
# ALASKA POWER AUTHORITY
# SUSITNA HYDROELECTRIC PROJECT

## ENVIRONMENTAL STUDIES
## FIRST SEMI-ANNUAL REPORT
## (JANUARY - JUNE, 1980)

## SUBTASK 7.05:
## SOCIOECONOMIC ANALYSIS

SUBMITTED BY

FRANK ORTH & ASSOCIATES, INC.

TO

TERRESTRIAL ENVIRONMENTAL SPECIALISTS, INC.

AUGUST 15, 1980

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LIST OF EXHIBITS

# I. INTRODUCTION

An important element of the feasibility of the proposed Susitna Hydroelectric Project is the socioeconomic impacts created by its construction and operation. Such impacts are important not only in their own right, but also because of the intense socioeconomic concerns so prevalent in Alaska.

The overall objectives of the socioeconomic analysis are to: (1) determine which socioeconomic conditions are most likely to be impacted and to what extent these conditions are likely to change; and (2) provide information that will aid in assessing the significance of the changes in socioeconomic conditions. The analysis has been divided into two phases. The first phase entails making preliminary determinations in (1). The second phase effort is devoted to providing for more rigorous determinations in (1) and to accomplishing (2). Phase I results are to be included in the license application to the Federal Energy Regulatory Commission (FERC) and Phase II is to be conducted while the license is under consideration. This phased approach helps to ensure that only the most relevant impacts are addressed in detail. The utilization of this approach will help produce results that are responsive to and consistent with the 1979 FERC licensing requirements as well as to the needs of the citizens of Alaska.

Phase I is composed of the following work packages:

1) Literature Review;
2) Socioeconomic Profile Development;
3) Preliminary Socioeconomic Impact Studies; and
4) Forecast of Socioeconomic Conditions with the Susitna Project.

During January through June, 1980, work effort focused upon Work Package 1 and the first part of Work Package 4. The objectives of Work Package 1 were to: (1) review impacts of other power development projects and assess their potential relevance to the proposed Susitna Project; (2) identify sources of social and economic data and determine the quality of such data; and (3) determine what data "gaps" exist. The objective of the first part of Work Package 4 was to identify and review alternative forecasting methods.

Work Package 1 is complete and the first part (work item) of Work Package 4 is complete. This semi-annual report describes these Work Packages and their results. Although this report is intended to stand alone, the interested reader might wish to supplement his understanding of this report by reading the socioeconomic analysis procedures manual.

# II. METHODOLOGY

## A. WORK PACKAGE 1: LITERATURE REVIEW

### Description

Socioeconomic impact studies for hydroelectric projects and other types of power projects similar to the range of proposed Susitna projects, current major assessments of Alaska demographic, social, and economic conditions, and literature pertaining to the Alaska sociocultural environment were identified, reviewed, and evaluated. In addition, information developed in other Subtasks of Task 7, and other Tasks of the Susitna Hydroelectric Project, were reviewed and used, as available and appropriate. It was anticipated that some information from Tasks 1 (Power Studies), 8 (Transmission) and 12 (Public Participation Program) would be relevant, and this data was to be accessed as it became available. Because this information was not available as of June 30, 1980, it will have to be incorporated into Work Package 1 at a later date. This work package was divided into four work items:

a. Collection of studies;
b. Impacts of similar hydroelectric projects;
c. Identification, review, and assessment of data and information concerning Alaskan socioeconomic conditions; and
d. Relevance of similar hydroelectric studies.

Work Package 1 has been completed, and the methodologies for work items are described below. The reader is also referred to Section III, Literature Review, and Section IX, Authorities Contacted, for supporting documentation to this discussion of Work Package methodology.

### Work Item a.: Collection of Studies

Socioeconomic impact studies for: (1) hydroelectric projects similar to the range of possible Susitna projects, and other types of projects with major socioeconomic impacts; (2) current major assessments of Alaska demographic, social, and economic conditions; and (3) literature pertaining to the Alaska sociocultural environment were identified.

Studies were collected in the following manner:

1. Consulted Frank Orth & Associates, Inc. (FO&A) and the University of Washington (U.W.) libraries for studies and bibliographies. Both FO&A and the U.W. possess extensive collections of Alaska socioeconomic and economic data as well as bibliographies and studies pertaining to hydroelectric and other power projects, including methodologies.

   The primary reference source utilized to identify and locate relevant environmental and socioeconomic impact studies was EIS,

Digests of Environmental Impact Statements. This is published by Information Resources Press. EIS is a monthly publication which indexes and abstracts from all statements issued by the federal government. Statements are catalogued beginning with 1977. The use of EIS greatly facilitated the search for relevant impact studies.

2. Organizations contacted in efforts to obtain citations of relevant studies and/or copies of the studies included: U.S. Environmental Protection Agency, Region 10, Seattle, WA; Information Resources Press, Arlington, VA (publishers of EIS); Bonneville Power Authority, OR; U.S. Corps of Engineers, New England Division, Waltham, MA; Puget Sound Power and Light Company, Bellevue, WA; and Washington Public Power Supply System, Richland, WA.

3. Persons contacted in efforts to obtain information concerning potentially relevant studies included C.P. Wolf, Ph.D., editor of Social Impact Assessment, and William Workman, Consultant, Socioeconomic Analysis.

4. A Socioeconomic Interview Guide (see Exhibit II-1) was developed for interviews with knowledgeable persons. This guide was implemented during a one week trip to Alaska and is described in the discussion of Work Item c. below.

Work Item b.: Impacts of Similar Hydroelectric Projects

The method for this work item was as follows:

1. After identifying and/or acquiring potentially relevant impact studies, those most applicable for the Susitna analysis were selected to be reviewed in detail. These studies were selected based on criteria relating to the anticipated characteristics of the Susitna Project. Exhibit II-2 summarizes this procedure for the studies reviewed.

   All studies selected to be reviewed dealt with the development of electrical generation facilities. All but two of the studies were of hydroelectric dam projects. The two other studies dealt with a large scale coal-fired generating facility and a large scale nuclear power project. These latter two were identified for purposes of comparison and supplementation.

   An attempt was made to review all recent hydroelectric projects in Alaska, both those in process or completed. The projects, by virtue of location, are relevant to the proposed Susitna project.

   The remainder of the studies reviewed dealt with recent and/or large scale hydroelectric projects that have prominent features similar to the Susitna project.

EXHIBIT II-1

SOCIOECONOMIC INTERVIEW GUIDE

Frank Orth & Associates, Inc. is currently preparing a bibliography of socioeconomic data for Alaska. This is the first step in a socioeconomic impact assessment for the proposed Susitna River hydroelectric project.

Although the primary focus is on areas which could be directly impacted by the project, we are collecting data on all of Alaska, since the indirect effects of the project could possibly impact the entire state. We are interested in all potential sources of socioeconomic data on Alaska, including computer files, books, government publications, and journal articles.

(Interviewer can show interviewee a map of the proposed project area, the Data Collection Guide which details type of materials requested, and other pertinent information on the study, in order to enhance interviewee understanding of the work package purpose.)

* * * * *

1. Do you have a printed listing or card catalog of your Agency's (Department's, Group's, etc.) publications?

    a. If so, interviewer should access and record on Data Collection Guide (DCG).[1]

    b. If not, do you have a library I could look through?

2. Do you have a printed listing of your computer files?

    a. If so, may I access -- or can you describe the listings? (Interviewer should fill in DCG.)

    b. What data would be available to us? (i.e., which data is not confidential?)

    c. Would it be possible to access confidential data in aggregated or coded form to protect confidentiality?

    d. Would there be a charge for accessing this data?

    e. What procedures do we need to follow to access data?

    f. What lead time is required?

3. Can you recommend any other persons, agencies, etc. who might also be helpful in identifying data sources?

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[1]If the same data is available at multiple sources, only one DCG need be filled out, and it should identify the multiple sources.

EXHIBIT II-2

CHARACTERISTICS OF SELECTED SOCIOECONOMIC IMPACT STUDIES

| | SELECTION CRITERIA | | | | | | | DESCRIPTIVE ELEMENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Hydroelectric Power | Large scale Hydroelectric (Over 1000 MW Capacity) | Recent (From 1977 on) | In Alaska | Remoteness | Nuclear Power | Fossil Fuel Power | Involves Anadramous Fisheries | Foreign | Involves Native American Groups |
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In addition to the studies formally reviewed, a number of studies were initially perused as part of a screening process for study selection for eventual review.

2. After initially reviewing several studies, a format for compiling the impacts from the various studies was created. The format is essentially in outline form subdivided into major impact areas. Due to the length and variety of the impacts, this format was easier to implement than a matrix chart would have been. Exhibit II-3 illustrates the basic format with headings. The headings refer to major impact areas which either directly, indirectly, or potentially affect socioeconomic variables.

   Attempts were made to separate construction versus operating and maintenance related impacts. Due to the differences in the studies' treatments of impacts this was impractical to implement. However, the description of the impacts generally provides sufficient information to make evident into which category they belong. One other important category associated with energy projects that became evident is impacts relating to transmission facilities.

3. Impact information was extracted from the studies and placed in the format shown in Exhibit II-3.

4. Impacts of the projects that were unusual and/or analyzed in substantial detail by the researchers, and that appeared to be relevant to Alaska and the Susitna area, were highlighted by "diamonds".

Work Item c.: Identification, Review, and Assessment of Data and Information Concerning Alaskan Socioeconomic Conditions

The method for this work item was as follows:

1. Developed a format for illustrating important characteristics of economic and social data bases and information. This format included location of data, form for access, frequency of coverage, latest data covered, area covered (statewide, SMSA, or community/village/town) and type of data (i.e., population, projected population, housing, projected housing growth, etc.) Exhibit II-4 shows this data collection format.

2. As described in Work Item a. and shown in Exhibit II-1, a Socioeconomic Interview Guide was developed for use when interviewing authorities of Alaska economic and social data bases and conditions.

3. Both the Data Collection Guide and Interview Guide were implemented in Seattle (FO&A and U.W. libraries) and Alaska. Contacts included:

EXHIBIT II-3

FORMAT FOR COMPILIATION OF IMPACTS FROM

RELEVANT ENERGY IMPACT STUDIES

PROJECT: Title
Lead Agency
Date, Type of Study or Document
Applicant or Responsible Office

- Descriptive Characteristics
  - Generating Capacity
  - Scope
  - Cost

Land Use and Features

Wildlife

Aquatic Species and Water Quality

Socioeconomic Categories
- Population
- Housing
- Tax Base and Revenues
- Employment
- Public Services

Community Attitudes

Energy

Cultural Resources

Recreation

Aesthetics

COMMENTS: Pertaining to study format, scope, and quality.

