Miscellaneous papers related to Crandon Project socioeconomic study.

MISCELLANEOUS PAPERS RELATED TO CRANDON PROJECT SOCIOECONOMIC STUDY

DRAFT

SIR REVIEW

ECONOMIC ANALYSIS METHODOLOGY

SOCIOECONOMIC ASSESSMENT

EXXON CRANDON PROJECT

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Date: March 7, 1983

REVIEW OF THE ECONOMIC ANALYSIS METHODOLOGY

SOCIOECONOMIC ASSESSMENT--EXXON CRANDON PROJECT

I. INTRODUCTION.

This is a review of RPC's Economic Analysis Methodology, prepared for the proposed Exxon project near Crandon, Wisconsin. The review analyzes: 1) the objectives identified by RPC; 2) the data collection procedures; 3) the assumptions underlying the analytical techniques; 4) the adequacy and relevance of the design; and 5) the usefulness of the information for the Environmental Impact Statement (EIS).

The methods used in RPC's economic impact assessment are designed to measure the economic changes that result from the introduction of a new economic activity. In terms of the EIS, the important changes are in the local study area and in the state. The important indicators of economic change are: business activity (output), total employment by place of residence, unemployment, personal income, per capita income, and labor force characteristics.

The economic projections for the study area are made by estimating the effects of the proposed project on the local economy and projecting them into the future for a specified number of years. This requires data on the project itself and on the study area economic characteristics. The important project characteristics are: employment (number and timing), local purchases, local sales, and other factors that affect either

local markets or income, such as tax revenues and wage effects (Leistritz and Murdock, 1981).

Important study area characteristics include: labor force characteristics (skill levels, participation rates, employment, unemployment, and underemployment), the natural resource base, which determines the feasibility of locating various types of facilities in the area, the economic structure, the level of economic development, and the support for economic growth and change such as training programs and business development resources.

In order to distinguish between project-related changes or effects and those that would occur for other reasons, economic characteristics and levels of business activity for the study areas must be projected under a without-project scenario and a with-project scenario. A project will generate both basic and nonbasic changes in the local economy. Basic activity is that which meets demand from outside the study area. Basic activity includes direct employment and income effects (on site), indirect effects through the purchase of goods and services in the local study area, and "other" basic effects that might result from changes in wage rates and/or changes in tax revenues. Nonbasic change is that which meets demand from within the study area; it is determined by the type, size and scope of the basic economic activity.

For a mine, different craft mixes are needed during construction and operation, and the required size of the labor force can change dramatically. These differences in turn influence the

demand for locally available labor. The extent to which a project's employment requirements can be met locally determines the amount and kind of inmigration an area will experience. The effect of the direct basic workers--those employed in the actual construction and operation of the project--will depend on their local/nonlocal status, family accompaniment, and residential location (Social Impact Research, 1982).

Purchases in the local economy to construct and/or operate the project produce indirect basic employment. Both project purchases and the ability of local economies to provide the necessary inputs vary substantially. Each project will have its own unique effect on indirect basic employment (Social Impact Research, 1982).

The project can also produce other direct basic employment and income effects: wage-induced effects, fiscally-induced effects, and economic effects that result from changes in land and water use. The magnitude and timing of these effects must be accurately estimated in order to measure their impact on the study area economy. The size of the tax base, the amount of surplus labor, and the economic structure all contribute to the type of impacts which occur.

The effects on the local study area of income generated by project employment depend on the proportion spent in the local economy. The two major factors which affect local spending are the residential location of the workers and their households and the availability of goods and services. Daily commuters and workers who are temporary residents (e.g., during the work week)

will produce lower nonbasic effects in the local economy than workers who are full-time residents with their households.

Nonbasic economic effects will vary according to the level of economic development in the study area, the project's economic sector, and the amount and sectoral distribution of other basic activity in the local economy. In addition, economic growth in a particular sector may lead to import substitution and changes in regional trading patterns that can change the existing economic hierarchy.

II. PROBLEM STATEMENTS AND RECOMMENDED ACTIONS.

Objectives and Scope.

The objectives of the RPC economic analysis first appeared in the Study Plan of 1980. The objectives include: 1) determining the positive, negative, and net economic effects of the proposed Exxon project near Crandon on the local study area and on the state; 2) developing models to evaluate the possible scenarios of economic development in the local study area, with and without the project, for a 55 year period; and 3) developing growth management strategies to address any adverse economic effects of the project. In the more recent Economic Analysis Methodology Report, the third objective no longer appears. To meet the two remaining objectives, RPC proposes to develop input-output models for both the state and the local study area in order to forecast changes by industry sector and to determine the

effects on major economic indicators such as business activity, employment, and income.

One advantage of input-output analysis is that it provides consistent estimates across industry sectors. Overall, the approach that RPC has adopted is a sound one. However, despite the selection of a number of good techniques, there are some justifications and qualifications that must be made to strengthen their forecasting methodology and to clarify some of the limitations to their approach.

The scope of the local study area analysis includes the typical indicators, provides special studies of five important industrial sectors, and details the underemployment.

Problem Statement One. There is some confusion throughout this report over the final year of the projection period. Other reports have stated 2027 as the final year. In this report, RPC states on page 2 that 2027 is the final projection year. However, on pages 3, 15, and 78, the year 2016 is used.

Recommended Action One. RPC must state clearly what year will be used as the final year of the projection period. In addition, the reasoning behind the choice must also be presented in the EIR.

Problem Statement Two. RPC has stated that they will prepare additional scenarios to address the concerns of affected parties (p. 5). Accordingly, the review of the fiscal analysis methodology report made the recommendation that fluctuations in mining activity should be modelled.

A major deficiency in RPC's projections of employment and

income is the lack of consideration of fluctuations in mining activity. Income and employment projections have been projected to be stable and steady over the forecast period, which is unlikely for a cyclical industry.

Recommended Action Two. In order to account for the effect of fluctuations in mining activity on the projections, RPC must estimate the employment and income effects if the mine were periodically closed down (for instance, due to a drop in the price of copper or zinc or a labor strike). Modelling the fluctuations in mining activity would give some estimate to DNR of the magnitude of the impacts on employment, income, and revenues received by the local study area during periods of cyclical slowdown. A comparison of these projections with the stable and steady projections would illustrate the amount of variation which could occur if the mine were temporarily closed.

Two scenarios must be considered, one with a closure that lasts for up to twelve months and another with a closure that lasts for 3 to 4 years. Exxon can determine in which year the closures would occur, according to their investment and feasibility studies. The timing of these closures should in no way be construed to reflect upon the economic feasibility of the mine, but rather should be viewed as bracketing the hypothetical range of economic impacts in the local study area.

Data Collection.

The data collected by RPC for the profile of existing economic conditions are complete with regard to labor force

characteristics, employment, unemployment, income, and per capita income. A variety of data sets are used which rely on information from the U. S. Census and various Wisconsin state agencies. Latest Census data are used whenever possible unless state data provide more recent or accurate estimates of economic characteristics. RPC also uses primary data for its specification of control totals in the I-O model. Questions about the primary data collection techniques are included in the review of the Survey Research Methodology.

RPC collected the appropriate secondary data; no problems exist here.

Underlying Assumptions.

Any approach to economic impact assessment requires making numerous assumptions. RPC's approach is no exception. In adopting the input-output framework, RPC has made several assumptions. First, an assumption was made to allocate county data down to the subcounty areas within the local study area in order to produce independent base year estimates of final demand, total output, and employment for the local study area. Allocations were based on the shares of either population or covered employment in each subcounty area relative to the respective county total. Second, several assumptions were made to project final demand into the future because input-output analysis requires independent projections of final demand. Third, assumptions about changes in employment/output ratios were made for local ratios in order to project employment within the Exxon project study area.

