations		
226	Though not in our region, the Peace-Athabasca Delta is of concern. This critical, unique ecosystem is dying due to dams on the Peace River. The loss of habitat for migrating waterfowl and shorebirds affects population's access to the continent. Action must be taken to restore the seasonal flooding and rejuvenate the Delta.		
303	Remember that we live in these area. We have to live with water quality (lack of it) and the smell. We want to enjoy the pristine settings of the North and it is disappointing to see what big business does. But don't go hog wild with environmentalists who want to ban out all human entry. Horses are not major polluters and are the traditional means of transport. DON'T TAKE THAT AWAY FROM US! More than ever before people want a wilderness horse experience.		

## LAST QUESTION ON EACH SURVEY

307	We are always concerned about the amount of people who throw garbage and dead animals, oil in the river and don't realize or care of the damage it does - perhaps more education would help.		
308	It would be nice to be able to drink clean water and catch fish that don't have deformities in the future.		
309	Keep up the good work.		
311	I have lived on the Peace River for 45 of my 55 yrs. I have seen the Peace come from a beautiful clean river to a muddy, mess. Where at one time, there was sand and gravel is now 15 ft of mud and . we as people have been totally ran over. Where we swam 20 yrs ago in lovely sandy beach is now mud our family gets swimmer's itches		
312	I am concerned about the government Special Place 2000. I think low impact users such as ourselves should have a say in where and how these are chosen.		
314	We live here. 90% of our staff/suppliers work and are born here. We are proud of much that has (as yet) not been raped. And we are only too glad to have you as mature visitors. For the benefit of our environment and the local people.		
402	Forestry practices should be responsible in preserving the land. There are so many surveys, but do they really accomplish anything, since the government is responsible for implementing recommendations		
403	Until more provinces can be convinced to join in the effectiveness of river basin management will be greatly diminished.		
404	interesting		
405	Dams must also release water on a timely basis, e.g., avoid floods if possible, provide more water flow if a drought.		
407	Keep us informed		
408	check water discharge at the discharge pipe	check more often	check different hrs of the day and night
409	this really does not affect us and we don't know what's going on up there		
410	Questionnaire is worded ineffectively	In need of more directive summary	unattractive to participants
411	Comments are on the experience of 30 years + is from the view point from the cattleman and how this industry has changed and had to cope of non agricultural industries which		
412	does not really pertain to use. We have no agriculture land near us. We have no parks or beaches without 25 miles. It is crown land, native grass, owned by the Alberta Government. There is no major water run within 50 miles of our leases which would be the Wapiti. We really do not do anything about Northern River Basins Study.		
413	Where is 11 million coming from. Tell us how they are going to spend it?	No water meters on out home wells	people live within the area should have the most input on these matters.
500	We need a lot more fishing on the Lesser Slave Lake to improve the quality and size of fish		
503	We should all keep in mind whatever we put in the water we are polluting it for someone else. Northern Alberta is not very polluted yet so we should be very careful of becoming complacent.		

### LAST QUESTION ON EACH SURVEY

507	keep water as clean as it is, if not cleaner		
600	water is the most important need for mankind. If water is destroyed life can not exist.		
604	We need to look at common sense approaches, perhaps acting on the regulation we have in place. Farmers are not anxious to see more regulation, however, they know the health of our water supply is important. Most avoid polluting to the best of their ability and this should be recognized		
605	I think farmers will develop more of a conservation ethic as resources become more depleted. For the time being, resource extraction offers badly needed cash for farm development. Farmers feel they are good land managers and society's view of them as polluters, bad managers, etc. are unfounded.		
702	We may be too late already but we need a management plan with balls something that will be enforced with a zero tolerance attitude in mind. It is easy to destroy an environment and damned near impossible to repair or replace it.		
703	some way to encourage and stimulate furbearing animal populations in the river basin.		
705	dispense with duplication of services	avoid self-interest groups	be realistic
706	cut off funding for special interest groups	stop environmentalists	use common sense
707	I trap on the Clearwater River 15 miles West of the Sask. Border. Water levels and quality there has not been affected yet. Part II of the questionnaire were answered on the area of my trapline, the rest of the questionnaire was answered on my knowledge of the Athabasca River.		
708	Have a public meeting and make everyone aware of all aspects of studies and future plans involving regulations and quality and quantity controls.	If you have any questions, please call me (403) 872-2217(h) and 872-2219(w)	
800	Come up with some figures and facts to explain what you have done in the years of your operation	In your magazine monthly tell people in plain English what has been done to tell people where their money was spent, not on offices and people riding the gravy train.	