EXHIBIT II-4

DATA COLLECTION GUIDE

ALASKA SOCIOECONOMIC DATA

TITLE (Use TES Bibiography format: remember to include number of pages)

LOCATION, CONTACT PERSON, TELEPHONE AND/OR ADDRESS

FORM (i.e., book, government publication, computer tape)

EASE OF ACCESS (i.e., free, in-library use only, pay for computer printout)

DATA TIME FRAME (i.e., 1964 - 1978)

FREQUENCY OF REPORTING -- CHECK APPROPRIATE CATEGORY(S):

____ ONE-TIME

____ ANNUAL (month of issue: )

____ QUARTERLY

____ MONTHLY

____ OTHER (specify)

AREA COVERED -- CHECK APPROPRIATE LISTING(S):

____ ALASKA TOTAL (not broken down by regions)

____ ALL ALASKA CENSUS DIVISIONS (by individual region)

____ SELECTED INDIVIDUAL CENSUS DIVISIONS

- _____ Aleutian Islands
- _____ Anchorage
- _____ Angoon
- _____ Barrow-North Slope
- _____ Bethel
- _____ Bristol Bay Borough
- _____ Bristol Bay
- _____ Cordova-McCarthy
- _____ Fairbanks
- _____ Haines
- _____ Juneau
- _____ Kenai-Cook Inlet
- _____ Ketchikan
- _____ Kobuk
- _____ Kodiak
- _____ Kuskokwim
- _____ Matanuska-Susitna
- _____ Nome
- _____ Outer Ketchikan
- _____ Prince of Wales
- _____ Seward
- _____ Sitka
- _____ Skagway-Yakutat
- _____ Southeast Fairbanks
- _____ Upper Yukon
- _____ Valdez-Chitina-Whittier
- _____ Wade Hampton
- _____ Wrangell-Petersburg
- _____ Yukon-Koyukuk

OTHER (i.e., components of census divisions, aggregations, and disaggregations) (specify):

CHECK ITEMS COVERED:

POP
- ____ Population
- ____ Projected population
- ____ Other (specify)

LAND[1]
- ____ Land-use patterns
- ____ Land-use projections
- ____ Other (specify)

HOUSE
- ____ Housing stock
  - ____ Single
  - ____ Multiple
  - ____ Commercial
- ____ Projected housing stock
- ____ Price/rent levels
- ____ Other (specify)

EMPLOY
- ____ Employment/unemployment levels
- ____ Type of employment
- ____ Income levels (personal)
- ____ Projected employment/income
- ____ Other (specify)

BS
- ____ Industry studies
- ____ Business level and income
- ____ Projected business trends
- ____ Business activity variables (specify)
- ____ Other (specify)

TAX
- ____ Tax rates
- ____ Tax revenues
- ____ Projected tax revenues
- ____ Other (specify)

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[1] Includes commercial, residential, recreational, and wilderness.

| | | |
|---|---|---|
| INFRA | ____ | Public facilities |
| | ____ | Projected public facilities |
| | ____ | Transportation facilities |
| | ____ | Projected transportation facilities |
| | ____ | Other (specify) |
| UTIL | ____ | Utility rates |
| | ____ | Utility usage |
| | ____ | Projected utility usage |
| | ____ | Other (specify) |
| ED | ____ | Education enrollments |
| | ____ | Education facilities |
| | ____ | Education costs/revenues |
| | ____ | Projected education |
| | ____ | Other (specify) |
| F&W[2] | ____ | Fish resource use patterns |
| | ____ | Wildlife resource use patterns |
| | ____ | Other (specify) |
| SOCIO | ____ | Attitudes toward growth |
| | ____ | Attitudes toward lifestyle and quality of life |
| | ____ | Other (specify) |
| REC | ____ | Recreational activity |
| | ____ | Projected recreational activity |
| | ____ | Other (specify) |

[2] Fish and wildlife employment, income, and business activity should be reported in those sections. The resource use section applies to resource levels, management, propagation, etc.

TYPE OF ANALYSIS

____ REGRESSION

____ TREND

____ ECONOMIC BASE

____ INPUT-OUTPUT

____ QUALITATIVE

DISAGGREGATION

____ STATEWIDE

____ REGIONAL

____ SUBREGIONAL

DATA SOURCES UTILIZED

____ PRIMARY

____ SECONDARY (specify primary source if known)

IS METHODOLOGY DESCRIPTION AVAILABLE?

a. Fairbanks Borough Planning Department
b. Fairbanks Borough Community Information Center
c. Alaska Northwest Pipeline Company
d. Fairbanks Chamber of Commerce
e. University of Alaska Economics Department
f. University of Alaska Institute for Economic and Social Research
g. Fairbanks Visitors Bureau
h. Fairbanks Industrial Development Corporation
i. First National Bank of Fairbanks
j. Doyon Corporation
k. Alaska Department of Energy
l. Alaska Power Authority
m. Cook Inlet Region, Inc.
n. Municipality of Anchorage Planning Department
o. Municipality of Anchorage Economics Department
p. Overall Economic Development Program, Inc.
q. Matanuska-Susitna Borough Planning Department
r. Matanuska Valley Electric Company
s. Matanuska Telephone Association
t. U.S. Department of Agriculture
u. Alaska Department of Transportation
v. Alaska Department of Labor
w. Alaska Department of Commerce and Economic Development

4. A format for organizing data and a bibliography were prepared. (See Section III. Literature Review, below, for examples and discussion.)

5. A follow-up notebook was developed which lists names of persons who may have further information and names or descriptions of documents still in press or studies still being performed. Dates for future contact and the type of data available are included in the notebook. Upon receipt of follow-up information, FO&A can update Data Collection Matrix sheets and Bibliography as shown in Section III. Literature Review, below.

Work Item d.: Relevance of Similar Hydroelectric Studies

The project impacts identified and presented in Work Item b., above, were assessed for relevance to Alaska according to geographic area and degree. This assessment yielded a list of impacts, by type, geographic area, and degree, which could be relevant for the preliminary impact studies (Work Package 3).

This work item was conducted as follows:

1. Impacts designated by "diamonds" in Work Item b. were compiled according to type of impact. Ordinary impacts (i.e., impacts commonly addressed by socioeconomic researchers and analyzed in little detail) were also compiled according to type of impact.

2. A preliminary determination of the most likely geographic distribution and degree of the diamond-designated impacts was made. Each designated impact was assigned to the (1) Upper Susitna area or (2) the railbelt and/or state and was judged to be relatively large and significant or relatively small and insignificant. (Note: As the socioeconomic analysis progresses, the designation of geographic area and degree will be refined and made specific to each type of impact or set of impacts.)

## B. WORK PACKAGE 4: FORECAST OF SOCIOECONOMIC CONDITIONS IN THE ABSENCE OF THE SUSITNA PROJECT

### Description

Assuming no hydroelectric development, socioeconomic conditions are to be forecast. It is possible that the forecasting methodology to be used in this work package will be borrowed directly from, or modified slightly from methodologies used by Alaska government or academic institutions. Further, relevant results already generated by acceptable methodologies are to be adopted. Where certain desired results are lacking, existing methodologies will have to be modified and implemented to produce such results. This work package has been divided into six work items:

a. Literature search
b. Literature review and evaluation
c. Development and application of methodology evaluation criteria
d. Selection of studies and their results for adoption
e. Methodology revision (if necessary)
f. Implementation of methodology (if necessary)

Work Item a. of this work package has been completed. The methodology for this work item is described below. The reader is also referred to Section II, Literature Review, and Section IX, Authorities Contacted, for supporting documentation to this presentation of Work Item methodology.

### Work Item a.: Literature Search

To increase the effectiveness and efficiency of the search, this work item was coordinated with Work Items a. and c. of Work Package 1. This work item was conducted as follows:

1. Energy development impact studies of Work Package 1, Work Item a., were reviewed for presence of forecasting methods. Those that contained potentially relevant methods were identified.

2. During the data source identification efforts of Work Package 1, Work Item c., Alaskan social scientists who have participated in forecasting socioeconomic conditions were interviewed. Forecasting models and methods utilized by these persons were identified.

3. C.P. Wolf, Editor, Social Impact Assessment, was contacted in regard to forecasting methods. He provided citations and a bibliography of impact studies and methods.

4. A list of studies containing forecasting methods and forecasting models was developed. Both Alaska and "Lower 48" forecasting studies and methods were included on the list.

# III. LITERATURE REVIEW

## A. WORK PACKAGE 1: LITERATURE REVIEW

### Description

As discussed in Section II. Methodology, Work Package 1 consisted of a literature review from two major perspectives:

a. Collection and review of socioeconomic impact studies for hydroelectric projects and other types of power projects similar to the range of proposed Susitna projects.

b. Identification of data on Alaska demographic, social, and economic conditions.

End products of this Work Package are (1) bibliographies of data and studies identified and (2) a systematic presentation of major attributes of the studies and data identified with particular emphasis on usefulness of these studies and the data for future Work Packages. The Work Package 1 literature review was comprehensive but not exhaustive. Bibliographies and data descriptions will be continually updated as work effort progresses on other Work Packages.

### Socioeconomic Impact Literature Review (Reference Work Items a, b and d as described in II. Methodology, above)

#### Work Item a.

As previously mentioned in the methodology description under Work Item a., part of the literature review involved a process of screening socioeconomic impact studies to determine which were relevant to the proposed Susitna project. Numerous studies were considered and/or perused to determine their applicability. As mentioned above, the search was made easier by utilizing the EIS reference periodical. The studies chosen for review are listed in Exhibit III-1. This exhibit also serves as a bibliography for the studies. Exhibit III-2 summarizes the selection criteria and descriptive elements for these studies. The number associated with each study refers to its order of presentation in this report.

It is important to note that one project listed in Exhibit III-2 is in the process of being reviewed. This is the Washington Public Power Supply System's (WPPSS) nuclear generating project currently under construction at the Hanford Reservation in Washington state. Extensive studies were done, both prior to construction and on an ongoing basis since construction began. Due to its scale, currency, and documentation, it is a valuable and relevant study to include here. As the requested materials arrive, the project's studies will be reviewed.

The WPPSS studies and the Boardman study (also presented in Exhibit III-2.) are the only two that are not hydro-related projects. Their

EXHIBIT III-1

BIBLIOGRAPHY FOR IMPACT STUDIES SURVEY

A. Relevant Socioeconomic Impact Studies

International Engineering Company, Inc., Robert W. Retherford Associates, Division. December 1979. Tyee Lake Hydroelectric Project - Petersburg & Wrangell, Alaska: Application for License Before the Federal Regulatory Commission for the Alaska Power Authority. Anchorage, AK 99502. 2 vols.

U.S. Bureau of Power, Federal Power Commission. March 1977. Bad Creek Project No. 2740-South Carolina: Final Environmental Impact Statement. Washington, DC. 361 pp.

U.S. Department of Energy, Bonneville Power Administration. March 1980. Boardman Coal Plant and Associated Transmission, Adopted Rural Electrification Administration Final EIS (USDA-REA-EIS-77-4F). Washington, DC 20545. n.p.

U.S. Department of Energy, Federal Energy Regulatory Commission. April 1980. Swan Lake Project No. 2911-Alaska: Final Environmental Impact Statement. Washington, DC 20545. n.p.

U.S. Department of Energy, Federal Energy Regulatory Commission. December 1978. Terror Lake Hydroelectric Project, Kodiak Island, Alaska: Application for License before Federal Energy Regulatory Commission for Kodiak Electrical Association, Inc. Washington, DC 20545. n.p.

U.S. Department of Energy, Federal Energy Regulatory Commission. February 1979. Green Lake Project No. 2818- Alaska: Final Environmental Impact Statement. Washington, DC. 189 pp.

U.S. Department of the Army, Office of the Chief of Engineers. January 1977. Hydroelectric Power Development, Upper Susitna River Basin, Southcentral Railbelt Area, Alaska: Final Environmental Impact Statement. Washington, DC 20545. 398 pp.

U.S. Department of the Army, Corps of Engineers. March 1977. Marysville Lake Project, Yuba River, California: Draft Environmental Impact Statement. Sacramento, CA. 358 pp.

U.S. Department of Energy, Federal Energy Regulatory Commission. March 1978. Solomon Gulch Project No. 2742-Alaska: Final Environmental Impact Statement. Washington, DC 20545. n.p.

U.S. Department of Energy, Federal Energy Regulatory Commission. November 1979. North Fork Stanislaus River Project No. 2049 -California: Draft Environmental Impact Statement. Washington, DC. 223 pp.

U.S. Department of the Army, Corps of Engineers, New England Division. September 1978. Dickey-Lincoln School Lakes Project at Dickey, Maine, Draft Environmental Impact Statement. Waltham, MA 02154. 11 vols.

B. Additional Literature Utilized

Information Resources Press. 1977-1980. EIS - Digest of Environmental Impact Statements. Arlington, VA 22209. Vol. 1-#1 -Vol. 4-#3.

EXHIBIT III-2

CHARACTERISTICS OF SELECTED SOCIOECONOMIC IMPACT STUDIES

| PROJECT | SELECTION CRITERIA | | | | | | | DESCRIPTIVE ELEMENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Hydroelectric Power | Large scale Hydroelectric (Over 1000 MW Capacity) | Recent (From 1977 on) | In Alaska | Remoteness | Nuclear Power | Fossil Fuel Power | Involves Anadramous Fisheries | Foreign | Involves Native American Groups |
| 1. Dickey-Lincoln School Lakes | ◇ | ◆ | ◇ | | ◇ | | | | | |
| 2. Boardman | | | ◇ | | ◇ | | ◆ | | | |
| 3. Susitna | ◆ | ◆ | ◆ | ◆ | ◆ | | | ◆ | | ◆ |
| 4. Green Lake | ◇ | | ◇ | ◆ | ◇ | | | ◇ | | |
| 5. Marysville Lake | ◇ | ◆ | ◇ | | | | | ◇ | | |
| 6. Swan Lake | ◇ | | ◇ | ◆ | ◇ | | | ◇ | | |
| 7. Terror Lake | ◇ | | ◇ | ◆ | ◇ | | | ◇ | | ◇ |
| 8. Tyee Lake | ◇ | | ◇ | ◆ | ◇ | | | | | |
| 9. Solomon Gulch | ◇ | | ◇ | ◆ | | | | ◇ | | |
| 10. N. Fork Stanislaus | ◇ | | ◆ | | | | | | | |
| 11. Bad Creek | ◇ | ◆ | ◇ | | | | | | | |
| WPPSS* | | | | | | ◆ | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

*Review in progress.