RPC needed to make independent base year estimates of the output for each state and local industrial sector, estimates that are required in order to regionalize the national I-O model. The major difficulty in making these estimates is that data at the subcounty level are not very broad. Data deficiencies make it difficult to develop accurate estimates of output for subcounty areas.

The major source of data at the subcounty level is covered employment. Covered employment is used to allocate output estimates by county down to the areas included in the local study areas. This data set has three important limitations: 1) covered employment excludes certain categories of establishments such as railroads, nonprofit institutions, and small government units that elect not to be covered; 2) data for small employers having establishments in more than one county are not allocated geographically; and 3) employers with no fixed location in Wisconsin are not allocated geographically.

Problem Statement Three. In estimating output, RPC recognized these limitations. However, they do not present an analysis of the significance of the limitations for their estimates of local study area output by sector.

Recommended Action Three. RPC must present some estimate of the bias which may result from using the covered employment data set in allocating output estimates for the counties to subcounty areas.

Independent estimates of final demand are required in input-

output analysis to make projections of output, exports, income and employment. RPC's base year estimates of final demand for the state and local study area rely on secondary data from federal and state sources. Projections of sectoral estimates of final demand at the state level are made by applying national rates of change from the Inforum model to the base year estimates of final demand. Export demand at the local level is projected in a similar way.

The local final demand sectors of transfer payments, government expenditures, and investment are projected in other ways. For transfer payments, a lagged relationship between population and transfer payments was used for projection. Changes in population 65 years and older were applied to the specified lagged relationship in order to produce projections. For government expenditures, a lagged relationship between government expenditures and personal income was used for projection. Changes in personal income were applied to the specified lagged relationship in order to produce projections. For investment final demand projections, a lagged relationship between investment and output was applied to changes in investment.

Problem Statement Four. In estimating final demand, RPC does not justify the assumption of applying national rates of change to the state and local study areas. RPC's choice of national rates of change is not supported by a statement of the unavailability of local data or any indication of how historical local rates of change compare to the historical national rates of change.

Recommended Action Four. RPC must justify their assumption in estimating export final demand for the local study area and all the final demand sectors of the state. A historical record can be created for the state and local study area for comparison with the national rates of change. Although the historical period must be restricted (1976-1980) due to data availability and time constraints, the information on state and local rates of change in estimates of final demand would provide some indication of the bias incurred by applying national rates. This information would also give the users of the document some measure of the significance of the bias, if any. The results of such an analysis must be presented in the EIR.

Problem Statement Five. RPC estimates personal consumption expenditures from transfer payments on the basis of the change in the retirement population. However, transfer payments are also received for reasons other than retirement, such as unemployment compensation, payments to nonprofit institutions and business transfer payments. RPC shows that approximately 75 percent of total transfer payments are made up of retirement, disability, and health insurance payments to civilians and military personnel (RPC, 1981). The ratio is shown for only two years, 1970 and 1978. The stability of this proportion is not shown during times of economic slowdown. Therefore, it is impossible to state unequivocally how stable the relation $TP_{t-1}/65+_{t-2}$ has been. If the ratio has changed significantly during periods of high unemployment, the final demand projections for this sector may be erroneous.

Recommended Action Five. RPC must present the evidence they use to support their estimation procedure for transfer payments in the EIR. They must show the stability of the ratio of $TP_{t-1}/65+_{t-2}$ over time. If the ratio has been found to vary, it will be necessary to re-evaluate the estimates for the final demand sector of transfer payments.

Employment is estimated through the use of employment/output ratios. The base year estimate for the state and local area is calculated using employment data from BEA and the output estimates derived above. The base year ratio is then adjusted by the national rates of change in employment/output ratios.

Problem Statement Six. In estimating employment, RPC does not consider that changes in employment/output ratios for the local study area may be different from those changes shown in the national model.

Recommended Action Six. Data from state and national sources on employment exist for the period 1965 to 1980. Indeed, RPC intends to collect data on total employment by month in the local study area. Data on employment for the local study area should be combined with output estimates for several years in the past (1965, 1970, 1975, and 1977 to 1980). The derived employment/output ratios should then be compared to the historical national ratios to determine if local rates are similar to those suggested by the national model.

Adequacy of The Techniques.

RPC has chosen to use input-output analysis to project the effects of the proposed Exxon mine near Crandon on the defined state and local study areas. A transactions table is produced from which a series of technical and interdependence coefficients are generated. The coefficients are used to determine the direct, indirect, and induced effects on output, employment, and income from changes in final demand. This model produces detailed projections of business activity, employment, and personal income by industrial sector.

However, there are several factors to consider when this choice is made: 1) RPC must account for changing relative input prices and/or technological change; 2) RPC must create a local and state I-O model where none exists; 3) RPC must obtain independent estimates of the ratio of sales to final demand; 4) RPC must account for the introduction of a new sector in the state and local study area which did not exist previously; and 5) RPC must be able to make projections for the case when the economy does not operate at full capacity (Hertsgaard, et. al., 1978; Leistritz and Murdock, 1981).

The most difficult task which RPC faced was the creation of state and local I-O models. The data for the direct estimation of such models requires a survey of firms located in the defined state and local study areas, a major undertaking both in terms of time and cost. RPC employed several techniques in order to reduce the amount of primary data needed to construct such models. Starting with a previously developed transactions table for

the national economy, which was created through surveys, they applied a nonsurvey (location quotient) technique to the technical coefficients of the national table. This procedure requires only the total output by industry for the state and local areas. RPC employed standard estimation procedures to generate the technical coefficients table for the smaller areas. Export and import coefficients were estimated as residuals.

While this technique is the most accurate nonsurvey technique available, it does overstate the multiplier effects (Morrison and Smith, 1974; McMenamim and Haring, 1974). To counter this problem, RPC used a partial survey technique called RAS. This procedure requires the same information as the location quotient technique plus estimates of intermediate sales and purchases. The latter are obtained through a survey of local firms. Then, through an iterative procedure, the rows and columns in the state and local tables are proportionately adjusted in successive turns to reflect the information gathered in the survey (Bacharach, 1970). Where the survey is inadequate or incomplete, the coefficients generated through the nonsurvey technique are used. This technique handles the problem of overstated multiplier effects and has been shown to reproduce the multipliers derived in a full survey approach fairly accurately (Morrison and Smith, 1974; McMenamin and Haring, 1974).

RPC has handled the problem of changes in relative input prices and technology by generating changes in the technical coefficients from the Inforum model, the same model which provides the first approximation of the technical coefficients of

the state and local study areas. The national rates of change in the coefficients are assumed to apply to the coefficients in the state and local tables.

Independent estimates are made of final demand for the state and local study area in the base year by using federal and state sources. Projected changes in this variable are made by applying the projected national rates of change between 1976 and 2016 to the state and local base year (1976) estimates.

RPC has adequately handled the effects on the structure of the economy due to the introduction of a new sector in the local economy. Because there will be a shift in the technical coefficients when the project begins construction, the technical coefficients for the without-project future will not be the same as the coefficients for the with-project future. RPC has excluded this sector from the table of technical coefficients for the without-project future. The with-project technical coefficients table is adjusted by adding a row and column specifically for the Exxon project. This addition accounts for changes in the economic structure.

A final point about I-O analysis is that it typically assumes that changes in gross output represent increased business volume for both existing establishments and new establishments. This means that variable cost inputs plus fixed cost inputs will increase as they have in the past in response to increases in output (Hertsgaard, et. al., 1978, p. 40). This would not be true if increases in business volume were met solely through existing establishments. RPC has not conducted any analysis or

made any assumption regarding the rate of capacity utilization in the local economy, except in the case of indirect effects where they lag the adjustment for a three year period.