Side notes for all surveys

Survey #	Page	Comment
028	4	Question 10 - no water discharge to surface bodies
033	6	not involved in rivers
034	6	<p>We have some minor groundwater contamination in some of our plants. I can't comment about other industries. Our impacts are very minimal</p> <p>We use some lake water, i.e., freeman Lake. No real problems and no change in lake water quality. Most of the rest of the significant water volume come from various aquifers and some of them sometimes present problems due to minerals ? . All of this water is recycled into our reservoirs and does not end up in the surface or groundwater.</p>
035	3	<p>- This survey response is based on our groundwater well not the saline groundwater wells that do not affect the basin quantity or quality concerns.</p> <p>- Question 5 - but less than 10% for the Cynthia Project the only fresh water use. The rest are saline groundwater</p> <p>- Question 9 -11: no discharge</p> <p>- Question 39: full-time committee not supported. Bring people together for a specific purpose over a specific period of time. Short term committee to establish standard management objectives and measures then each jurisdiction implement</p>
039	12	Question 42: This what you are being paid to do. Let the findings speak for themselves.
119	10	This question is difficult to understand just what you want?
120	3	Weldwood operates
120	5	<p>Assume major development projects need to prove an acceptable impact on a river</p> <p>- ? projects important only if producing sensitive discharges</p>
121	9	N/A river does not touch municipality (approximately 35 km distant)
123	4	Question 6 - non metered
127	8	unfair question: priority would be better 1,2,3,8
133	1	no one interested in completing survey
205	11	<p>Question 37: Taxpayers: which include everyone but should also include a user-based formula as well but should also be independent in reporting.</p> <p>- In other words everyone should be involved and</p>
208	11	Question 37: formula of above: those who pollute more pay more
211	9	<p>Question 34: what is the point of this exercise?</p> <p>Question 35: enforcement and protection have been vastly ineffective</p> <p>On survey: not very well designed. You probably could do better.</p>
213	4	<p>FOTA is not a user group. Individual members may well fish etc. But our function and activities as an association does not have to do with "use" but rather with conservation and preservation. FOTA attempts to look at development in the river globally, that is, in terms of its effects on ecosystems as well as in terms of how it will affect the activities and well being of local people.</p> <p>P.11: future monitoring will depend on development. Presently, chlorinated organic, biological oxygen demand and number and health of various organisms. Those who benefit from the development should pay.</p> <p>Question 38: If the committee has authority to regulate, monitor, enforce and charge the violators.</p> <p>Question 43: It was hard to express our views about conservation and preservation within the constraints of the questions asked. For example, there was nowhere obvious to talk about the Heritage Rivers Project or Special Places 2000. We think the NRBS should have done more on the effects of massive timber cutting on the river basins. It is the sheer amount, as well as the practices that concern us.</p>
215	11	<p>have not answered as we deal primarily with wetlands</p> <p>question 39: Why isn't B.C. identified as a government managing the Peace River basin? The Bennett dam, has significant impacts on downstream resources.</p>
217	9	Question 34 & 35: would not answer, did not want to answer on behalf of members
230	7	Question 18 - Factor 2 and Factor 3 are due to ecosystem destruction through clearing and clearcutting.
231	12	Question 40 - We have few members in the area compared to numbers of local residents. It is better that they are represented rather than we who travel from outside to the basins for our recreational

Side notes for all surveys

		purposes.
239	35	Poor choices
301	8	Again this would be of local concern. We are also interested in what happens after our area. We have answered the below relevant to our area only. Question 31: group 3 - unless it was a very costly use to polluters it would have limited effects
304	1	I do not operate within the area shown on you map, i.e. not within the Slave R, Peace R., Athabasca R. Or L. Athabasca basins.
306	6	We are not affected in the Tonguin Valley where we operate our company.
400	6	Does not pertain to us 10: don't know for sure
403	4	well water in our area is difficult to find and if found is usually not potable except in the NE Fourth Creek area near the Peace River where a reasonable aquifer exists
407	6	No noticeable effect, only 2 members properly is bordered by the Athabasca River
505	1	As per telephone discussion - Returning as not really a commercial fisherman, I net for 1 day license only.
600	5	Peace-Athabasca and Slave are not in our area
605	9	Maybe only #3 fits with what your analysts could measure.
605	10	Question #31 - If it paid well enough
700	3	information given only from Trapline 2082
701	4	Some time I wished the government would listen to trappers instead of always listening to large corporations. There would be a possibility of saving all our water resources. There should never be any effluent discharges in any river, creeks, lakes etc. If government does not put a stop to this, all our water resources are going to be polluted.
704	3	trapline 2875
708	3	- I cannot speak for all the trappers this year but I can give you an estimate of this year.

## **RESPONSES FROM VARIOUS SURVEYS**

Question 14 - industrial

Question 12 - agriculture and service board

Question 12 - river transportation

Survey #	Description of Changes in the Last 10 Years
7	Suspended steam operation and uses as much water.
16	We are increasing our water usage due to consumer demand.
17	Usage increased - 10% when facility capacity was doubled in 1990.
19	Quantity has been declining.
21	Not applicable.
36	City of Grande Prairie now discharges upstream of our pulp mill
408	stale, water dirty, less water polluted
409	poor quantity
413	drop in water table
416	Water table has dropped.
417	The quality of water has deteriorated to the point of needing treatment.
600	less rain fall in the seasons when most needed
601	dug out water changes colour quickly could be caused by higher use of nitrogen fertilizer
603	Flow rates have decreased in several springs, lower volumes in major creeks and Pembina River.
604	Decreases in both the quantity and quality as a result of deforestation and drainage.
605	I think with development of agriculture run off is definitely quicker. This has benefits in that farmers get on land quicker, but if you have a dry year, water shortages in dugouts or sloughs can occur. Also I think fish and wildlife negatively impacted.
800	Over the last 10 years there have been noticeable changes in the river. We notice a slowdown of the flow of the Athabasca from Mile 138 to Lake Athabasca and increased flow on the Quatre Fourches River.