◆ Determining characteristic

◇ Other characteristic

inclusion is warranted by the fact that the impacts in general and the socioeconomic ones in particular associated with such projects require a high degree of detail and analysis. In addition, the scale of most of these projects is comparable to Susitna.

Work Item b:

The studies were reviewed utilizing the format shown previously in Exhibit II-3. Impacts are summarized into essential qualities. The review process attempted to be comprehensive without being trite with regard to detail. The purpose behind the review was primarily to relate impacts to a socioeconomic context. The results of the review process are presented as Exhibit III-3.

Also, as part of Work Item b., impacts particularly relevant to Alaska and the Susitna area were identified and have been highlighted using diamond-shaped markers. This work item is incorporated into Exhibit III-3.

Work Item d.

The results of this work item are presented in Exhibit III-3a. The impacts listed in this exhibit have been extracted from the profiles presented in Exhibit III-3. The assessment of the profiles has yielded a list of impacts which could be relevant to the Susitna project. This list is by no means exhaustive and serves primarily as a guide for futher research and analysis in Work Packages 2, 3 and 4. The impacts are listed in a generalized form and, like the profiles, must be related to the specifics of the Susitna Project and its environment. This process, to be conducted in Work Package 2, will permit refinement and further specification of the impacts as to degree and geographic area.

Several of the types of impacts in Exhibit III-3a are not the primary responsibility of a socioeconomic assessment. Some examples are recreation, aesthetics, and wildlife. These were included, however, because they do have implications relevant to socioeconomic analysis. It is expected that most of this type of information will be provided by other study team members.

Impacts from the profile of the Upper Susitna River Basin were excluded from the profile assessment process. All impacts cited therein are potentially relevant although the specific findings will not necessarily be adopted by Frank Orth & Associates, Inc. In any case, most would be subsumed in some form or another in Exhibit III-3a.

Demographic, Social, and Economic Data Review (Reference Work Items a. and c. as described in II. Methodology, above)

The end-product of the Alaska socioeconomic data identification, review, and evaluation Work Item c. consists of two products:

a. A bibliography of documents numbered in alphabetical order, and

EXHIBIT III-3

PROFILES OF POWER DEVELOPMENT IMPACT STUDIES

PROJECT: Dickey-Lincoln School Lakes Project at Dickey, Maine

U.S. Army, Corps of Engineers, Waltham, Massachusetts
September, 1978, Draft EIS

- Located on the St. John River, Maine
- Two-dam hydroelectric project with a total holding capacity of 7.8 million acre-feet.
- Generating capacity - 830 MW initially, and 380 MW will be added later.
- Estimated cost - $757.5 million at 3.3% i rate
  - $822.4 million at 6.4% i rate.
- Project includes 365 miles of transmission lines.

Land Use and Features

- Project would encompass 134,242 acres of water and land, of which:
  - 88,650 acres of terrestrial land would become aquatic.
  - 247 acres of agricultural land would be inundated.
  - 81,946 acres of timberland would be lost.
  - 278 miles of free-flowing streams and 30 ponds and lakes would be lost.
  - One of the major wilderness areas in New England would be substantially altered.
  - Would provide flood protection to 4,500 acres of agricultural land downstream of the project.

Wildlife

- 36,893 acres of deer habitat would be destroyed, which could reduce deer population by 50 percent.
- Rare and unique plants would lose habitat, including the Furbish lousewort (Pedicularis firbishiae), which has been proposed for Rare and Endangered Species list.
- Increased access would lead to greater pressures from hunting.

## Aquatic Species and Water Quality

- Project would alter species of fish from stream and small lake type to that of a large reservoir.
- Downstream effects would raise temperature of water - may not freeze.

## Socioeconomic Categories

### Population

- Increase significantly by an estimated 2,700 to 3,200 new residents, 10 percent of which are estimated to stay after construction period.
- Earlier workers expected to bring families.
- 73 percent of the population of town of Allagash would be relocated. These families could experience economic, physical, psychological, and social problems from relocation.
- 166 families would be relocated.

### Housing

- Major impact on town of Allagash, where majority of town would be inundated.
- Rents and market values in residential areas near project would rise, due to pressure from relocating families and influx of new workers.
- Preferred alternative to mitigate construction phase impacts is to construct scattered site temporary housing in or near existing housing areas.

### Tax Base and Revenues

- Slight increase in tax base during construction phase, or "boom period," due to appreciated land values.
- Revenues would increase somewhat due to increased economic activity.
- Would not offset increased costs to governments.
- Tax losses on acquired land would amount to an estimated $97,000 for forest lands and $40,000 for town of Allagash.

Employment

- Project construction would employ an average 200 persons in winter and 900 in summer.
- Project would take eight years to complete.
- During peak years 4 through 7, maximum number of workers would be 1,900 persons.
- Transmission line work would employ an additional 300-450 individuals in years 4 and 5.
- Project would provide $60 million in salaries.
- Would reduce employment in timber industry somewhat.
- Wages would be federal scale and, thus, adversely affect wages in other sectors.
- Agriculture and forestry industries would be adversely affected by project's demand for skilled labor.
- Most of work force would be hired locally.
- Project would add 350 to 550 secondary and tertiary jobs, primarily in years 4-7.
- Operation and maintenance of dams would require 68 workers, 60 of whom would be hired locally.
- Maintenance of transmission lines would add 21 jobs.

Economy

- 200 miles of private logging roads would be inundated.
- 16 commercial facilities would be relocated.
- Agriculture in area would benefit from reduced flooding.
- Timber placed on local market as a result of clearcutting could depress prices.
- Multiplier effects on local economy from $35 million spent locally on supplies for project over seven year period represents three percent of area's annual sales.
- Service sector could receive up to $25 million.
- Retail sector would experience increased activity, although much could be of "low quality".

- Lost timber production earnings, including wages, taxes, and income, would range between $206 and $311 million over the 100-year project lifetime.

- Project could lead to localized temporary inflation.

- Availability of power may encourage industry to move in, but project is designed for peaking purposes.

- Timber industry in area would experience increased harvest costs due to inundation of service roads and large area to circumvent.

- Current timberland owners would incur large capital gains taxes.

- Present economic structure would be altered permanently.

Public Services

- Educational system would need to accommodate 400 to 600 school children and could be easily done.

- Influx of workers and families would require increased social services.

- Three to nine additional policemen would be required.

- Judicial system would be strained, and fire department as well.

- Would extend shortage of health services.

- Planning is required to mitigate impacts.

- Increased traffic would require more road maintenance.

Community Attitudes

- Tension would exist between residents and immigrants.

- Lack of recreation, social isolation, and close quarters would put stress on workers.

- Present social structure would be altered permanently.

- New set of values and standards would replace, in part, old set.

Energy

- Project would produce 19 percent of New England's peaking power needs by mid-1980's.
- Hydropower produces little noise, no pollution, and is a renewable energy source.
- Project is equivalent to 2.3 million barrels of oil yearly.
- Regulated river flows would benefit Canadian hydropower plants downstream.

Cultural Resources

- 37 archeological sites and six historical sites would be lost.
- 41 historic sites would be in viewshed of transmission lines.

Recreation

- Project would alter types of recreation available.
- Major portion of river available for white water canoeing would be eliminated.
- Hunting in area would increase, while game populations would decrease.

Aesthetics

- Visual and scenic character of area would change.
- Transmission lines would affect scenic vistas.

COMMENTS:

- EIS form utilizes construction and O&M phase distinction as well as "immediate impact area" and "service area impact" designations.
- USFWS recommended against project because it lacked a fish and wildlife mitigation plan.

PROJECT: Boardman Coal Plant and Associated Transmission Facilities

Bonneville Power Administration, U.S. Department of Energy
March 1980, Adopted Final EIS
(Adopted Rural Electrification Administration, Final EIS, January, 1978).

- 550 MW coal-fired steam electric generating station near Boardman in Morrow County, Oregon.
- Includes construction of approximately 35 miles of transmission lines, a 1,400-acre cooling pond and a 500-acre ash disposal area.
- Estimated cost with escalation is $450-500 million.
- Project is being coordinated with other major construction projects, e.g., an Alumax aluminum facility.

Land Use and Features

- Site is located within a 100,000 acre agriculture-industrial park owned by the State of Oregon.
- 97 percent of land for transmission line is located in Class VII and VIII land best suited for grazing, woodland, or wildlife.
- Impacts of transmission line will be minimal.
- Reservoir will provide storage for 11,500 acre feet of irrigation water. Land suitable for high value crops will experience increased utilization.
- Loss of land due to project is insignificant.
- Associated impacts will be created by coal mining at distant sites and transportation by rail.
- 7,000 tons of ash per month will be produced and disposed of at site.
- Wind erosion of soil will occur during construction.
- Emissions during operation will be within Class II Federal standards.

## Wildlife

- Carty Reservoir will have a beneficial impact on wildlife via creation of riparian vegetation and habitat.
- No rare or endangered species will be affected by project.

## Aquatic Species and Water Quality

- Reservoir will be filled and maintained by withdrawal of water from the Columbia River through existing structures.
- Withdrawal of water from the Columbia River will have minimal impact on river life (estimated maximum of 0.5% loss of aquatic organisms).
- Project will utilize a closed cooling system thereby avoiding thermal impacts to other bodies of water.
- Project will not affect the local water table.

## Socioeconomic Categories

### Population

- Area is experiencing significant growth due to industrial and agricultural expansion.
- Construction of project, coupled with construction of an Alumax aluminum reduction facility in area, could generate a population influx of 16,400, a number larger than the city of Pendleton.
- Depending on whether or not major facility construction is maintained after completion of project, population will be stable or decrease.
- Service population for area's growing work force will increase proportionally with a one year lag.
- No families or individuals will need to be relocated due to siting of project.

### Housing

- Demand for housing, both temporary and permanent, will largely depend upon whether other major construction projects are in progress. If so, participants may have to attract workers from outside commuting area which would significantly increase demand for temporary housing.

- Project participants will build temporary housing in short term and facilitate the construction of permanent housing.

- Demand for permanent housing in area will increase with or without the project.

- Care should be taken in not overbuilding stock, i.e., supply should fit demand.

Tax Base and Revenues

- Taxes on coal trains will total over $100,000 per year in five states; $14,000 will accrue to local government in Oregon.

- Using 1975 wage rates and income tax laws, each worker will pay $2,665 to the Federal Government and $945 to the state of Oregon during construction period - average annual totals of $1,455,000 and $516,000, respectively.

- Plant operating personnel will pay an average $2,440 in federal taxes and $826 in state taxes - average annual totals of $364,000 and $123,000, respectively.

- Participants will pay $3,900,000 in local property taxes from 1975-1979.

- After start-up in 1980, local property taxes are estimated at $2,150,000 for 1980 and 1981, and will increase by 6 percent per annum.

Employment

- Project will employ an average of 546 workers over a 4.5 year period with a peak work force of 780.

- Significant portion of workers will be temporary.

- Workers will be hired out of union halls in Pendleton, Hermiston, Umatilla, Tri-Cities, The Dalles, and Portland. If other projects are under construction at same time, more workers will be hired from outside this area.

- Based on 1975 wage scales and tax schedules, the average construction worker's annual taxable income will be $19,700 for a total on-site payroll of $48.4 million spread over 4.5 years.

- Operation and maintenance of plant will require 150 permanent workers with an annual operating payroll of approximately $2.8 million.

Economy

- Project includes paving one public road and a railroad spur to site.
- Participants hope to avoid a "Boomtown" scenario.
- Secondary impacts will be significant because area is rural in nature.

Public Services

- Demand for services will increase in Boardman with or without the project due to agricultural and industrial expansion in area.
- Infrastructure (water and sewer facilities) for permanent housing need to be expanded. Boardman has planned facilities to accommodate a population of 7,000 (present population is 700).
- Induced and occurring growth will require increased police and fire protection services.
- Current excess capacity allows time for planning future expansion.

