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A GUIDE TO ECONOMIC INFORMATION AND ACTIVITY FOR THE MINNESOTA COASTAL ZONE LAND USE MANAGEMENT PLAN

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By the

MINNESOTA
DEPARTMENT OF
ECONOMIC DEVELOPMENT

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A GUIDE TO ECONOMIC INFORMATION AND ACTIVITY FOR THE MINNESOTA COASTAL ZONE LAND USE MANAGEMENT PLAN

by the

MINNESOTA DEPARTMENT
OF ECONOMIC DEVELOPMENT
RESEARCH DIVISION

Funded by
National Oceanic and Atmospheric Administration
and The Minnesota State Planning Agency

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Introduction

The purpose of this report is to identify the organizational structure functioning within the economic aspects of the Minnesota Coastal Zone Land Use Management Plan. Because of the many influences and organizations operating on the defined area, the first approach to understanding the complexity of the organizational structures is to identify each in relation to the major industrial classifications, including Agriculture, Construction, Employment, Energy, Finance, Forestry, Income and Revenue, Manufacturing, Mining, Retail/Wholesale Sales, Services, Transportation, Tourism/Travel Recreation.

To accommodate the economic information to the coastal zone area definition, the scope has been broadened somewhat to include the City of Duluth and all of Lake and Cook Counties.

Because of the limited amount of time and funding given to the report, no attempt is made to be exhaustive in the analysis. The objective is to establish the main functional lines of economic development effort being directed to the area. With this limitation, the effort is still vast and complex. Thus, the method of approach used is that of a matrix design between the organizational effort and the major

industrial classifications. The matrix is included at the end of the report. Each organization will be presented in the mode of its role in the coastal zone economic concern. These roles will be given at the geographic level in which they operate -- inter-state, statewide, regional and city-county specific. Thus, the scope will descend from the general to the specific.

The level of technicality is determined by the subject matter but the effort, in general, was to direct the content of the report to the interested lay person as well as the technician.

This project is not to be construed as merely an organizational description or bibliography. It attempts to trace the operational lines of organizational responsibility and information capability. Although most subject matter is directed to the defined area, the surrounding major economic influences such as the copper-nickel mining implication, regional tourist traffic and the Burlington-Northern Transshipment facility on the Superior side of the harbor are included because of their significance to the Coastal Zone area economy.

Because of the vastly different character of the various organizations included in the study, the method of treatment varied in an attempt to catch the nature and operation of

the organization as it relates to the magnitude of its economic impact on the Coastal Zone.

Detailed organizational structure was given only for those agencies whose scope of operation differed from conventionally defined government agencies.

In addition to giving organizational responsibility and information capability; general statistics, projection, objectives, goals and policies were cited where they were important to establish some of the parameters for deeper and more specific economic study of the area. This extension of subject matter was included as a result of a request from the State Planning Agency review of the proposal.

No attempt has been made to deal with human resource or environmental issues because they will be treated in other phases of the planning process by the appropriate agencies. For example, population will be treated in the socio-economic report of the Arrowhead Regional Development Commission.

Special note should be made of the fact that the University of Minnesota portion of the study was prepared under subcontract by Dr. Wilbur R. Maki, Professor of Resource Economics, University of Minnesota-St. Paul.

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GREAT LAKES COMMISSION

In 1954, at a Regional Conference of State Governments, the Governors of the eight Great Lakes agreed to coordinate their efforts for the betterment of the Great Lakes area. An Interstate Committee was created to draw up a Compact for this purpose. In 1955, the Great Lakes Commission was established under the "Great Lakes Basin Compact". During the 1955 legislative sessions, five states -- Illinois, Indiana, Michigan, Minnesota and Wisconsin -- ratified enabling legislation to the Compact. Pennsylvania subsequently became a member of the Commission in 1956, New York joined in 1960, and Ohio in 1963.

Congress was requested to give its formal consent to the Interstate Compact, as is required by U. S. Constitution and on July 24, 1968, the President signed P. L. 90-419 which grants Congressional consent to the "Great Lakes Basin Compact". Congressional approval withheld consent to any agreements by party states with Canadian Provinces. One of the principal factors in the Commission's diligent efforts to obtain Congressional consent was the fact that this entitles the Commission to have official representation on the Great Lakes Basin Commission.

Purpose

The purposes for the organization of the Great Lakes Commission are defined in the Great Lakes Basin Compact as follows:

> To promote the orderly, integrated, and comprehensive development, use, and conservation of the water resources of the Great Lakes Basin (hereinafter called the Basin).
>
> To plan for the welfare and development of the water resources of the Basin as a whole, as well as for those portions of the Basin that may have problems of special concern.
>
> To make it possible for the states of the Basin and their people to derive the maximum benefit from utilization of public works, in the form of navigational aids or otherwise, that may exist or which may be constructed from time to time.
>
> To advise in securing and maintaining a proper balance among industrial, commercial, agricultural, water supply, residential, recreational and other legitimate uses of the water resources of the Basin.
>
> To establish and maintain an intergovernmental agency to the end that the purposes of this Compact may be accomplished more effectively. In addition, the Commission advises the states and federal representatives and departments on matters of regional water resources, and maintains a central point of contact for the states to provide and exchange information and to consider matters of concern to its members.

The Commission also serves as secretary for the Great Lakes Task Force and the action committee of the Great Lakes Environmental Conference.

Commission Activities

Navigation and Commerce - The Commission played a major role in establishing the Great Lakes as America's Fourth

Seacoast, and in promoting legislation aimed at improving the competitive position of the Lakes and in achieving an equity position for lakes' ports and shippers, particularly with regard to eliminating discriminatory land freight rates for export-import cargoes, extending the navigation season throughout the Great Lakes-St. Lawrence Seaway system, providing U. S. flag vessel service into the Lakes system, reducing or eliminating tolls in the Seaway, and urging fair and equitable administration of the cargo preference laws.

Environmental Quality - The Commission has participated in developing the various amendments to the Federal Water Pollution Control Act, from 1955 to the present. Its aim is to make existing legislation work and to insist on adequate funding and reduced red tape to allow Congressionally mandated programs to proceed. Through the Environmental Conference the foundations for the U. S.-Canada Water Quality Agreement were laid.

Shorelands Use - The Commission has developed a composite program, in cooperation with the Great Lakes states, federal agencies, local governments and various interested groups, designed to guide the use of the shorelands to prevent, to remedy or correct, and to provide relief to persons and areas from damages and losses arising from fluctuating water levels, flooding and erosion. Funding for erosion control, emergency

flood protection, and flood fighting has been sought; and measures for flood plain zoning and use and federal income tax relief have been proposed. The Commission successfully supported the appropriation of funds for the Coastal Zone Management Act.

Fisheries and Wildlife - The Commission annually supports and requests funding for the sea lamprey control program. This highly successful program now being carried in the 5 Great Lakes has been responsible for the return of the Great Lakes fishery. Associated with this, the Commission has promoted the Great Lakes Anadromous Fish Act which led to the coho, chinook and Atlantic salmon stocking of the Lakes.

Washington Representation - Periodically as the occasion affords and demands, the Commission appears before congressional committees and presents written statements to support legislation of benefit to the Great Lakes region. The Commission works closely with the Conference of Great Lakes Senators, Conference of Great Lakes Congressmen and state offices in Washington.

ORGANIZATIONAL STRUCTURE

Membership

The Great Lakes Commission is composed of not less than three, nor more than five commissioners from each party state. The states reserve the right to determine how their Commissioners

are appointed. Each state receives three votes that are cast by its Commissioners or the Commissioner's duly-appointed proxy.

Non-Voting Members

The By-Laws permit each state and the Great Lakes Commission as a whole to select advisors and consultants who can provide expert technical advice to the members. Provisions are also made for a federal representative to be a non-voting member of the Commission.

Committees

The Executive Committee is composed of the Chairman, Vice-Chairman and one Commissioner from each state.

The Chairman is responsible for appointing three or more Commissioners to the Standing Committees as follows:

Seaway, Navigation and Commerce Committee
Water Resources Committee
Shoreline Use and Recreation Committee
Fisheries and Wildlife Committee
Environmental Quality Committee

Officers

The Chairman and Vice-Chairman are elected from among the Commission's members at the Annual Meeting and serve for a term of one year. The Commission appoints an Executive Director who serves at its pleasure and at a salary determined by the Commission. His duties as listed in the By-Laws are as follows:

Carry out its policies.
Serve as editor of any Commission publication.

Coordinate the activities of all committees.
Arrange details and facilities, including secretarial and other services, for all Commission and committee meetings.
Serve as ex-officio member without vote for all committees.
Cause to be made a record of the proceedings of the Commission and Executive Committee and preserve the same in the headquarters office.

Give notice of all meetings.
Make recommendations on programs, policies and activities of the Commission.
Exercise general supervision under the direction of the Commission of all the Commission programs and activities.
Have immediate charge of the headquarters office and personnel.

Staff

Staff members are employed by the Executive Director who also establishes the level of compensation and delegates the duties. According to the By-Laws, the Executive staff consists of the Executive Director and such other staff members as may be designated by a majority vote of the Commission from time to time.

Meetings

According to the By-Laws, Standing Committees meet at least once between regular Commission meetings. The Commission must meet at least twice annually.

FUNDING

As the Great Lakes Commission is an agency of states, its funds are derived solely from contributions by member states. Each state contributes annually an equal sum, during the Fiscal

Year beginning July 1.

Publications of the Great Lakes Commission include:

Great Lakes Newsletter - bi-monthly
Great Lakes Research Checklist - semi-annually
Tonnage (Commerce) Statistics for Great Lakes Ports - monthly
Report to the States - biennually
Summary of State and Provincial Sport Fishing Regulations on Great Lakes - annually
Minutes of Committee and Commission Meetings
Water Quality Management Forum - special
Special Studies, Reviews and Reports - as appropriate

GREAT LAKES BASIN COMMISSION

The Water Resources Planning Act (Act, 79 Stat. 224.42 U.S.C. 1962 et. seq.) of 1962 authorized the President of the United States to establish commissions for River Basin Planning when such a request is submitted to the Water Resources Council by a Governor(s) of a state(s) in which a River Basin is located.

Requests for establishing commissions for River Basin Planning were presented to the Water Resources Council by the Governors of Indiana, Michigan, Minnesota, Ohio, Wisconsin, Illinois, New York and Pennsylvania. The Water Resources Council concurred in this request, and on April 20, 1967, President Lyndon B. Johnson, exercising his authority to issue executive orders, established the Great Lakes Basin Commission under Title II of the Water Resources Planning Act. (Executive Order No. 11345, April 20, 1967)

The jurisdiction of the Commission was specified as those portions of the eight Great Lakes States that are drained by the St. Lawrence River system, including the Great Lakes, their tributaries and tributaries to the St. Lawrence River that reach it within the United States.

PURPOSE

The purpose of the Great Lakes Basin Commission is basically that of PLANNING. The Commission conducts water and related land resource planning within those portions of the eight Great Lakes States that are drained by the St. Lawrence River system and its tributaries and the Lakes and their tributaries. A more precise statement of its duties is contained in the Water Resources Planning Act (Title II, Section 201) as follows:

> Engage in such activities and make such studies and investigations as are necessary and desirable to encourage the conservation, development, and utilization of water and related land resources of the Great Lakes on a comprehensive and coordinated basis by the Federal Government, states, localities, and private enterprise with the cooperation of all affected federal agencies, states, local governments, individuals, corporations, business enterprises, and others concerned.
>
> Serve as the principal agency for the coordination of federal, state, interstate, local and nongovernmental plans for the development of water and related land resources in its area, river basin, or group of river basins.
>
> Prepare and keep up to date, to the extent practicable, a comprehensive, coordinated, joint plan for federal, state, interstate, local and nongovernmental development of water and related resources: Provided, that the plan shall include an evaluation of all reasonable alternative means of achieving optimum development of water and related land resources of the Basin or Basins, and it may be prepared in stages, including recommendations with respect to individual projects.
>
> Recommend long-range schedules of priorities for the collection and analysis of basic data and for investigation, planning, and construction of projects.

Foster and undertake such studies of water and related land resources problems in its area, river basin, or group of river basins as are necessary in the preparation of the plan described in clause (3) of this subsection.

Commission Membership

The composition of the Great Lakes Basin Commission is outlined in the Executive Order in accordance with Section 202 of the Water Resources Planning Act as follows.

A Chairman to be appointed by the President.

One member from each of the following federal departments and agencies:

Department of Agriculture
Department of the Army
Department of Commerce
Department of Health, Education and Welfare
Department of Housing and Urban Development
Department of the Interior
Department of Justice
Department of Transportation
Federal Power Commission

The member is appointed to serve on the Commission by the head of each department or independent agency he represents.

One member from each of the following states:

Indiana
Illinois
Michigan
Minnesota
New York
Ohio
Pennsylvania
Wisconsin

One member from each interstate agency created by an interstate compact to which the consent of Congress has

been given, and whose jurisdiction extends to the waters of the area specified in Section 2. (Great Lakes Commission)

As the Commission members speak for their states and represent their Governors on all resource discussions, they are professionals in their fields. Significantly, the Governors have chosen directors and secretaries of their Departments of Natural Resources, Conservation, Forests and Waters, and the Director of Water Resource Planning for the State of Minnesota.

Likewise, the nine federal departments and agencies that are represented on the Commission have chosen persons with authority. These are chief executives of the organization's Great Lakes Basin operations. The Appendix to this section provides information on their membership representation.

Staff

In order to carry out the work of the Commission, the services of personnel may be obtained as follows:

> By employing such personnel as the Commission deems advisable, including consultants, and by retaining such professional or technical services as it deems advisable on a contract basis.
>
> By arranging for the services of personnel from and at the expense of any state, or the United States, or any subdivision or agency thereof, or any intergovernmental agency.
>
> By detail to temporary duty with the Commission on a reimbursable basis from any state or the United States, or any subdivision or agency thereof, or any intergovernmental agency.

By voluntary help of individuals, corporations, business enterprises, and others concerned.

The Great Lakes Basin Commission has a staff of seven professionals and eight clerical members.

Work Groups

In order to carry out its functions the Great Lakes Basin Commission has developed a structure whereby twenty-six Work Groups are responsible for detailed work on the Framework Study.

Each of these Work Groups, with the exception of Work Group No. 1 - Climate and Meteorology - has on its membership one or more federal representative. The federal representatives are reimbursed for their Work Group activities. Each state may have representation on each Work Group. However, the state members are not reimbursed for expenses.

Meetings

Regular meetings of the Commission are held on the second Thursday of January, April, July and October. These meetings are to be held at various geographical locations, preferably within the member states. Provisions are also made for holding special meetings at the request of at least six or more members or upon the initiative of the Chairman and Vice-Chairman.

The Commission must make every reasonable endeavor to arrive at a consensus of all members on all issues. In the

event that a consensus cannot be reached, provisions have been made in the law for the recording of dissenting opinions. (P.L. 89-80, Sec. 203d)

Budget

The By Laws of the Great Lakes Basin Commission call for an annual budget prepared by the Chairman in consultation with the Vice-Chairman.

THE GREAT LAKES BASIN COMMISSION
GREAT LAKES BASIN PROGRAMS, FY '75-FY-'79

"The purpose of this report is to catalogue and briefly describe the planning, research and data acquisition programs that selected governmental agencies are conducting during FY 75, or which they anticipate initiating during the next five years (FY75 through FY79). Pertinent information was sought not only from members of the Great Lakes Basin Commission, but also from other governmental entities active in the Great Lakes Basin ...

"This report was prepared through the combined efforts of these agencies and the staff of the Great Lakes Basin Commission. Great Lakes States, appropriate federal agencies, and other selected entities submitted their program elements during the summer of 1974. The Commission staff coordinated the respective inputs, seeking to eliminate duplication of data and to identify deficiencies. Nonetheless, some pertinent information may be missing since this is the first year that this document has been compiled. The Commission intends to update the document annually, refining and expanding coverage as needed.

"The Great Lakes Basin encompasses about 118,000 square miles of land area and some 61,000 square miles of lake surface within United States boundaries. In addition, another 116,000

square miles of land and water area are under Canadian jurisdiction. The Great Lakes system is about 2,000 miles long and has a total lake surface area of some 95,000 square miles.

"The region under consideration by the Great Lakes Basin Commission covers about 4 percent of the land area of the United States. It includes portions of eight States: MINNESOTA, Michigan, Wisconsin, Illinois, Indiana, Ohio, Pennsylvania, and New York. Some of the richest and most abundant natural resources of the North American continent lie within the Basin. The region, shown on Exhibit 1, is characterized by short streams, small drainage basins, and thousands of inland lakes. Forest and woodland, mainly concentrated in northern Minnesota, Michigan, Wisconsin, and New York make up 48 percent of the total land base. Cropland and pasture, covering 33 percent and 6 percent, respectively, of the total land area, are located primarily in eastern Wisconsin, southern Michigan and northern Indiana, Ohio, and New York. The remaining 13 percent of the land area is nonagricultural and includes urban, commercial, transportation, and industrial developments, as well as farmsteads, idle lands, and wildlife and small water areas.

"The natural features of the Great Lakes region account, in large part, for its population and economic growth. In 1970, more than 29.3 million people lived in the United States

portion of the Great Lakes system, about 14.4 percent of the national total in that year. Some 23.6 million persons in the Basin were classified as urban residents. Major urban-industrial centers found in the region include Minneapolis/St. Paul, Milwaukee, Chicago, Detroit, Toledo, Cleveland, and Buffalo. In general, the southern portion of the region specializes in manufacturing and is heavily urbanized. Durable good industries, especially those involving the production and utilization of steel, are especially important. Approximately 50 percent of the nation's steel is produced in the Basin, most of it in the southern portion. In contrast, much of the northern, western, and eastern portions of the region are devoted to dairy farming, lumbering, mining, and recreation industries.

"The Great Lakes region is subject to a variety of demands from within and without the Basin. Its abundant resources provide a generally high quality, easily obtainable water supply for all uses, raw materials for manufacturing, a waste disposal medium, and diversified recreational opportunities. The Great Lakes themselves provide an access route to national and international markets, which transport 100 billion ton-miles of freight each year. In addition they provide an invaluable resource for commercial and recreational fishing

and navigation. The Great Lakes are the largest freshwater system in the world. However, increasing population, urban concentration and per capita demand for natural resources continue to create great pressures in the region. As a system, the Great Lakes are unique. Storage and lake levels are naturally well controlled, but variations are not ideal ...

"While this report makes no attempt to rank the importance of various program elements, it is designed to be an input into future consideration of long-range schedules of priorities, a duty which is assigned to the Great Lakes Basin Commission by Section 201(b) of the Water Resources Planning Act of 1965 (Publ. L. 89-80). In particular, clause (3) states that river basin commissions shall "...recommend long-range schedules of priorities for the collection and analysis of basic data and for investigation, planning, and construction of projects..." This compilation will assist in that effort by providing an information baseline on current and near-term programs. As other information is collected and goals and objectives are more clearly articulated, the scheduling of long-range priorities will evolve as a continuing and iterative process.

"Although no specific analyses of the information contained in this report have been made, a few general conclusions emerged during the course of the effort. The following tables reveal the most obvious one, namely, that programs in the Basin

are myriad-some of which overlap in content and geographical coverage, most of which are related in one way or another to other program or mission elements. The second observation is that the quantity and variety of research and data acquisition programs are very significant. This became evident even though the lack of time for preparation of this report made it impractical to contact all potential sources. Consideration should be given to the potential for further coordination here, particularly from the point of view of ensuring that research and data acquisition efforts are formulated with the planner's information requirements in mind, where appropriate. Finally, almost all agencies showed a marked inability and/or unwillingness to project their programs beyond a year or two. The implications of this problem for setting long-range priorities are evident and future annual compilations must strive to refine the data in this respect. The new Congressional requirements for Federal agencies to present five-year programs along with each year's budget requests should assist in the preparation of future reports."

Below are the specific programs from the Great Lakes Basin general programs which name specific economic significance and all the listed Minnesota programs important on the Coastal Zone Area:

Name or Description of Program Element
Agency or Department
Overall Objective or Content

Federal Water Project Studies (excluding SCS work)
Bureau of Outdoor Recreation
To insure that authorized federal water projects provide for outdoor recreation activities at a level compatible with the unmet demands or future demands for recreation.

Soil Conservation Water Service Projects
Bureau of Outdoor Recreation
To insure that authorized SCS reservoirs incorporated outdoor recreation as an integral part of this project.

Applications of Remote Sensing to Recreation Planning
Bureau of Outdoor Recreation
To determine the utility and applications of using satellite scale photography in recreation planning.

Eastern U.S.--
Mine Map Repository
Bureau of Mines
A repository of mine maps containing microfilm records of maps showing data on past and current mining operations. Computer storage and retrieval of maps and pertinent associated data, with a computer printout index of all maps in the system.

Nationwide--Minerals
Availability System
Bureau of Mines
Collect and compile qualitative and quantitative data relative to critical mineral deposits. Analyze and classify these deposits according to classification and coding standards for computer storage and retrieval.

National and Regional
Water Assessment
Bureau of Mines
Make volumetric estimates of the withdrawal and consumptive water needs of the mineral industry for base years 1975, 1985, and 2000, by prespecified geographic units.

National Water Assessment
Bureau of Outdoor Recreation

A Study focusing on the cooperative identification and description of location, extent, and magnitude of the Nation's severe water-related problems.

Public Perception of Research Priorities
Great Lakes Basin
To survey and analyze the research priorities as detected by various informed publics.