Question 16 - industrial  
 Question 15 - stakeholder  
 Question 7 - agricultural service board  
 Question 14 - agriculture

Survey #	Description of Changes in the Next 10 Years
006	No major changes expected.
008	Increased production in the area associated with the Athabasca basin groundwater source. For secondary recovery.
013	Reduction in water use through recycling of effluent streams and process optimization.
015	We hope to expand, however, our licence includes sufficient room for expansion.
024	Lower requirements for pressure maintenance.
034	Utilize majority of the water for voidage replacement and for . As more heavy oil projects come on, we will use more water. As our fields mature further, we will utilize more water.
036	- Lower quantity requirements - reduction in use of groundwater by using site run-off water that will be collected beginning this year
038	Expansion, i.e., increased production
041	Increased company's operations in Grande Prairie operations
201	water quality could be worse
202	with new and stricter regulations facing pulp mills, it should be expected that the water quality will improve.
203	pollutants from pulp mills will eventually contaminate water
204	if more junk gets dumped in
205	increased industrial/agricultural activity - negative effect - increased domestic effluent
206	logging
208	pulp mill effluent is the No. concern
209	clearcutting
210	lower water levels and less flooding will cause wetlands to dry up which affects all plants and animal life. Also resource and human development along those corridors will cause stress on some animal life and impact some native plants For example, native grasses along the Peace River have vanished.
211	quality will continue to deteriorate and quantity may be affected by international accords
212	climate change, massive clear cutting of forest, poorer water quality because of increased industrial activity along the river
213	1) pulp mill effluent, 2) siltation from agriculture and logging practices, 3) increased effluent from municipal discharges, 4) more industry to pollute through run-offs and storm sewers, 5) logging in river valleys, 6) more visible pollution - foam, discolouration, rubble, debris, sewage, 7) increased oil & gas activity - pipeline crossings, siltation and run-offs and chemical pollution.
214	tree cutting cause faster run-off
215	continued drainage activities not only impacts wetlands habitats but also impacts on run-off rates and erosion
218	establishment of more pulp and paper mills upstream from La Crete
219	logging too close to embankments- there should be bigger buffer zone fires should be allowed to burn longer
220	If water levels keep dropping, it will be a problem very soon. More algae
221	Logging in NE Alberta affects water quality
223	increase in clear-cut forestry
224	Logging, very dirty water in run-off and increase in pollution
225	Logging especially clearcutting (deadfall) near river banks (blowdown) and oil and gas
226	Continued increase in forestry, oil and gas exploration and other industry and a decrease in fish and wildlife biologists to enforce existing regulations. Construction of another pulp mill (GAP) on the Wapiti. Unregulated clearing of private land with no regard for water courses
227	More industrial plants using river for a sewer.
229	Increase in oil field activity. Increase in beaver damming activity. Less trapping due to pricing. Less rainfall. More land being clear cut.
230	Pollution from Daishowa, ALPAC and oil sands activities. Increased sedimentation, draining of wetlands to facilitate logging. Increased agricultural clearing will do same.
231	Industrial pollution.



233	Continued increase in siltation from the enormous increase in logging. More pollution from DMI after they build another mill/expand.
234	Concerned that clear cutting will cause increased erosion and turbidity. Also some concerns about the tarsands and ALPACA'S effluent.
235	Discussion of dam on Slave still continues.
236	Increased pulp mills/mining effluents. Increased siltation. Dams would drastically affect water resources (e.g. Slave).
237	Increases in drainage, destruction of watershed forest cover.
238	More farmland opened up (silt runoff, mud and chemicals). Too much logging - destruction of forests. Pulp mills getting away with too much dumping effluent. Towns using river water for consumption and sewage disposal. Oil companies crossing river - chances of pollution.
239	Too many pulp mills, too much logging, more pollution, more flooding.
402	Agriculture in the area will diversify, most likely requiring an increase in irrigation practices
403	More herbicide use leading to more contaminated runoff to creeks and rivers as zero till and minimum till practices become more common. More livestock raised in the area due to elimination of the crow rate will increase demand for stock water and increased nutrient load on creeks, dugouts, river tributaries from livestock waste
405	massive logging practices in the Peace area, without tree cover, Spring melt is quick and faster water runoff may not soak into the ground, erosion will occur
408	many pollutants in runoff
409	noticeable drop in the water table which has reduced quantity available
413	possibility of cattle production increasing in our area therefore more water will be used
417	More use of water in different practices.
600	Farmers will have to practice new conservation
601	- drainage ditches could lower water table - less trees, reducing amount of run-off - perennial forage and reduce tillage could promote cleaner water
604	As our agricultural community is forced into diversification we feel there will be an increase in the amount of water required but in the quality required, e.g. greenhouses
605	Conservation farming methods will result in less erosion and siltation. Expansion of agriculture land base will I think increase drying of climate (not enough trees being left on farmlands).
606	More adaptation of limited access water systems. Better yard site planning to reduce manure runoff. Movement towards reduced tillage and other practices to conserve available moisture.