Energy

- Consequences of a sizeable and prolonged shortage of electrical energy will have a serious economic and social impact on the region:
  - Unemployment will rise and economy in general will suffer.
  - Would negatively impact irrigation agriculture and most industries.
  - Social services would suffer without a significant reduction in the real standard of living in the region.
  - "Reduction of poverty and increase of economic welfare are dependent on an increase in per capital personal income. The standard of living and per capita income both are directly related to the per capita consumption of energy."

Cultural Resources

- Project will have no effect on any historical sites.
- Archaeological sites in area will be investigated.

Recreation

- Project will not affect any recreation facilities.
- No part of project lands will be made available for recreational purposes.

Aesthetics

- Noise and temporary aesthetic disturbances will be minimal due to remoteness of site. There are no residences, recreation parks or public areas within four miles. Nearest roadway is seven miles away.

COMMENTS:

- Remoteness of setting helps minimize impacts.
- Extensive mitigation procedures are planned, especially regarding socioeconomic impacts.
- Prime concerns are social and economic in nature, not physical.

PROJECT: Hydroelectric Power Development
Upper Susitna River Basin
Southcentral Railbelt Area, Alaska

Office of the Chief of Engineers
Department of the Army
Washington, D.C. 20314

Responsible Office: Alaska District Corps of Engineers
Anchorage, Alaska 99510

January 1977, Final EIS

- Proposed two-dam hydroelectric project with approximately 1400 MW capacity.
- Includes construction of access roads, 364 miles of transmission lines and facilities, and recreational facilities.
- Estimated first cost of project: $1.5 billion.

Land Use and Features

- 55,000 acres for 84 miles upstream of Devil's Canyon would be inundated.
- 6100 of the 8200 acres required for transmission lines would be cleared.
- Dams would be built to withstand an 8.5 earthquake (Richter scale) centered 40 miles away. Area contains seismic faults.
- Project would have significant impact on natural features of area, especially as relates to potential for wilderness designation and scenic river classification. Area and river would probably both qualify.
- Project would prevent future mineral extraction on inundated land.
- Options for land use of transmission corridor land would be limited.
- Values of natural resources would be significantly impacted by construction of roads.

Wildlife

- Migratory patterns of caribou would be impacted especially between calving and summer ranges.

- Moose would be directly impacted, as caribou, by loss of habitat.

- Greatest impact would result from increased hunting effort due to increased accessibility of area.

- Subclimax growth on transmission line corridor would benefit wildlife.

- A general impact would occur by "ripple effects" through the food chain or wildlife "web".

Aquatic Species and Water Quality

- 50 miles of river downstream of the project would suffer general channel degradation.

- Transmission facilities would add to increased siltation of rivers and lakes in nearby areas.

- "Reduction of existing summer sedimentation peaks should have a beneficial effect on anadromous and resident fish populations for some distance downstream from Devil's Canyon Dam."

- Channel modification to enhance salmon spawning could be part of project.

- Eliminate downstream flooding which is detrimental to salmon spawning.

- Increase turbidity and introduce "glacial flour" (suspended sediment) in river downstream of project.

- Impoundments will mainly impact fisheries upstream of project.

- May be able to establish fisheries in reservoirs although steep walls are not conducive to fishery development. Unlikely any migratory species could be established due to problems with high level dams.

- During periods of excessive run-off, increased nitrogen supersaturation could harm fish.

- Project would impact vegetation and fish in tributary creeks above dams.

- According to a 1974 study, an estimated 24,000 chum, 5,200 pink, 1,000 red, some Chinook, and between 4,000 and 9,000 coho salmon migrated into the 50 mile section of the Susitna between the Chulitna River and Devil's Canyon during a seven week period (July 23 to September 11).

- Due to natural barriers, no salmon presently migrate above Devil's Canyon.
- Overall effects on downstream fisheries would be limited by techniques of release.
- During construction, water would be rerouted and flow regulated.

Socioeconomic Categories

Population

- Population in the Railbelt area is expected to increase with or without the project. The report states:

> "Construction of the project is not expected to have any long-range effect on the overall population growth, but is rather designed to fulfill presently projected needs of a growing population as one alternative means of producing power which will have to be provided in one way or another."

Housing

- Temporary campus for construction workers would be built.
- Immigration of a few construction workers' families to nearby towns would cause some impact.
- During O&M only a few families and workers would stay on and take up permanent residence.

Tax Base and Revenues

- Not addressed.

Employment

- Project would employ 1100 men during peak construction period (April through October).

Economy

- Seasonal nature of construction of project would adversely impact communities during the winter.
- Impacts on local communities would be temporary in nature (i.e., occur during construction phase).

- "A 10 year Devil's Canyon-Watana hydroelectric development program would have an economic impact on the Southcentral Railbelt area that would be felt to a greater degree during the construction phase of project development... The proposed... project will not create large blocks of excess electrical power for heavy energy-consuming industries." If this is desired, more energy is required. The project is "designed to serve population needs -- not to stimulate growth."

- Project would not affect river transportation below Talkeetna.

Public Services

- "Various community, borough, state, and private facilities and agencies would be impacted to various degrees."

- Increased accessibility to area near project would require additional law enforcement and fire prevention services.

Community Attitudes

- Not addressed.

Energy

- Hydropower could replace fossil-fuel based power in Fairbanks.

- Project would create a renewable non-polluting energy resource equivalent to 15 million barrels of oil.

Cultural Resouces

- Archaeological potential not known.

- Project would inundate one historical site.

Recreation

- Reservoir would flood nine of 11 miles of whitewater section of Devil's Canyon.

- Project would substantially increase impacts on resources affected by outdoor recreational activities.

- Recreational developments would eventually include visitor centers, boat launching areas, campgrounds, picnic areas, trail systems, etc.

- Initial annual visitation estimated at about 77,000 persons.

- Recreational opportunities would be increased by access roads and creation of project related recreational facilities.

Aesthetics

- "What is now a natural and scenic area showing little of man's influence would be impacted substantially." Area probably would qualify for wilderness designation and National Scenic River classification.

- Access roads, dams, and transmission lines would impair visual quality of area.

- Project would prevent various forms of pollution (heat, air, noise) from alternative types of energy generation.

- Replacement of fossil-fuel based power in Fairbanks could help "alleviate the severe winter ice fog and smoke problems in that area".

COMMENTS:

- Descriptions of most impacts are very qualitative and not substantiated.

- Socioeconomic part is very weak.

PROJECT: Green Lake Project
#2818 - Alaska

Federal Energy Regulatory Commission
February, 1979, Final EIS

Applicant: The City and Borough of Sitka, Alaska

- 16.5 MW hydroelectric dam on Volopad River, 10 miles south of city of Sitka.
- $41.9 million estimated total cost.

Land Use and Features

- Project would encompass 1,585 acres.
- Would destroy 1,020 acres of forested land.
- Severe erosion potential during construction.
- Construction of eight miles access road would impact 67 acres.
- Project would facilitate access to mineral claims in area.
- Project is located in active seismic area.

Wildlife

- Four bald eagle nests would be disturbed.
- 60 acres of Sitka deer habitat would be eliminated.
- 825 acres of river bottomland would be inundated, reducing available wildlife habitat.
- Vancouver Canadian geese sites would be eliminated.

Aquatic Species and Water Quality

- Increased turbidity would occur during construction period.
- Size of lake would increase by 830 acres to 1,000 acres.
- Three miles of Volopad River would be inundated eliminating nearly all accessible spawning habitat for brook trout, thereby causing a decline in trout stocks.

- Salmonids would be adversely affected downstream by sedimentation during construction.
- During O&M, turbidity would be less than at present.
- Little, if any, downstream effects.

## Socioeconomic Categories

### Population

- Due to dearth of housing for sale or rent, the high cost of living, and ease of air transportation to major cities, very few workers would relocate and bring families.
- Population would increase by 175 to 200 persons as a result of project.

### Housing

- Existing conditions very tight and expensive.
- Workers would be housed either in leased hotel space or a camp near site.

### Tax Base and Revenues

- $36,600 in revenue over three years would accrue to city due to four percent sales tax, assuming 80 percent of construction workers' expenditures are taxable.
- Increased revenue expected to offset additional costs to government.

### Employment

- 50 to 150 workers would be employed during three year construction phase.
- O&M would employ less than 10 persons.
- Lack of skilled construction workers in Sitka means majority of workers would be "imported".

### Economy

- Project would increase personal income of residents slightly.
- Assuming workers spend $380/month, or 15 percent of $2,525 monthly wage for 3,010 man-months, $1,143,800 would be generated to business establishments.

- Benefactors of spending would include restaurants, drinking places, drug stores, men's apparel stores, sporting goods stores, and personal service establishments.

Public Services

- Increase of estimated 23 school children could be easily accommodated.
- Project would lead to some increased demand on police and fire services.

Community Attitudes

- Not addressed.

Energy

- Project would allow applicant to place on "stand-by" plans to install a 5.5 MW diesel generator (with attendant benefits).
- Project would reduce the need for operating an 8.6 MW diesel generator located near city with its attendant noise and pollution.

Cultural Resources

- No impacts cited.

Recreation

- Increased access to area would facilitate hiking and hunting activities in area.

Aesthetics

- What is a serene wilderness area would become a noisy construction site and man-made lake.
- Project would be visible primarily to aircraft, which are numerous in area.

COMMENTS:

- Project is very small and isolated.

PROJECT: Marysville Lake Project, Yuba River, California

U.S. Army, Corps of Engineers, Sacramento, California
March, 1977, Draft EIS

- Two-dam hydroelectric project creating 6,640 acres of reservoir, or 916,000 acre-feet.
- Capacity: 1,350 MW with capability to add 900 MW more.
- Cost: $1 billion.

Land Use and Features

- Maximum 8,140 acres would be lost, including 1,530 acres of grassland and agricultural land.
- Would change 20 miles of river and streams to a 6,640-acre lake.
- Ownership patterns would change.
- May "improve" or preserve approximately 14,350 acres.
- Potential effects of dam on seismic activity (noted as inconclusive).
- Nearby land uses would change due to increased opportunities for recreation and irrigation. (Secondary impact.)

Wildlife

- Loss of 7,320 acres of wildlife habitat and 12 miles of riparian vegetation.
- 600 deer adversely affected.
- 100 turkeys displaced.
- Pressures on wildlife would increase due to subsequent growth, development, and agricultural production. (Secondary impact.)

Aquatic Species and Water Quality

- 20 miles of river and tributary streams fisheries would become a lake fishery.
- Alter downstream flows and temperatures (O&M).

- Increased sedimentation and turbidity of water during construction.

- Fish hatchery and spawning channel would be constructed and a spawning gravel management program would be instituted for downstream areas.

- Regulated flows, suitable timely discharges of regulated temperatures, coupled with hatchery and downstream control would lead to overall increase in river productivity.

- Salmon -- 10 percent of spawning and nursery area of Yuba River king salmon would be lost, but enhancement program would lead to overall increase of approximately 70,000 salmon.

- Steelhead -- enhancement program would offset adverse effects and increase stocks by approximately 10,000.

- Shad -- would benefit from river regulation and enhancement.

- Resident fish -- largemouth and smallmouth bass could be established in lake, as well as bluegills. Rainbow and brown trout would require planting program.

- Estimated benefits of enhancement program: $3,720,000 per year accruing to commercial and sport fishermen.

- Estimated costs of enhancement program: $1,260,000-2,000,000 depending on i rate used.

- Evaporation would reduce river volumes 22,000 acre-feet per year.

Socioeconomic Categories

Population

- Maximum 4,752 estimated increase due to inmigration of new workers and families (three persons per family per new worker).

- 500 people and 13 businesses would be relocated.

- Increased opportunities for irrigation, recreation, land development, and new industry would create secondary growth-inducing impacts.

Housing

- 160 units would be relocated or acquired.

Tax Base and Revenues

- Loss of $198,720 of revenue per year to local government bodies.
- Remove 2.2 percent of county's assessed valuation, or 6.6 percent of assessed land area.
- Reduce flood prevention expenditures for downstream governments.
- Revenues would increase over time due to appreciation of land values associated with recreational and agricultural development. (Secondary impact.)

Employment

- Maximum 3,520 workers on site (in year 6).
- Represents five percent increase in area work force.
- Maximum 1,935 jobs available to local workers.
- 45 percent of work force would be new to area, or 1,584 maximum new workers.
- Operation and maintenance would require 40 full-time and 10 part-time employees.