Problem Statement Seven. If the rate of capacity utilization is less than normal, the technical coefficients which start in 1976 (a normal year) will not adequately project the inter-industry effects of changes in output.

Recommended Action Seven. RPC has profiled five industries in a separate analysis and studied underemployment for the local study area economy as a whole. One component of the former analysis looks into the creation of new retail trade establishments. The need for new establishments provides some indication of the current utilization of capacity. Another indicator, part-time employment, is looked at in agriculture, forestry, retail trade, and the hospitality/ recreation/tourism sector; this indicator also measures the utilization of available capacity. The qualitative analysis of underemployment for the entire economy provides further information on capacity utilization. RPC should use the information from these analyses to justify the assumption of an economy at full capacity or explain how the accuracy of the projections is affected by the estimated underemployment.

The RAS technique cannot control for three potential types of errors: 1) overaggregation of the initial model, which then will not account for different inputs or different industries in the biproportional form of the matrix; 2) variations in input substitution across industries in violation of the assumed

uniformity of these effects; and 3) a ripple effect caused by a wrong estimate of a cell, which forces offsetting errors in other elements of its row and column and spreads in subsequent iterations over a wide area of the matrix (Bacharach, 1970).

The first type of error is adequately controlled for through the use of the highly disaggregated Inforum national model. However, the RAS technique can create both the uniform substitution effect and the ripple effect. The latter occurs where the survey data are incomplete or inaccurate. RPC has attempted to control for this effect by using its location quotient estimates when survey data were deemed inadequate. The former effect can occur where inputs can be used in different ways (i.e. coal can be used both as a fuel and as a material input). If other fuels are being substituted for coal, any data reduction techniques should only adjust the coefficients for coal in those industries that are using coal as a fuel; the technique should not adjust the coefficient for industries that use it as a material. Yet the RAS technique substitutes uniformly for coal across all sectors regardless of its use in a particular industry.

Problem Statement Eight. RPC does not mention the limitations of the RAS technique in the methodology report. Their major comments regarding its accuracy occur on page 109 where they say the technique is superior to the nonsurvey techniques used in reproducing a full survey-based I-O model (RPC, 1982; Morrison and Smith, 1974). The significance of the limitations resulting from the uniform substitution effect are not discussed. This can be a serious concern, especially in the case of wood,

which is an important commodity in the local study area and which can be used both as a fuel and a material. Also, the existence of a ripple effect is not discussed by RPC nor is there any indication that it is adequately controlled for.

Recommended Action Eight. RPC must examine the significance of these effects on their derivation of the state and local I-O models. The results of this analysis must be presented in the EIR.

III. APPLICABILITY.

The economic impact assessment will be an essential part of the EIR. Important outputs which should be included in the EIS are employment, personal income, unemployment, and per capita income. These should be provided for the study area as a whole, for each jurisdiction, and for each industrial sector. Impacts of the project on these characteristics, as well as qualitative information for the five special industry studies regarding underemployment, the effects of land use conversions, and the creation of new establishments should also be included. These measures will adequately summarize the key economic characteristics. Other economic outputs can be presented in separate reports and referenced.

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State of Wisconsin \ **DEPARTMENT OF NATURAL RESOURCES**

Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

July 2, 1984

File Ref: 1630
Exxon

Dear Sir/Madam:

Enclosed is the Review of Existing Socioeconomic Information and Definition of Local Study Area for the Proposed Exxon Mine near Crandon, Wisconsin, prepared by the Denver Research Institute (DRI), for the Department of Natural Resources. This is the first of a series of reports being prepared by the Denver Research Institute as part of the development of the social and economic portions of the Environmental Impact Statement (EIS) for the proposed Exxon mine near Crandon, Wisconsin.

The "Review" contains three sections: the first describes how the social and economic impact sections are developed and some of the criteria used in assessing impacts. The second section describes the criteria used in selecting the communities in the local area to be studied for likely impacts. The list is presented in Table 5 on page 31. The third section reviews the information available to date and outlines which items will be reviewed for verification, which will be reorganized and reformatted and finally what information has not yet been assembled and will need to be gathered. The summary of the third section is found in Table 6 on pages 33-36.

We will be conducting meetings to discuss this review in the local study area this summer. We will also accept public comments on it until September 1, 1984.

If you have any questions or wish to make comments, please contact me at (608) 266-8299 or by writing to the address above.

Sincerely,
Bureau of Environmental Analysis and Review

Elizabeth David

Elizabeth David
Resource Economist

ED:mm

Enclosure

REVIEW OF EXISTING SOCIOECONOMIC INFORMATION AND DEFINITION OF LOCAL STUDY AREA FOR THE PROPOSED EXXON MINE NEAR CRANDON, WISCONSIN

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Project 5-32257, Work Items III.A. 1 and 2

Approved by:

State of Wisconsin
Department of Natural Resources
Madison, Wisconsin

April 23, 1984

INTRODUCTION AND OVERVIEW

The Exxon Minerals Company wishes to obtain a mining permit for the Crandon Project, a proposed zinc, copper and lead mine and mill in Forest County, Wisconsin.

The Wisconsin Department of Natural Resources (DNR) is the permitting agency. It must prepare and consider an environmental impact statement describing the environmental consequences of this proposed action before making its permitting decision.

The University of Denver Research Institute (DRI) was competitively selected by DNR to assist in the preparation of the socioeconomic portions of the environmental impact statement. DRI is under contract to review the socioeconomic aspects of the environmental impact report and the other documents submitted by Exxon in support of its application, to supplement those materials as needed, and to help DNR with its preparation of the environmental impact statement.

The Contents of This Report

Three topics are covered in this, DRI's first report to DNR:

1. A general description of the socioeconomic information which should be included in the environmental impact statement.

2. A description of the appropriate study area(s). This area will be studied for the socioeconomic effects of the proposed permitting action and the resulting development of the Crandon Project.

3. A first description of the information and analysis needed to validate or supplement that furnished to date by Exxon and its socioeconomic consultant, RPC, Inc., and to prepare an adequate and defensible environmental impact statement.

The Socioeconomic Content of an Environmental Impact Statement

The legal and regulatory requirements for an environmental impact statement established by Wisconsin law (which incorporates certain Federal law and regulations by reference) are described. These define the statement as primarily an information document. It furnishes information relevant to DNR's permitting decision and also useful to other agencies, local governments, and business people in making their decisions on matters which might be affected by the Crandon Project.

This report also discusses the concept of socioeconomic impact assessment in the context of the legal and regulatory requirements and the considerable uncertainty surrounding impact assessments and forecasts.

The Study Area

The study area selected is approximately the region consisting of Forest, Langlade, and Oneida counties. The criteria and bounding process are described.

Information and Analysis Needs

General information needs are listed briefly by topics and categorized by quality (and quantity) of analysis required for the socioeconomic portions of the environmental impact statement. The topics include information on alternatives, including the proposed action, the affected environment (the baseline), and the environmental consequences of the proposed action (the positive and negative socioeconomic effects or impacts).

Examples of information/analysis needs include:

- Give appropriate attention to both positive and negative impacts, particularly where a given socioeconomic effect has both beneficial and adverse impacts on a particular affected person, group or institution.

- Give particular effort to studying the role (and preservation) of unique cultural groups, primarily the Native American bands or tribes.

- Forecast potential for changes in highway accident rates and fatalities with and without the project and under the various alternatives.

- Examine the fiscal vulnerability of selected communities under specified assumptions and changes in service standards resulting from socioeconomic change.

- Develop proposed alternative analytical guidelines and criteria for decision-makers to consider in dealing with the the no "net substantial adverse economic impact" test, one of the statutory criteria for permitting a mine. Array comparable numbers on costs and benefits, explain them, and discuss significant costs and benefits that can't be satisfactorily quantified.