Question 7 - General Stakeholders and agricultural associations

Survey #	
200	sustain the natural resources of the area, keep balance between economic and environmental concerns
201	to defend the quality of the environment to examine environmental in facts in Fort McMurray and the north
202	a rural resident who is interested in providing recreational opportunities to the public. Board members are volunteers who meet once a month in regular meetings and for any special meeting and/or function
203	typical member is of native Heritage
204	average income farmer through to tradesmen and some elite
205	(members - male/female age 7-83) 30 year old male employed in resource industry (agriculture, oil) or in service (government/education)
206	Average age of 45, mostly male, mainly interested in sporting activities
207	middle income, rural people with an interest in the environment and social aspect of outdoor pursuits
208	well educated, 30-50, \$15-30,000/yr. income, outdoor recreation enthusiasts, concerned about future of Alberta's environment
210	a concerned outdoor person who enjoys a passion for the outdoor
211	rural dweller who still has a feeling for the land and well educated and highly motivated
213	eager to observe and learn and promote democracy, speak for the environment
214	age between 14 and 40 athlete in nature
215	approx. 70% are non-consumptive uses of wildlife, about 30% are hunters and fishermen; all support habitat preservation (based on Grande Prairie members)
216	outdoor people: hunters, fishermen, campers, snow mobilers
217	degree in biology and environmental science, university grads
218	male, 20-30 yrs, active in sports
219	loves outdoors, involved in fishing and hunting
220	anyone that hunts and fishes (sportsman)
221	30 yrs of age, male, likely oil sand workers, hunter
223	enjoy outdoor activities
224	common worker who boats on weekends and evenings
225	workers in the oil and gas industry who enjoy hunting and fishing
226	interested in nature and the outdoors, wanting to share knowledge and concerned about sustaining wildlife and wildlife habitat
227	25-45 years., male, any profession
228	Hotel, Restaurant
229	Avid outdoors person who is willing to work many hours free of charge to help curb the depletion/devastation of local area fish and game stocks.
230	Wild spectrum of backgrounds. Typically interested in nature study.
231	15-40 years., male or female who enjoys outdoor and water sport in particular.
232	Students, grades 5-12.
233	?
234	40-50 years, hunter or fisher since childhood, middle income, good knowledge of the area.
235	Beginner, wanting to see if they would like the sport.
236	18-80 years, wilderness recreational canoeing/camping and/or whitewater enthusiast.
237	Usually hunters, fishermen
238	Hard working, family person, boat owner, down to earth, common sense, conservationist, hunter/fisherman/woman, outdoors person.
239	35 year old mother of two, part time professional educator.
400	Farmers, retired people, business people, males and females
402	a non-typical farmer that wants to leave his area
403	a mixed farmer with some off-farm employment
404	40-45 myself minister, feeding & livestock & farming
405	hard working, self-employed farmer
406	local farm people and acreage owners
407	a farmer working for the betterment of the community
408	basic farmers rural residents

409	a rural resident
410	overworked - underpaid agricultural technology
411	mixed farming and ranching
412	cow calf operator
413	agriculture background male and female evenly split, age 35-65 yrs
414	owner producer grazing cattle in a community pasture
415	user of the community hockey arena
416	Volunteer
417	More than likely from an agricultural background