Economy

- Irrigation rights may be altered.
- Reduced flooding downstream and availability of water for irrigation would increase agricultural productivity.
- Flood damages would decrease from $345 million to $9.3 million per year.
- Opportunities for recreational development would lead to increased construction activity and attendant businesses. (Secondary impact.)

Public Services

- School population would increase by maximum 1,109, or seven percent of existing school-age population in year 6 (.7/new family or worker).
- Police, fire departments, and other services would need to expand to accommodate growth.

- Substantial impact in residential centers from influx of workers and relocating individuals. Existing conditions are already tight.
- 25 miles of electric lines and seven miles of telephone lines would be affected.
- 25 miles of roads would be inundated. Replacement would lead to overall upgrading of routes, however.

Community Attitudes

- Project would alter character of area, especially in higher population density with attendant problems.
- Extensive social structure and social pattern changes would result.

Energy

- Project would replace two existing hydro facilities (total capacity: 56 MW).
- Would result in net energy capacity of approximately 1,300 MW initially, and approximately 2,200 MW ultimately.

Cultural Resources

- 2 cemeteries would be relocated.
- Of the 430 known prehistorical and historical sites, 245 would be inundated or disturbed. Remainder would change ownership.
- A representative sample would be preserved or displayed at a visitor center.
- Old powerhouses would be preserved as well.

Recreation

- Stream fishing and white water boating in immediate area would be lost.
- Six small recreation sites would be established.
- Project would add 235,000 recreation days/year initially, and approximately 600,000 days/year ultimately.
- Increased recreational opportunities relating to hunting, camping, picnicing, swimming, fishing, and boating.

Aesthetics

- Project would alter rural and visual character of area.
- Drawdown marks around reservoir would average four feet and reach a maximum of 19 feet.
- Construction period would degrade air quality somewhat and increase ambient noise level.
- Noise impacts would be due to changes in land use and human activity, not to changes in noise sources or patterns. (Secondary impacts during O&M).

COMMENTS:

- Assessment attempts to quantify in monetary terms, impacts on fisheries and recreation.
- Distinguishes between construction and operating and maintenance (O&M) phases.

PROJECT: Swan Lake Project No. 2911 - Ketchikan, Alaska

Federal Energy Regulatory Commission
April, 1980, Final EIS

Applicant: Ketchikan Public Utilities

- 22 MW hydroelectric dam on Falls Creek and Swan Lake.
- Construct 30.5 miles of transmission lines.
- Construct port facility and access roads.
- Capital investment cost - $80.9 million.

Land Use and Features

- Project would use 2,448 acres.
- 80,000 acre-foot reservoir would cover 1,500 acres, of which 460 acres would change from terrestrial to aquatic environment.
- Lose 743 acres of Sitka spruce and Western hemlock.

Wildlife

- Construction activity including hunting, trapping, and noise would scare away bear, deer, and wolf.
- During operation and maintenance, impacts would occur due to (1) habitat modification, and (2) habitat limitation.
- Bald eagles in area may be adversely impacted.
- Overall impact not substantial.

Aquatic Species and Water Quality

- Loss of 3.5 miles of lake spawning area used by Dolly Varden and Kokanee would result in some decline in stocks.
- Sediment runoff and water diversions would adversely impact salmonids and eggs.
- Port facility would have little impact.
- Mitigative measures could include stocking lake and establishing new spawning areas.

Socioeconomic Categories

Population

- Impacts concentrated in City and Borough of Ketchikan.
- Not many families expected to migrate -- if all workers were from outside (unlikely), fewer than 25 percent would relocate with family.

Housing

- Existing stock adequate.

Tax Base and Revenues

- Assuming 80 percent of workers' expenditures are spent in Ketchikan at 4 percent city sales tax, revenue would be $15,200 over 3 years.

Tax Base and Revenues

- Assuming 80 percent of workers' expenditures are spent in Ketchikan at 4 percent city sales tax, revenue would be $15,200 over 3 years.
- Some additional revenue would occur, due to personal property tax on construction equipment of contractor (hard to estimate).
- Expenditures expected to be offset by revenues.

Employment

- Three year construction phase.
- 53 to 185 workers at site; average 100.
- 60 percent would be Alaskans (by law), if qualified.
- Specialized labor would be "imported".
- $2,525 average monthly wage.
- 15 to 20 day work periods at site.
- During O&M, 10 persons would be employed.

Economy

- Effects and impacts would center in Ketchikan.
- Bulk of supplies, however, would likely be imported to site.

- Estimated $342,000 would be spent in Ketchikan over three years, if 25 workers relocate and spend 15 percent of monthly wage.

- Estimated $135,000 would be spent in Ketchikan over three years, if 15 men for five days/month @ $50/day for food, lodging, and vacation.

Public Services

- If migration occurs as mentioned, 28 school children would be added to local system which can easily accommodate up to 700 more; i.e., little impact.

- Campsite for workers is outside police jurisdiction; little impact.

- Might be some problems with parking in Ketchikan if workers bring cars.

Community Attitudes

- Not discussed; little impact due to isolation of site.

Energy

- Project would allow applicant to retire existing diesel-driven generator to reserve status.

- Hydropower benefits include renewable, non-polluting energy source.

Cultural Resources

- Project would inundate one log cabin dating from 1940's to 1950's -- judged not significant; does not meet historic criteria.

- Petroglyphs in area may be disturbed.

- Wiers at Leask Cove may be historic and may be disturbed.

Recreation

- Hike-in trail access would be constructed.

- Site would include boat dock, picnic, toilet, and interpretive facilities.

- Construction activities would preclude area for recreation purposes.

Aesthetics

- Transmission lines would impair some scenic vistas from ocean spots.
- Change natural setting to man-made scene.

COMMENTS:

- Project is very small, but EIS deals with Alaskan topics.
- Setting is remote; most impacts discussed are direct.

PROJECT: Terror Lake Hydroelectric Project, Kodiak Island, Alaska

Federal Energy Regulatory Commission
Application for Project License No. 2743, December, 1978

Applicant: Kodiak Electrical Association, Inc.

- 20 MW hydroelectric dam.
- 78,000 acre-feet storage capacity.
- $81 million estimated total capital investment.

Land Use and Features

- Part of project area lies within Kodiak National Wildlife Refuge.
- Rest of project includes land owned by state, borough, and a Native village corporation.
- Will increase size of lake from 270 to 850 acres.
- 580 acres will be inundated and 70 acres cleared for lines, roads, and other facilities.

Wildlife

- Loss of wildlife habitat and construction activities will have negative impact on Kodiak bear, mountain goats, beaver, and Peregrine falcon.
- Construction impacts include noise, physiological stress, and will affect wildlife survival rates.
- O&M period unlikely to have much impact on wildlife.
- Increased trapping and hunting in area would result from increased accessibility affecting otter, red fox, weasel, deer, and brown bear populations.

Aquatic Species and Water Quality

- Construction of dam and clearing of right-of-ways will have minor impact on aquatic species, unless it occurs during fall spawning season.
- River productivity could actually benefit from flow regulation, which would prevent freezing and flooding.
- ADFG is considering a hatchery below project to take advantage of flow regulation.

- No fish in Terror Lake presently.

- Dam would affect turbidity, velocities, temperatures, supersaturation of gases, and sedimentation downstream.

- Average annual river flow at mouth would be reduced by 35 percent.

- Intertidal zone would be monitored.

Socioeconomic Categories

Population

- Negligible impact; slight temporary increase could be expected.

Housing

- Workers would be housed at construction camp near site.

Tax Base and Revenues

- Revenues may increase slightly.

Employment

- Construction of project would create 225 jobs, which would be filled mainly by Alaskans.

- 75 percent of work force would be skilled labor.

- One or two full-time jobs would be created during O&M phase.

Economy

- Short-term (i.e., construction phase) benefits would accrue to local economy -- mainly to merchants, local suppliers, and transportation sectors.

- Project could encourage industries dependent on reliable energy to make long-term investments in area.

- Salmon fishery could potentially benefit from enhancement projects associated with project.

Public Services

- Little impact, due to isolation of project and workers.

Community Attitudes

- Not addressed, and perhaps not applicable.

Energy

- Primary impact is that project would increase applicant's overall available electrical energy.
- Project would replace expensive diesel-generated electrical energy.
- Project would "save" approximately 20 million barrels of oil over 75 years.

Cultural Resources

- No historical sites would be impacted, although there may be archeological sites in area.

Recreation

- Public access would be restricted to project area.

Aesthetics

- Isolation of project makes impacts negligible, except for transmission lines.
- Three waterfalls would be adversely impacted.
- Although noise would occur during construction phase, project overall would reduce ambient noise level by replacing diesel generator.

COMMENTS:

- One letter noted that, concerning fishery enhancement, performance would depend to a large extent on the intent of operation; i.e., its stated purposes.
- Assessment does not quantify much data, nor is it specific in procedures, although this could be due to the fact that the project and impacts are of such a small scale.
- This was an application, not an EIS.
- Project is very small and very isolated.

PROJECT: Tyee Lake Hydroelectric Project -
Petersburg & Wrangell, Alaska

Federal Energy Regulatory Commission
December 1979
Application for Project License for the Alaska Power Authority

- 20 MW hydroelectric facility with 10 MW additional capacity planned.
- No dam will be constructed initially. (Is included as part of 10 MW addition.)
- Tyee Lake will serve as reservoir.
- Project includes 81 miles of tranmission facilities of which 69 will be overhead and 12 submarine cables.
- Cost in 1980, with a 6.5% interest rate and a 7% per year inflation allowance, estimated at $53 million.

Land Use and Features

- Project will encompass 4,500 acres.
- 1,250 acres will be disturbed by construction activities.
- Transmission lines will cross some LUD II land (land to be managed in a roadless state).
- Transmission facilities will cross 39 rivers and streams, and occupy 1,675 acres of which 289 is private property.
- The transmission facilities utilize "low productivity land areas where possible -- perhaps thereby enhancing an otherwise non-productive area."
- High probability exists that one or more earthquakes of a magnitude of 7.0 or greater on the Richter Scale would occur during the project's lifetime.
- Powerhouse facilities and Tyee Lake are located in the Tongass National Forest.
- No road access to Tyee Lake will be constructed.
- Helicopters will be used extensively to mitigate impacts.

Wildlife

- Predominant impact on wildlife will result from increased accessibility of area to recreationists.

◆ - Short-term impacts are related to construction activities and are proportional to the "overall carry capacity (the population an area will support without undergoing deterioration) of areas adjacent to project facilities," i.e., density of each wildlife species.

- Falcons and bald eagles may be disturbed.

- Construction campsite is presently a logging camp and thus many impacts have already occurred.

- Long-term impacts are associated with the alteration of topography and habitat.

◆ - Clearing of right-of-way for transmission lines would stimulate low-growth vegetation benefitting certain species.

Aquatic Species and Water Quality

- Arctic grayling stocks in Tyee Lake may be impacted but stocks are already depressed.

- Submarine cables could affect the shrimp fishery.

- Possibility for a fish hatchery utilizing tailwaters of project could enhance salmon fisheries.

◆ - Construction of transmission lines could deteriorate water quality in rivers and streams used by salmon.

Socioeconomic Categories

Population

◆ - Contractor would not encourage workers and families to resettle but would allow workers to fly home at intervals.

Housing

- Housing for workers at site would be provided using an existing logging camp.

Tax Base and Revenues

- Not addressed.

Employment

- Project will employ a maximum of 60 workers.
- Operation and maintenance will require one or two fulltime caretakers.
- Total gross earnings of all employees would be $16 million throughout construction period.
- Tunnel work would be on a continuous basis for nine months a year, six days a week.
- Operation and maintenance will require one or two fulltime caretakers.

Economy

- Project will have overall minimal impact on Petersburg and Wrangell.
- Significant income would accrue to two cities as a result of transmission line staging there.
- Opportunity to manage timber in right-of-way would be foregone, and on adjacent lands as well. Cost of harvesting timber near transmission lines may increase.
- Hydropower could "help stabilize operational costs of industrial power users and help them to remain competitive. It could also encourage industries that are dependent on reliable energy to make long-term investments in Petersburg and Wrangell."
- Local merchants will benefit from project workers spending part of their earnings there.
- Local suppliers of construction materials and transportation services would benefit.

Public Services

- Project will create minor traffic increases in Petersburg and Wrangell.