Great Lakes Water Levels Study
U.S. Army Corps of Engineers, North Central Division
Survey study to investigate factors affecting fluctuations of Great Lakes water levels and determine feasibility of a plan for regulation of the Lake Levels. Particular reference is given to reduction of damage to shore properties, improvement for navigation, power development and local protection for shore areas and tributary streams subject to flooding due to Lake Level fluctuations,
TEC = $3,480,000; Bal. = $1,250,000.

Land Drainage Study
(IJC Reference--WQ Agreement)
United States Environmental Protection Agency
To study pollution in the Great Lakes System from agricultural, forestry and other land-use activities.

Geo-Environmental &
Mineral Resources
University of Wisconsin Sea Grant Advisory Service
To develop a reliable underwater minerals exploration techniques for both placer and lode deposits to relate the nature of the deposit to ore grade economics; to develop a pre-mining geo-environmental survey program; and to continue applied research on sand dispersal (& sand resources) around nuclear power plants.

Policy Studies
University of Wisconsin Sea Grant Advisory Service
12 projects under this subprogram relate to legal and social actions as inputs to the management process affecting use of the Great Lakes and particularly the CZ.
Subject include: coastal land use standards, legal implications in CZM; power plant siting; impact of energy shortage; process of decline in coastal communities; scenic and cultural resources of the coastal communities; & other studies in WQ and resource management.

Ports and Commerce
University of Wisconsin Sea Grant Advisory Service
To define problems facing Great Lakes area from changing ocean transportation technology; estimate benefits or losses from these changes; update containerization study; recommend government policy for shipping and port industries; and to study relationship of environmental and economic considerations under CZ laws.

Marine Products and Technology
New York Sea Grant Institute
To provide assistance to marine-based industries.

Lake Trout Stocking in Lake Superior
United States Fish and Wildlife Service
Minnesota Department of Natural Resources
Reestablishment of lake trout broodstock in Lake Superior. If funds, facilities and manpower available, stock additional fish to contribute to sport fishery.

Assessment of Lake Superior Fish Stocks
Great Lakes Fishery Commission
Assess Lake Superior fish populations in light of adverse ecological changes; determine result of alewife-smelt interactions; measure relative impact of lamprey predation and fishing on salmonid and coregonid stocks; evaluate salmonide stocking programs.

Improvement of Sport Fishing for Anadromous Fish
Minnesota Department of Natural Resources
To provide fish passage to inaccessible portions of streams tributary to Lake Superior, to improve fish habitat and to evaluate fish population dynamics in treated waters. This is a 50-50 cost-sharing program through Anadromous Fish Conservation Act with the USFWS.

French R. Trout Hatchery
Minnesota Department of Natural Resources
To construct a portion of a coldwater hatchery for the annual production of 28,000 pounds of trout and salmon for release into Lake Superior and tributaries. This is a grant-in-aid program through the Federal Aid in Sport Fish Restoration Program (Dingell-Johnson) and the Anadromous Fish Conservation Act with the USFWS.

Heavy Industrial Sources Research
Grosse Ile Laboratory USEPA
Research projects on treatment and handling of residuals from heavy industrial processes.

Great Lakes & St. Lawrence Seaway Navigation Season Extension
U. S. Army Corps of Engineers, North Central Division
Survey study to demonstrate practicability of extending navigation season.
TEC = $12,500,000; Bal. = $5,238,000.

Great Lakes & St. Lawrence Seaway Navigation Season Extension Demonstration Program (Environmental Evaluation Work Group)
Bureau of Outdoor Recreation
U.S. Dept. of the Interior
To assess the effects of demonstration projects on recreational shore areas, water based areas, and recreational activities in the demonstration project area.

Navigation Season Extension: Great Lakes
Great Lakes Environmental Research Laboratory
National Oceanic and Atmospheric Administration
Establish extent of ice cover, provide short-term information on ice cover for winter navigation. Provide input for evaluation of shore erosion, structural damage, water losses. Prepare procedures for short- and long-term ice forecasting.

Water Resources Appraisal of
Lake Superior Watershed
United States Geological Survey
U. S. Department of Interior
Minnesota Department of Natural Resources
General Water resources appraisal.

Lutsen Harbor
U. S. Army Corps of Engineers, St. Paul District
Advanced engineering and design of recreational boat harbor--harbor of refuge
TEG = $180,000; Bal. = $70,000.

Duluth-Superior Metropolitan Area Study
U. S. Army Corps of Engineers, St. Paul District
Urban study to survey the metropolitan area in regard to problems and needs affecting WS, pollution abatement, N, FC, hydroelectric power, and related water resources development and control.
TEC = $870,000; Bal. = $250,000.

Beaver Bay Harbor
U. S. Army Corps of Engineers, St. Paul District
Advanced engineering and design of recreational boat harbor--harbor of refuge.
TEC = $160,000; Bal. = $70,000.

National Portage National Monument
National Park Service
U. S. Department of the Interior
To complete the restoration of a National Historic Site.

Superior Slope Streamflow Data
United States Geological Survey
U. S. Department of the Interior
3 daily gaging stations and 11 annual peak discharge stations.

St. Louis R. Basin Streamflow Data
United States Geological Survey
U. S. Department of the Interior
9 daily gaging stations, 1 monthly WQ station, and 2 annual peak discharge stations

Apostle Islands Streamflow Data
United States Geological Survey
U. S. Department of the Interior
3 annual peak discharge stations

UPPER GREAT LAKES REGIONAL COMMISSION

On August 25, 1965, Congress passed the Public Works and Economic Development Act of 1965. This Act gave formal recognition to the fact that some areas in the United States are below the national averages in respect to employment, income, and other economic aspects. In order to alleviate these distressing problems, and to prevent an out-migration of employees to more stable areas, Congress established an agency for public works and economic development within the Department of Commerce.

The Agency is responsible for providing federal financial assistance to areas and regions that suffer from substantial and persistent unemployment and under-employment. The objective is to enable them to take effective steps in planning and financing economic development.

The charter of the Upper Great Lakes Regional Commission was signed April 11, 1967. The Act outlines the program and planning responsibilities of the Commission as follows:

> To advise and assist the Secretary of Commerce in identification of optimum boundaries for the Upper Great Lakes Economic Development Region.
>
> To initiate and coordinate the preparation of long-range overall economic development programs for the Upper Great Lakes Economic Development Region.

To foster surveys and studies to provide data required for the preparation of specific plans and programs for the development of the Upper Great Lakes Economic Development Region.

To advise and assist the Secretary of Commerce and the member states in the initiation and coordination of economic development districts. The objective is to promote maximum benefits from the expenditures of federal, state and local funds.

To promote increased private investment in the Upper Great Lakes Economic Development Region.

To prepare legislative and other recommendations with respect to short-range and long-range programs and projects for federal, state and local agencies.

To develop, on a continuing basis, comprehensive and coordinated plans and programs and establish priorities thereunder. Due consideration should be given to other federal and local planning in the Upper Great Lakes Economic Development Region.

To conduct and sponsor investigations, research and studies that include an inventory and analysis of the resources of the Upper Great Lakes Economic Development Region. Sponsor demonstration projects designed to foster regional productivity and growth in cooperation with federal, state and local agencies.

To review and study federal, state and local public and private programs in cooperation with the agency involved. Where appropriate, recommend modifications or additions that will increase their effectiveness in the Upper Great Lakes Economic Development Region.

To formulate and recommend, where appropriate, interstate compacts and other forms of interstate cooperation. The Commission will also work with federal, state and local agencies in developing appropriate model legislation.

To provide a forum for consideration of problems of the Upper Great Lakes Economic Development Region. To propose solutions and establish and utilize, as appropriate, citizens and special Advisory Councils and Public Conferences.

To make additional recommendations from time to time to the Secretary of Commerce and to the State Governors and appropriate local officials, with respect to:

The expenditure of funds by federal, state and local departments and agencies in the Upper Great Lakes Economic Development Region in the fields of natural resources, agriculture, education, training, health and welfare, transportation and other fields related to the purposes of the Public Works and Economic Development Act of 1965.

Such additional federal, state and local legislation or administrative actions as the Commission deems necessary to further the purposes of the Public Works and Economic Development Act of 1965.

The Upper Great Lakes Regional Commission is composed of the Governors of the party states, Michigan, Minnesota and Wisconsin, and a Federal Co-chairman, who are appointed by the President by and with the advice and consent of the Senate.

The State Governors elect a Co-chairman from among their number who rotates the duties of Presiding Officer with the Federal Co-Chairman. The State Co-chairman serves a one year term.

Each Governor must also have an alternate. The alternate may be appointed by the Governor or in a manner designated by the state. He will have authority to vote for his state in the event of the Governor's absence.

OPERATING PROCEDURE

Meetings

According to the provisions of the Charter, the Upper

Great Lakes Regional Commission is required to hold regular meetings quarterly. There are also provisions for Special Meetings that may be scheduled by either of the Co-chairman at the request of any two Commission members. The Alternates meet prior to each meeting of the Commissioners.

FUNDING

There are two budgets involved in implementing requirements of the Upper Great Lakes Regional Commission. One budget, that consists of 100 percent federal funds, is used to provide funds for the Federal Co-chairman and his supporting staff. The number of personnel positions allocated to the Federal Co-chairman are determined by the Secretary of Commerce and the Office of Management & Budget.

The second budget is used for administrative expenses of the Commission. This budget is funded by 50 percent federal funds and 50 percent state funds to which all three states contribute an equal amount.

Investments to date by the Upper Great Lakes Regional Commission in Minnesota have helped make possible projects whose total worth exceeds $67.8 million.

Since 1968, Minnesota has received 202 grants from the Commission. In addition, Minnesota has shared the benefits of more than $13.5 million in Technical Assistance Projects which have been carried out in the three UGLRC states.

Here are the Minnesota Supplemental grants received to date which pertain to the Coastal Zone Area:

Grand Marais, Marina
Knife River, Coho Salmon Propagation
Duluth, Miller-Dwan Hospital
Lake County, Split Rock Lighthouse State Park
Ely, Municipal Airport
Duluth, Voc Tech School
Duluth, Airport Improvements
Lake County, Split Rock Lighthouse State Park
Duluth, Medical School
Lake County, Gooseberry Falls State Park
Carlton-St. Louis Counties, Jay Cooke State Park
Knife River, Harbor & Marina
Lake County, Split Rock Lighthouse State Park
Duluth, Area Cultural and Research Center
Two Harbors, Industrial Park
Grand Portage Indian Reservation, Motel
Duluth, Voc Tech School
Duluth, Voc Tech School
Duluth, Spirit Mountain Recreation Area
Duluth, Cultural Center
Duluth, Arena-Auditorium

TECHNICAL ASSISTANCE GRANTS

Public Investment Planning
Duluth Airport
Lake States Forestry Cooperative at Duluth
Feasibility of Custom Pelletizing Plant
Feasibility Study of Producing Reduced Iron Product
Demonstration of the Development of Tourism Credit Corporations
Lutsen/Silver Bay Study
Deicing Program, Duluth Harbor
Indian Pre-Employment Training
Individual Slotting
Center for Assistance to Small Business
Deep Portage Conservation Reserve
Devil Track Airport Improvement Study, Cook County
Water Supply Investigation, Grand Portage Indian Reservation
Federal Excess Property
Mobile Tourist Information Van Demonstration
Pollution Control Demonstration, Duluth-Superior Harbor
Recreation Tourism Development Center
Solid Waste Management Systems Plan
Duluth/Superior Economic Development Plan

Feasibility Study of Forest Access Roads, Cook County, Minnesota
Mobile Vocational Career Guidance
Individual Job Slotting
Metal Foundry Feasibility, Duluth
Model Recreation Vehicle Legislation
Duluth-Superior Port Study
Economic Development Operation, Duluth
Energy Conservation Information Program
Energy Planning and Information System
Regional Vocational Information System
Regional Tourism Energy Program
Beef Cow-Calf Enterprise Demonstrations on Northern Minnesota farms
Feasibility Study for an Environmental-Plant Materials Center
Assistance to Small Business and Recreation
Minnesota State Land Information System

A $65,000 program was initiated in 1974 to help the City of Duluth open and support an ECONOMIC DEVELOPMENT OFFICE for one year to create and guide a strategy to attract and retain economic base industry. Duluth's population has dropped from 104,511 in 1950 to 100,578 in 1970 and the number of manufacturing jobs has declined from 12,000 in 1950 to 5,950 in 1974. The recent closing of the U. S. Steel plant with the loss of 2,000 jobs, the impending and precarious condition of the Reserve Mining Company (approximately 3,000 employment), and the Universal Atlas Cement Company (150 to 225 employment) and the negative economic aspects of possible water contamination conditions have resulted in severe economic dislocation conditions. The office is directly responsible to the Governor's Representative of the Upper Great Lakes Regional Commission and its activities are closely coordinated with the State Department of

Economic Development. The project is focusing on providing immediate impact on attracting new manufacturing industries and helping to establish Duluth as a regional growth center with assistance also extending to Silver Bay, Babbitt and Two Harbors, the surrounding areas which also are greatly affected by Reserve Mining Co. employment.

A new Duluth tourist attraction is this historic railroad depot which was built in 1892 and is considered to be the best example of French-Norman architecture in the United States.

Two Upper Great Lakes Regional Commission grants totaling $200,000 are at work in Duluth in a project conservatively estimated to draw 350,000 visitors annually.

The project, a three-phase $3 million effort, is transforming a historic downtown railroad depot into the St. Louis County Heritage and Arts Center which will serve civic organizations with a total membership of 4,500 persons.

UGLRC funds are involved in the second stage of the project, along with $201,250 HUD preservation grant monies and miscellaneous local foundation and individual contributions for a total cost of $900,000.

The long-time landmark will provide permanent housing for the A. M. Chisholm Museum, Duluth Art Institute, St. Louis County Historical Society, Duluth-Superior Symphony, Duluth Playhouse, Duluth Ballet Company and School, and Matinee

Musicale. Some of these organizations will move into the facility this fall.

The $450,000 Museum of Transportation and Industry was the first phase of the total project and was funded partially by an EDA grant, along with $98,000 in local funds.

Third stage will require $1.6 million for construction of a performing arts building, including a 285-seat auditorium, and a link between this and the main Center. This is currently in the planning stage.

UGLRC funds were committed to the nine-year-old project to help improve the area's ability to attract and hold tourist interest.

INVESTMENT STRATEGY, FISCAL YEAR 1975

The overall goal of the Commission is to maintain, improve, and create an overall economic base to encourage growth and protect existing jobs and industries. In more specific terms -- to retain and create new jobs for the citizens of the Upper Great Lakes Region.

In FY 1975 it is intended that this overall goal will be pursued through the following investment strategies.

Industrial Development

Over the past several years the Commission has and will continue to make investments in industrial site facilities.

Because the Region has a large number of available areas for industrial expansion, the Commission will continue to make investments in this area only where there is identifiable immediate job generation or retention capability. In addition, the Commission will make investments in such facilities only where there is evidence of a continuing community capability and effort to attract additional expansion. Investments in these facilities will be made as supplemental grants to basic Federal grants from the Economic Development Administration and Farmers Home Administration.

The Commission will also continue its support of the Centers for Assistance to Small Business, whose primary role is Assisting existing businesses in the Region to maintain and expand their operations. In addition, the Commission will support specific industrial development activities under its Technical Assistance authority where the assistance promises to provide new products, new facilities and economic growth for the Region.

In keeping with the limited dollars available to the Commission, program priorities have been and will continue to be given to those projects with the greatest job impact for the smallest number of dollars.

Recreation and Tourism

In FY 1974 the Commission adopted a new strategy based

on the projected negative impact of the energy crisis on the Region's recreation and tourism business. This strategy, which involves special assistance to State and local authorities and promotion and transportation assistance to the recreation industry, will be continued in FY 1975. (This strategy is also discussed under Transportation, below.)

The Commission will continue its support and assistance for the orderly development related to the "Network of Star Attractions" which centers on the newly created National Parks and Lakeshores.

The Recreation Assistance Centers now operating in each of our States will be continued in FY 1975. These Centers will be central to the energy related strategy cited above.

The Commission will continue to support investments in new facilities aimed at the attraction of tourists and promotion of the Region's recreation industry.

Transportation

With the continued energy problem, the transportation strategy of the Commission has been expanded to include considerations of new railroad services, Great Lakes ferry services, and expansion of the Commission's investments in the promotion of third level air service.

The Commission will continue its investment program in the construction of regional airport facilities, recognizing

however, that the increased funding authority of the Federal Aviation Administration reduces the capability and need of the Commission to supplement airport investments.

The Commission will continue its strategy to aid the expansion and growth of traffic on the Great Lakes-St. Lawrence Seaway System where Federal and State programs are inadequate.

To the extent that the Commission's limited budget allows, the Commission will continue its support of road and bridge projects related to economic development.

Human Resources

The Commission will continue its strategy to provide facilities and equipment for regional vocational education facilities which are related to needed job skills and serve the greatest number of regional residents.

The Commission will continue its support of guidance, placement, and training programs which will aid in industrial growth and the provision of greater opportunities for the citizens of the Region. Special priority will continue to be given to projects for the Native American population.

Natural Resources

The Commission will continue to support investments in selected natural resource fields where the potential for economic growth and the preservation of the Region's environment are

indicated. These areas include assistance for the development of land use information systems; mineral, agricultural, and forestry investigations; and projects aimed at protecting and enhancing the natural environment.

Energy

The new energy-related programs begun in 1974 will be continued. The keystone to the Commission's Energy Program will be the development and implementation of energy accounting and management systems undertaken in each of the States and coordinated through this Commission.

The Commission will assume selected investments in Transportation and Recreation as described above.

Other Programs

While the Commission has traditionally rejected major programs in other areas, such as health services and housing, due to lack of funds, the Commission will however support selected investments in any area where a possible economic impact is identified.

As funds permit, the Commission will support the efforts of sub-state districts where these efforts or projects are related to the overall goals and strategies of the Commission.

Finally, the Commission will undertake a review of its regional development plan and five-year program during FY 1975

and an evaluation of past Commission investments with such financial support as the Commission deems necessary and appropriate.

NORTHERN MINNESOTA SMALL BUSINESS DEVELOPMENT CENTER

1. PROJECT IDENTIFICATION

To establish a Management and Technical Service Center in the Upper Great Lakes Region, State Of Minnesota providing technical assistance to industry and recreation under the policy guide lines approved by the Governor's alternates July 17, 1970.

2. OBJECTIVE

a) The Center will provide a variety of services with emphasis placed upon marketing, engineering, management and business research relative to feasibility for enterprises in their formative stages or expansion. Small Business Center will be assisted in these services by State Agencies, Junior Colleges, Universities and Private Consultants.

b) The over all objective of Small Business Center is to assist economic development and expansion of the region and to assist lending agencies to set priorities to the creation of new employment.

3. PROJECT LOCATION

The office of Small Business Center will continue to be

located in Duluth, Minnesota and will service the entire Upper Great Lakes Region.

4. WORK TO BE DONE

a) Small Business Center will provide consulting in the fields of marketing, engineering, production, business research and feasibility.

b) Small Business Center when necessary will contract with consultants to provide skills not available within the Center staff for specific problems.

c) Feasibility studies may be conducted by the Center as required.

d) Additional technical services will be provided by the Minnesota Department of Economic Development on an "in kind" basis with existing field staff. Other departments of State Government and State Educational systems will also provide "in kind" services.

5. PERFORMANCE POTENTIAL

Small Business Center will be directly responsible to the Governor's Representatives of the Upper Great Lakes Regional Commission and shall coordinate through the commissioners of the Department of Economic Development or his designate.

6. TIME SCHEDULE

The Program Year 2 will be operative in the fiscal 1972-1973

and shall commence August 15, 1973. Annual reports on the project will be made at the end of each fiscal year with interim reports where required.

7. PREVIOUS WORK ON THE SUBJECT

Previous work includes State Economic Development Program and programs and projects of the Upper Great Lakes Regional Commission. However, none of this has been directed towards management skills or other such technical aids as proposed in this project. Therefore, this proposal endeavors to augment previous and on going programs by providing additional skills.

8. COSTS AND SOURCES OF FUNDS

"See Budget".

9. ENABLING ACTIONS REQUIRED

The State Department of Economic Development currently has the enabling legislation to carry the terms of this proposal.

10. AREA AFFECTED

This program would have a high local impact because of its direct improvement of individual industry in a specific locale. Individual successes would provide a total employment increase plus indirect benefits of other segments of the economy both private and public.

11. PROJECT REPORT

Complete records of project activities will be kept by the

Center with the financial accounts being done by a private accountant funded and monitored by representatives of the Upper Great Lakes Regional Commission. At the end of each program year, an annual report comprised of the quantity reports of summarization will be compiled thus indicating the total impact of the year's activities.

THE ARROWHEAD REGIONAL DEVELOPMENT COMMISSION

The most direct introduction to the purpose and function of this commission is presented in its By-Laws:

The Commission shall be known as the Arrowhead Regional Development Commission. It is a regional development commission established under and pursuant to 1969 Laws of Minnesota, Ch. 1122 (Minnesota Statutes, 1969, Sec. 462.381 et seq.) establishing Regional Commissions.

The Commission shall maintain its principal office in the City of Duluth, St. Louis County, Minnesota, and may establish such other offices in such other locations as it may deem appropriate.

The development region within which this Commission shall function shall include that area within the boundaries of the following counties of the State of Minnesota: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake and St. Louis, and such additional counties or areas as may be specified by executive order pursuant to law.

The Commission has been established to promote intergovernmental cooperation on a regional basis to meet common problems of governmental units located within this region. Further, it is recognized that coordination of State, Federal and local planning and development programs is essential to

the orderly and cohesive development and progress of the region.