Question 6 - General Stakeholder and Agricultural Associations

Survey #	
200	sustain the natural resources of the area, keep balance between economic and environmental concerns
201	to defend the quality of the environment to examine environmental in facts in Fort McMurray and the north
202	to maintain and operate outdoor recreation areas(day use sites, campgrounds, boat launches etc.) and to set policies on recreation issues. To assist community organizations with their initiatives and to support public rec. Facilities which service the region.
203	to improve the quality of life for Native people by supporting self-determined activities which encourage equal access and participation in Canadian society with respect to Native cultural distinctiveness. To provide opportunity in social recreational and educational activities in Centre and other locations. To promote friendship and understanding between native and Non-native people, to foster respect appreciation among all races through shared activities.
204	look out for the interest of the members on the matters of fish and big game
205	habitat protection, conservation education, youth involvement in outdoors, promoting sportsman during hunting and fisheries
206	to preserve and help manage our surrounding environment
207	to promote wise use and conservation of our provincial fish and game resources
208	1) to complete Alberta's Protected Areas (or have them completed) 2) to ensure Alberta is a society that has mechanism allowing Albertans a meaningful say in the decision making process.
209	to encourage environmentally responsible tourism
210	to be a voice for concerned hunters, anglers and outdoor people. Also to promote and educate people about conservation and protecting the environment
211	protection of the water quality in the Slave River. Advocacy on environmental issues affecting the river, the shore or its wildlife
212	to educate the people in the surrounding area about environmental issues and to promote environmentally friendly activities in the area. Also operate a recycling depot
213	share knowledge on ecosystems of the Athabasca River Basin, press for access for information, i.e. public meetings on environmental impacts of proposed major development, work for the principles of democracy. FOTA stands for clean air, soils and water and will resist any industrial development that pollutes air, soil and water.
214	to promote the safe use of canoe and kayaks on moving water
215	to preserve and increase Alberta's waterfowl resources through restoration, preservation and creation of prime breeding habitat in Canada. This habitat will be developed by utilizing multi-use concepts
216	to promote conservation of our natural resources. To foster and promote the non-commercial harvest of fish and wildlife as part of an overall wildlife management program. To develop and promote educational and recreational opportunities and to promote outdoor ethics and safety.
217	to ensure ? of environmental biology in natural resource management
218	to maintain and continue develop the recreational facilities in the M.D.
219	to promote through education, lobbying and promotion the conservation of fish and wildlife to protect and enhance their habitats
220	to promote environmental awareness and to attain land in Wildwood area for wildlife habitat
221	The promotion and conservation of wildlife and habitat
222	to raise awareness in environmental issues to the public and to expose environmental problems to public scrutiny
223	to enjoy wilderness, promote canoeing and water safety and introduce canoeing to public
224	to organize functions for boaters, river boat races, family functions on the river, bringing outsiders to our area and to protect our river environment
225	to preserve and enhance fish and wildlife and opportunities for outdoorsmen to pursue
226	- to foster an increased awareness appreciation and understanding of natural history in the Peace region. - to increase interest enjoyment and knowledge of natural history - to support conservation measures particularly dealing with wildlife and wildlife habitat
227	Lobby group for hunters, fishermen, outdoor enthusiasts.
228	Tourism and economic development promotion
229	Increase the awareness of depleting fisheries/game.

	Inform members of local fish and wildlife regulations. Teach and train junior future outdoor sportsmen. Information on new fishing techniques, catch and release
230	To be the strong voice for nature protection in Canada.
231	Promotion of the sport of canoeing and kayaking for sport and recreation and competition in Alberta.
232	Outdoor education/physical education/recreation.
233	To promote environmental responsibility.
234	Consideration of fish and wildlife.
235	Exposure to the sport - safety and enjoyment. Encourage individuals to pursue and purchase their own equipment so that sport will grow.
236	To enjoy paddling (canoe and kayaking) on Alberta rivers. Improve members paddling skills and safety awareness. Promote awareness and appreciation of natural heritage of rivers and lakes.
237	To promote the sustained quality of environment and wildlife for present and future generations.
238	Promote the beauty of the Peace River Valley by exposing it to boaters.
239	Promote all forms of canoeing. Meet members educational, social, and tripping needs as paddlers.
400	to promote agriculture in the residing community
401	farming and livestock
402	to try to re-direct industry (and urban sprawl) off of good agricultural land onto poor agricultural land. Also, oppose inter-basin water transfers
403	to encourage improvement in agricultural, horticultural practices and the quality of life in our community
404	mixed farming
405	to graze our members' cattle during the Summer in an economically feasible manner
406	community closeness
407	to construct facilities, e.g. community hall, skating rink, children playground, two ball diamonds with skate infield. These facilities are in place in the Tiger Lily district. Interests are preserving the environment and wildlife
408	We have a hall serving the community meetings , weddings, funerals, dances Christmas events
409	to provide a secure and safe setting for family and community activities
410	to further agricultural and recreational activities in our area
411	to graze cattle on summer range
412	to graze our cattle in Summer time
413	to promote community and family involvement in various sport and cultural activities in our agricultural area.
414	sustaining beef industry in the area
415	to provide facilities for the settlement of our community and encourage family recreation and agriculture
416	Preventative programs. Parks and facilities. Cemetery
417	Agriculture awareness and recreation and community development within the MD of Smoky River #130.

QUESTION 5 - TOTAL VOLUME OF RAW WATER

Survey #	Volume Unit		
	Plant 1	Plant 2	Plant 3
100	344,260 m <sup>3</sup>		
101	37,000 m <sup>3</sup>		
102	400,000 m <sup>3</sup>		
103	115 m <sup>3</sup>		
104	31,200 m <sup>3</sup>	20,400 m <sup>3</sup>	30,000 m <sup>3</sup>
106	2.5 million ?	2.5 Million ?	
108	118,000 m <sup>3</sup>		
111	85,000,000 imperial gal		
112	165,000 m <sup>3</sup>		
113	722,007 m <sup>3</sup>		
114	245,823 m <sup>3</sup>		
116	85,583,375 litres	256,750,120 litres	
117	2.2 Million gal	1.6 Million gal	
118	350,000 gal	350,000 gal	
123	950,000 m <sup>3</sup>		
124	2,000 gal/day	2,000 gal/day	
125	9 active wells 650,000 imp/gal/day		
128	9064.0		
129	6.7 million gallongs	75,000 M3	127,000 M3
130	205,700,000 gallons/year		

Question 5 - Description of Expansion of Plant

Survey #	Plant 1	Plant 2	Plant 3
100	unknown		
101	no		
102	no		
103	no		
104	Chlorinators will be added in the future as required by new Environmental Act		
105	more cap?		
106	to meet new turbidity standards	to meet new turbidity standards	
111	It is our intention to construct a raw water reservoir		
112	plant designed for a population of 1500		
116		standby generator (1996)	
117	upgrade in 1995		
121	expansion of filter system		
122	upgrade plant and river intake		
125	aquifer is depleting; possible solution is artificial recharge to population threshold of 11-12,000		
128	Yes		
129	install water treatment package. Increase ? flows to 360 m <sup>3</sup> /day capacity		
129	Yes. Industrial water treatment package. Increased design flow to 360 m <sup>3</sup> /day capacity.	Nil	Nil
130	doing a study to increase capacity		
130	Yes. Doing a study to increase capacity.		