Energy

- Power from project expected to come on-line in 1984.
- Would replace diesel-generated power for estimated 11 years when more power would be needed. Local residents would be

relieved of noise and odor of diesel generators.

- "The major socioeconomic consideration would be the availability of power at a stable, long-term, lower-price for electrical energy to all the consumers, individual, business, and industrial, of the service area."

- By the year 2000, 10 MW of power could be added by construction of a dam on Tyee Lake.

Cultural Resources

- Not addressed.

Recreation

- Transmission line corridor would open areas up for recreational pursuits, e.g., snowmobiles, cross country skiing and hunting.

- Limited use of Tyee Lake does and would continue to occur due to remoteness of area.

- Some public use facilities mainly for boaters, would be constructed at the powerhouse, e.g. a shelter, picnic tables, and sanitation facilities.

- Land would be reserved for expansion of recreational facilities as the need arose.

Aesthetics

- Transmission lines and powerhouse facilities would impact aesthetic values of area.

COMMENTS:

- Project is small and isolated.

- Impacts are not quantified.

PROJECT: Solomon Gulch Project No. 2742 - Alaska

Federal Energy Regulatory Commission
March 1978, Final EIS

Applicant: Cooper Valley Electrical Association, Inc.
Glenallen, Alaska

- 12 MW hydroelectric project.
- Will enlarge present dam and install turbine facilities.
- Located on Solomon Gulch Creek, 4 miles south of city of Valdez.
- Project includes 104 miles of transmission lines to Glenallen and four miles of line to Valdez.

Land Use and Features

- Project would encompass 820 acres of which 700 acres is state-owned and 120 acres administered by BLM.
- Transmission lines would require 1300 acres.
- Project would inundate 515 acres.
- Solomon Lake would increase by 100 acres to 615 acres.
- Existing dam (old hydro development never completed) encompasses 180 acres.

Aquatic Species and Water Quality

- Diversion of water from Solomon Gulch Creek would alter downstream riparian habitat.
- Salmon spawning areas at mouth of creek could be adversely impacted by sedimentation during construction.
- Overall impact on fisheries would be minor.

Wildlife

- 515 acres of wildlife habitat would be lost.
- Bald eagles, peregrine falcons, bears, and goats could be adversely impacted.

- Contact between bears and people could increase resulting in a bear population decrease.
- Undergrowth by transmission lines will be beneficial to wildlife.

Socioeconomic Categories

Population

- Impacts would be negligible.

Housing

- Area has excess capacity as a result of Alaska pipeline construction.
- Construction camp consisting of mobile homes would be built for workers.

Tax Base and Revenues

- Not specifically addressed.

Employment

- 20 to 30 workers would be employed during construction.

Economy

- Adverse impacts would be negligible.
- Stable, cheap supply of energy could enhance economic development potential.

Public Services

- Not addressed.

Energy

- Project would reduce dependence on an expensive and erratic diesel based power supply.
- Project would link existing electricity distribution networks in Glenallen and Valdez.

Cultural Resources

- No known archeological or historical sites would be impacted.

Recreation

- A hiking trail to the reservoir would be constructed along the access road.
- Area would be used an estimated 250 to 500 visits per year.

Aesthetics

- Rerouting of creek through powerhouse and transmission lines would degrade natural scenery of area.

COMMENTS:

- Size of project is very small, as are resulting impacts.
- Impacts are negligible compared with those associated with construction of Alaska pipeline.

PROJECT: North Fork Stanislaus River Project
#2409 - California

Federal Energy Regulatory Commission
November, 1979, Draft EIS

Applicant: Calaveras County Water District

- 205.2 MW installed capacity.
- Project would consist of one main dam, two diversion dams, and 56 miles of transmission lines.

Land Use and Features

- Project would encompass 3,508 acres.
- 1,900 acres would be inundated.

Wildlife

- 2,500 acres of wildlife habitat, including 200 acres of critical meadow habitat important to deer, would be wiped out.
- Poaching would likely increase with development of area.
- Mitigative measures could include compensation for lost habitat through "improvement" of other areas.

Aquatic Species and Water Quality

- 12.5 miles of stream habitat would be destroyed.
- Trout stocks would be adversely affected both during construction and O&M phase periods due to temperature, flow, and gas saturation level changes.
- Construction would increase turbidity and sedimentation of river downstream.
- During O&M, sedimentation would increase downstream due to lack of flushing.

## Socioeconomic Categories

### Population

- Impact depends on three parameters:

  (a) Percent of relocating workers who are married -- according to a 1975 Mountain West Research study of energy projects in the West, figure is 75 percent.

  (b) Percent of relocating workers who would bring families estimated to be between 50 percent and 78 percent.

  (c) Average number of children per family: estimated .75.

- In California, however, workers tend not to relocate with families, but return for visits at times. Therefore, it is assumed 40 percent of relocating workers will bring families.

- Net population gain would be between 1,900 and 2,170 during construction phase.

### Housing

- Project would create need for 510 units for families, plus dormitory-type accommodations for 770 persons.

- Since stay of most families would be short-term, leasing might be preferable.

- Not much housing available within a 45-minute commute.

- If applicant provides worker housing, little overall permanent impact will occur.

### Tax Base and Revenues

- $276,000 in revenue would accrue to county due to taxes applicable to construction equipment (one percent in California).

- Four percent sales tax would increase revenues from construction related expenditures.

- Applicant agreed to pay $110,000 to sheriff's department and maintain three miles of county roads, thus offsetting impacts and costs.

Employment

- Construction of project would employ 810-1,500 workers over three-year period, for a total 21,160 man-months of on-site labor.
- 150 workers, or 25 percent of the work force, from 2-county area could be employed by project.
- 220 workers expected to live in 2-county area (150) or commute from outside 2-county area (70); the remaining 1,280 would relocate to area.
- (2) Employment at retail, service, and financial institutions in area would increase.
- Unemployment would decrease due to project.

Economy

- Total of $59,500,000 in wages would be paid over 3-year period.
- A portion of total wages paid would become income for area businesses and workers (i.e., wages and salaries, proprietors' income, rent, interest, and profit). Estimated at $9,000,000 via following process:

| | |
|---|---|
| $59,500,000 | Total wages |
| -19,500,000 | For taxes, insurance premiums, and automatic savings |
| -10,000,000 | For mortgage payments, education, and other fixed payments |
| $30,000,000 | In discretionary income |

Half of discretionary income can be assumed to go for vacations elsewhere or sent to families living elsewhere. Thus:

| | |
|---|---|
| $30,000,000 | |
| -15,000,000 | |
| $15,000,000 | would be spent locally, of which 40%, |
| or - 6,000,000 | would go to wholesalers, distributors, and manufacturers outside of 2-county area; |

thus $9,000,000 net income increase.

- Multiplier effects from income increase are estimated at 15 percent of total, or $1,350,000. (Secondary impact.)

Public Services

- New sewer and water facilities may be necessary to accommodate population increase.
- Project may necessitate expansion of schools to accommodate increase in school population (510 families relocated with 380 children, of which 280 are school age; public school system would need to accommodate maximum 225 at one time (80 percent); costs would be offset by increased state funding.
- Sheriff estimates two more policemen and two cars would be required.
- Road maintenance would increase due to increased traffic.

Cultural Resources

- Seven archaeological sites would be inundated.

Recreation

- Project would inundate some areas currently used by an estimated 4,000 persons per year.
- 60 campsites, boat launch facilities, primitive campsite areas, and group sites would be developed as part of project.
- Project may beneficially impact 17 mile white water river run by flow stabilization (run is one of the most heavily used in the United States).

Aesthetics

- Scenic quality of numerous areas would be affected.

COMMENTS:

- Agreement was made with DFG to protect, preserve, and enhance fisheries and wildlife.

PROJECT: Bad Creek Pumped Storage Project No. 2740

Federal Power Commission
March, 1977, Final EIS

Applicant: Duke Power

- Located in Oconee County, South Carolina.
- 1,000 MW Pumped Storage Complex.
- Near existing pumped storage.
- Tie-in with Oconee Nuclear Power Station.

Land Use and Features

- 505 acres of vegetation supporting timber, wildlife, agricultural activities, and recreation would be permanently lost.
- 370 of 505 acres would be inundated.
- 820 acres impacted during construction.
- Transmission lines would affect an additional 315 acres.
- No commercially valuable mineral deposits in area.
- Some commercially valuable timber would be lost.

Wildlife

- Loss of habitat would affect game and non-game species of wildlife.

Aquatic Species and Water Quality

- Project would lower stream productivity.
- 2.3 miles of cold water stream fishery and riparian wildlife habitat would be inundated.
- Trout would be adversely impacted; project would eliminate approximately one percent of state's trout habitat.
- Construction phase would increase turbidity and sedimentation of downstream areas.

## Socioeconomic Categories

### Population

- 10 percent of work force expected to relocate, or 100 new families.

### Housing

- Not expected to be significant because 75 percent of work force is expected to be hired locally.

### Tax Base and Revenues

- Significant and substantial positive impact -- $950,000 during years one through three and $1,350,000 per year during subsequent years; equivalent to 25 percent of existing tax revenues on real estate and personal property.

### Employment

- Eight to nine year construction period employing maximum of 500 during fourth year.
- 75 percent hired locally.
- Assuming 95 percent of work force is in impact area, $6 million in gross wages would be paid.
- Multiplier effects from project would create secondary and tertiary jobs.
- O&M period would employ 12 persons full-time.

### Economy

- Not discussed.

### Public Services

- Little impact.
- Minor impact on schools.

## Community Attitudes

- Not addressed.

Energy

- Project would create savings in cost to applicant. Project would be used to maintain nuclear and fossil fuel at or near full capacity at which those plants are more efficient.

Cultural Resources

- Not discussed.

Recreation

- 30-mile hiking trail would be constructed as part of project.
- Project area itself, however, would be closed to public.
- Project would displace 68 hours of angling, or 30-40 fishing trips @ $6.30/day = $189 to $252 annual loss. (Most recent estimates value day trips at $13.90 - $160.36; average $32.30 per day.)
- Some loss to dispersed recreation activities which occur presently (1,500 visitors/year currently for hiking, primitive camping, and nature study).

Aesthetics

- Substantial, but not visible (draw down mud strip).
- Isolated nature of project reduces aesthetic impacts.

COMMENTS:

- Different type of project than Susitna (pumped storage versus conventional hydroelectric dam).

EXHIBIT III-3a

IMPACTS OF REPRESENTATIVE POWER DEVELOPMENT PROJECTS: POTENTIAL RELEVANCE FOR THE PROPOSED SUSITNA PROJECT

| DEGREE AND GEOGRAPHIC AREA OF IMPACT | TYPE OF IMPACT |
|---|---|
| | **Land Use and Features** |
| | Total acreage required by project facilities and right-of-ways. |
| | Total acreage of land indirectly impacted by project facilities and right-of-way. |
| | Short-term impacts may be less substantial than the long-term impacts. |
| + L,R | Patterns of ownership and induced changes. |
| + L | Changes in uses of land. |
| ? L | Value of land and natural resources above and below ground lost/gained. |
| ? L,R | Changes in potential uses of land (wilderness or roadless areas, National Scenic River, etc.) |
| + L,R | Potential for seismic activity. |
| o L | Overall "productivity" of land could increase. |
| + L | Increased accessibility will affect land and resource values. |
| ? R | Opportunities for flood protection. |
| | **Wildlife** |
| o L, R | Rare or endangered species impacted (e.g. bald eagles, geese). |

Degree of impact: + is relatively large;
o is relatively small.
? is uncertain.

Geographic area of impact: L is the Upper Susitna area (local)
R is the railbelt and the state (i.e., outside the upper Susitna area).