I. WHAT AN ENVIRONMENTAL IMPACT STATEMENT IS

The Crandon Project environmental impact statement (EIS) is, like other EISs, a compilation of information about the environmental consequences of a proposed governmental action or decision. The proposed action in this case is issuance of permits for the mining project by the Wisconsin Department of Natural Resources (DNR) and other state agencies.*

The EIS itself does not determine the decision. It does inform those making the decision, as well as others affecting or affected by the decision, of the decision's effects on the human environment. This environment includes people, local governments, social and economic institutions and physical components such as air and its quality, water, land, wildlife and other resources. One way an EIS informs decision-makers is by providing information useful in determining whether the proposed action is in compliance with prevailing environmental standards. In the case of the natural environment, this information can be relatively straightforward. For example, Federal law dictates acceptable standards for air quality, and the EIS states whether the proposed action would meet these standards.

There are few such measures and standards for socioeconomic quality however. Health and housing codes or policies on zoning or employment, e.g., affirmative action, may affect the socioeconomic environment, but its ambient quality is not readily measurable nor standards for it definable. "Acceptable" change in the socioeconomic environment is largely a matter

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*The Metallic Mining Reclamation Act, §144.80 to §144.94, Wisconsin Statutes.

of judgment and point of view. The EIS describes the nature of these changes in order to inform the decision-makers (at many levels), and an affirmative decision may be justified by other, nonenvironmental policies or laws, regardless of many types of negative socioeconomic impacts. This is the case under both the National Environmental Policy Act (NEPA)* and the Wisconsin Environmental Policy Act (WEPA)** regulations (which embodies the NEPA provisions and regulations by reference).

In this, WEPA is patterned after and largely incorporates NEPA by reference. It specifically embodies the Federal regulations implementing NEPA, as well as having its own implementing regulations. Therefore, the overall history of EIS preparation and use shows it to be a substantial force in influencing decisions, even though it is an information document. It must be considered in decision-making, and any overriding of substantial negative environmental impact considerations must be explained in the decision. Any action or decision taken in the face of very serious environmental consequences has often been discouraged under other legal or political processes.

The Audience for the EIS

The EIS allows (and its authorizing legislation requires) actions or decisions to be made only with extensive information on the environmental consequences. Therefore, the EIS is useful, if not necessarily controlling, in the decision-making agency, as it describes the significant

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*NEPA [P.L. 91-190, 42 U.S.C. 4321 et seq., as amended, §101(b)]; 40 CFR, Part 1505.

**§1.11(5), Wisconsin Statutes; NR 150.07(e)(3).

positive and negative environmental effects of the proposed action (or alternative actions).

Regardless of the outcome of the decision process, a good EIS (and particularly its socioeconomic sections) supplies information of profound value for the planning and decision-making of many others outside DNR:

- Other state agencies
- Local governments and elected officials affected by the decision
- Local and regional businesses, financial institutions, and home builders
- The general public and parts of the public organized into special interest groups, e.g., recreationists, highway users, etc.

Special Legislation Affecting the Crandon Project EIS

Other environmental or specific legislation may prescribe conditions for go/no-go decisions on a proposed action based on some class of information or subject which might be covered in an EIS. Relevant examples of this are two provisions in the Wisconsin Metallic Mining Reclamation Act covering information sometimes addressed in socioeconomic sections of EISs.

One such provision says "the proposed mining operation conforms with all applicable zoning ordinances."* This is normally covered in the land use section or subsection of an EIS.

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*§144.85 (5)(a)1.f, Wisconsin Statutes.

The other example is the requirement that "the proposed mine will not result in a net substantial adverse economic impact in the area reasonably expected to be most impacted by the activity."* Alternative proposed analytical guidelines and criteria for clarifying this multi-issued standard will be developed, and appropriate information on it should be arrayed and presented in the EIS.

Classes of Information in an EIS

WEPA specifies to some extent the content and format for a Wisconsin EIS, and also requires that it substantially follow the regulations promulgated by the President's Council on Environmental Quality (CEQ) for Federal agency EISs under NEPA. The regulations adopted by the Wisconsin Department of Natural Resources further supplement these requirements.

Simplifying slightly, the topics covered in any Wisconsin EIS include the following, synthesizing the Federal and Wisconsin requirements for content and format:

- Summary and purpose of the EIS
- The proposed action and alternatives to the proposed action, including a no-action alternative and alternatives which would avoid some or all of any adverse impacts of the proposed action (identified subsequently)
- The affected environment (the "baseline")
- The environmental consequences of the proposed action--covering positive and negative effects on physical, biological and socioeconomic environments

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*§144.85(5)(a)1.e, Wisconsin Statutes.

- Mitigation measures, both preventative and remedial, for adverse impacts which have not already been discussed under alternatives to the proposed action

The environmental consequences discussion should include some appropriate degree of discussion of unavoidable adverse impacts, the relationship between short-term uses of the environment and maintaining and enhancing long-term productivity, irreversible and irretrievable commitments of resources, economic advantages and disadvantages, urban quality, and historic and cultural resources. Socioeconomic information must be presented in the EIS coverage of every one of these topics.

In addition, the Crandon Project EIS (or any similar mine EIS) also furnishes information which deals with the go/no-go mine permitting criteria mentioned earlier.

Finally, the EIS may include or be supplemented by appendices of analytical or technical material. The EIS will include a list of the people preparing it.

What are Socioeconomic Effects or Impacts?

Socioeconomic effects or impacts resulting from an action or decision (and its execution) are defined as changes from the state of society which exists or which could be expected to exist at the future time when the action is carried out. The changes affect local or regional social, economic, and cultural systems--and the people and institutions comprising these systems.

Positive effects or impacts are those seen as beneficial. Negative impacts are those seen as costly, disruptive or otherwise harmful. These perceptions of polarity--is the impact perceived as

positive or negative?--may vary with the values or the interests of the perceiver. These variations among different affected persons, groups, or institutions, those affecting or affected by the action or decision, are crucial factors in identifying and evaluating impacts.

Impact identification and evaluation depends on public participation, inquiry, analysis, and the experience of those assessing impacts. For socioeconomic impacts, this effort can be disciplined and made somewhat systematic by examining three basic social/economic systems which help accommodate change in a community or region.

Three Basic Systems for Accommodating Changes in the State of Society

The market mechanism supplies and allocates capital for housing and private provision of goods and services, and it furnishes most of the goods and services; it supplies labor; it makes land and other resources available. It does these things in response to effective demand, assuming that prices are mutually acceptable to buyers and sellers, or that at some level of prices sellers will come forward and that supply will then exist.

Local government is generally delegated the responsibility for protecting the public health, safety and welfare. More practically, it must assure that utility services are provided, schools built and staffed, snow plowed, and conflicts settled--or at least controlled. It often must provide capital facilities before new residents move in, and offer services as soon as they arrive.

The social assimilation mechanisms are largely informal, but some institutions may help or hinder. These mechanisms, unlike local

government and the market, cannot be assumed to automatically respond supportively to growth. Law enforcement may be evenhanded or selective. Churches and voluntary associations may be friendly or exclusionist. As a result of change, the community may expand as a more diverse community or it may split between old-timers and newcomers; it may even fragment into many hostile groups. Existing groups may be displaced or lose power. Growth or a growth-inducing project itself may create conflicts beyond the collective experience and capability of the existing mechanisms.

The Affected Persons, Groups or Institutions

At the same time these systems are examined, the affected persons, groups or institutions (APGI) are identified. These are the people, groups, or institutions affected by or affecting the project or the subject of the decision. This process is helped by using the checklist in Table 1, Affected Persons, Groups or Institutions Checklist."