Survey #	Question 10	Question 12	Question 14	Question 19
100				Public opinion differs on the use of treating our water with fluoride
101		less run-off due to lack of snow and rain	less usage due to increase costs because of increase in treatment costs	
102	Increased pumping capacities Increase treated water storage Change chemical fired system			
103		A secured quantity are improved quality from the Peace River		
104				Possibility of contamination of supply
105	expansion for more capacities			
106	we are going from chlorinating system to a full treatment plant			Treatment and ease of water supply in dugouts
107				maintaining the level of Kemuivan Lake in order to attract tourists to the Kiwiwan Birdwalk and interpretive Centre
108	new storage well, upgrade filters, new high lift pumps	more silt (dirt content high) more fertiliser chemicals		flood and spring break-up control
109	Expansion of an existing plant - cost \$1,985,000.00 distribution system	There is less water on the Christina River where the water supply comes from.	Mainly because of the improvements that will be made this summer.	
110				Damming of the Pembina River. Oil companies taking surface or ground water and pumping it down into deep oil wells.
111	create an off stream-raw water reservoir to enable a constant source of low turbidity water to be supplied to the water treatment plant.		Only due to increased population	
112			new water plant planned for a population increase	
114	we will do an engineering study in 1995. We will go to chlorinating system We may add another well and increase our reservoir size		Quantity - the town is growing and we use more water every year.	
116	1995/96 - standby generator 95/96 - calibration of all meters 97/98 - install residential metering program ( a goal to reduce			



117	consumption by 10%) develop more groundwater supplies as opposed to trying to treat surface water, i.e., dugouts	Quantity changes - more demand on supplies by farmers plus commercial users. Must meet present demand over next 2 years but demand should stabilize.		Water drainage as opposed to water storage
119		the lake has gone steadily		
121	improved and enlarged filtering system	improved quality of water as a result of improved operational procedures	Current request of specialized industrial needs will double or triple our water production within 1 to 3 years	- erosion concerns - water pollutants entering the water courses
122	- Upgrading: clarifier, treated water storage, addition for chemical storage/ raw water reservoir ? river intake upgrade. On a yearly basis we are undertaking steps to automate and integrate as many functions of the plant as possible.		We will be hooking on area residents outside the village.	
123				
124		Some of the well are drying up		
125		methane gas in new wells concern is the level of water in wells	hoping for population growth in town	make sure that within their circle large water usage should be reported to them so that it can be regulated so no ill effects on aquifer
126	a regional water distribution system from 1 central treatment facility	water is becoming more difficult and costly to treat. We also rely on Spring run-off for our water supplies and there have been occasions when our demand was barely met		Guaranteed supplies for agriculture and commercial/industrial operations
127		The present aquifer (underground water) has dropped at least 2.5 meters since 1984.	We may need additional levels to supply demand	
128	Our rain water is changing (color). We will have to add new equipment to deal with the problem soon.	Less water. We have not had good river flushes (floods). This may have had some reason for the increased organic color which has greatly increased.	Dry conditions will likely continue and the logging industry will add to the color conditions in my opinion.	
129	Filtration at Jousard	turbidity		Drainage/Floor Control/Erosion
130	Improve Capacity	"Pasteurized" water results in increase in impurities in water, therefore more difficult to treat.		

## COMMERCIAL RECREATION AND RIVER TRANSPORTATION SURVEYS

### QUESTION 10 - COMMERCIAL RECREATION

#### QUESTION 11 - RIVER TRANSPORTATION

Survey #	
300	we have more time to spend on the operation
302	no wish to expand
303	self-explanatory
304	More and more demand and we are training good leaders
307	We are a small remote wilderness adventure, rustic setting and peace and quiet all in one - people are looking for this sort of holiday.
309	new business
310	promotion
312	People are finding less and less of these regions
314	We are that desperate to host "assembly-line style". We learned that more work does not work
315	repeat clients and promotion of activities
316	Through advertising and promoting.
800	We may haul quarried building stone. However, there is no certainty that we will be even granted a license in future despite the fact that we are the longest operating carrier (13 yrs) on the system. We are at the whim of the bureaucrats who administer the National Transportation Act.

### QUESTION 11 - COMMERCIAL RECREATION

Survey #	
300	our business is "fishing"
301	our product is built around a clean pristine and wilderness setting that is focussed on recreation
302	too far removed
304	The Smoky was safe to drink 25 years ago and we always did. Now the lower section stinks.
308	I ride the head waters of Athabasca
310	boating and fishing
312	rivers and lakes again are the reasons for our business
315	Bear and moose hunting, fishing and sightseeing, bird watching
316	River boat tour.