EXHIBIT III-3a (cont.)

| DEGREE AND GEOGRAPHIC AREA OF IMPACT | TYPE OF IMPACT |
|---|---|
| o L | Pressures on wildlife created by project, short-term during construction and long-term created by alteration of topography and habitat (acres lost or altered). |
| + L | Secondary impacts on wildlife created by increased accessibility and use of area by recreationalists and trappers/ hunters. |
| o L | Species of wildlife affected and percent change in population. |
| ? L | Poaching/abuse of wildlife may increase due to increased accessibility. |
| o L | Clearing of right-of-way could benefit certain species by stimulating low-growth vegetation. |
| | Aquatic Species and Water Quality |
| | Changes in river behavior could impact riparian ecosystem. |
| o L | Construction of dam and clearing of right-of-ways will have a short-term and probably minor impact depending on timing. |
| ? L, R | Permanent alteration and regulation of river flows could have a beneficial/harmful impact on downstream fisheries; in particular, salmon. |
| o L | Fisheries above impoundments would be impacted; percent of area's resource. |
| ? L | Spawning areas of fisheries are most sensitive area impacted. |
| ? R | Project operation could alter freezing temperatures of water downstream. |
| | Socioeconomic Categories |
| | 1. Population |
| | Temporary versus permanent impacts. |
| o L | Number of workers, families, and other inhabitants expected to relocate. |

EXHIBIT III-3a (cont.)

| DEGREE AND GEOGRAPHIC AREA OF IMPACT | TYPE OF IMPACT |
|---|---|
| + R | Population may grow with or without project, and coupled with other projects (e.g. the gas pipeline.) |
| ? R | Project may induce secondary population growth. |
| | 2. Housing |
| | Impacts to region may depend on percentage of workers recruited from outside region. |
| ? L,R | Availability, or tightness of housing market determines scale of impact. |
| + R | Demand for housing many be determined independently of project and in part by other major construction projects. |
| o L | Most workers will be housed in temporary construction camps; commuting is unlikely. |
| + L, o R | Rents and market values in the closer residential areas may rise. |
| | 3. Tax Base and Revenues |
| | Taxes on construction property may accrue to certain government entities. |
| ? L,R | Depending on workers' spending habits, various communities may experience an increase in revenues from sales tax. |
| o L,R | Appreciated land values may lead to an increase in tax base. |
| ? L | Participants and/or governments may agree to offset certain costs incurred by various governments. |
| o R | Revenues will accrue to the Federal and state governments via income taxes on construction and operating personnel income. |
| ? L | Revenues may increase over time due to appreciation of land values relating to increased opportunities for development (secondary impact). |
| ? L | Changes in land use will alter value of tax base. |
| | 4. Employment |
| | Number of employees required during operation and maintenance. |

EXHIBIT III-3a (cont.)

| DEGREE AND GEOGRAPHIC AREA OF IMPACT | TYPE OF IMPACT |
|---|---|
| | Income figures for workers (total annual, average per worker, timing, etc.) |
| | Secondary employment may occur in economic infrastructure due to multiplier effects. |
| + L | Number of construction workers and timing of work force loading. |
| + R | Percentage of work force hired locally. |
| o L | Seasonal variations in employment. |
| o L | Number of workers employed by transmission line construction. |
| o R | Effect on other industries and sectors of economy created by project's demand for labor. |
| + R | Impacts of laws related to number of state residents required to be employed. |
| | Breakdown of work force by trade and function. |
| | 5. Economy |
| | Increased accessibility to area could encourage development associated with recreational opportunities. |
| + L, o R | Multiplier effect on local and regional economy. |
| ? L, R | Incentives for industrial development created by stable energy availability. |
| + L, o R | Impacts on local communities from increased economic activity associated with project. |
| ? L, R | Percentage of work force income spent locally or in region. |
| o L | Impact on personal income of area residents. |
| ? L | Various sectors of the economy would benefit. |
| | 6. Public Services |
| ? L | Demand for educational services. |
| ? L | Demand for police and fire protection services. |

EXHIBIT III-3a (cont.)

| DEGREE AND GEOGRAPHIC AREA OF IMPACT | TYPE OF IMPACT |
|---|---|
| ? L, R | Effects on existing services and transportation facilities. |
| ? L | Demand for sewer and water facilities. |
| ? L | How costs for public services will be incurred and funded. |
| o L | Demand for judicial and health services. |
| ? L, R | Need for planning at various levels. |
| | Energy |
| | Hydropower is a relatively pollution-free, renewable resource. Its use prevents impacts of alternatives. |
| + L, R | Project could reduce and/or replace dependence on fossil-fuel based power. |
| + R | Project may add over 1000 MW of generating capacity to region. |
| + R | Large shortages of electrical energy could have a serious economic and social impact. |
| + L,R | Could provide a stable, long-term, lower-price supply of electricity. |
| | Community Attitudes |
| + L,o R | Tensions could exist between residents and immigrants project may attract. |
| + L | Lack of recreation, social isolation, and close quarters may place stress on workers. |
| + L,o R | Present social structure would be altered permanently. |
| + L,o R | A new or modified set of values and standards may arise. |
| | Cultural Resources |
| | Value of archeological and/or historical sites lost or made accessible. |

EXHIBIT III-3a (cont.)

| DEGREE AND GEOGRAPHIC AREA OF IMPACT | TYPE OF IMPACT |
|---|---|
| | Recreation |
| | Project may increase accessibility of area for recreational pursuits. |
| ? L,R | Project area availability for public use. |
| ? L,R | Value of recreation opportunities gained/ lost (e.g., hiking, hunting, fishing, kayaking). |
| ? L | Transmission line corridor may increase accessibility of areas for recreational pursuits. |
| | Aesthetics |
| + L | Natural scenic area would be substantially impacted. |
| o L,R | Transmission lines will impact visual quality of numerous areas. |
| o L | Impacts may be "negligible" due to remoteness of project area. |

b. A set of Economic Data Collection Matrix sheets which correspond to the numbered bibliography and the descriptive characteristics obtained from the Alaska Socioeconomic Data Collection Guides (as shown in Exhibit II-4 above.)

These end-products are shown in Exhibits III-4 and III-5.

It should be noted that the Bibliography and Data Collection Matrix sheets are a First Edition of what will be a continuing data search and organization process through all Work Packages.

Thus, in many instances where there are blank cells in a matrix, it is not necessarily the case that no data exist in this category. Also, additional data in categories where data was identified may be uncovered at a later date. Particularly in areas where FO&A will interact with other Task teams, there will be significant information transmitted in the future. Land use and recreation are two examples of the type of data to be shared among Task teams.

Aside from use of the Follow-up Notebook (as described in II. Methodology, above) to update information, and interaction with other Task teams, additional data sources have been identified. These include:

a. Alaska Department of Commmerce and Economic Development:
   - Local and State government debt and expenditures
   - Manufacturing capital expenditures
   - Housing permits by size of structure
   - State tax revenues

b. Alaska Department of Education:
   - Enrollment by district
   - Number of schools, number of professional staff, expenditures and cost per pupil by district

c. Alaska Department of Fish & Game:
   - Various inventories, surveys, and data

d. Alaska Department of Natural Resources:
   - Various mineral resource inventories
   - Timber inventories
   - Mining claims

e. Alaska Department of Revenue:
   - List of Alaska businesses

## B. WORK PACKAGE 4: FORECAST OF SOCIOECONOMIC CONDITIONS IN THE ABSENCE OF THE SUSITNA PROJECT

### Description

As discussed in II. Methodology, Work Item a. was a search for socioeconomic forecasting studies and models. The end product of this work item is a bibliography of studies and models. This bibliography is presented in Exhibit III-6.

EXHIBIT III-4

ALASKA SOCIOECONOMIC DATA BIBLIOGRAPHY
FIRST EDITION, JUNE 1980


1. The Agricultural Experiment Station, School of Agriculture and Land Resources Management and the Institute of Social and Economic Research, University of Alaska. 1978. Yukon-Porcupine Regional Planning Study. Fairbanks, AK. n.p.

2. Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1979. An Assessment of the Domestic Market for Alaska Wood Products. Juneau, AK. 32 pp.

3. Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. February 1980. Community Project Matrix. Juneau, AK.

4. Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. Various quarterly issues. Information & Reporting System. Juneau, AK.

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7. Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1979. What You Never Thought to Ask About Mining. Juneau, AK. 28 pp.

8. Alaska Department of Commerce and Economic Development, Division of Economic Enterprise and U.S. Department of Agriculture Economic Research Service. April 1977. Alaska Farm Cost of Production Survey. Juneau, AK. 22 pp.

9. Alaska Department of Labor. Various monthly issues. Alaska Economic Trends. Juneau, AK.

10. Alaska Department of Labor. 1980. Annual Planning Information, FY 1981. Juneau, AK. 80 pp.

11. Alaska Department of Labor. Various monthly issues. Labor Force Highlights. Juneau, AK.

12. Alaska Department of Labor. Labor Market Information Directory. Juneau, AK. 23 pp.

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21. Anchorage Economic Development Commission. September 1976. Anchorage Economic Report. Anchorage, AK. 15 pp.

22. Fairbanks North Star Borough. December 1979. 1979 Annual Report. Fairbanks, AK. 24 pp.

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25. Fison, Sue, Don Moore and Cindy Quisenberry. 1977. Energy Costs, Consumption and Impacts in Fairbanks. Fairbanks North Star Borough, Fairbanks, AK. Impact Information Center - Special Report No. 5. 69 pp.

26. Fison, Sue and Cindy Quisenberry. 1977. Impact Information Center Final Report. Fairbanks North Star Borough, Fairbanks, AK. Chapters 3, 7, 8, 10, 12, and 13.

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28. Forrest, Marilynn. July 1979. North Pole Refinery Energy Impact Study. Fairbanks North Star Borough, Community Information Center, Fairbanks, AK. Special Report No. 6. 45 pp.

29. Logsdon, Charles, et al. (undated) Copper River-Wrangell Socioeconomic Overview. The Institute for Social and Economic Research and the Agricultural Experiment Station, University of Alaska, Fairbanks, AK. n.p.

30. Logsdon, Charles, Kenneth L. Casavant, and Wayne C. Thomas. 1977. Input-Output Tables for Alaska's Economy: A First Look. Agricultural Experiment Station, University of Alaska, Fairbanks, AK. Bulletin 48. 15 pp.

31. Matanuska-Susitna Borough Planning Department. April 1978. Phase I: Comprehensive Development Plan. Palmer, AK. 245 pp.

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35. Municipality of Anchorage Planning Department. 1978. Population Profile. Anchorage, AK. 32 pp.

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38. Rogers, George W. and Jack Kreinheder. 1980. Socioeconomic Analysis for Fishery Areas and Census Division. Limited Entry Study Committee. 241 pp. (Prepared for Alaska Legislative Affairs Agency.)

39. United States Department of Energy, Alaska Power Administration. January 1979. Power Market Analysis. Draft. 125 pp.

EXHIBIT III-5

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80
(Numbers in cells refer to attached bibliography)

TYPE OF DATA : SOCIO

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Attitudes Toward Growth | | | | | | | | 37 | 32,33 | 3 | | |
| Attitudes Toward Lifestyle and Quality of Life | | | | | | | | 37 | 32,33 | 3 | | |
| Other | | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA: F & W

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Fish Resource Use Patterns | | | | | | | | | | | | |
| Wildlife Resource Use Patterns | | | | | | | | | | | | |
| Other | | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80
(Numbers in cells refer to attached bibliography)

TYPE OF DATA: ED AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Education Enrollments | | | | | | 21 | | | 31 | | | |
| Education Facilities | | | | | | | | | 31 | | | |
| Education Costs/Revenues | | | | | | | | | | | | |
| Projected Education | | | | | | | | | | 3 | | |
| Other | | | | | | 35[a] | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

a = education level

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80
(Numbers in cells refer to attached bibliography)

TYPE OF DATA : UTIL

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Utility Rates | 23,24 | 27,34 | 25,26, 39 | | | 39 | | | 31,39 | | | 39 |
| Utility Usage | 23,24 | 34 | 25,26, 39 | 36 | | 39 | | | 31,39 | | | 39 |
| Projected Utility Usage | | | 39 | | | 39 | | | 39 | 3 | | 39 |
| Other | 23[a] | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

a = generating capacity.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA : INFRA

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Public Facilities | | | | | | | | | 31,33 | | | |
| Projected Public Facilities | | | | | | | | | | 3 | | |
| Transportation Facilities | 23 | | | | | | | | 31,33 | | | |
| Projected Transportation Facilities | | | | | | | | | | 3 | | |
| Other | | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA : TAX

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Tax Rates | | 27 | | | | | | | | | | |
| Tax Revenues | | | | | | | | | | 23 | | |
| Projected Tax Revenues | | | | | | | | | | | | |
| Other | 23[a] | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA : BS