Impact identification becomes complicated as it is found that an APGI falls in two or more categories. For instance, Forest County government is an APGI to Exxon's Crandon Project if the County (as provider of services and facilities for the public health, safety, and welfare) receives additional tax revenues to help it carry out its responsibilities--a positive impact. In another role, as an employer, Forest County may find itself disadvantageously competing for labor as project construction or operations offer higher pay for job skills important to County government operations--a negative impact.

TABLE 1. AFFECTED PERSONS, GROUPS OR INSTITUTIONS CHECKLIST

A. People internal to the affected industry, e.g., owners, stockholders, management, employees and their unions, and potential employees.

B. Suppliers and customers of an affected industry, e.g., vendors of materials, energy, equipment, and services, including financing, insurance, and advertising, plus intermediate and final consumers. (An analysis of input-output tables, census publications, and interviews facilitates this listing.)

C. Competitors of an affected industry, e.g., firms or industries threatened by either direct competition or substitution for their outputs resulting from developing of the new metals source. Their suppliers and customers may also be involved. Competitors may also include industries competing for resources, e.g., labor.

D. Government, e.g., at federal, state, and local levels, and in different roles. Includes government as legislator, executor, adjudicator, tax collector, regulator, and keeper of economic stability; as provider of facilities and services, social welfare, and national security; as competitor for resources, e.g., labor.

E. Affected bystanders, e.g., constituencies, institutions, and ecosystems. Included are natural resources, wildlife, Indian tribes (Native Americans), recreation potential, aesthetic effects, and the persons involved with these, including investors, employees, residents, neighbors, resource users, property owners, political dominants, etc.

Source: From John S. Gilmore, et al., Environmental Policy Analysis, Denver: Denver Research Institute, 1971, p. 92.

Thus, one APGI may be subject to varying effects, depending on how well the basic social/economic systems are able to accommodate change. Generalized classes, with examples, of both positive and negative effects or impacts are shown in Table 2, "Generic Categories of Positive Effects or Impacts," and Table 3, "Generic Categories of Negative Effects or Impacts."

If the three basic social/economic systems have adequate capacity and flexibility, they may handle most of the impacts on most of the APGIs. If not, some impact mitigation may be required.

Mitigation

Mitigation is abstractly defined as the timely and equitable distribution of benefits or positive impacts, and the avoidance or amelioration of the negative impacts. More specifically, it is desirable to avoid or minimize negative impacts. If this ideal situation cannot be achieved, mitigation may be achieved by publicly acceptable trade-offs (and the EIS should offer information assisting public understanding of these trade-offs).

What is left over after these remedies is the array of net impacts which, if they are considered significant and negative, may require further study of the alternatives to the proposed action or decision.

Socioeconomic Impact Assessment--Limitations and Uncertainty

A socioeconomic impact assessment forecasts and evaluates the consequences of a proposed action (among other alternatives to that

TABLE 2. GENERIC CATEGORIES OF POSITIVE EFFECTS OR IMPACTS

Enhanced Market Activity

Where increased personal income and effective demand creates new jobs, diversifies the local economy, and attracts and allocates adequate resources to assure adequate supply of housing goods and services. May create new sources of local capital or attract outside sources.

Improvements in Government Facilities and Services

Where tax revenues are adequate to enable individual governments to expand and train their staffs, upgrade or replace facilities, and diversify services.

Social (Cultural) Diversification

Where newcomers are accepted into the community and enhance the cultural base and increase contacts with the outside world.

ENHANCED BY:

Assistance from Exogenous Institutions or Systems

Examples include state assistance programs which smooth out irregularities in the distribution or timing of revenues, and technical assistance from state agencies or industrial project sponsors to improve local planning, grantsmanship, etc.

BUT:

Problems may impede the realization of the positive impacts. These problems include jurisdictional mismatches, lack of local entrepreneurial expertise, etc.

TABLE 3. GENERIC CATEGORIES OF NEGATIVE EFFECTS OR IMPACTS

Market Failures

Where sudden increases in local demand for labor, housing, commercial capital, and public capital are not met by existing market mechanisms at any acceptable price because of risk premiums in pricing or nonexistent supply.

Shortfalls in Government Facilities and Services

Where local (and possibly state) governments lack fiscal resources, expertise, and experience in providing the services and facilities needed to accommodate a growing population, or where governments are unwilling or unable to make the investments necessary to provide them.

Social (and Political) Disruption

Where existing relationships and systems break down because of stresses from growth and from conflict between the existing population and the newcomers.

COMPLICATED BY:

Inadequacies and Breakdowns in Exogenous Institutions or Systems

Examples are response failures in secondary mortgage markets, governmental impact assistance programs, state-furnished transportation systems, state school assistance programs.

Uncertainty

Resulting from problems with technology, markets, project sponsor's cash flow, labor, weather, regulation, suppliers, or lack of credible information on project employment levels and schedules.

action). This section of the report provides a simplified view of the impact assessment process.

The impact assessment is essentially the statement and description of cause and effect relationships (and changes in relationships) between the action(s) and the affected environment. Since the affected environment is not the present one, but one expected to exist when the action occurs, there may be great uncertainty about the consequences of the action.

Uncertainty

> The state of things existing where there is more than one possible outcome to a particular course of action, either from internal pressures or external/environmental factors, but the chance or probability of getting any one particular outcome is not known.
>
> If the probability is known, the situation is one of risk, not uncertainty. Risk, at least most financial risk, may be insured against; uncertainty cannot.

Practically speaking, forecasts of the future socioeconomic environment are made under such great uncertainty that it is unrealistic to expect great accuracy from them. Who predicts election results precisely? Who forecasts exactly the success of an investment in a new venture? Whose estimate of national money markets (and costs of capital) are consistently reliable? All of these are factors in describing the affected socioeconomic environment.

Even the project description is subject to uncertainty, and it is the description of the project's characteristics which drives the forecasts of socioeconomic change. When will construction start? What will be the size of the construction work force? What will be the proportions of local construction workers versus daily commuters versus weekend

commuters versus in-migrants (a situation substantially influenced by choice of a construction contractor--who may hire union or hire open shop)? Where will these individuals choose to live? Will the present construction-operation scheduling be accurate (unexpected snags often occur in any heavy construction)? Will there be unscheduled shutdowns and layoffs (not unusual in the mining industry), and at what stage in the mine's expected operating life will they occur--an important variable as to what the socioeconomic effects of shutdown may be?

All in all, the socioeconomic impact assessment is probably most useful for:

1. Identifying some obvious effects if certain events occur at certain times
2. Raising "what if" type questions, which may be important to the affected persons, groups, or institutions.

How is uncertainty best handled in an EIS? One solution is prescribed in both Wisconsin and Federal regulations--the worst case analysis.* It can be argued that this is apt to do more harm than good, confusing and disturbing some of the affected persons, groups, or institutions whose calm judgment is important to their communities and, often, to the success of the proposed project. Wherever justifiable, experience, analogy, and judgment should be used to reduce uncertainty by specifying reasonable assumptions about the affected environment or the proposed action. This in turn reduces the need for pure worst case analysis.

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*NR 150.07(e)(7); 40 CFR 1502.22(b).

Significant Impacts

The effort put into reducing uncertainty should be related to the significance of the prospective impact. Unfortunately, "significant" is also subject to uncertainty.

The Federal EIS regulations* offer some guidance on determining significance. They stress "context," roughly the importance relative to the impact area; and they stress "intensity," with a list of considerations, including severity of impact, impacts that are simultaneously beneficial and adverse, the extent to which the proposed action sets a precedent, etc. Here again, experience, analogy, and judgment must be sought and applied. Conflicting views may also be important to note.