### QUESTION 7 - IMPORTANCE OF WATER (COMMERCIAL RECREATION)

Survey #	
301	we offer water-related courses and activities that we have built our business around
302	fishing and swimming only
303	Our business is based solely on people canoeing down local rivers. Without a minimum amount of water in these rivers, we have no business
304	Clear lake and springs are our water source and their freedom from pollution is a major factor
306	We sell eco-tourism trips, mountain scenery, fresh air, water, fishing, riding, etc.
307	We use the Peace River to bring our guests to the Peace Valley Guest Ranch
309	Clear water makes for better pictures. Better fishing, bathing, swimming, less filtration necessary
310	river travel
311	for swimming, boating water, fishing sports
312	Rivers and lakes are the reason for our rides
313	for a wilderness experience
314	paddling, canoeing, sailing wildlife viewing in rivers, streams and lakes, non-consumptive use except some fish catch, eaten occasionally
315	All activities on Slave River and lakes in the NE Alberta
316	100% dependent on river.

# CHANGES IN FISH & FURBEARERS

## QUESTION 7 - COMMERCIAL FISHERMEN

### QUESTION 5 - TRAPPERS

Survey #	Number	Quality	Health	Other
500	fish are getting smaller in some lakes (overstocked)	good	fair to good	
503	our lakes are producing better than ever	We have always had a good quality of fish	same	
504	several lumps on whitefish and suckers			
506	no change	fish may be skinny	no change	
509	have increased	of some lakes has increased	unknown	
700	rabbit, lynx and weasel are all down in numbers	wolves are over run all through the North standing at Westlock north to N.W.T.		
701	drastic drop in fur catches	poor quality of fur	poor health because of oil sand plants and pollutants in the Athabasca River	
702	Population numbers have fallen dramatically	quality of fur is poorer, i.e. coarse, poor, colour)	animals are not fat like they used to be	Smaller furbearers such as mink are not found along bank drainage like they used to
703	fewer beaver, muskrats and minks	still good	fair	
704	increase in beaver due to decrease in trapping - decrease in lynx, rabbit cycle low	good	good	
705	decreased annual cycle and local activity	no significant change	no	
706	decrease (normal cycle)			
707	normal cycles of declining and increasing populations			
708	fewer			nothing I am aware of

## INDUSTRIAL STAKEHOLDERS SURVEY

### QUESTION 8 - industrial

Survey #	Other Purpose of Water
3	Injection water.
7	Not for much.
9	Oilfield waterflood
11	Feeding fish pond
14	Injection/Enhanced recovery.
21	Water/Injection-Pressure Maintenance.
23	Water flood.
24	Pressure Maintenance.
26	Injection-Water flood.
27	Water injection
29	Water flood support.
31	Downhole injection/Potable.
32	Steam to injection.
33	Reservoir pressure maintenance.
35	Oilfield water flood.
37	Drilling fluid oil and gas wells.

## AGRICULTURAL ASSOCIATION AND AGRICULTURAL SERVICE BOARD SURVEYS

QUESTION 8 - USE OF WATER FOR AGRICULTURAL PURPOSES (GENERAL AGRICULTURAL.)

QUESTION 3 - USE OF WATER FOR AGRICULTURAL PURPOSES (AGR. SERV. BOARD)

Survey #	
400	For personal use, for livestock crops and gardens
401	household, livestock cattle, hogs and chicken
402	By and large water is used for watering livestock
403	Soil conditions allow easy construction of dugouts so these are the main source of agricultural water for livestock and source water for spraying crops
404	domestic use and livestock
405	for personal use, household use and livestock use
407	domestic use and livestock consumption
408	cattle homes sprayers
409	watering livestock
410	water livestock, fill sprayer tanks , clean equipment
411	watering cattle
412	to water their cattle
413	stock watering and crop spraying
414	water for cattle and hay production
415	spraying crops and water cattle
416	Home use and livestock.
417	Spraying, watering livestock, growing cereals, forage and specialty crops.
600	personal use, livestock, greenhouse use, crop spraying, some small irrigation
601	household and livestock consumption and watering gardens
602	water livestock and domestic
603	Livestock watering
604	Largely for livestock watering, household use, spraying of crops.
605	Very little use of mainstream Peace River. Tributaries such as Royer River, Teepee Creek and Bear River and spring surface runoff used for filling dugouts for livestock watering.
606	The main use of water by farmers in our area is for watering livestock. Smaller amounts are used for watering gardens, and for spraying crops.

## IMPACT ON OTHER WATER USES IN THE BASINS

Question 10 - general agriculture

Question 5 - agricultural service board

Survey #	
402	There could be some pollution by livestock in Haynes Creek
405	The amount of water used by our members should not have a noticeable impact in water supply of the Peace River
408	fishing, hunting
409	not applicable
413	none
414	none
415	very little
600	not much
601	pesticide and fertilizers backing into water. Soil erosion causing dirty water
602	little to none
416	Recreation
417	N/A
603	Minimal impact is the perception, some are concerned if run off from canals or feeding areas are reaching the river system.
604	Drainage and cultivation into the major rivers is increasing the speed of flow resulting in erosion problems. Pollution to a small extent is of some concern.
605	Run off from livestock operations may be some concern with herbicides but not much.
606	Some impact on water quality as a result of manure runoff, fertilizer leaching etc. but very little impact on water supply.