The Commission shall be active in the general field of coordination and development which shall include but not be limited to multi-county planning and development, serve as the authorized agency to receive State and Federal grants authorized by law, preparation and adoption of comprehensive development plans for the region, research, review and development of data pertinent to regional development and the issuance of reports and studies thereon; the Commission shall review and comment upon proposals and plans which may be submitted to it as required by law and assist wherever possible the various local units of government within the region.

The Arrowhead Regional Development Commission shall consist of the following:

(a) 1 member from each County Board of every County in the Development Region.

(b) 1 additional County Board member from each County in the Development Region having a population over 100,000 persons.

(c) 1 member of a Town Board of Supervisors from a township located in the Development Region and selected as hereinafter provided.

(d) 1 mayor or councilman from a municipality of under

10,000 population from each county, selected by the mayors of all such municipalities in the Development Region, as hereinafter provided.

(e) 1 mayor or councilman from each municipality of over 10,000 persons in each county.

(f) 2 school board members selected as hereinafter provided. A school board for these purposes shall be defined as the school board of an independent school district.

(g) 1 member from each council of governments located in the Development Region.

(h) 1 member representing special districts located within the Development Region. A special district shall be defined as meaning a governmental unit other than a county, city, village, borough, town, or school district established by law and possessing substantially all of the powers of a municipal corporation.

Citizens representing public interests within the Region (including members of minority groups) shall serve as members of the Commission. Each such member must be a person residing in the Development Region. It is recognized that public interests within the Region will change from time to time. To permit proper representation of such interests, the Commission shall periodically review these By-Laws to provide for the addition or deletion (as the case may be) of special interests

entitled to representation on the Commission. Addition or deletion shall be carried out by amendment of these By-Laws in the manner hereinafter set forth. In no event, however, shall the representation of minority groups be eliminated. The following public interests within the Development Region shall be entitled to representation by one member upon the Commission:

(1) Health
(2) Human Welfare
(3) Crime Prevention
(4) Labor
(5) Commerce and Industry
(6) Mining
(7) Minorities
(8) Indian Reservations
(9) Tourism and Recreation
(10) Environmental Quality
(11) Agriculture and Forestry
(12) Transportation and Communication
(13) Community Action Boards (two members)

It is recognized that the Commission is authorized to engage in a continuous program of research and study into various matters affecting the economic, environmental, social and financial status of the Region. The Commission is authorized to establish advisory committees consisting of Commission members and interested and affected citizens to inquire into and report on such matters, which may include but need not be limited to the following:

(a) Acquisition and financing of park areas and open spaces;

(b) Coordination with Federal and State laws and regulations on control and prevention of water and air

pollution;

(c) Examination of regional tax structures, tax resources and fiscal disparities;

(d) Consolidation of local governmental services;

(e) Regional capital improvement program;

(f) Indian and other minority group problems;

(g) Law enforcement activities, including court systems and police and correctional programs;

(h) Problems of low-income groups and the aged;

(i) Coordination with representatives of all Federal agencies, managing, directing, supervising or coordinating Federal programs in the area served by the Commission.

The Executive Director shall prepare and submit to the Commission not later than its regular January meeting a report as required by Minnesota law. This report shall be considered and shall be the basis for the report required to be issued by the Commission. It shall be directed to the governmental units and the public within the region served by the Commission and to the Legislature and the Governor of the State of Minnesota. The report shall include but not be limited to the specific items listed in Minnesota Statutes, Sec. 462.393, which may be briefly summarized as follows:

(a) Summary of receipts and disbursements for the preceding year;

(b) Budget for the year in which the report is filed and for the following year. At the time the budget for the next year is submitted, the Executive Director shall submit a general work program showing the relationship of the proposed budget to the anticipated program to be carried out by the Commission;

(c) Description of any comprehensive plan adopted in whole or in part for the Region;

(d) Summaries of studies and resulting recommendations made for the Region;

(e) Schedule of applications for Federal grants or loans made by all governmental units within the Region, together with the action taken by the Commission in relation to such applications;

(f) Schedule of plans submitted to the Commission by local government units and actions taken by the Commission regarding such plans;

(g) Commission recommendations regarding Federal and State programs, cooperation, funding and legislative needs.

The Executive Director shall first submit said report to the Board of Directors for approval prior to its filing with the Commission.

COOPERATIVE AGENCIES AND ORGANIZATIONS

Federal

Economic Development Administration (EDA)
Bureau of Mines (Department of Interior)
Upper Great Lakes Regional Commission
U. S. Department of Labor
Environmental Protection Agency (EPA)
Small Business Administration (SBA)
Community Services Administration (SRS, HEW)
Housing and Urban Developemtn (HUD)
Farmers Home Administration (FHA)
Soil Conservation Service
Agriculture Stabilization and Conservation Service

State of Minnesota

Minnesota Department of Natural Resources
Minnesota Department of Highways
Minnesota Department of Education
Minnesota State Department of Economic Development
Iron Range Resources & Rehabilitation Commission
State Planning Agency
Upper Great Lakes Regional Commission
Minnesota Department of Employment Services
Minnesota Area Development Administration (ARA/EDA)
Minnesota Department of Corrections
Minnesota Pollution Control Agency

Local

Private and Civic:

Chambers of Commerce
Duluth Industrial Bureau
Northeastern Minnesota Development Association (NEMDA)
13 Industrial Development Corporations
Earl Ruble and Associates, Duluth
Duluth Architectural Resources, Inc.
Range Regional Planning Commission
Range Municipalities and Civic Association
The Educational Research and Development Council for N. E. Minn. (RAND)
Arrowhead Region Planning Council for Health Facilities and Services (ARCH)
Northeastern Minnesota Organization (NEMO)

County Government:

7 County Planning Advisory Commissions
County Agents
County Land Commissioners

City of Duluth (Government)
Seaway Port Authority of Duluth (SPAD)
City of Duluth, Planning:
Duluth Housing and Redevelopment Authority
Community Development Administration

Other

Western Lake Superior Sanitary District (WLSSD)
University of Minnesota - Consultants

ECONOMIC DEVELOPMENT PLANNING

WORK PROGRAM

The work efforts of the ARDC economic development program for the June 30, 1974 - June 30, 1975 period will involve a continuation of the current program elements to insure adequate follow-through on previous activities in addition to an expansion of industrial promotion efforts. Previous work programs and the current planning effort by necessity had to address a wide variety of physical, social and economic concerns. The ARDC due to the expanded responsibilities it has assumed under the Minnesota Regional Development Act has had to orient much of its economic development program towards the formation of structures or systems that could allow "comprehensive development" to occur. By comprehensive it is meant that plans and policies be developed for areas such as land use, water quality, forest resources, education, housing, law systems and general delivery of human services. While these are just a few of the elements of a "comprehensive development plan" they indicate the diversity of conditions that must be

addressed. The ARDC presently feels that sufficient programs or systems have been developed to cope with the diverse factors of a regional comprehensive development program and that an environment is present for expanded economic development to occur. The following elements constitute the ARDC work plan for 1974-75:

ELEMENT I. A. Technical Assistance B. Information Systems
C. Research D. Policy Development

The above are areas of activity addressed in previous and the current economic development program. These are important functions and are work elements that must remain on a continuing basis.

A. Technical assistance will continue to be extended to local communities on the process of obtaining funding for public facilities or programs; assistance on industrial development and bond programs; tourism development and organizing for development.

B. The development of the Regional Management Information System has experienced significant gains during the past program year. Currently the system is in the process of accessing into the State Computer System and will be able to code information for the purpose of mapping and planning down to such scales as 2½ acre parcels of land, if necessary, to facilitate the storage and handling of the vast amounts of

data needed for development planning. One new area that will be explored through the MIS during the 1974 program year will be the feasibility of a "development simulation and predictive model." Sometime in the future when the regional input-output economic model is completed the two systems will prove to be an invaluable tool for guiding the development process. The MIS program will require continued work effort.

C. Research is an on-going function of the ARDC economic development program. The efforts of the research division are an integral part of all ARDC efforts. Continued effort will be directed towards analysis of business and economic trends; population trends; wage data; census breakouts; industrial prospect listing and a variety of other data areas.

Expanded emphasis on the part of the research division will be placed on obtaining of funding sources and conduct of a program to develop a seven county inter-industry input-output model. This will be a valuable tool for analyzing weaknesses in the economic base of the district and for predicting the impact of such things as new industry or the closing of plants.

A regional policy plan has been developed; however, policy again is a continuing effort. During the 1974 program

year it is anticipated that effort will be extended to develop more specific regional policy on various subject areas. As an example it is planned that through citizen agency participation programs, that detailed policy will be developed on items such as forest production in the peripheral areas of the Voyageur National Park or in the portal zone of the Boundary Waters Canoe Area.

ELEMENT II A. Industrial Development B. Tourism

A. The Growth Center of the Arrowhead Region during the past few years has suffered economic set-backs in air defense operations and economy moves or pull-outs of other national based companies. Many of the lost jobs have been regained through industrial expansion; however, considerable more emphasis must be placed on industrial development prospecting. Currently an industrial development team or association is being formed consisting of ARDC, NEMDA, Port Authority, Upper Great Lakes Regional Commission, State Economic Development, City of Duluth and others. It is planned that semi-monthly meetings be held to exchange information and coordinate industrial prospecting activity. The ARDC will be actively involved in the formation of this program.

NEMDA, ARDC, the regional chambers of commerce and the local development corporations will coordinate and promote industrial development activity in the remaining areas of the region.

B. Tourism development is another area of prime economic consideration of ARDC. With the advent of the Voyageur National Park in the Arrowhead Region approximately one million vacationers will be visiting the area in the future. Presently the resort and other accommodations facilities are inadequate to handle the anticipated volumes and many are just plain inadequate. Probably the prime reasons for the down-graded situation of some of the accommodations are:

(1) the lack of capital investment

(2) inadequate promotional programs and

(3) lack of a coordinated system of controls relative to resale standards, facility standards and operational standards.

Efforts will be extended by ARDC to work with tourism development agencies and the State Department of Economic Development to develop programs to address the above conditions. Other factors affecting tourism such as gas allocations will be addressed in cooperation with other agencies of the State.

ELEMENT III. Planning and Coordination

ARDC has been actively involved in coordinative efforts for development of the district through the EDA program in past program years. This experience will be helpful in addressing a new problem situation that is occurring as a result of economic expansion in the Iron Range area of the

Region. Taconite and wood fiber expansions are currently being planned that total nearly one billion dollars during the next five to ten years. While this is a much welcomed investment it also creates numerous physical and social problem situations. Housing, social services, transportation systems, environmental control, law enforcement and so on will need to be coordinated to enable orderly development. This effort is expected to require a significant portion of ARDC staff time.

A preliminary draft of an Iron Range Action Plan has been prepared by ARDC staff, which identifies specific problem elements and the extent of effort required to deal with these problems. The five major elements which have been identified are Transportation Systems, Economic Development, Housing and Community Facilities, Environmental and Energy Resources, and Human resources. ARDC has recommended working closely with a new organization called the Iron Range Council, whose members are representative of most communities in the Range area. The Action Plan proposal also includes specific recommendations for intergovernmental cooperation and channeling of resources for maximum impact.

The ARDC role of a catalyst is currently directed at bringing housing development corporations, mortgage financiers, property owners, and local officials together on a concerted effort to meet severe housing needs in the range area. The

primary objective; however, is to achieve orderly development in suitable locations which will utilize existing community facilities, such as sewer and water systems, school facilities, etc.

FOREST MANAGEMENT

In 1974, the Forestry Committee, representing various interests within the forestry and land management field, was organized as a working, advisory committee to the Arrowhead Regional Development Commission. The creation of this committee was a result of the recognition of how important forest resources and forest industries are to the present and future well-being of the Arrowhead Region.

The Committee is comprised of county land commissioners and representatives from private industry, state and federal foresters and research.

In recognition of the need for a forester on staff at ARDC, three of the Region's major forest industries -- Blandin Paper Company, Boise Cascade Corporation and Potlatch Incorporated -- through the Northeast Minnesota Development Association (NEMDA) contributed funds to employ a forester staff consultant.

The report, "Arrowhead Region Timber Resources," was prepared in May as a working document and compiled from existing forestry inventory information, adjusted for land with-

drawals and for economic operability. The need for up-to-date information on timber supply and demand has been given strong emphasis by the ARDC. The Forestry Committee and ARDC are actively working for adequate funding for this purpose by both the state and federal government.

Timber cover maps and data on acreage of commercial forest land for the Voyageurs National Park Planning Area have been compiled. The Forestry Committee has submitted revised goals and policies for the natural resource section of the Plan for the Voyageurs Park Planning Area.

The Committee is working toward strengthening the management of county-owned tax-forfeit land. As a result of this interest, the Duluth Unit of the U. S. Forest Service, North Central Forest Experiment Station is making a study to analyze marketing and management trends of forest resources on Minnesota county lands to provide information for future policy and management direction.

In addition, staff support has been provided ARDC in natural resource management and planning; in reviewing Environmental Impact Statements; evaluation of forestry data in the Minnesota Land Management Information System (MLMIS) and in working with state and federal agencies.

The forestry program at ARDC was basically developed to coordinate forest related activities and to provide a regional

forum for representatives of industry, government and private citizens with interests in forest management.

ARDC established a Forestry Advisory Committee and maintains a staff expertise in Forest Management.

The goals of the forestry program are detailed as follows:

(1) To act as a coordinating body for forestry activities carried out by public agencies and private and industrial forest land owners.

(2) To monitor forest management and utilization practices in the Region and promote sound, sustained use of forest lands.

(3) To keep abreast of forest industry's use of timber resources and production of wood products.

(4) To provide expertise in forest related matters that have potential adverse impacts on long-range goals for the forest lands in the Region.

(5) To establish forest management and use goals for the Region.

(6) To promote adequate and current inventories of the timber resources in the state and the Region.

HOUSING

Funding of government housing programs for elderly and low-income families has been virtually non-existent for two years.

- All programs were suspended under the moratorium in January, 1973, until March, 1974.
- In March, the St. Paul Area Office of the Department of Housing and Urban Development (HUD) advised only the Itasca and Koochiching County housing authorities to apply for Section 23 leased housing program funds. Applications and substantial other documents were submitted to HUD prior to the June 30th deadline resulting in reservation for 106 units.
- The Housing and Community Development Act of 1974 passed on August 22nd. The only major provision for elderly and low income housing is Section 8 (formerly Section 23) leasing housing, not for construction of units, but actually a housing allowance system for eligible families.
- The HUD regulations were finally published in November, applications received as of December 1st, but no funding will be authorized until after January 1, 1975 ... thus 2 years have passed without any federal housing assistance to the non-metro Arrowhead Region.

Any government subsidized housing activity during the past two years was the result of contracts negotiated prior to January, 1973. However, the Minnesota Housing Finance Agency has provided some interim construction funding for projects in Virginia, International Falls and Duluth.

The Arrowhead Regional Development Commission has been monitoring the development of federal legislation, policies and regulations in efforts to develop a comprehensive strategy for elderly and low-income housing programs in the Region.

Coordination of several agencies is essential to accomplish any development in the Region. Plans are being developed with the following agencies: HUD, Farmers Home Administration (FHmA), Minnesota Housing Finance Agency, Minnesota Rural Development Council (RDC), Housing Assistance Council, Washington, D. C. and local housing and redevelopment authorities.

Meanwhile, the substantial expansion of taconite plants across the Iron Range, plus related economic activity, has precipitated a housing crisis that will become worse before housing construction can catch up.

Four major problems are involved in the Range housing crisis:

- a severe shortage of mortgage credit
- apparent inability of developers to provide housing units at costs which affected families can afford
- lack of coordination throughout communities to channel suitable types of development into desirable locations
- lack of variety in development of alternative housing types

ARDC is working as a catalyst to bring mortgage lending agencies, developers, land owners and local government officials together for planning of desirable projects which will reduce costs for everyone, particularly the home owner. A major policy has been to encourage high quality standards for residential development areas which will be an asset to communities instead of a liability.

ARDC's planning activities for housing are funded under a HUD 701 planning grant. Technical assistance to county and municipal housing and redevelopment authorities will be substantially increased in 1975 for development of elderly and low-income family housing.

INFORMATION SYSTEMS

A systematic approach to the collection, storage and retrieval of information has the potential of becoming a valuable tool to all levels of government as well as the planning efforts of the Arrowhead Regional Development Commission. A regional data base and information management system that is usable across governmental lines can provide a communication link that will allow decision makers at the various levels to view problems from common grounds. Significant progress was made toward these goals through the development of a Regional Information System in 1974.

One focus of the information system in the past year has been continued cooperation with the State Planning Agency and the Minnesota Land Management Information System (MLMIS) in the development of a land resource information system for the Arrowhead Region. The system is based on information for each 40 acre parcel of land within the Region and is composed of land use, soils, forest cover, ownership and geologic information. The development of this system has involved some new concepts in analysis and computer mapping. The data base is complete and will be available for users in 1975.

With the extensive MLMIS data base and 1970 Census information on computer tapes at the University of Minnesota, Minneapolis, it has been necessary to process data through the University of Minnesota, Duluth computer facilities. Funding has been secured from the Intergovernmental Information Services Advisory Council (IISAC) for the lease of a Remote Batch Terminal that will allow ARDC to access these data bases directly from its offices and will allow the use of other computers as they become available locally and nation-wide.

Another area of considerable effort was in the Voyageurs Park Planning Area. Six areas that have the potential for high impact from the development of the Voyageurs National Park were identified. Resource data was then collected for

these areas and computerized by 2 1/2 acre cells. The six areas ranged in size from 14,200 acres to 45,000 acres. A computer analysis system called the Environmental Planning and Programming Language (EPPL) was then used for analysis of these sites for recreational purposes from formulas developed by the Department of Natural Resources (DNR).

Work has also continued in cooperation with the Center for Urban and Regional Affairs (CURA) of the University of Minnesota on an update of lakeshore information for the Region. The information that was collected in 1973 has been merged with the 1967 computer files of CURA. An analytical report of the data is forthcoming.

The zoning pilot project saw continued progress as new zoning and variance permit application forms with a computer coding format as an integral part were completed and instituted in St. Louis, Lake and Koochiching Counties for testing. The forms will be reviewed and improved, the system expanded to provide a method by which development within the Region can be monitored. This project has involved cooperation with the DNR, MLMIS, State Planning Agency, St. Louis, Lake and Koochiching Counties.

A regional data base is materializing, filling gaps in information collection and storage that have existed in the past. The availability of the computerized information system will become a significant planning tool in 1975.

ECONOMIC PLANNING

During 1974, ARDC continued to perform its long established role of supplying economic data to the countless agencies and organizations requesting it, and technical assistance to applicants and potential applicants for federal economic development funds. This year assistance also included applications for state rural development funds.

In addition to these responsibilities, major developments throughout the Region dictated that ARDC explore new avenues of economic planning. In the case of the possible shutdown of Reserve Mining, this planning took the form of an employment impact analysis, the first of a four-part study being conducted by the University of Minnesota, Duluth, for ARDC. Potential copper/nickel development in northeastern Minnesota has afforded ARDC the opportunity to become involved in a thorough program of economic impact analysis and socio-economic research. Coastal Zone Management activities and taconite expansion on the Iron Range will further increase the responsibilities of ARDC in the area of long-range economic planning.

Increased planning responsibilities require increased policy decisions. Consequently, an Economic Policy Committee has been formed to serve as an ARDC advisory committee that will provide direction to these new planning endeavors. Initially, this direction will be used to guide the revision

and updating of the Overall Economic Development Program (OEDP), originally written in 1967, and containing the economic goals, policies, and programs for the Arrowhead Region.

On a technical basis, ARDC's planning capabilities will be greatly improved through the development of a computerized economic information system, which will expedite the collection, storage, and retrieval of economic data.

TECHNICAL ASSISTANCE

The Arrowhead Regional Development Commission has been providing technical assistance regarding the comprehensive planning process to local units of government. With increasing state and federal requirements and programs dealing with land use, the effectiveness of local governments is limited due to the lack of professional staffs.

The technical assistance program has resulted in a complete reworking of the Koochiching County Zoning ordinance and providing support at regular county meetings.

The draft of a county-wide zoning ordinance is being prepared for Lake County with the prospect that an ordinance may be adopted by the 1975 building season. St. Louis County is being assisted in the revision of its sub-division control ordinance and general zoning matters.

Assistance to municipalities is being provided in much the same manner as to the counties. Communities being assisted

in the comprehensive planning process are Big Falls, Cook, International Falls, Island View, Littlefork, Northome and Orr. Planning commissions have been organized with technical assistance from ARDC.

Major elements of the technical assistance program are:

- to provide technical assistance in the adoption of a comprehensive plan and controls to implement the plan
- to assist counties/municipalities in land use enforcement programs, i.e., zoning ordinance, sub-division controls, sanitary controls, building and housing controls
- to improve the coordination between communities and counties
- to assist municipalities and counties in the standardization of planning and zoning methods to be compatible with regional and state standards.

COASTAL ZONE MANAGEMENT

The Coastal Zone Management Act of 1972 authorized annual grants to coastal states for the purpose of assisting in the development of a management program for land and water resources. The coastal zone program in Minnesota includes the North Shore area along Lake Superior.

In 1974 the State Planning Agency received its first grant under this program and the Coastal Zone Management planning process was initiated.

The Arrowhead Regional Development Commission is actively participating in this process by means of a contractual relationship with the State Planning Agency. Initially this involvement included participation on the Coastal Zone Management Work Group that is composed of representatives from the State Planning Agency, Pollution Control Agency, and the Departments of Natural Resources, Highways, Health and Economic Development.