Limitations

The limitations of the socioeconomic impact assessment process are clearly implied in the above discussion of uncertainty. They may be compounded by lack of timely and accurate information. The socioeconomic analyses and the final conclusions embodied in the EIS often can be tested for greater or lesser sensitivities to changes in the expected future. From this, the reader of the EIS may judge or can be warned about the relative accuracy of various pieces of information on socioeconomic effects.

In the long run, though, the reader is responsible for remembering that the socioeconomic impact assessment process is subject to great uncertainty. The more precision the assessment purports to offer, the more it is probably ignoring uncertainty.

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*42 CFR 1508.27.

If the reader expects an EIS to give sure-bet statements of the future consequences of the proposed action, the reader becomes vulnerable. The reader who studies it to stimulate thought and judgment on what might happen is the person best using the socioeconomic parts of the EIS.

II. THE AFFECTED ENVIRONMENT OR SOCIOECONOMIC IMPACT AREA FOR THE EIS

An impact area usually is defined in geographic terms as the area in which significant impacts are likely to occur. However, an impact area also should be defined in political terms, as the governmental entities which are likely to experience significant impacts. For example, the impact area for the Crandon Project may include the geographic area bounded by Langlade, Forest, and Oneida counties, but it need not include every political entity within those boundaries. The reason for excluding political entities, such as certain towns, is that they are unlikely to experience significant impacts from the project.

In this report, the impact area will be defined first in political terms as those government entities requiring study for their vulnerability to significant impacts. Delineation of geographic boundaries for the impact area will flow from this analysis.

Examples of significant, discernible socioeconomic impacts* include the following:

- The appearance of a large new project, employing hundreds (or thousands) of people
- Higher rates of employment and higher levels of personal income due to growth in job opportunities for local residents
- Visible changes in a community's appearance due to increases or substantial changes in the character or value of the housing stock (perhaps in the form of mobile homes)

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*This emphasis on discernible effects as a criterion for defining the impact area is in keeping with recent literature on the subject: Denver Research Institute, et al., Assessing and Managing Socioeconomic Impacts of Power Plants, 1984; and Mountain West, et al., Socioeconomic Impacts of Nuclear Generating Stations, 1982.

- A moratorium on sewer extensions due to a lack of system capacity to serve more people
- New stores opening as a result of increased demand for retail goods
- Dramatic changes in an entity's property tax base or in payments received from a governmental impact assistance program, e.g., the Mining Investment and Local Impact Fund Board (MIB) due to construction of the project
- Need for new revenues for a jurisdiction because of project-related activities, leading to increased tax or fee burden per household.
- The sudden appearance of unfamiliar faces and vehicles in a community (particularly if traffic is appreciably heavier)

This list is not comprehensive, nor is it necessarily the case that all of these impacts will result from the Crandon Project. The list does illustrate the kinds of concerns that are the subject of socioeconomic impact analysis, and it indicates what criteria are appropriate for defining an impact area.

The first two items on the list concern job creation by the project. The project hires hundreds or thousands of people directly, and as income from these jobs filters through the economy, nonbasic (or service sector) jobs are created. Assuming that the project is large enough, people will migrate into the area to take jobs with the project or new nonbasic jobs. Thus, one question for defining the impact area is: Where will in-migrants work?

The next two items (increased demand for housing and increased demand for public facilities and services) are a function of population growth. In general, project-related population growth is attributable to two groups of in-migrants identified above: (1) in-migrants employed by the project and (2) in-migrants taking nonbasic jobs attributable to

project-related growth. If a community experiences sizable in-migration, its population will grow and significant impacts may occur. Hence, another question for defining the impact area is: Where will in-migrants live?

The fifth item on the list (increased demand for retail goods) concerns shopping patterns as opposed to residency patterns. An in-migrant may choose to live in Elcho for its natural amenities and small-town atmosphere, but he may shop in Antigo or Rhinelander because they offer more diversified retail bases. Thus, a third question for defining the impact area is: Where will the project-related population shop?

Note that this question addresses the entire project-related population, while the first two questions address a smaller group: the in-migrants associated with the project. One likely impact of the project is that it will provide jobs for area residents who otherwise might have left the area in search of work. In this way, the project reduces out-migration, thus slowing a population decline or contributing to net population growth. Residents who take jobs with the project are part of the project-related population. While this positive impact is not used explicitly as a criterion for defining the impact area, it will be examined in the study of the impact area. It is not likely to be a discernible effect of the project outside of the impact area defined in this report.

The next items on the list (changes in revenues) raise a political/jurisdictional issue, e.g., what entities can tax the project and its directly related population, and which entities are entitled to

substantial MIB-mandated payments? The ability to tax the project's population depends on where they live and shop--issues which are addressed in the questions above. Receipt of mandated payments is limited to specified jurisdictions near the mine. Thus, the fourth criterion for defining the impact area may be narrowed down to the following: What governmental entities can tax the project or receive MIB-mandated payments? What entities may need new revenues because of project-related activities, whether or not they can tax the project or are eligible for mandated payments.

The last item among the examples of discernible impacts has to do with social concerns. These concerns arise from the introduction of newcomers to the existing social environment. If the newcomers are similar to the existing population in their culture and behavior, they may be assimilated with ease. If the newcomers are dramatically different, social stress may result. The potential for stress exists wherever the two groups come into contact with one another--in stores, at town meetings, or on the roads. All other things being equal, the potential for social stress is greatest when newcomers come into contact with a unique, different culture, such as a tribe of Native Americans. A fifth criterion for defining the impact area is: Where will social contacts foster change?

These five questions will be used to define the impact area:

- Where will in-migrants work?
- Where will in-migrants live?
- Where will the project-related population shop?

- What governmental entities can tax the project or receive MIB-mandated payments?
- Where will social contacts foster change?

Where Will In-Migrants Work?

In-migrants employed by the project are assumed to work at the project site or in project offices. In-migrants employed in nonbasic jobs are assumed to work mostly in the major trade centers, with smaller portions going to the less developed retail centers. The project site is in the towns of Lincoln and Nashville, near the City of Crandon. Project offices currently are in Rhinelander. Rhinelander and Antigo are the major trade centers in the area, as discussed below.

Where Will In-Migrants Live?

A number of factors influence where people live: commuting time to work, the availability of shopping and entertainment centers, the quality of schools, housing availability, and so on.* Commuting times to the project site are easily measured and provide a convenient indicator of in-migrant settlement patterns. Other factors influencing settlement patterns can be more difficult to measure and may change over time. To address these issues, DRI has made the simplifying assumption that larger communities tend to attract more in-migrants than smaller ones, because they offer more urban amenities. Recent studies support the use of

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*Such factors were discussed and considered for modeling in: Research and Planning Consultants, Inc., Definition of the Local Study Area, Socioeconomic Assessment Exxon Crandon Project.

commuting times and population concentrations as indicators of settlement patterns.*

Commuting Times

DRI has found that construction workers tend to tolerate longer commuting times than operations workers. Since the construction worker's job on the site is a temporary one, he or she is willing to accept a longer commute as a short-term inconvenience. An operations worker is more prone to regard his or her job as a permanent one and therefore takes a greater interest in keeping commuting time at a minimum.

In a recent study of power plant construction, DRI found that construction workers tend to live within 73 miles or 1.42 hours of the job site. Operations workers tend to live within 40 miles or 0.84 hours.** Workers who live farther away than these distances tend to move closer to the project site. These in-migrants tend to settle within 30 miles of the project or in major population centers within an hour's drive of the project site.***

For its assessment of the impact area, RPC considered the geographic area within a one-hour commute of the project site. This area

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*Denver Research Institute, et al., Socioeconomic Impacts of Power Plants, 1982.