## GENERAL STAKEHOLDERS

### Question 16 - General stakeholders

Survey #	Specific Concerns
200	need to establish some sort of guidelines with goals and plans for the basin
202	This organization is presently unfamiliar with how the northern rivers are presently managed.
205	not enough protected areas harvesting and development not done in an ecosystem-based methods
206	management very scarce
207	too much industrial impacts on Athabasca
208	The impact of chemical pollutants on water quality, ecological integrity of water-based ecosystems, increased BODs, loss of river aesthetics, loss of important corridors to wildlife resident and migratory to logging and development.
209	- clearcutting, pollutants from pulp mills, pollutants from heavy oil, leakage from tailing ponds and threat of tailing ponds and lack of enforcement
210	The government should not allow development along river or water courses until an impact assessment has been completed. This development would include agriculture resource development and tourism. These corridors are, in some areas, the only habitat left. These areas provide good cover, food, water. We must protect these sanctuaries. Also many communities use these water courses for drinking water therefore the quality of the water is very important.
211	1) uncontrolled and unregulated (or poorly regulated) pulp mill development 2) Alberta Government care attitude to water management 3) free trade impact on water management, RE: diversion of rivers 4) lack of consultation or consultation process being merely tokenism 5) no community involvement in management process whether with the NRBS or NRBC
212	- No base line study on the Athabasca before approval of AlPac pulp mill - No environmental assessment was done on the effects of clear cutting in the Alpac FMA - No study on the cumulative effects of all industrial development on the Athabasca River
213	No confidence in industrial studies. Lack of government studies. Currently, piecemeal management of rivers for development not for conservation values and not as watersheds/basin/ or ecosystem based. There is no mechanism in place to assess cumulative impacts. Environmental Protection is cutting back on monitoring. NRBS will perhaps provide a "snapshot" but nothing ongoing. Instead, we have municipal discharges, agricultural runoff, industrial effluent and effluent from energy projects all under different authorities. Lack of govt. monitoring into full reaches of rivers and tributaries.
214	that the use of the river for recreation not be hampered and water quality be improved (less pollution)
215	Dams on the Peace River have resulted in significant changes to the flood frequency of the Peace-Athabasca delta. As a result, the reduced flooding is causing a succession of change in the habitats of the PAD. The PAD is internationally recognized by the RAMAR Convention as one of the world's important wetland areas. The lack of annual flooding and recharge of wetlands areas is compromising these wetland habitats.
219	Pollutants from pulp mills: Wapiti River into Smoky into Peace
224	pollution
225	cumulative effects of all these pulp mills are not being considered
227	There is basically no management.
229	Do not know much about it.
230	Massive developments do not appear to be sustainable. Need goal of zero effluent! Need more protection of ecosystems (not ecosystem management as per ALPAC!)
231	Not familiar with current management plans.
232	Pollution and contamination of waterways is a major concern.
233	Re: ALPAC submission - No concern from government and industry (DMI) for environmental destruction that is taking place.
234	Concerned about commercial fishing and Native fishing with nets. Fish stocks are being depleted. Netting whitefish decreases fry in the water thus decreases for sport fish. Concerned about the effects of clear cutting in game populations and what the increased access is going to do to game populations.
236	Contradictory messages received from federal and provincial management. Regulations do not have teeth.

	Environment assessment process mostly whitewash, e.g. ALPAC.
237	Information is still unclear as to toxicity or clarity on monthly and yearly conditions over the previous 20 or 30 years of increased use of rivers.
238	<p>Pollution -Something must be done.</p> <p>Pulp mills - Must have greater restrictions put on them or be removed.</p> <p>Fish and Wildlife studies must be more thorough and ideas and suggestions from locals must be taken into account.</p> <p>Towns must be regulated on disposal of sewage into river.</p> <p>Too many access points along rivers to be policed properly.</p> <p>Oil companies must not be allowed to pipeline across river and must be forced to drill wells farther back from river.</p>
239	Too much logging - control development. Leave something for future generations.







## **Appendix M**

### **Computer Data Files (SPSS/PC+ Files)**



The diskette contains the following files:

AGRGROUP.SYS: 18 responses from agricultural stakeholders  
AGSERBRD.SYS: 8 responses from agricultural service boards  
COMMFISH.SYS: 12 responses from commercial fishermen  
COMREC.SYS: 17 responses from commercial recreation operations  
ENV&REC.SYS: 38 responses from environmental and recreation groups  
INDUSTRY.SYS: 44 responses from industrial water users  
MUNGOVT.SYS: 35 responses from municipal and local governments  
TRANSPRT.SYS: 1 response from river transportation companies  
TRAPPERS.SYS: 9 responses from trappers.

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