Late this year, the Work Group was expanded to include representatives from Lake, St. Louis and Cook Counties. Beyond the interagency coordination activities, the Arrowhead Commission will be inventorying land ownership along the coastal zone, the boundaries of which have been initially defined as the Lake Superior Watershed, precipitating an extensive public involvement program. ARDC will also be preparing numerous working reports on goals and objectives; zoning regulations; socio-economic conditions; historic, natural, cultural and scientific resources; and sewage treatment conditions along the North Shore of Lake Superior.

SUB-REGIONAL PLANNING

The Arrowhead Region can be analyzed by sub-areas which have distinct characteristics and contrasts with other areas. The geological, vegetative, social and economic characteristics differ in significant proportions.

Five major sub-areas consist of the northern wilderness border area (Voyageurs National Park, Boundary Waters Canoe Area, etc.); the North Shore of Lake Superior (Coastal Zone Management Area); the Iron Range (Grand Rapids to Ely); the southern rural area (Aitkin, Carlton, South St. Louis Counties) and the Duluth metropolitan area.

The major purposes of commitments by the Arrowhead Regional Development Commission to comprehensive sub-regional planning is to insure better results from accelerated development, cost-effective solutions and maximization of effort by all affected communities and government agencies.

Across the Iron Range sub-region, over one billion dollars of capital investment for industrial expansion (taconite plants and related industries) is committed to construction. These current and immediate future developments are creating conditions which are different than any period in past Range history. Some existing or future conditions may be viewed as problems and other conditions as tasks which must be accomplished.

A report was published in May, 1974, entitled "Assessment of Growth Impacts on the Iron Range," which identified numerous elements for action planning.

The basic premises underlying the proposed Action Plan are four-fold:

. that this particular point in Iron Range history offers a unique opportunity to capitalize on massive industrial expansion by which affected communities can grow and improve the quality of life.

. that the Arrowhead Regional Development Commission is charged by state law with the responsibility for regional planning, technical assistance and should play a substantial role in the Action Planning Program.

. that the scope of work necessitates substantial involvement by local units of government in the planning process, as well as state and federal agencies.

. that action or implementation of the plan components will require identification of resources, both monetary and organizational, by which concrete results can be achieved.

The intent of this Action Plan scope is to utilize and maximize existing efforts, capabilities and programs within ARDC, local governments and other agencies. The results of "spin-offs" from current programs and activities can be harnessed to produce substantial benefits for Iron Range communities. The key includes organization, coordination and communication.

Numerous meetings with mayors from nearly every community on the Range have brought out the need to coordinate planning efforts. Local officials have indicated their desire to

utilize the Range Municipalities and Civic Association (RMCA) as a policy coordination organization and to work with ARDC in developing a planning program that will address the problems of rapid growth on the Iron Range.

REPORTS 1974

Arrowhead Regional Criminal Justice Plan, 1975

Status Offense Study for the Arrowhead Region, June, 1974

Area Plan on Aging, 1975

Interim Planning Report for the Human Services Board Pilot Project, October, 1974

Final Planning Report for the Human Services Board Pilot Project, December, 1974

Northwestern Minnesota Union Wages Rates and Other Selective Wage Data, November, 1974

Personal Income in the Arrowhead Region - 1972, December, 1974; New & Expanded Industries in the Arrowhead Region during 1973, December, 1974
Arrowhead Region Timber Resources, May, 1974

Assessment of Growth Impacts on the Iron Range, May, 1974

Housing Program Needs Analysis, June, 1974

An Interim Housing Action Plan, June, 1974

Population Trends and Forecasts, April, 1974

Functional Plans for HUD APJs of Virginia, Hibbing and Chisholm, May, 1974

Project Completion Report - 701 Planning Assistance Program, FY 1974

Water Quality Management Plan, June, 1974:
Planning Process, Goals and Objectives
Bibliography of Water, Land and Socio-Economic Information
Inventory of Wastewater Sources

Hydrology and Water Quality

An Appraisal of the Federal Water Pollution Control Act of 1972
Sewer System Evaluation
Population, Economy and Land Use
Alternatives and Strategy for Water Quality Management
An Appraisal of Organizations and Procedures
Water Quality Management plan for the Lake Superior Basin-Summary Report

THE DULUTH-SUPERIOR METROPOLITAN INTERSTATE COMMITTEE

Purpose

The purpose of the Duluth-Superior Metropolitan Interstate Committee, hereinafter called the "MIC", shall be to promote, coordinate, develop and implement a planning process and the development of goals and objectives relating to matters of economic, environmental and social concern to the citizens residing within the Duluth-Superior Metropolitan Area of St. Louis County, Minnesota and Douglas County, Wisconsin. This committee reflects and recognizes the responsibilities and concern for such citizens which exist with various local units of government in this Metropolitan Area and with the Arrowhead Regional Development Commission (ARDC) in Minnesota and the Northwest Wisconsin Regional Planning and Development Commission (NWRP&DC) in Wisconsin. The committee and its procedures are to perform in such manner as will develop and maintain to the greatest extent possible eligibility for the metropolitan area for participation in federal, state and local planning programs.

Duties and Powers

The MIC shall have the following goals and objectives:

1. When intermunicipal and interstate considerations are involved, to undertake comprehensive planning for the Duluth-Superior area of St. Louis County, Minnesota, and Douglas County, Wisconsin, and other urban and urbanizing areas as may be determined by the parties.
2. To stimulate and assist local governmental units in the above mentioned urban and urbanizing areas in conducting comprehensive and functional planning within their jurisdiction and to provide a mechanism for local governments to participate in a planning process on an intermunicipal and interstate basis.
3. To provide an interstate organization of representative capacity which can deal with common planning problems on interstate and intermunicipal bases.
4. To develop programs and procedures which will result in effective intermunicipal and interstate plans.
5. To develop goals for intermunicipal and interstate plans and to assist in and promote development of such plans.
6. To serve as an information center and clearinghouse for such interstate and intermunicipal planning efforts, including those conducted on behalf of the federal government, state governments and any private or public institution.

7. To carry out such functions and perform such duties as will result in continuing eligibility for federal and state funding of programs affecting the metropolitan area.

8. To coordinate and promote the enactment of compatible and consistent federal, state and local legislation affecting matters of common concern to the citizens within the metropolitan area.

The MIC shall have the following powers to perform its duties and functions:

1. To direct and oversee research studies, collection and analysis of data, the preparation of plans to guide the harmonious physical, economic and social development of the Duluth-Superior Metropolitan Area and provide technical assistance to local units of government within the urban and urbanizing metropolitan area. Program responsibilities will be specified in the work programs adopted by MIC and contractual obligations established by NWRP&DC and ARDC. All policies and plans of the MIC will be subject to review and comment by NWRP&DC and ARDC pursuant to the Regional Development Act of Minnesota and the Regional Planning Commission Law of Wisconsin and appropriate federal regulations.

2. To perform the federal grant review and coordinating function for NWRP&DC and ARDC for the Duluth-Superior

area pursuant to the designations held by ARDC and NWRP&DC as Regional Clearinghouses under the Office of Management and Budget Circular A-95. The regional commissions, however, will retain the option of reviewing grant proposals that have regional as well as metropolitan significance.

3. To review and comment upon all policies and plans provided to the MIC by local units of government that have jurisdiction in the metropolitan area.

4. To adopt plans which have been developed for the Duluth-Superior Metropolitan Area by any planning agency recognized by either Wisconsin or Minnesota or by any agency or department of the United States Government having authority to do so.

Metropolitan plans developed by MIC to carry out the above goals and objectives shall be submitted to the respective units of local government for review and comment as required by Minnesota and Wisconsin state statutes and specific time shall be provided for their review and comment before such actions are to be deemed the official acts of MIC. Such metropolitan plans shall also be submitted to the Arrowhead Regional Development Commission (ARDC) and Northwest Wisconsin Regional Planning and Development (NWRP&DC) for their review and comment prior to submission to federal or state authorities

or prior to adoption by local units of government as part of such comprehensive plan development. In Minnesota, review and comment of metropolitan and local plans by ARDC shall be only that required by the Minnesota Regional Development Act (as amended), and in Wisconsin only that required by the Wisconsin Regional Commission Law (Wisconsin Statute 66.945). MIC shall serve as the appropriate advisory committee to ARDC and NWRP&DC in the development of any review and comment for the metropolitan area as required hereunder or otherwise required by law or regulation.

POPULATION

A census of population has been taken every 10 years since 1790, the nineteenth being conducted as of April 1, 1970. The publication program for the 1970 census was completed in December 1973, with the exception of supplementary reports issued occasionally to present data from previously published large reports and special-use statistics of public interest. A list of the 1970 census reports appears in this issue of the Catalog.

The Current Population Survey is conducted monthly. Interviewers visit a scientifically selected sample of the population to obtain current information on the personal and family characteristics of the population, mobility of the population, income, consumer buying indicators, school enrollment, and other subjects. Also derived from this survey are estimates of employment, unemployment, hours of work, occupation and earnings. These labor force data are turned over to the Bureau of Labor Statistics, U. S. Department of Labor, for analysis and publication. That agency assumed responsibility for these functions effective July 1, 1959.

Estimates of population for post-censal and intercensal dates, as well as projections of the population, are prepared

from time to time. Special censuses of local areas are taken at the request and expense of the local governments involved. Reports providing estimates and projections of the population of various foreign countries also are published periodically.

1970 CENSUS OF POPULATION

Results of the 1970 Census of Population were made available as they were tabulated and assembled. The first preliminary figures were issued beginning in May 1970; advance final figures were issued beginning in September 1970; and detailed final figures were issued beginning in October 1970. Final data from the 1970 Census of Population have been assembled and issued in two volumes. A list of final published reports from the 1970 Census of Population appears in this issue of the Catalog.

Publications programs and descriptive order forms for the various series of reports published as a result of the 1970 Census of Population and for current population reports may be obtained on request from any U. S. Department of Commerce District Office or from the Subscriber Services Section, Social and Economic Statistics Administration (SESA), Washington, D. C. 20233.

1969 CENSUS OF AGRICULTURE

The 1969 Census of Agriculture provides selected items of general information for all farms and more detailed data

for the farms with gross sales of $2,500 or more in 1969. Results for counties and States have been published under the general title, Volume I, Area Reports. This volume was issued for each State and island area.

Statistics by subject for each state, geographic division, region, and the United States were issued in Volume II, U. S. Summary. Each of the nine chapters in this volume was published separately. Other volumes of the 1969 Census of Agriculture cover agricultural services, irrigation, and drainage of farm lands. A census of horticultural specialties and a sample survey of farm finance were taken for the year 1970. In general, the farm finance items are comparable to those for which financial data were collected in the 1960 and 1965 sample surveys of agriculture, i.e., the horticultural data to data collected in the 1959 Census of Horticultural Specialties.

A survey of specialized agricultural operations was conducted for the first time, covering the year 1971. The results were published in nine separate reports. Each report describes a major type of agricultural product and presents data for the principal producing counties, States, and the United States. These reports, along with reports on forms and procedures, a procedural history, a graphic summary, and an evaluation of coverage, will comprise Volume V, Special Reports.

The definition of a farm, as used in 1959 and 1964, remained the same in the 1969 Census, so that 1969 data are generally comparable to those of earlier censuses.

MANUFACTURING AND MINERAL INDUSTRIES

The census of Manufacturers, first taken for 1809, provides data on manufacturing activities for small geographic areas, individual industries, products shipped, and materials consumed. This census was taken decennially for 1809-1899, except for the year 1829 for which no canvass was made; quinquennially 1899-1919; and biennially thereafter through 1939. After disruption of this schedule by data collection vital to World War II activities, the manufactures census was conducted for the years 1947, 1954, 1958, 1963, and 1967. Under legislation enacted in 1964, the census of manufactures will be taken in the future covering the years ending in 2 and 7. The results of the 1972 Census of Manufactures are now being published.

The census of mineral industries, first taken for 1839, was conducted at about 10-year intervals during the next century. It was taken for the years 1954, 1958, 1963, and 1967. Under legislation enacted in 1964, the census of mineral industries will also be taken in the future covering the years ending in 2 and 7. The results of the 1972 Census of Mineral Industries are now being published.

A census of commercial fisheries was conducted for the calendar year 1963 and was the first such census undertaken since 1908. Prior to the 1908 census, there were two census surveys of commercial fisheries, one in 1889 and the other in 1880. This census is conducted by the Bureau of the Census in cooperation with the Bureau of Commercial Fisheries, Department of the Interior. The results of the 1967 Census of Commercial Fisheries were published during 1970.

The Annual Survey of Manufactures was conducted for each year 1949-53, 1955-57, 1959-62, 1964-66, and 1968-71. These surveys are based on a scientific sample of manufacturing establishments and provide annual statistics for intercensal years on employment, payrolls, man-hours, value added by manufacture, inventories, new capital expenditures, and value of products shipped--data which are shown in more detail in the census of manufactures reports.

Current statistics on commodity production and shipments are issued in the Current Industrial Reports series. This series of reports makes available to manufacturers, trade groups, and other users of industrial data, current figures for use in their day-to-day operations and forward planning. The current reports also present a picture of industrial production trends over a period of time.

1972 CENSUS OF MANUFACTURES

The 1972 Census of Manufactures conducted during 1973 as part of the Economic Censuses, is an enumeration of establishments engaged in manufacturing activities in the United States. The results of the census of manufactures are being presented in a series of reports on industries, geographic areas, and subjects (employment size of the establishment, type of organization, etc.). Two types of statistics are provided: (1) General statistics (number of establishments, employment, payroll, man-hours, cost of materials, value of shipments, capital expenditures, and inventories) and (2) quantity and value of materials consumed and products shipped.

Advance and preliminary reports furnishing summary results have been issued and are being superseded by more detailed paperbound reports. These paperbound reports will be incorporated and issued in final hard bound volumes which may contain additional explanatory materials and graphics not previously published. Concurrent with the publication of the volumes, selected aggregate data included in the final reports will be available on computer tapes. For further information on the computer tape program, see the corresponding section, Manufacturing and Mineral Industries, in Part II of this Catalog.

Publication order forms for the various reports issued as a result of the 1972 Census of Manufactures and Mineral Industries

are issued as soon as the report becomes available and may be obtained on request from any U. S. Department of Commerce District Office (see back cover of this Catalog) or from the Subscriber Services Section (Publications), Social and Economic Statistics Administration (SESA), Washington, D. C. 20233. Descriptive order forms for the 1971 and 1970 Annual Survey of Manufactures and the Current Industrial Reports may be obtained from the above offices on request. A consolidated list of reports from the 1967 Census of Manufactures, Mineral Industries, and Commercial Fisheries appears in the 1972 issue of U. S. Department of Commerce Catalog.

ANNUAL SURVEY OF MANUFACTURES

The Annual Survey of Manufactures was initiated in 1949 and has been conducted since that time for years not covered by the census of manufactures. The Annual Survey provides up-to-date basic statistics on the key measures of manufacturing activity for industry groups, important individual industries, and for geographic divisions, States, large standard metropolitan statistical areas (SMSA's) and large industrial counties and cities. The survey currently covers approximately 65,000 plants out of a total of about 300,000. Included in the sample are all large manufacturing plants, which account for more than two-thirds of total employment of all manufacturing establishments in the United States, and a sample of the more

numerous medium-and-small-sized establishments.

The Annual Survey program is designed to provide estimates of general statistics (employment, payroll, man-hours, value added by manufacture, etc.) for industry groups and industries; general statistics for geographic divisions, States, SMSA's, and cities, cross-classified by major industry group and large industrial counties; value of shipments for classes of products; expenditures for new plant and equipment for industries and industry groups, and for States and large SMSA's; value of manufacturers' inventories for industry groups and industries; fuels and electric energy data by industry groups and States; and gross book value of fixed assets and rental payments. The 1960 Annual Survey of Manufactures was the first to provide general statistics for large industrial counties. The 1956 Annual Survey was the first to provide these data for SMSA's, and 1969 for cities.

1972 CENSUS OF MINERAL INDUSTRIES

The 1972 Census of Mineral Industries, conducted during 1973 as part of the economic censuses, is an enumeration of establishments primarily engaged in the extraction of minerals in the United States. The results of the census of mineral industries are being presented in a series of reports on industries, geographic areas, and subjects (employment size of establishments, type of organization, etc.). Two types of

statistics are provided (1) general statistics (number of establishments, employment, payroll, man-hours, cost of materials, value of shipments, and capital expenditures) and (2) quantity and value of materials consumed and products shipped.

Advance and preliminary reports furnishing summary results have been issued and are being superseded by more detailed paperbound reports. These paperbound reports will subsequently be assembled and reissued in final hardbound volumes which may contain additional explanatory materials and graphics not previously published. Concurrent with the publication of the volumes, selected aggregate data included in the final reports will be available on computer tapes.

1972 CENSUS OF RETAIL TRADE

The 1972 Census of Retail Trade, conducted during 1973 as part of the economic censuses, is an enumeration of retail establishments in the United States. The 1972 census is the 10th census of retail trade of the United States. Preliminary data from the census of retail trade have been issued in a series of press releases for each State and the District of Columbia on number of establishments with employees, employment, payroll, and sales. More detailed area data are being issued in final paperbound Area Statistics Reports. Final

series, of Subject and Major Retail Centers paperbound reports are also being issued and Retail Merchandise Line Sales will be issued. These paperbound reports will be assembled and reissued in hardbound volumes which may contain additional explanatory materials and graphics not previously published. Concurrent with the publication of the volumes, selected aggregate data included in the final reports will be available on computer tapes.

1972 CENSUS OF WHOLESALE TRADE

The 1972 Census of Wholesale Trade, conducted during 1973 as part of the economic censuses, is an enumeration of wholesale trade establishments with employees in the United States. The 1972 census is the 10th census of wholesale trade. Preliminary data from this census have been issued in a series of press releases for each State and the District of Columbia on number of establishments, employment, payroll, and sales. More detailed area data are being issued in final paperbound Area Statistics reports. Final series of Subject and Wholesale Commodity Lines Sales paperbound reports will also be issued. These paperbound reports will be assembled and reissued in hardbound volumes.

1972 CENSUS OF SELECTED SERVICE INDUSTRIES

The 1972 Census of Selected Service Industries, conducted during 1973 as part of the economic censuses, is an enumeration

of selected service establishments in the United States. The 1972 census is the ninth census of selected service industries of the United States. Preliminary data from this census have been issued in a series of press releases for each State and the District of Columbia on number of establishments with employees, employment, payroll, and receipts. More detailed area data is being issued in paperbound Area Statistics reports. A final series of Subject paperbound reports will also be issued. These paperbound reports will be assembled and reissued in hardbound volumes which may contain additional explanatory materials and graphics not previously published. Concurrent with the publication of the volumes, selected aggregate data included in the final reports will be available on computer tapes.

CONSTRUCTION AND HOUSING

The first U.S. Census of the construction industry was taken in 1930 (covering the year 1929) in conjunction with the Fifteenth Decennial Census and as part of the census of business. Census data for the construction industry were again collected for 1935 and 1939 and published as a part of the 1935 and 1939 Census of Business Reports. Collection of census data for the construction industry was disrupted by data collection vital to World War II activities. Following World War II the censuses

of business were reinstated but coverage of the construction industry was not included. Data for the construction industry were again collected for 1967 and 1972 as a part of the 1967 and 1972 Economic Censuses. The final data from the 1967 census have been reissued in volume form. The results of the 1972 Census of Construction Industries are now being published. A 1967 census of construction industry of Puerto Rico was conducted in conjunction with the Commonwealth of Puerto Rico and the 1967 Census of Business. A 1972 census of construction industry of Puerto Rico was conducted as part of the 1972 Economic Censuses.

Statistics on construction activity include current monthly data on housing starts and sales, housing completions and under construction value of new construction put in place, construction prices, public construction contract awards, and new housing units authorized by building permits and housing units authorized for demolition. Quarterly statistics are compiled on expenditures for alternations and repairs to residential properties. Most of these series were formerly issued jointly by the Bureau of Labor Statistics and the Bureau of Domestic Commerce (formerly Bureau of Competitive Assessment and Business Policy). The Bureau of the Census assumed responsibility for collecting and publishing construction statistics effective July 1, 1959.

A census of housing was taken as part of the decennial censuses of 1940, 1950, 1960, and 1970. As a part of the 1960 Census of Housing, the Survey of Components of Inventory Change and Residential Finance (SCARF) was taken starting in late 1959 and extending into 1960. The Components of Inventory Change portion measured gains and losses in the housing inventory through new construction, conversion, demolition, and the like, after 1950, and changes after December 1956 when the National Housing Inventory was conducted.

The Residential Finance portion obtained data on method of financing the purchase of property, the size of the outstanding mortgage debt, and detailed tabulations on such mortgage characteristics as amount of loan, interest rate, Government insurance status, method of amount of mortgage payments and type of lender.

Current statistics on housing include quarterly data on vacancy rates and condition and characteristics of available housing vacancies for the country as a whole, for geographic regions, and inside and outside standard metropolitan statistical areas. Data on television sets for the Nation, regions, and geographic divisions have been obtained from a series of supplements to the Current Population Surveys.

A publications program statement describing the contents and timing of the reports from the 1972 Census of Construction

Industries is available. Descriptive order forms for the various series of reports from this census, from the 1970 Census of Housing, and from current construction and current housing surveys may be obtained upon request from any U. S. Department of Commerce District Office.