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Industry Studies | 17[d] | | 2[a] | | | 2[a] | 17[d] | | 2[a], 31 | 3,6, 17[d] | 7[c] | 2[a],20 |
| Business Level and Income | 23 | | | | | 21 | | | | 4,6 | | 20 |
| Projected Business Trends | | | | | | | | | | 3 | | 20 |
| Business Activity Variables | 23[f] | 27[g] | 26[g] | 36[h] | | 21[e] | | | | 4[b], 6[b], | | |
| Other | | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

a = 1977 Railbelt Wood Demand.
b = banking, interest rates, Anchorage CPI.
c = mining.
d = agriculture.
e = CPI, building permits, port & airport activity.
f = banking, CPI.
g = CPI.
h = CPI, transportation activity, banking, con-

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA : EMPLOY

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Employment/Unemployment Levels | 5,9,10, 23 | | 26 | 5,9 10, 36 | | 21, 35 | 5,9 10 | 37 | 31 | 4,5, 9,10, 11 | 15 | 14 |
| Type of Employment | 5,9,10, 23 | | 26 | 5,9 10, 36 | | 21,35 | 5,9, 10 | 37 | | 4,5, 6,9, 10 | 15 | 14 |
| Income Levels (personal) | 5,9,10, 23 | 16 | | 5,9, 10 | 16 | 35 | 5,9, 10 | 37 | | 4,5, 6,9, 10 | 16 | |
| Projected Employment/Income | 9,10 | | | 9,10 | | | 9,10 | | | 4,9, 10,13 | 15 | 14 |
| Other | | | | | | | | | 31[b] | 13[a] | | |

[1] R.U. = regular updates of data issued. [2] R.S. = recent study. One time report with data within 1978-1980 period

[3] D.M. = dated material. Data for period 1977 and prior.

a = job openings.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA : HOUSE

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Housing Stocks | 23 | 34 | | | | 21, 35 | | 37 | | | | |
| Projected Housing Stock | | | | | | | | | | 3,6[a] | | |
| Rent/Price Levels | | | | | | 35 | | 37 | | | | |
| Other | 23[c] | | | 36[d] | | 21[b] | | 37[e] | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

a = building permits.
b = rental vacancies and homes for sale.
c = building permits, mortgage values.
d = construction; vacancy rates.
e = condition of housing

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA: LAND

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Land-Use Patterns | | | | | | | | | 31,33 | | | |
| Land-Use Projections | | | | | | | | | | 3 | | |
| Other | | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA: POP

| | AREA AND CURRENCY OF INFORMATION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Population | 5,10,23 | | 26,39 | 5,10 | | 35,39 | 5,10 | 37 | 31,33, 39 | 4,5, 10 | | 39 |
| Projected Population | 10 | | | 10 | | | 10 | | 33 | 4,10 | | |
| Other Population | | | | | | 35[a] | | | | | | |

[1] R.U. = regular updates of data issued. [2] R.S. = recent study. One time report with data within 1978-1980 period

[3] D.M. = dated material. Data for period 1977 and prior.

a = age + race.

EXHIBIT III-5 (cont.)

ACRE WORKPACKAGE 1 ECONOMIC DATA COLLECTION MATRIX First Edition 6/17/80

(Numbers in cells refer to attached bibliography)

TYPE OF DATA : REC

AREA AND CURRENCY OF INFORMATION

| | FAIRBANKS | | | ANCHORAGE | | | MATANUSKA-SUSITNA | | | STATEWIDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R.U.[1] | R.S.[2] | D.M.[3] | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. | R.U. | R.S. | D.M. |
| Recreational Activity | | | | | | | | | 31 | | | |
| Projected Recreational Activity | | | | | | | | | 31 | 3 | | |
| Other | | | | | | | | | | | | |

[1]R.U. = regular updates of data issued. [2]R.S. = recent study. One time report with data within 1978-1980 period

[3]D.M. = dated material. Data for period 1977 and prior.

EXHIBIT III-6

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# IV. RESULTS AND DISCUSSION OF BASELINE STUDY

The baseline study, Work Package 2 (Socioeconomic Profile Development), is to be conducted during July through November, 1980.

# V. IMPACT ASSESSMENT

The impact assessment, Work Package 3 (Preliminary Socioeconomic Impact Studies), is to be conducted during October through December, 1981.

# VI. MITIGATION

Mitigation, included in Work Package 3 (Preliminary Socioeconomic Impact Studies), is to be conducted during October through November, 1981.

# VII. SUMMARY

At this stage of the socioeconomic analysis it is not possible to provide any conclusions. However, several major points that were made above and a few comments would be appropriate. These points and comments are presented below by work package.

## A. WORK PACKAGE 1: LITERATURE REVIEW

With respect to the review of representative power development studies, it was quite evident that there was substantial diversity in the quality, scope, and methods employed. In general, the depth of analysis, scope, degree of substantiation and quantification, appropriateness of methodology, and overall quality were greater when the project was large and/or the socioeconomic impacts were extensive and controversial. Of the many studies perused and the eleven reviewed in depth, the Dickey-Lincoln School Lakes study, the Boardman coal facility study, and the Washington Public Power Supply System's studies (as reviewed so far) were the most desirable in terms of the above attributes. Many of the impacts of these projects were determined to be potentially relevant for the Susitna Hydroelectric Project. In addition, some aspects of the methodologies used in the socioeconomic studies for these projects will be relevant for Work Package 4.

In reading many of the summary impact documents, it was apparent that either the underlying socioeconomic analysis was weak or that the summary document itself was poorly written. Many of the documents, for example, used conditional or indeterminate phraseology. To say, with no substantiating information, that something could have a beneficial impact is to make an insignificant statement. Unfortunately, many of the socioeconomic summaries contained this type of material.

Finally, some of the studies reviewed and perused stressed the importance of analyzing impacts from a broad as well as narrow perspective. A broad perspective could be particularly relevant for Alaska because the proposed Susitna Project might have a significant influence on the railbelt and/or state economy. Additionally, other proposed Alaskan projects, if large and contemporaneous with the proposed Susitna Project, would have to be integrated into the socioeconomic impact analysis for Susitna, e.g. the proposed gas pipeline. Impact analysis in Alaska, perhaps more than elsewhere, must be both broad and narrow. The approach taken in conducting Work Package 1 (and the first part of Work Package 4) recognizes this procedure.

With regard to the identification and categorization of social and economic data, it appeared that the overall quality, availability, and currency of these data are uneven. By and large, data on employment, population, housing, education, revenues, and utilities are recent and continually updated. Varying degrees of data also exist for other categories such as attitudes toward growth and recreational usage. On the other hand, three prominent examples of data that are of relatively poor quality, availability and/or currency are (1) land use, (2) industrial use (especially industry studies and business activity levels and income), and (3) fish and wildlife use patterns (e.g., fish

population and catch levels by stream/river, and wildlife population and harvest by geographic area). It should be stressed that these "ratings" of data are broad and preliminary. At present the ultimate extent of these shortcomings are unknown.

In Work Package 1, Work Item c., it was stressed that data identification and categorization is an on-going process. The functions of this process are to identify sources of data, form of data, ease of data access, data time frame, frequency of data reporting, geographic area covered, and data "gaps". The apparent data "gaps" noted above are currently being investigated and the extent of the shortcomings will soon be determined.

## B. WORK PACKAGE 4: FORECAST OF SOCIOECONOMIC CONDITIONS IN THE ABSENCE OF THE SUSITNA PROJECT

The first work item of this work package was to identify and collect socioeconomic studies and models. This was done by accessing forecasting studies and models in Frank Orth & Associates, Inc.'s library and by searching for other forecasting studies and models in coordination with the Work Package 1 work effort. This search began in Alaska and then extended throughout the "Lower 48". Social scientists at the University of Alaska, Institute for Social and Economic Research, and the Alaska Department of Commerce and Economic Development were interviewed and several prominant social scientists in the Lower-48 were contacted. The result of these interviews and search was the compilation of a rather comprehensive bibliography of forecasting studies and models. These studies and models will be reviewed and evaluated during the next few work items of Work Package 4. The objective is to determine which forecasting methodology would be most appropriate for the socioeconomic analysis via this broad survey process.

# VIII. REFERENCES

The references for this report are provided in Exhibits III-1, III-4, and III-6. These references will be updated as the socioeconomic analysis continues. The only reference cited in this report was: Information Resources Press. 1977-1980. EIS - Digest of Environmental Impact Statements. Arlington, VA 22209. Vol. 1-#1 through Vol. 4-#3.

# IX. AUTHORITIES CONTACTED

While conducting Work Package 1 and the beginning of Work Package 4, several persons from local, state, and federal agencies and private institutions were contacted. These persons are listed below by Work Package and city in which the contact was made. Persons contacted as part of project management are also listed.

## A. WORK PACKAGE 1

Several persons were contacted as part of Work Package 1, Literature Review. The purpose of the contacts was to obtain information to:

1. Identify sources of socioeconomic studies, data, and information;
2. Establish communication channels with data source personnel and key informants;
3. Identify forecasting models; interview model developer and/or users; and
4. Identify current and projected activities which could influence socioeconomic variables.

Data collection guides as described in II, Methodology, above, were utilized during the interviews.

Fairbanks, Alaska

1. Philip Berrian, Fairbanks Borough Planning Director.
2. Karen Fox, Research Analyst, Borough Community Information Center.
3. Karla Zervos, Executive Director of the Fairbanks Visitor and Convention Borough.
4. Bob Dempsey, Fairbanks Chamber of Commerce.
5. Bill Workman, Consultant, Socioeconomic Analysis.
6. Virginia Hanna, Alaska Northwest Pipeline Company.
7. Dave Williams, Land Planner, Doyon Corporation.
8. Sue Fison, Director, Socioeconomic Studies, Northwest Alaskan Pipeline Company -- Availability of socioeconomic data and review of recent and upcoming activities.

9. Alan Jubenville, Principal Investigator, Recreation & Land Use Studies, Susitna Hydroelectric Project.

10. Bill Workman, Consultant, Socioeconomic Analysis, Susitna Hydroelectric Project.

Anchorage, Alaska

1. Heinz Noonan, Economist, Alaska Department of Energy.

2. Marge Sagerser, Land Manager, Cook Inlet Region, Inc.

3. Lee Gorsuch and Scott Goldsmith, Institute for Social Research.

4. Mike Meehan, Director of Planning, and Shawn Hemme, Assistant Planner, Municipality of Anchorage.

5. Nancy Blunk, Alaska Power Authority.

6. Robert Krogseng, Resident Manager, TES.

7. Richard Ender, University of Alaska Urban Observatory.

Palmer, Alaska

1. Don Lyon, Executive Director of OEDP, Inc.

2. Bud Goodyear, Public Information Officer, Matanuska Valley Electric Co.

3. Chamber of Commerce.

4. Delon Brown, U.S. Department of Agriculture.

Juneau, Alaska

1. David Reume, Alaska Department of Commerce and Economic Development.

2. Hugh Malone, House Power Alternatives Study Committee.

Seattle, Washington

1. Terry Galbraith, Public Relations Officer, Puget Sound Power and Light Co.

2. Dan Sternborn, Team Leader, EIS Review Section, and Judi Schwarz, Environmental Protection Specialist, Environmental Evaluation Branch, U.S. Environmental Protection Agency.

Richland, Washington

1. Alice Lee, Coordinator - Socioeconomic Division, Washington Public Power Supply System.

Arlington, Virginia

1. Gene Allen, Information Resources Press.

B. WORK PACKAGE 4

The following persons were contacted during the beginning of Work Package 4. The purpose of these contacts was to identify and review forecasting methods and applications of such methods.

Portland, Oregon

1. Ruth Love, Sociologist, U.S. Army Engineer District.

New York, New York

1. C.P. Wolf, Editor, Social Impact Assessment.

Anchorage, Alaska

1. Scott Goldsmith, Assistant Professor of Economics, Institute of Social and Economic Research, University of Alaska.

C. PROJECT MANAGEMENT

Talkeetna, Alaska

1. Various citizens.

Watana Base Camp, Alaska

1. Alan Jubenville, Principal Investigator, Recreation & Land Use Studies, Susitna Hydroelectric Project, and Dr. Jubenville's staff.

2. Various Susitna Hydroelectric Project team members including, but not limited to, archaeologists, avian ecologist (Dr. B. Kessel), predator ecologist (Dr. P. Gipson), drillers, and seismologists.

High Lake Lodge, Alaska

1. John Wilson, Resident Manager.

Anchorage, Alaska

1. Nancy Blunk, Coordinator, Public Participation Program, Alaska Power Authority.

Seattle, Washington

1. Bill Workman, Consultant, Socioeconomic Analysis, Susitna Hydroelectric Project.