**Denver Research Institute, et al., Socioeconomic Impacts of Power Plants, 1982. The findings were affected by the inclusion of extremely rural study areas where speed limits were poorly enforced. Average commuting times are lower than the average maximum times cited.

***Denver Research Institute, Socioeconomic Impacts of Power Plants: Case Study No. 1 - Coal Creek Station, November 1983. In sparsely populated southwest Wyoming, about 800 miners (operating) regularly ride buses from their job sites to their homes in Rock Springs (35 to 45 miles).

is sufficiently large to include probable residences of most in-migrants. In-migrants who choose to live in settlements within 30 minutes of the project site may reside in the City of Crandon or the towns of Nashville, Lincoln, Crandon, Monico, and Elcho. The towns of Ainsworth, Schoepke, and Laona are candidates for inclusion in the impact area, but it is not apparent that they offer sufficient housing close enough to the project site to attract population. In-migrants who prefer larger cities are likely to settle in or around Rhinelander or Antigo, both of which are within an hour's drive of the project site. No other cities of comparable size (more than 4,000 population) are within 60 minutes of the project.

Population Concentrations

The Rhinelander and Antigo areas are the major population centers in the vicinity of the project. The Rhinelander area has a population of around 17,800, if one includes the City of Rhinelander and the towns of Crescent, Newbold, Pelican and Pine Lake. The Antigo area has a population of around 11,000 if one includes the City of Antigo and the adjacent towns of Ackley and Antigo. Because of their aggregate sizes, these two areas are likely to attract in-migrants. Certain individual towns within these areas may be more attractive than others because of their locations relative to the project site and the amenities offered. DRI has included Rhinelander, Crescent, Pelican and Pine Lake in the impact area and designated Newbold as a candidate for inclusion. Likewise, the City of Antigo is included, and the towns of Ackley and Antigo are candidates for inclusion.

Where Will the Project-Related Population Shop?

Shopping patterns determine the distribution of one of the project's positive impacts--increased retail sales stemming from higher levels of personal income. These increases in income may be attributable to direct employment by the project or nonbasic employment associated with project-related growth.

Rhinelander and Antigo are the major trade centers in the area of the project. According to census figures for 1977, Rhinelander accounted for 34.8 percent of total retail sales in Langlade, Forest, and Oneida counties, while Antigo accounted for 24.5 percent.* Rhinelander and Antigo accounted for significant, but smaller shares of service receipts in the three counties (28.4 and 17.4 percent respectively).** The position of these two cities as sales leaders supports their inclusion in the impact area.

Wausau and Green Bay are within two-hour drives of the project and support significantly larger retail sectors than Rhinelander or Antigo. However, their distances from the project site would discourage casual shopping trips, and purchases made by the project-related population would be relatively minor in comparison to total retail volumes in the two cities. For these reasons, they are not included in the impact area.

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*RPC, Report on Current Conditions, Exxon Crandon Project, August 1981.

**Ibid.

What Government Entities Can Tax the Project or Receive MIB-Mandated Payments?

Increases in local government revenues can be another positive impact of the project. These increases can occur when local governments have the right to tax the project directly or when the Mining Impact Board makes payments to local entities from net proceeds tax revenues.

The following local government entities could levy property taxes on the proposed Crandon Project:

- Town of Lincoln
- Town of Nashville
- Crandon School District
- Forest County
- Nicolet VTAE District

Mandatory allocations of a portion of the net proceeds funds are provided for the following entities:

- Forest County
- Town of Lincoln
- Town of Nashville
- Mole Lake Chippewa Community
- Potawatomi Community

Funds also would be distributed throughout the affected area on a discretionary basis by the MIB.

The State of Wisconsin also could receive revenues from the project, either in the form of the net proceeds tax or from sales taxes on project equipment purchased in the state. While it is not useful to include the state in the impact area, DRI will consider the potential for significant revenues to the state from the project-related sources.

Where Will Social Contacts Foster Change?

Social Contacts

Positive social impacts may occur. New job opportunities may enable the region to retain and employ a larger percentage of its young people. Contacts with in-migrants may broaden cultural horizons and lead to more diverse educational opportunities.

On the other hand, interests of retirees and tourists or seasonal residents may conflict with some interests of newcomers. Some portion of the retirees, particularly those who have moved to the area to retire, may resist change in their communities. Seasonal residents may experience some competition with in-migrants for housing. Signs of a large construction/mining project may diminish the area's bucolic atmosphere for some tourists. Road congestion near the project site at shift changes may be disruptive to any residents using these roads.

The potential for social contact is greatest in the places where in-migrants live and shop and in the immediate vicinity of the project.

Native Americans

Two unique cultures are in the immediate vicinity of the project site. One is the Mole Lake Chippewa Community, which is located within the boundaries of the Town of Nashville. The second is the Forest County Potawatomi Community, which has dispersed property holdings east of the project site in the Town of Lincoln. Thus, both of these tribes have properties in the same towns as the Crandon Project.

Due to their proximity to the project site, frequent contact between members of these communities and the in-migrant population is likely. This contact may result from the following causes:

- In-migrant population passing through Native American properties
- Contact in shared shopping and recreation areas
- Contact in schools
- Participation in local government meetings, elections, and activities (including governance of the towns of Lincoln and Nashville, Forest County, and the Crandon School District)
- Contact at work for those Native Americans who take project jobs

Given the likely level of contact between these communities and the in-migrant population, the Mole Lake Chippewas and Potawatomis are included in the impact area.

A third unique culture which bears consideration is that of the Menominee tribe, located south of the project on State Highway 55. Only the far northern border of the Menominee Reservation is within a one-hour drive of the project site. Keshena, location of the tribal headquarters, is near the southern border of the reservation. It is not unreasonable to expect some Native Americans on the reservation to commute to the project for work. This would be the primary means of contact between the tribe and the in-migrant population.

Other forms of contact are likely to be minimal. Few in-migrants are likely to pass through the Menominee reservation because of its distance from the project site. Distance also should keep contacts in shopping and recreation areas at a minimum. In-migrants living in the three-county area will share no schools or local governments with the Menominee tribe. For these reasons, the Menominee Reservation is a candidate for inclusion and for some degree of analysis as described below.

Definition of the Impact Area

Table 5 summarizes the entities included in the impact area. The entities listed are the political entities which make up the impact area. This is ". . . the area reasonably expected to be most impacted by the activity."* For analytical purposes, the three-county region--Forest, Langlade, Oneida--offers the best set of boundaries for the impact study area.

Each of the entities in the impact area will be studied for its vulnerability to significant socioeconomic impacts, but the level of detail will not be the same for each entity. In some cases, preliminary analysis may reveal that only certain types of impacts are likely to be significant for some entities. For example, an entity may require a population analysis, but not a fiscal analysis (because of state equalization measures). Throughout the analysis, DRI will focus on the most significant potential impacted areas in order to avoid generating unnecessary information and superfluous analyses.

Candidates for inclusion will be examined as the analysis proceeds.** If the analysis should indicate potential for significant impacts to occur in these entities, they would be included in the impact area.

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*§144.85(5)(a)1.e, Wisconsin Statutes.

**These candidates are the towns of Ainsworth, Laona, Schoepke, Newbold, Ackley, and Antigo, the Laona School District, and the Menominee Reservation.