1972 CENSUS OF CONSTRUCTION INDUSTRIES

The 1972 Census of Construction Industries, conducted by the Bureau of the Census in 1973 as part of the 1972 Economic Censuses, is an enumeration of construction establishments in the United States operating as general contractors, operative builders, special trade contractors, or land subdividers and developers. The 1972 estimates of establishments with payroll in all the construction industries are based on reports from a probability sample of about 145,000 construction establishments. The sample included all large and medium size construction establishments (10 employees or more) and a sample of small construction establishments (1 to 9 employees). Limited data for establishments with no payroll are derived from administrative records of the Federal Government.

The results of the census of construction industries are being presented in a series of reports on each of the 27 industries. Preliminary and final industry series reports show data on: Number of construction establishments; receipts;

employment; payrolls; payments to subcontractors; payments for materials, components, and supplies; payments for the rental of machinery and equipment; value added; capital expenditures during the year; and depreciable assets. More detailed data are shown on construction receipts relating to new construction as compared with maintenance and repair work, ownership (public vs. private) of construction, location of work, and type of work (single-family houses, industrial buildings, streets and roads, etc.).

Preliminary industry reports presenting data for establishments with payroll are now available. These reports will be superseded and supplemented by final industry reports. Final area reports presenting data similar to the industry report series will be published for each of the 50 States and the District of Columbia. Final special reports presenting selected data by type of operation and legal form of organization and data on specialization in primary types of construction will be published at a later date. A separate report will be issued on the construction industry in Puerto Rico.

All final reports will be assembled and reissued in cloth-bound volumes. These volumes may contain additional explanatory materials and graphics not previously published. Selected data included in the final reports will be available on computer tapes.

TRANSPORTATION

The 1972 Census of Transportation is the third census of this type ever to be taken in this country. The first census of transportation was taken in 1963. Prior to 1963, some information on transportation was compiled and published in connection with the decennial censuses of 1880 and 1890. Reports on certain aspects of transportation were published at intervals by the Bureau of the Census during the early part of this century. Under legislation enacted in 1964, the census of transportation is now taken at 5-year intervals (for years ending in 2 and 7), coinciding with the other economic censuses of business, manufacturers, and mineral industries.

The 1972 Census of Transportation consists of three major phases: (1) National Travel Survey; (2) Truck Inventory and Use Survey; and (3) Commodity Transportation Survey.

The publication program of the 1972 Census of Transportation presents revised benchmark data on personal travel, the use of trucks, and the shipment of commodities, and it makes possible the measurement of changes over a period of time (1972 compared with 1967 and 1963). A list of publications from the 1967 Census of Transportation appears in the 1971 annual issue of the Department of Commerce Catalog.

Descriptive order forms for the various series of reports published as a result of the 1972 Census of Transportation may

be obtained on request from any U. S. Department of Commerce District Office.

1972 CENSUS OF TRANSPORTATION

Final Reports

Volume I National Travel Survey

This volume contains the three reports published for the 1972 National Travel Survey. One report presents data for the full year 1972; another is a spring report covering trips ending in January through May of 1972; and the third is a summer report covering trips ending in June through September 1972. The survey is based on information obtained from a probability sample of households representing the total civilian, non-institutional population of the United States.

For travel during 1972, additional information is presented on an origin/destination basis. Included are tables for each destination travel region showing: Number of households taking trips; trips taken; person-trips; person-miles; person-nights; and type of destination used by origin travel region. The same data sets are presented for travel to destinations outside the United States by origin travel region. Additionally, for the first time, travel to a "visited State" is provided for selected States. The 1972 Survey includes somewhat more detail by type of transport, as well as type of lodging (overnight accommodations used), by State, by trip. Traveler, household, and trip

characteristics are shown such as: Size of household, race of head, sex of traveler, ownership of residence, type of dwelling unit of residence, weekend trips, vacationing destination-area type, means of transport, purpose of trip, family income, occupation of household head, round-trip distance, duration of trip, number of trips, age of traveler, education of traveler, etc.

The appendixes provide a glossary of terms, facsimiles of questionnaires, and a description of the available public-use tapes.

VOLUME II TRUCK INVENTORY AND USE SURVEY*

This volume presents data based on the 1972 Truck Inventory and Use Survey and contains the data previously issued in the individual State reports (TC72-T-1 to 52) listed in the 1973 issue of this Catalog.

The volume contains data on the characteristics and use of the Nation's truck resources, other than vehicles owned by Federal, State and Local government agencies. The data presented in this volume are based on a probability sample of private and commercial trucks registered (or licensed) in each State during 1972.

The tabular presentation in the volume has been arranged into three broad sections. The first section deals with

various cross-classifications mostly at the national level. It also is divided into three subsections, based on number of trucks, truck-miles, and specialized trucks (such as pickup and panel trucks). The second section provides comparative data on the number of trucks, truck-miles, and average miles per truck in each of the 50 States and the Nation as a whole. This section is further divided into three subsections based on size of truck, major occupation use, and range of operation. The third section presents tabulations for each of the 50 States and the District of Columbia. Data include trucks, truck-miles, and average miles per truck for each State and cross-classifications by vehicle and operational characteristics based on the total truck registrations for each State.

The appendixes provide a facsimile of the census questionnaire and information on expected sample size and distributions of trucks by State, size, classification of trucks, revised Federal Highway Administration total truck inventory by state, and public-use computer tape contents.

This series presents data on the shipments of commodities from manufacturing plants, by geographic division for approximately 80 three-digit Transportation Commodity Classification (TCC) groups. Each of the 14 reports shows data for the three-digit commodities comprising one two-digit major group or more. Tables show the flow of commodities at the

three-digit TCC level for tons and ton-miles of shipments by means of transport, distance and weight of shipment, and origin and destination. These reports will be issued as part of Vol. III, 1972 Census of Transportation.

1. Textile Mill Products, Including Apparel. 62 pp. $1.70
2. Lumber and Wood Products Except Furniture; Furniture and Fixtures; Pulp, Paper, and Allied Products. 104 pp. $2.30.
3. Rubber and Miscellaneous Plastics Products. 36 pp. $1.20.
4. Stone, Clay, Glass, and Concrete Products. 66 pp. $1.75.
5. Primary Metal Products. 59 pp. $1.60.
6. Leather and Leather Products. 33 pp. $1.15.

FOREIGN TRADE

Statistical data of United States exports and imports are collected from Shippers' Export Declarations and import entries. These forms are filed by exporters and importers with Customs officials and transmitted to the Bureau of the Census. The statistics compiled include information on the dollar value and net quantity (pounds, gallons, square yards, etc.) of U. S. imports and exports of commodities by all methods of transportation combined, and shipping weight and value of shipments made by

vessel and by air. Data are shown by country of origin and destination, and Customs districts through which merchandise enters and leaves the United States. Separate statistics are presented on trade with Puerto Rico and U. S. possessions and on trade of the Virgin Islands with foreign countries. Beginning with January 1948 statistics, data are available on exports (excluding military shipments) and general imports adjusted for working-day and seasonal variations.

The export statistics are compiled in accordance with the classification in Schedule B, Statistical Classifications of Domestic and Foreign Commodities Exported from the United States. Import data are initially compiled in terms of Tariff Schedules of the United States Annotated (TSUSA). These data are arranged and presented in monthly published reports in terms of commodity classifications contained in Schedule A, Statistical Classification of Commodities Imported Into the United States. Introductory sections of report FT 135, FT 410, and other statistical publications contain discussions of the presentation of the statistics.

Any changes of a substantial nature affecting the coverage or presentation of the statistics are announced in the appropriate publication. Detailed information concerning the foreign trade program is presented in a brochure entitled Guide to Foreign Trade Statistics for the current year.

STATISTICAL ABSTRACT OF THE UNITED STATES: 1974 (95th Annual Edition)*
1,048 pp. July 1974

This one-volume basic reference source, issued annually since 1878, is the standard summary of statistics on the social, political, and economic organization of the United States. It presents a comprehensive selection of statistics from the publications and records of governmental and private agencies.

This edition contains more than 1,400 tables and charts and an extensive guide to sources of additional data. Although emphasis is given primarily to national data, many tables present data for regions and a smaller number for cities. Sections 33 and 34, respectively present comprehensive data for States and for the 157 largest standard metropolitan statistical areas. Statistics for the Commonwealth of Puerto Rico and for outlying areas of the United States are included in the State tables whenever available. Additional information for cities, counties, metropolitan areas, congressional districts, and other small units, as well as more historical data, are available in various supplements to the Abstract.

There are 66 entirely new tables in this edition covering such topics as job vacancies in manufacturing, election campaign costs for national offices, U. S. multinational companies, prices of new one-family houses sold, mortgage status of homeowner properties, violent crimes in cities, suicide rates

for selected countries, and salt water sporting fishing. Seven new tables are included in the section called "Energy", along with three new tables concerned with fuel and energy use in the section entitled "Manufactures."

In addition, continuing series have been brought up to date, and less timely data have been curtailed or eliminated. Text notes have been revised to reflect changes in definitions and source references.

CBP-73 COUNTY BUSINESS PATTERNS - 1973

This series presents data for 1973 and 1972 on employment, number and employment size of reporting units, and taxable payrolls. The individual State reports present the principal data items by detailed industry--4-digit level of the Standard Industrial Classification (SIC) for States and counties and by major industry group (2-digit SIC) for standard metropolitan statistical areas (SMSA's). Also included, by major industry group, are data on: Number of employees and reporting units, by employment-size class; and employees and taxable payrolls of administrative and auxiliary units.

The U. S. summary includes data by detailed industry (4-digit SIX) for the United States and by major group (2-digit SIC) for each State. Also included are totals of the principal data items for each county and SMSA.

SMALL BUSINESS ADMINISTRATION (SBA)

"The Small Business Administration is a permanent, independent government Agency created by Congress in 1953 to encourage, assist and protect the interests of small businesses.

"Congress has directed SBA to take the lead in identifying and analyzing small business problems, to be the voice and advocate of small business, to foster and coordinate research and organization of significant data and to initiate ideas and innovations that will widen opportunities for small business to get started and compete on an equitable basis.

"The Agency strives to carry out this mandate by insuring that small business concerns receive a fair proportion of government purchases, contracts and subcontracts, as well as of the sales of government property; making loans to small business concerns, State and local development companies, and victims of floods or other catastrophes; licensing, regulating and lending to small business investment companies; improving the management skills of small business owners, potential owners and managers; and conducting studies of the economic environment.

WHO IS ELIGIBLE?

"Most small independent businesses -- except speculative firms, newspapers, television, radio stations, other forms of

media, and, normally, gambling.

"For purposes of making loans, SBA defines a small business as one that meets these general size standards:

. Wholesale -- annual receipts from $5 million to $15 million depending on the industry.

. Retail or Service -- annual receipts from $1 million to $5 million, depending on the industry.

. Construction -- annual receipts of from $1 million to $5 million, depending on industry. (Separate and lower size standards have been adopted for the special trades (construction) industries.)

. Manufacturing -- from 250 to 1,500 employees depending on the industry.

Detailed definitions are set forth in Section 121.3-10 of Part 121, Chapter I, Title 13 of the Code of Federal Regulations.

FINANCIAL ASSISTANCE

BUSINESS LOANS

"When a small businessman with a financial problem comes to SBA for advice and assistance, Agency loan officers review his problem and suggest possible courses of action. If he needs money and cannot borrow it on reasonable terms, SBA often can help. The Agency will consider either participating with

a bank in a loan or guaranteeing up to 90 percent of the loan. If a bank or other lending institution cannot provide the funds, SBA will consider lending the entire amount as a direct government loan if funds are available. However, most of SBA's loans are made in cooperation with banks.

"SBA looks at past earnings records and future prospects of a small businessman to determine whether he has the ability to repay a loan, and any other fixed debts, out of business profits. SBA loans may be used for:

. Business construction, expansion or conversion

. Purchase of machinery, equipment, facilities, supplies or materials

. Working capital

DIRECT AND IMMEDIATE PARTICIPATION LOANS

"SBA, at present, can make a direct loan up to $100,000 unless funds are not available. In participation loans, the SBA and the private lending institution each put up part of the funds immediately. The maximum interest rates on SBA's share is 5 1/2 percent. The bank may set a legal and reasonable rate, but SBA's share may not be in excess of $150,000 in any immediate participation loan at this time.

LOAN GUARANTY PLAN

"SBA can guarantee up to 90 percent (or $350,000) which-

ever is less of a bank loan to a small firm for the same purposes as direct and participation loans. The interest rate is set by the bank, within certain limits set by SBA from time to time.

POOL LOANS

"SBA makes loans to corporations formed and capitalized by groups of small business companies for purchasing raw materials, equipment, inventory or supplies to use in their individual businesses. These loans may also be made to obtain the benefits of research and development or to establish R&D facilities.

"The Agency, alone or with a bank, may lend as much as $250,000 for each pool member. The SBA interest rate is 5 percent, and the maturity may be up to 10 years. However, when these loans are used for construction, maximum maturity may be for as long as 20 years.

ECONOMIC OPPORTUNITY LOANS (EOL)

"Economic Opportunity Loans make it possible for the disadvantaged businessman or woman who has the capability and the desire, to own their own businesses. Both prospective and established small businesses may receive assistance under this program.

"The Economic Opportunity Loan program provides both

financial and management assistance. The maximum amount is $50,000 for up to 15 years.

"Any resident of the United States, Puerto Rico, and Guam may apply for an EOL, if:

1. Total family income from all sources (other than welfare) is not sufficient for the basic needs of that family; or
2. Due to social or economic disadvantage he or she has been denied the opportunity to acquire adequate business financing through normal lending channels on reasonable terms. This includes honorably discharged Vietnam-era veterans.

"Every applicant must show that he has the ability to operate a business successfully and that the loan can be repaid from the earnings of the business.

"Although character and ability are more important than collateral under this program, every applicant is expected to have some of his own money or other assets invested in the business.

HANDICAPPED ASSISTANCE LOANS

"Under this program, the Small Business Administration is authorized to make loans in two categories: Handicapped Assistance Loans to non-profit organizations (HAL-1) and

Handicapped Assistance Loans to small business concerns owned, or to be owned, by handicapped individuals (HAL-2).

"HAL-1 financial assistance is available to public or private non-profit sheltered workshops, or any similar organization which employs handicapped individuals for not less than 75 percent of the manhours required, to enable them to produce and provide marketable goods and services. HAL-2 financial assistance is available for the establishment, acquisition, or operation of a small business concern owned by handicapped persons.

DEVELOPMENT COMPANY LOANS

"SBA believes that a vigorous national economy depends on the ability of each local community to develop its own economy. Throughout the nation, local communities are finding that they can increase job opportunities, boost individual income and local tax revenues by helping business concerns to get started -- diversify -- expand their operations and modernize their facilities. This Agency has two development company lending programs.

STATE DEVELOPMENT COMPANIES

"A State Development Company is a corporation organized by a special Act of the State Legislature, to operate statewide to assist the growth and development of business concerns,

including small businesses in its area.

"SBA makes loans to State Development Companies to supply long-term loans and equity capital to small business concerns. The SBA may lend a State Development Company as much as the company's total outstanding borrowing from all other sources. These loans may be for as long as 20 years at variable interest rates.

LOCAL DEVELOPMENT COMPANIES

"This program works exclusively through a Local Development Company made up of local citizens whose primary purpose is to improve their economy. They assist in the planned economic growth of the community by promoting and assisting the development of small business concerns in the area.

"To be eligible for this kind of loan, citizens must put up their own personal dollars. As a corporation with at least 75 percent of its ownership vested in persons living or doing business in the community, local people assume responsibility for projects they sponsor. A Local Development Company (LDC) may be organized as a profit or non-profit corporation and must have a minimum of 25 stockholders or members.

"A Local Development Company must provide a reasonable share of the cost of the project, generally 20 percent of the total amount. A maximum of $350,000 may be borrowed from SBA

for each identifiable small business to be assisted for as long as 25 years.

"Development Company loans may help to buy land; build a new factory; acquire machinery and equipment; expand or convert existing facilities, provided the project will assist a specific small business.

"The Agency participates with banks, insurance companies, pension fund groups, other agencies, State authorities, commissions and others, when making loans to Local Development Companies.

DISASTER LOANS

"In cases of disasters -- storms, floods, earthquakes, or other catastrophes, the Small Business Administration can help victims repair physical damage or overcome economic injury. The agency makes loans to individuals, business concerns of all sizes, and non-profit organizations, to repair or replace damaged structures, lost or damaged furnishings, business machinery, equipment and inventory.

PHYSICAL DAMAGE LOANS

"The agency may make a disaster loan with a bank or other private lending institution or entirely on its own. The amount of a loan is determined generally by the loss, the needs of the applicant, and other factors. Under a physical disaster,

the amount may not exceed $50,000 for homes, $10,000 for furniture and fixtures, but not to exceed $55,000 repair or replacement of homes and household goods; and up to $500,000 for rehabilitation of businesses. Loans may be for as long as 30 years.

"When a bank-SBA loan is made, the bank may charge its regular interest rates within certain limits set by SBA from time to time. However, the Agency sets its share at a lower interest rate set by statute.

"The SBA works closely with the American Red Cross in disaster areas, coordinating its loan program with the Red Cross grant program.

ECONOMIC INJURY LOANS

"In areas hit by major or natural disasters, determined by the President or the Secretary of Agriculture, small firms suffering economic losses are eligible for SBA loans.

"SBA funds may be used to provide working capital and pay financial obligations that the borrower would have been able to meet if not for the disaster.

"The interest rate on SBA's share of a bank-SBA loan or a loan made entirely by the Agency is set by the Secretary of the Treasury. A participating bank may set the rate on its share within limits set by SBA from time to time.

PRODUCT DISASTERS

"SBA also makes loans to small firms that have suffered substantial economic injury because they cannot process or market a product for human consumption because of disease or toxicity resulting from either natural or undetermined causes.

"The interest rate is set by the Secretary of the Treasury on SBA's share of a bank-SBA loan, or a loan made entirely by the Agency. A participating bank may place the rate on its own share within limits set by SBA from time to time.

DISPLACED BUSINESS LOANS

"Small firms with substantial economic injury as a result of being displaced by or being near Federally aided urban renewal and other construction projects are eligible to apply for SBA loans to help relocate or reestablish. Reasonable upgrading of the business while reestablishing is permitted.

"The interest rate is established yearly according to statutory formula. A Bank may set the interest rate on its share within reasonable limits.

"SBA may make a loan to any small business concern that must make changes in its equipment, facilities, or operation in order to meet the requirements of the Egg Products Act, the Wholesome Poultry Products Act, and the Wholesome Meat Act of

1967, if the SBA determines that such a concern is likely to suffer substantial economic injury without the loan. The U.S. Department of Agriculture or the appropriate State authority will issue a list of required changes based on its inspection of the premises to determine the amount and use of the necessary loan.

OCCUPATIONAL SAFETY AND HEALTH

"A loan may be made to assist a small business firm that must make changes in its equipment, facilities or operations in order to comply with Federal standards under the Occupational Safety and Health Act of 1970, or State standards adopted pursuant to this legislation, if SBA determines that the firm is likely to suffer substantial economic injury without a loan. A loan applicant may be considered under either of the following:

Voluntary Compliance Procedure -- when a small business concern independently initiates changes in order to comply with Federal standards.

Cited Violation Procedure -- when a small business concern is required by OSH Administration to undertake action in order to meet Federal or State Standards.

STRATEGIC ARMS ECONOMIC INJURY LOANS

"The Small Business Administration is authorized to make loans to assist, or to refinance the existing indebtedness

of, any small business concern directly and seriously affected by the significant reduction of the scope or amount of Federal support for any project as a result of any international agreement limiting the development of strategic arms or the installation of strategic arms facilities.

BASE CLOSING ECONOMIC INJURY LOANS

"A loan may be made to assist any small business concern that has suffered, or will suffer, substantial economic injury as a result of the closing by the Federal Government of a major military installation, or as a result of a severe reduction in the scope and size of operations at a major military installation. Loans are made to help the small business continue in business at its existing location, reestablish its business, purchase a new business, or establish a new business. Maximum maturity is 30 years and interest rates are established annually. In most instances, the maximum amount of a loan cannot exceed $500,000.

REGULATORY DISASTER LOANS

"In addition to Coal Mine Health and Safety Loans, consumer Protection Loans, and Occupational Safety and Health Loans, SBA provides similar financial assistance to help small concerns meet requirements imposed by any Federal law, any State law enacted as a result of the Federal law, or any regulation of

a Federal law. The small business concern must show that it is likely to suffer substantial economic injury without this assistance before a loan may be approved. The interest rates will be the same as under the Displaced Business Loan Program, and maximum loan amounts and terms are the same as for Base Closing Economic Injury Loans.

LEASE GUARANTEE PROGRAM

"Small businessmen often are unable to lease good locations because they do not have top credit ratings required by landlords. SBA, in certain cases, will issue an insurance policy or reinsure a policy issued by a private insurance company which guarantees the rent for a small businessman. When the private insurance participation is not available, SBA may guarantee the leases directly. The guarantee may extend for a minimum of 5 years to a maximum of 20 years on a participating basis, and 10 to 20 years on a direct basis.

"Premiums are based on actuarial studies and are payable in advance with no refunds. Although the small businessman is required to pay three months' rent in advance to be held in escrow in case of rent defaults, it will be returned to him when his lease is up, with 4 percent interest, if there are no defaults. In some cases, the landlord may agree to a three month deductible clause in the policy in lieu of the escrowed rent.

"Applicants for lease guarantee policies are evaluated under a risk analysis system devised specifically for this SBA program. Under this system, the applicant's management skills, his financial position, the location in which he wishes to rent, and his business are analyzed.

"The Agency is seeking to widen small business participation in this program, which can be valuable to small firms trying to relocate or trying to obtain prime space.

SURETY BOND PROGRAM

"The Small Business Administration is committed to help make the bonding process more accessible to small and emerging contractors who, for whatever reasons, might have found bonding previously unavailable to them. SBA is authorized to guarantee to a qualified surety up to 90 percent of losses incurred under bid, payment, or performance bonds issued to contractors on contracts valued up to $500,000. The contracts may be for construction, supplies or services provided by either a prime or subcontractor for governmental or non-governmental work.

"Applications for this assistance are available from any SBA field office. They are forwarded to the surety underwriters by an insurance agent with whatever credit, financial and experience data is required by the surety company. After the surety's decision that the bond can be issued, subject to

SBA's guarantee, a single-page agreement form is forwarded to the nearest SBA regional office by the surety company. The contractor pays SBA a small fee for this assistance, and the surety pays SBA a portion of its bond fee for the guarantee.

"In order to be eligible for this program, the contractual situation must be included in the Contract Section of the Rating Manual of the Surety Association of America.

MINORITY ENTERPRISE PROGRAM

"SBA has combined its efforts with those of private industry, banks, local communities and the Federal Government to substantially increase the number of minority-owned, operated and managed businesses. For the first time in SBA history, the Minority Enterprise Program brings all the Agency's services together in a coordinated thrust to make more sound business opportunities available to minority individuals.

"Since minorities comprise 17 percent of the Nation's population, yet own 3¼ percent of the country's more than 8 million small businesses, the main objective of the minority enterprise Program is to help close the gap in business ownership between minority individuals and other Americans.

"The Minority Enterprise Program consists of an overview staff in SBA's Washington Headquarters office. ME field

representatives are stationed in all regional and in many district offices. These representatives, cooperating with local business development organizations, explain to potential minority entrepreneurs how all the services and programs of SBA are available to help them become successful business operators.

"SBA tries to match minority individuals, who indicate a desire for business ownership and have some management aptitude, with sound business opportunities. The ME field representative then becomes the applicant's "advocate", advising and helping with financial statements, business projections, and any related material. Assistance is also given, if needed, in preparing a formal loan application.

"The package service indicates the extent and type of management or technical assistance offered the applicant to help assure his business can be operated successfully. This phase of the program is emphasized because private surveys have shown consistently that faulty or inadequate management is responsible for more than 90 percent of new business failures.

"ME loans are made under all the Agency's lending programs. In regard to the regular business loan program (7a) they are made under standard criteria. But under the Economic Opportunity Loan (EOL) program, relaxed eligibility criteria are used, with emphasis on the applicant's character and his ability to

repay the loan and other obligations from the profits of the business.

"The average ME loan is for approximately $39,000.

"Most opportunities for minority businesses -- both new or established -- are in the retailing, distributing, franchising and service industries. Opportunities in these categories are not only greater in numbers, but usually require less equity capital on the part of the would-be owner.

"SBA does, however, encourage and help minority and disadvantaged individuals become owners of manufacturing firms, nursing homes, processing plants and similar businesses, whenever possible.

"The Agency counsels and, in many ways, assists minority groups in forming Local Development Companies and specialized Small Business Investment Companies. Local Development Companies are formed by groups interested in stimulating the planned economic growth of their community by aiding small concerns in the local area. Specialized SBICs provide equity funds, long-term loans and management assistance to small business concerns owned by socially or economically disadvantaged persons.

"The Minority Enterprise Program also has an active plan to help minority contractors locate and coordinate available help at all levels from public and private sources in order

to grow and improve their productive capabilities.

"Minority-owned or managed firms interested in performing government contracts are helped through Section 8(a) of the Small Business Act, under which SBA is authorized to act as prime contractor for certain types of goods and services and subcontract orders to individual small firms. The goal of the program is to open the doors of government contracting opportunities to minority businesses unable, or unlikely to get a chance, to bid on competitive contracts.

"Surety bond guarantees are made on construction contracts up to $500,000. The revolving line-of-credit program, designed to aid minority contractors, is now available to any small business with an assignable contract.

"Based on SBA's experiences with the 8(a) program, the Agency has developed a system called the Minority Vendors Program, whereby major private corporations are provided a service which will match their procurement needs with minority vendors qualified to satisfy those needs.

"In all its ME activities, SBA works closely with other governmental agencies, trade associations, larger businesses, franchisors, and local civic and business organizations.

"SCORE counselors, as well as SBA Advisory Council members across the country, also play an active role in supporting minority enterprise activities.

SMALL BUSINESS INVESTMENT COMPANIES (SBICs)

"The SBA helps finance small firms through privately owned small business investment companies. SBICs are SBA-licensed companies which supply venture capital and long-term financing to small firms for expansion, modernization, and sound financing of their operations. They may also provide management assistance.

"SBICs must operate within SBA regulations but their transactions with small companies are private arrangements and have no connection with SBA.

"Initial minimum private investment required in an SBIC may vary from $150,000 to as much as $1 million, depending on the area to be served, the prospects for sound, profitable operation, and whether or not businesses to be financed will be largely owned by persons whose participation in the free enterprise system is hampered because of social or economic disadvantages.

"SBA may make loans, or guarantee 100 percent of the loans of private lending institutions, to SBICs to add to their funds for financing small firms. Such loans may be subordinated, with up to 15-year terms. Maximum loan to an SBIC is basically $15 million or twice the SBIC's private paid-in capital and paid-in surplus, whichever is smaller.

"SBICs that specialize in venture capital financing and

are capitalized at $500,000 or more may qualify for SBA direct or SBA-guaranteed loans aggregating up to $20 million. Congress has authorized certain tax incentives to encourage more investment in SBICs.

"SBA, in cooperation with the Department of Commerce, has instituted a specialized application of the SBIC principle wherein SBICs dedicated solely to assisting small business concerns owned and managed by socially or economically disadvantaged persons are organized under Section 301(d) of the Small Business Investment Act of 1958, as amended.

"These SBICs are owned and operated by established industrial or financial concerns, community or business-oriented economic development organizations, or private or public investors to combine money and management resources for assistance to socially or economically disadvantaged entrepreneurs.

HOW SBICs FINANCE SMALL FIRMS

"SBICs may make long-term loans, purchase stock or debt securities, or combine equity and loan financing. Minimum term of SBIC financing is 5 years, except that an SBIC may maintain up to one-half of its portfolio in investments in disadvantaged firms with minimum investment periods of 30 months.

ELIGIBILITY FOR FINANCING

"For SBIC financing, a concern is small if its assets do not exceed $7½ million, its net worth is not more than $2.5 million, and its 2-year average annual profits after Federal income taxes did not exceed $250,000. A concern may also qualify under the regular business loan size standards.

PROCUREMENT ASSISTANCE

"Each year, the Federal Government contracts for billions of dollars with private companies. SBA helps small businessmen obtain a share of this government business by providing several forms of assistance to small firms that want to obtain government prime contracts and related subcontracts.

"Specialists in SBA field offices counsel small businessmen on prime contracting and subcontracting. They direct them to government agencies that buy the products or services they supply; help to get their names placed on bidders' lists; assist in obtaining drawings and specifications for proposed purchases and offer many other related services, which include supplying leads on research and development projects.

Prime Contracts Program

"Major government purchasing agencies "set-aside" contracts or portions of contracts for small business bidding. SBA has its own Procurement Representatives stationed in major military

and civilian procurement installations. They recommend additional "set-asides", provide small business sources to contracting officers, assist small concerns with contracting problems and recommend relaxation of unduly restrictive specifications. SBA also checks the effectiveness of small business programs administered by procurement installations.

Certificates of Competency Program

"If a small firm is low bidder on a Federal contract and its ability to perform the contract is questioned by the contracting officer, the company may ask SBA for a "Certificate of Competency" (COC).

"If the firm applies, SBA industrial specialists make an on-site study of its facilities, management, performance record and financial status. If SBA concludes that the company has, or can obtain, the necessary credit and production capacity to perform the contract successfully, it issues a certificate (COC) attesting to that fact. A COC is valid only for the specific contract for which it is issued and is binding on the contracting officer.

Subcontracting Program

"The SBA develops subcontract opportunities for small business by maintaining close contact with prime contractors and referring qualified small firms to the Department of Defense, General Services Administration, National Aeronautics

and Space Agency and the Atomic Energy Commission, and sometimes others. Under regulations established by these agencies, government prime contractors must give small concerns an adequate opportunity to compete for their subcontracts.

Property Sales Program

"Each year, the Federal Government sells large amounts of real and personal property and natural resources surplus to its programs. SBA cooperates with the General Services Administration, Department of Agriculture, Department of Interior, the Department of Defense and other government agencies to channel a fair share of this surplus property and resources to small business.

Contract Opportunity Meetings

"In cooperation with local business groups and other government agencies, SBA participates in meetings where small businessmen can learn of prime contract and subcontract opportunities. Government contracting agencies and prime contractors present their needs and requirements, and discuss bidding opportunities. SBA field offices can provide information about scheduled meetings.

Locating Additional Suppliers

"SBA representatives are particularly watchful for purchases on which few small firms have bid in the past. If

the representatives believe small firms can perform these contracts, SBA offices locate small companies that would be interested in bidding.

"Another source of information and guidance to those who want to buy and sell to the government is "The U. S. Government Purchasing and Sales Directory." It lists principal goods and services bought by military and civilian agencies and the purchasing offices which buy them. It also tells where to obtain copies of the specifications used in government purchasing and provides helpful information on government sales of property. The Directory is sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.

"Selling to the U. S. Government," another SBA publication, (OPI-12), explains the government's buying methods and suggests steps to take in selling to it and to prime contractors. The leaflet is available free from all SBA offices.

Technology Utilization

"This service program puts all small companies in prompt contact with technological assistance consistent with company needs for production techniques, modernization processes and new product development.

"Technical specialists in SBA offices will help any small

company identify its technological needs and supply immediate assistance.

MANAGEMENT ASSISTANCE

"Most businesses fail for lack of good management. For this reason, SBA offers a diversified program of management and technical assistance to strengthen small firms and to improve their operations. Under SBA's program of management assistance, conferences, problem clinics and individual counseling are offered so that the management ability of increasing numbers of small business owner-managers can be improved. The program is executed by Management Assistance Officers in the field offices, who pinpoint problems in operating, develop solutions and help with planning.

Courses

"Business management courses, co-sponsored by SBA with public and private educational institutions and business associations are generally evening classes which deal with planning, organizing and controlling a business, as distinguished from day-to-day operating activities.

Conferences, Workshops, Clinics

"Conferences usually run one day and cover subjects such as working capital, business forecasting and diversification of markets; whereas workshops usually deal with capital

requirements, sources of financing, types of businesses, organization, and choice of location for prospective owners.

"Clinics go into specific problems of small businessmen in a particular industry.

"This Agency plans these classes, and provides speakers, outlines, visual aids, sound movies, and case studies for instructors, as well as publications to be used by the student. A small fee is charged enrollees.

Counseling

"SBA furnishes individual assistance to small businessmen with management problems, and also will counsel prospective small businessmen who want management assistance, or information on specific types of business enterprises.

"In addition to staff professionals, small businessmen can benefit from the services of SCORE (Service Corps of Retired Executives), and ACE (Active Corps of Executives), together with other national associations who lend individual help.

"SBA draws from this pool of talent to match the need of the small businessman with the expertise of its volunteers. Then, an assigned counselor visits the small businessman in his establishment. Through careful observation, he makes a detailed analysis of the business and its problems. If it is

a complex problem, he may call on other volunteer experts to assist. Finally, he will offer a plan to remedy the trouble, and help the businessman through his critical period. This service is free, except for out-of-pocket expenses.

Small Business Institute

"In the Small Business Institute (SBI) Program, with the cooperation of faculty, senior and graduate students of the nation's leading schools of business, personal counseling is given to small business owners.

"Although participation in the SBI program is, at present, limited to SBA clients (loan recipients and holders of 8(a) contracts) in most localities, business owners who are interested in this service should contact the nearest SBA office. It will be able to determine their eligibility.

The "406 Program"

"The 406 Program provides management and technical assistance to firms and individuals qualifying under Section 402 of the Equal Opportunity Act. The kind of assistance provided ranges from such categories as junior and senior accounting to complex engineering, according to the specific needs of the individual recipient, and is offered without charge.

"To determine eligibility to participate in the 406 Program, either as a recipient of counseling or as a consultant, the

nearest SBA office should be contacted.

Foreign Trade

"The Agency works closely with the Department of Commerce, and other agencies, to help generate export activity and furnish information on export opportunities.

ADVISORY COUNCIL PROGRAM

"Small business Advisory Councils throughout the country provide communication between the Agency and citizens in their area.

"Each of the 65 district offices has a District Advisory Council. These Councils make a total of 2,000 men and women who represent small businesses, lending institutions, newspapers, broadcast media, labor, professions, education, and virtually every segment of commerce.

"Council members serve the Agency by reporting on the small business climate, its needs and the effects of SBA programs in their communities, as well as nationally. They also make suggestions and recommendations which enable the SBA to serve small businesses better.

"They visit banks to discuss SBA's cooperation with private lenders, opening doors to public investment funds for small business assistance.

"Council members speak to civic, service, and business organizations making use of the broadcast and printed media

to tell SBA's story.

"The National Advisory Council is composed of a representative from each of the 65 District Councils and members-at-large. Its chairman, appointed by the Administrator, serves for one year.

"Both District and National Advisory Council members are appointed to two-year terms, and serve without compensation.

SBA Publications

"SBA issues several series of management, technical and marketing publications which have proved to be valuable aids to established or prospective managers of small firms. Some are available from the SBA without charge and others are sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.

"Among the free publications are:

MANAGEMENT AIDS FOR SMALL MANUFACTURERS -- discussions of the various phases of managing a small manufacturing business including accounting, financial management, personnel management, purchasing and market research.

TECHNICAL AIDS FOR SMALL MANUFACTURERS -- facts on significant development in fields such as materials,

processes, equipment and maintenance.

SMALL BUSINESS BIBLIOGRAPHIES -- reference sources for business owners, managers and prospective small businessmen.

SMALL MARKETERS AIDS -- discussions of the various phases of managing a small retail, service, or wholesale business including advertising, competitive strategy, controlling, and selling.

Among the for-sale publications are:

SMALL BUSINESS MANAGEMENT SERIES -- booklets on specific management subjects by recognized authorities in their fields.

STARTING AND MANAGING SERIES -- pamphlets on general good practices in starting and managing a business and others on starting and managing specific kinds of businesses, such as restaurants, service stations, etc.

"In addition to these management aids, pamphlets describing the Agency's programs of assistance are available without charge to persons interested in SBA's services to small businessmen.

"For information on specific SBA publications in each of the above categories, please contact your nearest SBA field office or write to the SMALL BUSINESS ADMINISTRATION, 12 South Sixth Street, Minneapolis, Minnesota 55402."

U. S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS
MAJOR PROGRAMS

Current Employment Analysis

The Bureau's program on Current Employment Analysis provides for the analysis and publication of data on the labor force, employment, unemployment, hours and earnings, job vacancies, and labor turnover. Data are obtained from two major surveys, the Current Population Survey and the survey of nonagricultural payrolls.

The survey provides the only data available on a regular basis which covers the entire civilian noninstitutional population and identifies those who are in the labor force, either working (employed) or looking for work (unemployed), and those who are not in the labor force. Data on employed persons are collected and published monthly, arrayed by a wide variety of characteristics including age, sex, color, marital status, household relationship, full-and part-time status, and occupation. Annually, Current Population Survey data are published separately for all metropolitan and non-metropolitan areas combined; 4 regions and 9 subregions; 10 large states; and 20 of the largest Standard Metropolitan Statistical Areas and 14 of their central cities.

The industry employment statistics program is designed to provide detailed information on non-agricultural wage and

salary employment for the Nation, States, and major labor areas. The industry employment statistics program also provides detailed information on average weekly earnings, average hourly earnings, and average weekly hours. Data relate to production workers in mining and manufacturing, construction workers in contract construction, and nonsupervisory workers in private non-manufacturing industries.

The job openings--labor turnover statistics program--is designed to provide information on: (1) the current stock of unfilled job openings as of the last business day of the month and vacancies which have continued unfilled for a month (long-term) or more and (2) the gross movement of wage and salary workers into and out of employment status (labor turnover) for individual establishments.

Each year a historical volume is published for the Nation containing employment, hours, earnings, and labor turnover. The annual compendium for States and areas includes data on employment, hours, and earnings only.

MANPOWER STRUCTURE AND TRENDS

In its program on Manpower Structure and Trends, the Bureau collects, analyzes, and publishes data on the labor force; employment by occupation; and projections of occupational and industrial manpower requirements. Two major programs of research and analysis provide studies of the labor force and long-range projections of labor force supply,

including tables of work-life expectancy.

Analytical studies cover emerging trends and changes in workers' marital and family status, work experience, education, and other characteristics. Special studies deal with topics such as the employment experience of youth, recent college graduates, Vietnam veterans, and working women with children. Projections of the labor force extend 10 to 15 years into the future; they indicate anticipated changes in characteristics and composition for program formulation and evaluation, vocational guidance, and other long-range planning.

Mail surveys of employment by occupation are conducted in non-agricultural industries. Data are analyzed to determine trends in industries, and are used along with other information to update occupational patterns in the industry-occupational matrix. Information on future occupational and industrial manpower requirements and resources is published biennially in the Occupational Outlook Handbook. The Occupational Outlook Quarterly furnishes additional information for those who help young people choose a vocation and keep abreast of new developments in education and training programs.

The office also prepares data about the changing industrial structure and occupational composition of American industries. Special studies provide more technical information and project quantitative manpower requirements and resources in certain

occupations. Techniques for projecting State and local manpower requirements are developed within the context of national manpower projections. Aid is given to State and local agencies in using these techniques.

PRICES AND LIVING CONDITIONS

Each month, through the Bureau's program on Prices and Living Conditions, price changes are estimated at two levels--the final purchase by the consumer and the first (primary market) of commercial transaction. The Consumer Price Index (CPI) for urban wage earners and clerical workers has been available as a continuous series for over 50 years. The CPI is used extensively to measure changes in purchasing power of the consumer dollar. As the basis for most estimates of changes in real earnings of labor, the CPI figures significantly in wage adjustments and collective bargaining negotiations. It is estimated that over 7 million workers are covered by contracts which provide for wage increases based on changes in the index. Recent revision of the food store and rent samples, continuing research into techniques of adjustment for quality changes, and strengthening of weak areas, e.g., hospital service charges and home purchase prices, should improve the precision of the index as a measure of actual price changes.

Measurement of price change at the primary market level

is centered largely in the Wholesale Price Index (WPI). Summary indexes are published monthly for groups of products and for most of the individual commodities. The commodities are grouped according to a commodity classification which takes account of market structures and products having related uses. Using essentially these same data, price indexes are compiled and published monthly for selected manufacturing and mining industries. The WPI is used widely for market analyses, escalation of long-term purchase and sales contracts, formulation of economic policies, and as an indicator of price and other economic trends. In 1967, the measurement of wholesale price changes was improved; weights and the classification system were revised and new commodities and a number of industry indexes were added. The WPI has long been calculated by electronic processing.

Conceptual and technical research is conducted on the measurement of price change. New indexes are developed such as measures of international price competitiveness. The Bureau also carries on continuing analyses and interpretations of price developments, including subjects such as linkages between the WPI and CPI.

From time to time, surveys of consumer expenditures are made to provide information on variations in spending patterns, income, and assets and liabilities among families

grouped by different characteristics. Such survey data are used in studies of consumer expenditures and also form the basis for revision of the pricing lists and weighting patterns for the periodic revisions of the CPI.

WAGES AND INDUSTRIAL RELATIONS

Four major types of employee earnings surveys are conducted in the Bureau's Wage and Industrial Relations program to provide the information on straight-time earnings by occupation and on establishment practices and supplementary wage provisions: (1) area surveys in selected metropolitan and, on a more limited scope, nonmetropolitan areas related to occupations common to a variety of manufacturing and nonmanufacturing industries; (2) industry surveys in selected manufacturing and nonmanufacturing industries cover occupations peculiar to the particular industry; (3) national salary surveys cover selected professional, administrative, technical, and clerical occupations in private employment; and (4) surveys of union wage rates and hours cover selected journeymen, helper, and laborer classifications in four highly unionized industries in cities of 100,000 population or more. Other studies provide information on the occupational earnings and benefits of municipal government workers.

On a nonoccupational basis, studies are made of annual earnings and employment patterns of all employment in the

private non-agricultural sector. These studies provide information for all workers and for those employed all four quarters of the year. Some data are presented by sex and race. Also on a nonoccupational basis, national information is developed on the distribution of earnings and weekly hours of work of nonsupervisory employees.

In addition to the studies of straight-time earnings by occupation, another group of surveys are conducted to measure employer's total expenditures for employee compensation, including, individually, the major supplements to straight-time pay for hours worked. Data are presented for all employees, office employees, and nonoffice employees. The total private nonfarm economy is surveyed biennially; separate data are provided for manufacturing and nonmanufacturing industries. In the intervening years, selected individual manufacturing and nonmanufacturing industries are surveyed.

Digests and detailed analyses are made of the provisions of major types of employee benefit plans, e.g., health, insurance and pensions, that supplement straight-time pay in American industry. Information is developed on the nature and prevalence of the plans.

In studies of the trend in wages, a monthly report on current wage developments presents information on general wage rate changes and changes in related benefits in major collective bargaining situations. The data are identified

by the individual companies and unions affected. Information for nonunion and small union situations in manufacturing is included in quarterly and annual statistical summaries of the general wage change data.