TABLE 5. ENTITIES INCLUDED IN THE IMPACT AREA

	Criteria for Defining the Impact Area				
	Place of Employment	Place of Residency	Shopping Patterns	Distribution of Revenues	Social
Counties					
Forest	x	x	x	x	x
Langlade	x	x	x		x
Oneida	x	x	x		x
Cities					
Crandon	x	x			x
Antigo	x	x	x		x
Rhinelander	x	x	x		x
Secondary Service Centers and Towns					
Elcho		x			x
Crandon		x			x
Lincoln	x	x		x	x
Nashville	x	x		x	x
Crescent		x			x
Monico		x			x
Pelican		x			x
Pine Lake		x			x
School Districts					
Crandon		x		x	x
Antigo		x			x
Elcho		x			x
Rhinelander		x			x
Three Lakes		x			x
Reservations					
Mole Lake Chippewa				x	x
Forest County Potawatomi				x	x
Other					
Nicolet VTAE District	x	x		x	x

III. MEETING THE PERFORMANCE REQUIREMENTS FOR THE SOCIOECONOMIC PORTIONS OF THE CRANDON PROJECT DRAFT EIS

This section briefly addresses the tasks that DRI has identified for meeting the requirements laid out in Section I, "What an Environmental Impact Statement Is," for preparing the socioeconomic portions of an informative, complete, and legally defensible draft environmental impact statement (DEIS).

Status of Tasks

The task needs identified so far may be augmented or changed as DRI proceeds into the next phase of its work, the drawing up of a work plan for approval by the Wisconsin DNR. There also may be modifications as information is received from Exxon Minerals Company or its consultant, RPC, Inc., as questions are raised in DNR or the review sessions, or as field validation and inquiry go on.

Typical Issues or Tasks

Examples of tasks of varying importance are presented below. (A more comprehensive list concludes this section.)

- Give appropriate attention to both positive and negative impacts, particularly where a given socioeconomic effect has both beneficial and adverse effects on a particular person, group, or institution. (This applies to many of the items described under "Scope" in the matrix at the end of this section.)

- Give particular effort to studying the role (and preservation) of unique cultural groups, primarily the Native American bands or tribes.

- Forecast highway accident rates and fatalities with and without the project and under the various alternatives.

- Examine the fiscal vulnerability of selected communities under specified assumptions about changes in service standards resulting from socioeconomic change.

- Develop the information needed to provide an operationally usable definition of no "net substantial adverse economic impact," one of the statutory criteria for permitting a mine. Array comparable numbers on costs and benefits, explain them, and discuss significant costs and benefits that cannot be satisfactorily quantified.

Tasks Involving Validation, Analysis and Reorganization, and Supplementation

The DRI tasks in Table 6, "Meeting the Performance Requirements for the Socioeconomic Portions of the Crandon Project DEIS," are categorized relative to the information presently available from Exxon and RPC. These tasks are necessary in order to verify and supplement the information provided by Exxon and RPC to date. They are classed as validation (or verification), analysis and reorganization, and supplementation to adequately cover EIS needs.

The topics listed along the left column of Table 6 cover information which in many cases must be developed for both the affected environment (baseline sections of the DEIS) and for the environmental consequences (socioeconomic impacts) sections.

TABLE 6. PRESENTLY ANTICIPATED TYPES OF EFFORT REQUIRED TO COMPLETE SOCIOECONOMIC PORTIONS OF CRANDON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT

	Sensitivity Testing and Validation of RPC Models and Conclusions (Limitations/Uncertainty)	Use Different Methodology and Structure of Presentation on Issues RPC Addressed	Issues not Fully Covered by RPC, Requiring New Information, Analysis, and Presentation
Project Description		Aggregate information into single chapter.	More information required on project work force composition and scheduling; and Exxon hiring and purchasing policies. Description of Project facilities and services to be provided by project.
Framework for Analysis*		Reorganize and reformat presentation of information.	Develop process for meeting requirements for acceptable and legally defensible EIS.
History	Detail economic history further, emphasizing familiarity with industrial employment and Native American history.		
Employment and Income	Review multipliers implicit in models; review and verify personal income data.		Study state and/or local government as major employer/industry.
Population	Review and verify demographic assumptions, distribution of work force (including less even distribution of population).		
Housing and Land Use	Test and validate land use information. Validate impact of housing competition on recreation.		Note present status of local zoning in jurisdictions affecting the project and any related determinations made by such jurisdictions.

*Framework for analysis includes description of the impact area, methodology, scope of work, etc.

TABLE 6. PRESENTLY ANTICIPATED TYPES OF EFFORT REQUIRED TO COMPLETE SOCIOECONOMIC PORTIONS OF CRANDON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT (Continued)

	Sensitivity Testing and Validation of RPC Models and Conclusions (Limitations/Uncertainty)	Use Different Methodology and Structure of Presentation on Issues RPC Addressed	Issues not Fully Covered by RPC, Requiring New Information, Analysis, and Presentation
Community Services			
a. Public (Including Water)	Test and validate; update description of facilities.		Describe implications of extremely decentralized service patterns. Identify present and future baseline needs and deferred maintenance.
b. Schools	Test and validate; update description of facilities and enrollments.		Describe implications of extremely decentralized service patterns. Identify needs and deferred maintenance.
c. Human Services	Test and validate.		Substantially broader coverage and more detail on public and private services.
Government Structure			Description of powers and responsibilities, capability analysis; identify institutions for intergovernmental cooperation.
Public Finance	Review with Department of Revenue for tax practices and calculations.	Vulnerability analysis/responsiveness to growth. Discuss uncertainty with regard to bonding.	Compare local government budgeting practices.

TABLE 6. PRESENTLY ANTICIPATED TYPES OF EFFORT REQUIRED TO COMPLETE SOCIOECONOMIC PORTIONS OF CRANDON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT (Continued)

	Sensitivity Testing and Validation of RPC Models and Conclusions (Limitations/Uncertainty)	Use Different Methodology and Structure of Presentation on Issues RPC Addressed	Issues not Fully Covered by RPC, Requiring New Information, Analysis, and Presentation
Roadway Capacity and Transportation			Wisconsin DOT Highway Deficiency File information obtained and analyzed; plus some problem estimates for county roads; accident rates.
Private Facilities and Services			Analyze and describe retailing and services availability; do retail capacity survey if needed.
Social Conditions (and Attitudes)	Test and validate.	Summarize and integrate different types of information from present and future conditions reports.	Broader coverage and greater detail on affected persons, groups, and institutions and social organizational units. Identify settings for interaction.
Native Americans	Validate.	Discuss tribes as unique cultural groups.	Sociocultural analysis of role in white society. Identify measures for integrating Native Americans into Crandon Project work force. Analysis of educational, law enforcement and fiscal analysis. Interrelationship with other tribes in state.
Cumulative Impacts and Others			Discuss implications of developing experienced mine work force; are there other nearby ore bodies potentially made more attractive by Crandon Project mill with resulting socioeconomic impacts?

TABLE 6. PRESENTLY ANTICIPATED TYPES OF EFFORT REQUIRED TO COMPLETE SOCIOECONOMIC PORTIONS OF CRANDON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT (Continued)

	Sensitivity Testing and Validation of RPC Models and Conclusions (Limitations/Uncertainty)	Use Different Methodology and Structure of Presentation on Issues RPC Addressed	Issues not Fully Covered by RPC, Requiring New Information, Analysis, and Presentation
Project Discontinuities			Consequences of shutdowns at various stages of mine life cycle; risk exposure of major affected persons, groups, or institutions. Broader consideration of post-operations phase as appropriate.
Impact Avoidance, Minimizing, and Mitigation			Depends on outcome of impact analysis; mitigation needs, costing, and sources of mitigation; mitigation responsibility analysis. Discuss possible benefits of monitoring work force spatial location as aid to any entity dealing with negative impacts.
Summary of Significant Impacts			Propose criteria for "significance" (see text) and select impacts for inclusion in EIS.
Discussion of Net Adverse Economic Impact			Develop analytical guidelines, criteria, and information to assist DNR in determining if statutory requirement is met.