Detailed histories of negotiated changes in wage rates and related economic benefits are traced in wage chronologies covering about 35 key collective bargaining situations.

Wage indexes are prepared to provide further insight into the trend of employee earnings. These studies cover, nationally, salaries of selected public occupational groups; and the earnings of production and nonsupervisory workers, exclusive of the effects of overtime (in manufacturing only) and interindustry employment shifts. Other national, regional, and selected city indexes are derived from the area and industry wage surveys.

The Bureau maintains a public file of approximately 5,000 collective bargaining agreements in all industries except railroads and airlines. The file includes all agreements covering 1,000 workers or more and forms the basis for the Bureau's studies of the whole range of subjects and practices dealt with in collective bargaining agreements.

The Bureau's oldest continuing statistical series provides monthly estimates and detailed annual analyses of work stoppages.

A directory of national and international labor unions in the United States is published biennially. The directory includes information on union membership, its structure, functions, and geographic and industrial distribution.

The provisions of union constitutions are analyzed with reference to union government and internal administration.

PRODUCTIVITY AND TECHNOLOGY

The Bureau's program on Productivity and Technology has two major thrusts; it measures productivity trends in the economy, major sectors, and individual industries; and it investigates the nature and effect of technological change within industries and across industry lines. In support of these two goals, the program also provides relevant international comparisons as well as studies of changing labor and materials requirements in major types of construction.

The Division of Productivity Research prepares indexes of output per man-hour both quarterly and annually for the private economy as well as the farm, nonfarm, and manufacturing sectors. Included with these series are related measures of hourly compensation and unit labor costs, along with corresponding series on unit nonlabor payments per unit of output. In addition, the Division prepares annual measures for broad sectors of the economy, such as mining, manufacturing, trade, and utilities.

The Division of Productivity Research also has responsibility for the Construction Labor Requirements Program, which measures the total effect on employment of various types of construction. Man-hours are measured not only for direct employment at the construction site, but also for the indirect employment required to manufacture, sell, and transport construction materials. These studies also indicate changes in productivity in that repeated surveys of the same type of construction reveal changes in overall unit labor requirements.

The Division of Industry Productivity Studies investigates productivity trends in individual industries such as steel, motor vehicles, and petroleum refining. Annually it publishes indexes for about 40 industries; several new industries are added each year. In addition to providing the measures, the Division studies the factors underlying productivity movements, which in turn can serve as a basis for projecting industry productivity growth.

The Division of Technological Studies examines technological changes and their manpower implications. One type of study reviews the evolution of significant technological innovations, such as computers, throughout industry in general. Another study involves an intensive investigation of a selected major industry, such as coal or transportation, in which far-reaching changes are taking place on a large scale.

The Division of Foreigh Labor Statistics and Trade prepares

labor economic indicators for major foreign countries for comparison with the United States. The foreign data are adjusted for comparability to similar U. S. measures where feasible. Comparisons are made of levels and trends in productivity, hourly compensation, unit labor costs, prices, employment and unemployment, and other selected measures. In addition, the Division conducts studies on the effect of trade on employment in various U. S. industries.

ECONOMIC TRENDS AND LABOR CONDITIONS

The Division of Economic Growth is responsible for medium- and long-range projections by the Bureau. Recently the Bureau published estimates of potential demand, industrial output, and employment in 1980.

The Economic Growth staff is responsible also for major research for the Interagency Economic Growth Project. The Departments of Commerce and Labor and the Office of Management and Budget, under the general guidance of the Council of Economic Advisors, are involved. This research provides a comprehensive and integrated framework for analyzing some of the implications of long-run economic growth for employment and other problems. Projections to 1975 and 1980 have been made and published for about 80 industries. Based on relationships between projections of output and employment and projections of the GNP, consumption, investment, government

expenditures, and exports, (interindustry or input-output analysis) this work aids the government in manpower planning and businessmen in developing long-term economic and market forecasts.

The Division of Economic Studies monitors the general condition of the economy; provides special current reports, charts, and tabulations; assesses the short-term economic outlook; develops social indicators related to employment and earnings; and conducts studies of family structure, work, and income.

Short-run assessments, and analyses of economic developments are made regularly for top policy-making units of the government. A quarterly review of current price, wage, and productivity data is published.

This division represents the Bureau in a government-wide program to produce social indicators. Specialized research on the social aspects of employment and earnings is conducted to measure the quality of the social environment and some social aspects of governmental policies.

Data from the Current Population Survey and other sources are cross-tabulated to provide detailed information on households and on the personal, social, economic, and occupational characteristics of select groups of people.

This information is used to develop social indicators

and evaluate proposed or ongoing governmental programs, such as manpower training in relation to the Family Assistance Plan.

MINNESOTA DEPARTMENT OF EMPLOYMENT SERVICES

In addition to the availability of the above information sources, the State Department of Employment Services offers the following publications:

Monthly Supplement to the Review of Labor and Economic Conditions

Minnesota Work Force Data, January 1958 - December 1973 (April 1974)

Annual Economic Outlook (This is issued usually in January for the ensuing Calendar Year.)

Selected Work Force, Population and Income Data, United States and Minnesota, 1940 - (August 1974)

Minnesota Employment Projections, 1960 - 1980 (March 1974)

Minnesota County Work Force Data, 1966 through 1972 (November 1973)

Minnesota County Work Force Data Supplement, 1972 through 1973 (May 1974)

Manpower Information of Affirmative Action Programs

1974 Minnesota Salary Survey

1974 Minnesota Salary Survey, Hospitals and Nursing Homes

1974 Salary Survey by County (October 1974)

1974 Salary Survey by Industry and by Size of Firm (September 1974)

The employment condition of the Coastal Zone Area can be capsulized from the "Employment Gap" report of the Duluth Office

of the Minnesota Department of Employment Services.

"The term "employment gap" is used to denote the difference between the actual level of employment and that level that would have existed in an area for a specific time period if the area enjoyed an economic classification of "full employment."

"For the purposes of this report "full employment" is considered to exist where a labor market area has at least 96.5% of its labor force employed and 3.5% or less classified as unemployed. This figure of 96.5% is not without some weakness, however. The percentage figure alone does not reveal the number of persons who are working part-time or how many persons are working below their skill level at a reduced salary. Since both of these factors play a part in determining annual income totals for a given area, it is well to be informed of this factor if job trends are to be utilized in other analyses. Additionally it should be recognized that the maximum unemployment rate of 3.5% allowable in the concept of "full employment" is based on a set of national conditions and that minor deviations from this level may be appropriate for some smaller areas based on a different set of economic assumptions.

"Some economists are now looking more closely at the 3.5% level of unemployment as being too low. Proponents of the concept that current labor market conditions suggest a need to revise upward the allowable rate of unemployment in the

"full employment" formula are thinking in terms of a 4.5 - 5.0% unemployment rate as the cutoff point.

"Their rationale for advancing the cutoff point of unemployment to around 5.0% is as follows: the growing weight of married women and young people in labor market statistics (they traditionally have relatively high unemployment rates) makes it much harder now to reach a lower rate of joblessness. In addition, some economists feel that with the present level of unemployment benefits, a period of joblessness is not quite the disaster it used to be.

"Proponents of the concept that a 3.5% rate of unemployment is the maximum rate of joblessness allowable in the definition of "full employment" suggest that this percentage is not unrealistic. They would argue that definitions should not be changed just because of year-to-year variations in the mix of types of employment and unemployment or the composition of the labor force. Also, to use a given rate of unemployment (e.g. 3.5%) of the labor force presumes that all who are able and willing to work are in the labor force. Actually, at any one time a sizeable number of persons may not be in the labor force, but would still be available for work if they felt that jobs were available. In this context, a 3.5% unemployment rate may more nearly represent a 4.0% rate for purposes of measuring full employment. In addition they can

point to post-war years in European countries where the rate of unemployment dropped below 1% (when adjusted to conform to U. S. definitions.)

"Until the guidelines of the Department of Labor and the Department of Commerce officially revise the unemployment cutoff rate of 3.5%, this percentage will be used as the determining factor in showing the level of "full employment" for the areas covered in this report.

"It is felt that by presenting the material in the manner shown in the attached tables the observer can more readily grasp the actual condition of labor market in comparison with the desired job level that would have existed had the area enjoyed "full employment".

"Too often the singular presentation of the rate of unemployment for an area leaves unanswered such pertinent questions as just how good or bad is the current level of employment, how far off from an accepted norm is the job market, or is the current deviation of employment from a desirable level one of short-term or long-term duration. Although the term "full employment" may actually exist by definition in an area, it is still possible that some categories or classes of persons may find employment prospects very poor.

"It is hoped that the material presented in this analysis will, when considered along with other economic barometers,

enable the analyst to grasp the overall economic picture a little more clearly than otherwise would be the case.

Data shown in the various tables for the various counties covers the period from 1966 to 1974, whereas the data for the City of Duluth covers the years 1960-1974. Information by county is not available for the years prior to 1966.

CITY OF DULUTH

Year	Full Empl.	Actual Empl.
1960	46,031	44,400
1961	44,390	41,900
1962	44,390	41,900
1963	43,715	42,000
1964	43,425	42,100
1965	44,197	43,500
1966	44,583	44,300
1967	45,162	44,900
1968	46,127	45,900
1969	46,996	46,800
1970	46,802	46,300
1971	47,285	46,200
1972	46,706	45,000
1973	46,600	45,700
1974*	45,800	44,200

*Preliminary data

COOK COUNTY

Year	Full Empl.	Actual Empl.
1966	1,409	1,390
1967	1,341	1,300
1968	1,293	1,260
1969	1,322	1,300
1970	1,341	1,310
1971	1,361	1,330
1972	1,399	1,350
1973	1,573	1,530
1974*	1,669	1,590

*Preliminary data.

LAKE COUNTY

Year	Full Empl.	Actual Empl.
1966	4,536	4,500
1967	4,246	4,100
1968	4,150	4,100
1969	4,053	4,000
1970	3,957	3,900
1971	4,053	3,900
1972	4,053	3,900
1973	4,343	4,200
1974*	4,439	4,200

*Preliminary data.

U. S. DEPARTMENT OF AGRICULTURE

Forest Service

The 75 million acre Lake States Planning Area encompasses portions of three States--Minnesota, Wisconsin and Michigan.

The population of the area is classified rural. In 1970, population density in the Lake States was about 28 people to a square mile--just about half of the National average. The largest urban center within the planning area is Duluth-Superior, with a population of about 150,000 people. The total population in 1970 within the Lake States area was 3.1 million people. This population is expected to increase to 3.3 million by 1990 and 3.4 million by the year 2000 (an increase of 9 percent from 1970). This is about one-third of the National increase (204 million to 264 million). While the area is classified rural, population densities along the southern boundary of the area are much higher.

Population centers adjacent to the planning area will produce much of the population impacts upon the area. The metropolitan areas of Minneapolis-St. Paul, Milwaukee, Chicago, and Detroit are the areas which will provide many of the people who will be using the National Forests.

Populations of those cities adjacent to the planning area

will grow more rapidly than those within the planning area. Consequently, pressures on the area's resources are going to increase more rapidly than could be expected from residential population alone.

The average age of area residents is significantly above the National average. The unusual population distribution is largely the result of the area's economic conditions.

Once, almost nothing but forest, the Lake States suffered heavy logging in the 60 years following the Civil War. Land clearing operations for agriculture reached their peak during the early part of the twentieth century. However, in the interval between 1925-1950, it became evident that much of the cleared land was submarginal for agriculture and had begun to revert back to forest. It was during this period of time that the major portions of the National, State and county Forests were established. At present there are about 36 million acres of forested lands. The other 37 million acres are in agriculture, urban areas, etc.

The economy of the Lake States Area is primarily resource based. Forest based industries employ the largest number of people; agriculture and mining are the other major employers. The fourth major industry, recreation, also employs a large number of people, particularly on a part-time basis.

Historically, such resource based economies tend to be less energetic than the National economy is as a whole. Except for a few local areas closely associated with mining, the Lake States Area is no exception. The area generally has a long history of economic depression. This has resulted in a constantly decreasing population, out-migration of young people to large urban areas, and persistent high unemployment. Medium family income is one-third less, and unemployment is one-third higher than for families living adjacent to the Lake States Area. Recently, these trends have slowed and in some cases reversed. Increased National population, affluence, and leisure time resulted in an upsurge in demand for the amenities that the Lake States can provide--a relatively undisturbed, natural environment, low population density, easy access for population centers, and so forth. This caused a rapid increase in land values and significant opportunities for year-round recreation industries.

Employment and medium family income prospects for the area are brighter--large investments in the mining industry are in the offering, particularly in Minnesota. The demand for wood products is accelerating, and new mills are being constructed. Because of its proximity to the large population centers, there will be continuing increases in the demand for recreation.

Ethnic minority groups make up about 5 percent of the population, which is less than the National average. The largest minority is the American Indian. There are 20 reservations in the Lake States Area with a combined resident population of 15,000. Nine of these reservations are located on or adjacent to National Forest land. Forest Service planning and management activities must consider the needs and objectives of this minority population.

There are eight National Forests in the Lake States Area with two, the Huron and the Manistee, being managed jointly by one Forest Supervisor. They are a diverse group ranging from the 2 million acres of National Forest land on the Superior National Forest, with its Nationally famous Boundary Waters Canoe Area, to the 500,000 acre Manistee National Forest with its sand dunes. Total National Forest acreage within the area is 7 million acres.

THE PLANNING PROCESS

The Forest Service has developed a three-phase planning procedure that is designed to be dynamic and responsive to current and changing legislation, budget levels, National objectives, and public needs and concerns. The three phases are: an AREA GUIDE, a FOREST PLAN, and a UNIT PLAN.

The feedback process is an integral component of the

planning process in all phases. It provides stimulus for plan modification as changes occur within the scope of each planning document.

It is essential that the process be viewed in its entirety. Each subsequent phase, although becoming more specific, is not independent of the others. The components of the process and the objectives of each phase follow.

AREA GUIDE

This document is the first step in the planning process. The basic objective of the GUIDE is to establish broad direction for planning and management of the natural resources present within the National Forests in the planning area. It defines latitudes of management for individual programs as well as establishes long-range resource output levels.

FOREST PLAN

This document, the second step in the planning process, is written within the framework of the GUIDE. The objective is to refine and apply broad management direction consistent with the characteristics and situation on each individual National Forest. This will include establishment of specific standards for Forest-wide practices, allocation of the Forest land to the various classifications of management outlined in the GUIDE, and establishment of boundaries for homogeneous

units within the Forest.

UNIT PLAN

This document represents the final step in the planning process. A UNIT PLAN will be written for each homogeneous unit established in the FOREST PLAN. The UNIT PLAN will tell what, where, and how things will be done on that particular unit. It will incorporate the specific standards and direction given in the FOREST PLAN and will be based on a detailed resource inventory, including land capability. The plan will emphasize interdisciplinary planning and will include management activity schedules, financial needs, and manpower requirements.

FUNCTIONAL PLANS

Functional plans, such as timber management, wildlife, and recreation plans, will be coordinated with the overall direction of Forest Plans. Functional plans help establish current production and potential goals for planning units, yet functional plans are dependent upon land use plans for planning direction and basic land use allocations. Ordinarily, functional plans will cover individual National Forests, but fish and wildlife habitat management plans developed in cooperation with the individual States (as specified by P.L. 93-452) are coordinated at the State level.

Although the integration of functional plans into the land use planning process, as outlined above, is specified in Forest Service policies, it is recognized that there will be a transition phase to assure orderly integration. By the end of this planning period, it is expected the transition will be complete. Any provision of an approved functional plan which is inconsistent with a provision of a subsequently approved land use plan will simultaneously be modified at the time the land use plan is approved. The revised provision will become effective at the time of the land use plan approval.

TIMBER

Situation

Although the Lake States will be supplying a large portion of the Nation's timber in the year 2000, predictions based on existing technological practices show demands for sawtimber and other forest products will exceed the supply.

New industries are moving into the Lake States, and more are expected to do so as old-growth timber supplies decline in the West. Just how much industry will shift to the Lake States is difficult to predict. However, based on an estimate of new industries recently established or being built, this increase is expected to total approximately 21 percent from 1972 to 1977.

In addition, existing pulpwood mill capacity is being

expanded, and saw, chip, and veneer mills are being modernized to use wood from small trees for lumber, plywood, and other products. These new developments are leading to increased demand, which will make wood costs higher for all industries.

Aspen is classified and utilized as a softwood in the construction industry. Recently implemented technology for the production of aspen dimension stock and plywood indicate this species will help meet future softwood demand.

The largest anticipated shortage will be of softwoods, especially sawtimber. Producers of hardwood lumber and plywood that are dependent on the higher grades of preferred species (red and white oaks, yellow birch and maples) face supply problems and prospective increases in prices. However, supplies of low quality timber could be made available for pallets, construction timber, railroad ties, or hardwood pulps if placed on the market.

Areas presently on National Forest lands that are either poorly stocked or are producing small quantities of low value material could be replanted to forestall the shortage. If this is done, the impact on other resources may be beneficial or detrimental depending on location and/or species.

The current uncertainty regarding future use of clear-cutting, certain site preparation techniques, and herbicides poses a dilemma for managers. However, timber management

activities provide opportunities to manipulate vegetation on forest lands to accomplish other resource objectives.

The present surplus of overmature aspen in Minnesota also poses a problem. If it isn't harvested in time to prevent its loss to decay, a substantial volume and growth loss of aspen will occur, as this type is changed in many areas to more tolerant northern hardwoods, balsam, fir, and brush types.

Assumptions

a. By the year 2000, demand for timber products in the Lake States will exceed growth.

b. Demand for wood products will accelerate over the long-term, because wood is a renewable resource.

c. Environmental protection will significantly increase timber management costs and/or reduce harvest.

d. The amount of land available for timber production in Wisconsin, Michigan, and Minnesota will decrease by 3 million acres (6 percent) by the year 2000. Timber production lands on the seven National Forests in those States will diminish by at least 50,000 acres.

e. There will be significant improvements in logging technology.

f. Public concern with the visual aspects of timber management practices will increase.

Objectives

a. Provide for the production of large, high quality veneer

and lumber products.

b. Provide a sustained yield of forest products consistent with the capability of the land and other resource values.

c. Improve utilization practices, both in the woods and in the mill.

Policies

a. Explore viable alternatives for sites that require special management constraints to obtain adequate timber production.

b. Modify silvicultural practices to assist in achieving other resource objectives.

c. Following approved silvicultural guides, provide for regeneration and growth of a good mixture of hardwood species consistent with other resource considerations.

d. Soil suitability data will be a major factor in making decisions concerning species management on specific sites.

e. Soil inventory and interpretative data are prerequisites for species conversion decisions.

f. Encourage and/or specify logging methods that will best achieve the management objectives for a stand, yet are compatible with the protection needs of the site and residual vegetation.

g. Encourage full-tree logging to accomplish site preparation for regeneration, reduce fire hazard, improve aesthetics

where feasible, and improve utilization; except where significant damage will occur to the soil or water resources or to the residual stand of trees.

h. Develop and use improved planting stock to improve growth characteristics and other benefits such as resistance to insects and diseases.

i. Herbicides will be used as management tools only where there are reasonable environmental safeguards.

j. Surplus nursery stock will be used to grow plant materials for wildlife, erosion control, and aesthetics.

k. Nonstocked and poorly stocked land will be brought into full production in coordination with other resource needs.

MINERALS

Situation

Historically, mining has been a significant industry in the Lake States Area. The iron ore mining done in the area accounts for 98 percent of iron ore produced in the United States.

Nearly every National Forest already has a known potential for significant mineral activity impinging on it. Furthermore, there are intensive mineral surveys underway, and their effects on the National Forests pose an even greater potential.

Much of the lands in the Lake States National Forests

were purchased from private individuals who reserved their mineral rights. Consequently, most of the significant mineral deposits in these National Forests are owned by private individuals. The rights the Forest Service has to affect mineral development on such areas depends directly on the wording of deeds with these individuals. Each case is unique. There also are tracts of non-Federal lands within or adjacent to the National Forests that have mineral potential.

In recent years, development of domestic mineral resources has not kept pace with national demand. The increasing gap in production has been met by increasing imports. However, rising prices and improved technology have caused the mining industry to again examine the large reserves of copper-nickel ore that lie within the Lake States. They are the largest known in the United States and lie entirely within or adjacent to National Forests.

The expected upsurge in minerals and energy activity will require intensive effort to protect the environment of the Lake States and its National Forests.

Assumptions

a. Mineral development will increase at an accelerating pace, which will increase the potential for severe local problems in water supply, environmental degradation, etc.

b. A majority of the public will expect a maximum effort on

environmental protection measures relative to all mining operations.

c. New mineral developments will open in areas that currently have no activity.

d. Mineral sources previously considered to be submarginal will become marketable.

Objectives

a. Within existing laws, integrate the development and use of mineral resources with full consideration of all other resource values.

b. Concurrently with mineral extraction, restore the site to a condition which either closely resembles its original state or which has a productive capacity that contributes to resource objectives for the area.

Policies

a. Where mineral rights are recorded to a third party, except for special management areas, cooperate with and encourage the party to consider other resource values to the fullest extent possible when developing the mineral resource.

b. Where minerals are reserved subject to Rules and Regulations of the Secretary of Agriculture, apply these rules and regulations to permit the complete and satisfactory development of the mineral resource while at the same time minimizing any adverse impact on the environment.

c. Where the Forest Service controls the mineral rights, recommendations to the Bureau of Land Management for issuance of a prospecting and/or mining permit will be contingent upon receipt from the permittee of an operating and rehabilitation plan which provides for full, orderly development of the mineral resource and, upon its completion, satisfactory restoration of site.

d. Sand and gravel will be made available to local, State and other Federal units of government except where these materials are in short supply and they are needed for National Forest purposes.

e. Sand and gravel will be made available for private purposes only after governmental needs are met.

f. An operating plan for mineral development will be required.

g. Priorities for the restoration of existing depleted mineral sites will be commensurate with the degree of environmental degradation.

h. Mineral rights will be purchased when costs are commensurate with administrative values.

OUTDOOR RECREATION

Situation

Minnesota, Michigan and Wisconsin offer a broad spectrum of recreation activities. Within these States is found an

abundance of surface water, wilderness, Great Lakes shoreline, scenic beauty, a variety of plants and animals, and the beauties of changing seasons.

Private industry traditionally assumed a signifcant role in the development of outdoor recreational facilities in these States. These include family owned and operated cabins and resorts, corporation managed hotel chains, providers of recreation facilities, manufacturers of recreation equipment and winter sports areas. Private campgrounds are increasing at a rapid rate, and franchised systems of campgrounds are widespread. These developments represent a great economic factor in the Lake States Area.

An important recreation attraction of the Lake States National Forests is the multitude of lakes of all sizes. All three of the Lake States have legislated wild and scenic river systems which complement the National Wild and Scenic Rivers Act (P.L. 90-542). Several rivers mentioned in both kinds of legislation are near or in the National Forests. The Boundary Waters Canoe Area is unique in the National Wilderness Preservation System because it is the only National canoe area within the system.

The National Trail System Act helped focus attention on the values of trails and the need for increased action in making trail opportunities available. The proposed North

Country Trail passes through Minnesota, Wisconsin, and Michigan. This trail begins in Vermont and connects with the Lewis and Clark Trail in North Dakota. Trails are in great demand by a variety of both motorized and nonmotorized users.

Assumptions

a. Demand for all types of outdoor recreation will increase.

b. The greatest increase in outdoor recreation demand will be dispersed recreation.

c. Recreation facilities requiring intensive development can be operated at a profit by private industry if proper sites are available.

d. National Forests within the planning area are expected to experience an increase in recreation visitor days (RVD's) from 10,160,000 RVD's in 1970 to 13,025,000 RVD's in 1985.

Objective

a. Provide outdoor recreation opportunities that are not likely to be accommodated through private developments.

Policies

a. The National Forests will encourage, cooperate, and avoid competing with private industry or other public agencies in providing highly developed recreation facilities.

b. Existing National Forest highly developed recreational facilities will be completed so as to fully utilize their sites.

c. Lakeshore development should be restricted to those lakes that can support facilities with acceptable environmental impact.

d. Low-use, high-cost recreation facilities which do not offer a better than average recreation experience, should be evaluated for closure. Forest Supervisors will perform indicated closure(s).

e. Forest Plans will establish criteria for the protection of undeveloped lakes.

f. Forest or Unit Plans will designate lakes for which motor vehicle access will not be provided across National Forest land.

g. The design of facilities (roads, trails, buildings, etc.) should be coordinated with the recreation experience level selected for the particular area.

h. New downhill skiing facilities on National Forest land may be constructed if Forest or Unit Plans and an environmental impact statement support the project.

i. Trail development should be designed to allow compatible uses on the same trail (for example, horses during the summer, snowshoeing during the winter).

j. A limited number of bicycle trails should be constructed to test the demand for this type of forest recreation.

k. National Forest frontage on the Great Lakes will be managed in close coordination with the States to insure consistency with their coastal zone policies.

l. Each Forest within the Lakes State will provide trails and/or areas where off-road vehicles are allowed.

m. Where refuse facilities are not provided, a carry-in/carry-out policy should be considered.

n. Visitor information services should be provided in a fashion which responds to the forest users' interest in, and desires for, interpretation of the local environment and to their need for knowledge about nearby recreation opportunities.

WATER

Situation

The Lake States Area earns its name because a substantial volume of area is surface water. Excluding the Great Lakes, about 1 acre in 17 is surface water in the Lake States compared to 1 acre in 46 for the conterminous United States. On a volume basis, this amounts to between 10 and 15 acre-feet of surface water per each 16 acres of land. Again, excluding the Great Lakes, 6 of the 10 largest freshwater lakes in the United States lie within the Lake States Planning Area.

Surface runoff, known as streams, is also plentiful within the Lake States Area. While daily runoff from the area averages 40 billion gallons per day, present daily utilization is only 1.2 billion gallons. By the year 2000, daily utilization is expected to reach 1.4 billion gallons.

Ground water supplies in the Lake States Area are highly variable yielding several hundred gallons per minute in areas of deep permeable glacial drift to less than 10 gallons per minute where bedrock lies near the surface. Since mining and mineral concentration facilities are usually associated with bedrock deposits, this implies a necessary impace on surface waters in these areas. Thus, despite the differences between surface runoff and consumption noted above, extensive, local water development may be needed to handle mining related installations.

Similarly, the energy crisis may pose significant future impacts on the abundant surface water supplies of the Lake States Area. These impacts would occur locally, where large amounts of water might be exported from the planning area for coal gasification or oil shale development elsewhere.

Water quality within the Lake States Area is generally high and only infrequently reflects significant impacts from cultural activities. Except for the eastern portion of the area, surface waters tend to be soft (low in total dissolved

matter) reflecting the absence of inputs from ground water supplies which are typically hard (high in total dissolved matter). Turbidity and sediment loads of streams are generally low, but both streams and lakes are often stained brown by drainage from organic wetlands. Where ground water supplies have been developed, water is of suitable quality for domestic and industrial uses.

When high quality surface water resources are abundant, the potential for degradation through cultural activities is great. This is especially true in areas having impermeable watershed (bedrock, clay, consolidated drift) where impacts from land use activities (logging, mining, shoreline development) are most readily reflected in alteration of water quality. Although the impacts of such activities will be lessened through increasingly stringent water protection standards, they can never be entirely divorced from the watershed.

Assumptions

a. Accelerated private and public development of both lake and stream shorelines will pose an increasing threat to surface water quality.

b. There will be increased demands for water in mining operations.

c. Except for local situations, principally in northeastern

Minnesota, there appear to be adequate water supplies through the planning period.

d. The use of small inland lakes for commercial protein production will be minimal during the planning period.

Objectives

a. Protect the surface and ground water resources of the National Forests through the application of sound land management techniques.

b. Rehabilitate significant surface or ground water problem areas through sound watershed management techniques.

Policies

a. Loading criteria will be used to assess the impacts of land use practices on water quality. Such a concept provides a conceptual framework from which the planner can assess the total impact of activities within a given watershed on either lake or stream water quality.

b. The trophic character or state of lakes, as determined utilizing available nutrient loading models, will not be altered. This concept permits cultural loading flexibility within each trophic state, while at the same time encourages the prior selection of a lake of a given trophic character when contemplating certain types of uses.

c. Vegetation will not be manipulated for the purpose of increasing water yields.

NATIONAL DIRECTION

The establishment and management of the National Forests are based on:

THE CREATIVE ACT OF 1891, which authorized the President to establish forest reserves from the public domain. President Harrison set aside 13 million acres under this Act, but there was no provision for administration. THE ORGANIC ADMINISTRATION ACT OF 1897 provided for protection, management, and use of the forest reserves. THE TRANSFER ACT OF 1905 transferred the forest reserves from the Department of Interior to the Department of Agriculture. THE ACT OF MARCH 4, 1907, renamed the forest reserves National Forests.

THE WEEKS LAW, ACT OF MARCH 1, 1911, authorized the purchase of lands for timber production and regulation of the flow of navigable streams. Most of the National Forests in the South and East were established under this law. This Act also provided for a program of Federal-State cooperation in fire protection.

THE MULTIPLE USE-SUSTAINED YIELD ACT OF 1960, which confirmed longstanding Forest Service policy to administer the National Forests for outdoor recreation, range, timber, watershed, wildlife, and fish purposes. It stressed that consideration be given relative values of resources in particular areas.

THE WILDERNESS ACT OF SEPTEMBER 3, 1964, declared the policy of Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.

THE LAND AND WATER CONSERVATION FUND ACT OF SEPTEMBER 3, 1964. The purposes of this Act are to preserve, develop, and assure accessibility to quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation in such recreation and to strengthen the health and vitality of the citizens of the United States.

THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 declared a National policy to encourage productive and enjoyable harmony between man and his environment. It provides a continuing policy for the Federal Government to cooperate with State and local governments and other concerned public agencies to promote the general welfare and to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.

THE FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974 provides an orderly framework for assessing the supply of, and demand for, the Nation's forest and related resources. It also provides for the development of long-range plans to assure that the American people enjoy adequate

supplies of water, recreation, forage, timber, and wildlife from the National Forest System and private forest lands in the decades ahead.

In addition to other laws, executive orders, and regulations which apply to the National Forests, direction from the Congress and President is expressed through the appropriation process. As elected representatives of the people, the President and Congress provide guidance to the Forest Service by authorization of funds, public hearings, and committee reports.

Forest Service basic considerations as stated in the "Framework for the Future" are:

THE FOREST SERVICE HAS THE FEDERAL RESPONSIBILITY FOR NATIONAL LEADERSHIP IN FORESTRY.

> National leadership includes top-level participation in setting National priorities, formulating programs, and establishing the pattern of Federal policies that relate to man and his natural environment. Effective leadership in forestry is an all-inclusive objective of the Forest Service.

FOREST SERVICE RESPONSIBILITIES AND INTERESTS GO BEYOND FOREST LANDS.

> Forests and forest-related rangeland, grassland, brush-

land, alpine areas, minerals, water areas, and wildlife habitat illustrate the variety of natural resources involved in the scope of forestry. Forestry also involves less tangible values such as scenery, air and water quality, recreation, open space, environmental quality, economic strength, and social well-being. In the following objective and policy statements the terms "forests" and "forestry" are used in this broad sense.

IN OUR COMPLEX SOCIETY THERE MUST BE AN INTERRELATIONSHIP AMONG OBJECTIVES, POLICIES, AND GOALS.

Listed here are those objectives and illustrative policies and goals at each major level of the Forest Service organizational structure. The interrelationships among various objectives and policies must be an integral part of decisionmaking at all organizational levels, ranging from the most all-encompassing, long-range planning, to identification of specified targets of immediate concern.

The following objectives identify the general scope and character of the role the Forest Service should play in the society of today and tomorrow. It provides a new "framework" to help guide our thinking and decisionmaking through the Service.

PROMOTE AND ACHIEVE A PATTERN OF NATURAL RESOURCE USES THAT WILL BEST MEET THE NEEDS OF PEOPLE NOW AND IN THE FUTURE.

PROTECT AND IMPROVE THE QUALITY OF AIR, WATER, SOIL AND NATURAL BEAUTY.

HELP PROTECT AND IMPROVE THE QUALITY OF THE OPEN SPACE ENVIRONMENT IN URBAN AND COMMUNITY AREAS.

GENERATE FORESTRY OPPORTUNITIES TO ACCELERATE RURAL COMMUNITY GROWTH.

ENCOURAGE THE GROWTH AND DEVELOPMENT OF FORESTRY-BASED ENTERPRISES THAT READILY RESPOND TO CONSUMERS' CHANGING NEEDS.

SEEK OPTIMUM FOREST LANDOWNERSHIP PATTERNS.

IMPROVE THE WELFARE OF UNDERPRIVILEGED MEMBERS OF SOCIETY.

INVOLVE THE PUBLIC IN FORESTRY POLICY AND PROGRAM FORMULATION.

ENCOURAGE THE DEVELOPMENT OF FORESTRY THROUGHOUT THE WORLD.

EXPAND PUBLIC UNDERSTANDING OF ENVIRONMENTAL CONSERVATION.

DEVELOP AND MAKE AVAILABLE A FIRM SCIENTIFIC BASE FOR THE ADVANCEMENT OF FORESTRY.

THE DEPARTMENT OF ECONOMIC DEVELOPMENT

The purpose of the Department of Economic Development is generally defined as the major state agency that directly, or through liaison with the private sector and all levels of government, develops, promotes and stimulates optimum economic growth for the State of Minnesota. This purpose is based on the department's various powers and duties.

POWERS AND DUTIES

The powers and duties of the Department of Economic Development, as defined by statutes, are:

A. Investigate, study, and undertake ways and means of promoting and encouraging the prosperous development and protection of the legitimate interest and welfare of Minnesota business, industry, and commerce, within and outside the state.

B. Locate markets for manufacturers and processors and aid merchants in locating and contacting markets.

C. Investigate and study conditions affecting Minnesota business, industry, and commerce and collect and disseminate information and engage in technical studies, scientific investigations, and statistical research and educational activities necessary or useful for the proper execution of the powers and duties of the Department in promoting and developing Minnesota business, industry,

and commerce, both within and outside the state.

D. Plan and develop an effective business information service both for the direct assistance of business and industry of the state and for the encouragement of business and industry outside the state to use economic facilities within the state.

E. Compile, collect and develop periodically, or otherwise make available, information relating to current business conditions.

F. Conduct or encourage research designed to further new and more extensive uses of the natural and other resources of the state and designed to develop new products and industrial process.

G. Study trends and developments in the industries of the state and analyze the reasons underlying such trends; study costs and other factors affecting successful operation of businesses within the state; and make recommendations regarding circumstances promoting or hampering business and industrial development.

H. Serve as a clearing house for business and industrial problems of the state; and advise small business enterprise regarding improved methods of accounting and bookkeeping.

I. Encourage and develop commerce with other states and foreign countries and devise means of removing trade barriers hampering the free flow of commerce between this and other states.

J. Cooperate with inter-state commissions engaged in formulating and promoting the adoption of inter-state compacts and agreements helpful to business, industry, and commerce.

K. Cooperate with other state departments, and with boards, commissions, and other state agencies, in the preparation and coordination of plans and policies for the development of the state and for the use and conservation of its resources insofar as such use, conservation, and development may be appropriately directed or influenced by state agencies.

L. Assemble and coordinate information relative to the status, scope, cost, and employment possibilities and the availability of materials, equipment, and labor in connection with public work projects, state, county, and municipal; recommended limitations on said public works; gather current progress information with reference to public conditions of employment; inquire into and report to the Governor, when requested by him,with respect to any program of public state improvements and the financing thereof; and request and obtain information from other state departments or agencies as may be needed properly

to report thereon.

M. Study changes in population and current trends and prepare plans and suggested policies for the development and conservation of the resources of the state.

N. Confer and cooperate with the executive, legislative, or planning authorities of the United States and neighboring states and of the counties and municipalities of such neighboring states, for the purpose of bringing about a coordination between the development of such neighboring states, counties, and municipalities and the development of this state.

O. Generally, gather, compile, and make available statistical information relating to business, trade, commerce, industry, transportation, communications, natural resources, and other like subjects in this state, with authority to call upon other departments of the state for statistical data and results obtained by them and to arrange and compile that statistical information in such manner as may seem wise.

The Department of Economic Development is comprised of the following divisions:

1. Administrative
2. Industrial Development
3. Tourism
4. International Trade and Finance
5. Research
6. Publicity and Promotion

INDUSTRIAL DEVELOPMENT

Two significant goals the Department's Industrial Development Division is seeking are the promotion of the State of Minnesota as a choice location for industry, and the assistance to local communities and their industries in realizing their economic potential.

The division encourages rural growth and maintains liaison with local communities, chambers of commerce, industrial corporations and local, regional, state and federal government agencies. The Department has a full time field representative in Region 3 (Arrowhead).

The Industrial Development Division is concerned with the following points:

Industry Attraction and Expansion

. Consult with industry regarding expansion needs, and prepare information relating to sites, taxes, labor availability, transportation, utilities, environmental requirements and financial assistance.

. Compile and publish economic data for industry planning--available industrial buildings list, tax comparison studies, Industrial Development News, and labor training for industry programs.

. Maintain liaison between industry and industrial realtors, railroads, utilities, developers, chambers of commerce, development corporations and other commercial and civic organizations.

. Maintain contact with and disseminate information to major companies throughout the world to acquaint them with economic facts

about Minnesota, its advantages to industry and the services of the Department of the Economic Development.

. Advertise nationally the advantages of Minnesota and its business and industrial opportunities.

. Conduct joint business trips with business leaders and members of economic development organizations to call on business and industry in other areas to encourage expansion of their facilities to Minnesota.

Community Economic Development Counseling

. Assist in developing comprehensive community economic and industrial promotion expansion programs and guide communities in preparing, publishing, and presenting economic data for promotional purposes.

. Help form community industrial development corporations and industrial sales teams to properly promote marketable community assets.

. Aid communities in selecting, developing and promoting industrial sites and parks, and assist in attracting and screening industrial prospects.

. Conduct economic and industrial development seminars for specific communites, development groups or other interested agencies and individuals.

. Help individual communities maintain a stable economic base through local industry promotion.

Business Community/State Government Liaison

. Serve as industry's prime contact with state government.

. Assist in channeling state, federal and local governmental programs, projects and policies to aid the business community.

The ultimate objective of the division is the development of an ongoing system for coordinating state and local capabilities with industry needs by committing specific services to attract new industry and hold expansion within the state.

A number of new plant locations and industrial expansions have taken place in Duluth in recent years. More specifically, from 1968 through 1974, seventy-four (74) new or expanded industries have augmented the Duluth economy. Ten new or expanding industries have been established on the North Shore from 1969 through 1974.

A listing of the Duluth and North Shore developments consist of the following:

DULUTH (1968)	INVESTMENT
A & E Supply Co.	$225,000
Chroma-Glo, Inc.	472,000
Duluth Filter Co.	72,000
Duluth Herald & News Tribune	150,417
Duluth Laundry, Inc.	40,000
Industrial Welders & Mach., Inc.	54,000
Jeno's Inc.	1,000,000
Minnesota Power & Light Co.	1,500,000
Neal Bort Co.	10,000
North Shore Mfg. Co.	200,000
O'Brien Oil Co.	120,000
Zinsmaster Hol-Ry Co., Inc.	31,000

DULUTH (1969	INVESTMENT
American Paint Corporation	$ 57,500
Barko Hydraulics, Inc.	120,000
Coca-Cola Bottling Co.	650,000
Crystal Distributing Co.	250,000
Cutler-Magner Co.	135,297
E.S. Ekman Transfer Co., Inc.	32,400
Elliott Packing Co.	200,000
Halvorson Equipment Co.	150,000
Ironmasters, Inc.	120,000
Jeno's Inc.	2,000,000
Dale Johnson Co.	25,000
Art Massie Co., Inc.	20,000
Mid-Continent Warehouse, Inc.	500,000
Minn. & Wisc. Packaging Corp.	52,800
Modern Constructors, Inc.	25,000
John Morell & Co.	150,000
Reach-All Mfg. Co.	35,000
Road Machinery & Supplies	300,000
Silea, Inc.	6,500
L. J. Walsh Co.	25,000
World Wide Homes, Inc.	150,000
DULUTH (1970	
Katzmarek Iron Works, Inc.	27,000
Minnesota Woolen Fashion Wagon	50,000
Twin Town Box Corp.	50,000
Western Iron Foundry Co.	20,000
Zenith Steel Co.	75,000
DULUTH (1971)	
Arrowhead Equipment Co.	50,000
Duluth Herald & News Tribune	600,000
Electric Construction	NA
Glendenning Motor Freight	14,000
Gundersen-Carlson Equipment, Inc.	26,180
Harcourt, Brace, Jovanovich Publications	30,000
Minnesota Woolen Fashion Wagon	200,000
Polaris Wilbert Vault Corp.	160,000
Rainducker, Inc.	6,000
Snoline, Inc.	15,000
DULUTH (1972)	
Coca Cola Bottling Co., Inc.	400,000
Hallet Dock Co.	218,000
International Organics, Inc.	2,300,000
Jeno's Inc.	NA
Lakehead Alloys, Inc.	400,000
Rainducker Mfg. Co.	150,000
Superwood Corp.	NA

DULUTH (1973)	INVESTMENT
Bombardier Corp.	$1,400,000
Cargill, Inc.	15,000,000
Elliott Packing Co.	900,000
Gardener-Denver Co.	140,000
Hallet Dock Co.	450,000
Int'l Organics, Inc.	NA
National Iron Co.	400,000
Porky's Bldg. Supply	21,000
Thermal Co., Inc.	NA
Twin Town Box Corp.	500,000
DULUTH (1974	
American Hoist & Derrick	5,500,000
Bort, Neal Co.	50,000
Del Zolto Mfg. Co.	4,000
Jeno's Inc.	NA
Globe Duluth Enterprises, Inc.	NA
Hallet Wire Products	NA
Premiere Mfg. Inc.	Leased
Zalk-Josephs Co.	Leased
GRAND MARAIS (1971)	
K. P. & L. Forest Products	20,000
TWO HARBORS (1969)	
Industrial Rubber Applicators, Inc.	160,000
J. C. Campbell Co.	250,000
Husky Hydraulics, Inc.	200,000
TWO HARBORS (1971)	
Husky Hydraulics	300,000
TWO HARBORS (1972)	
Abec Corp.	110,000
Husky Hydraulics	100,000
TWO HARBORS (1973)	
Hahn Mfg. Co., Inc.	75,000
Husky Hydraulics, Inc.	440,000
Northshore Steel, Inc.	NA
TWO HARBORS (1974)	
J. C. Campbell Co.	60,000

Manufacturing also plays a significant role in the coastal zone area. There are nearly 150 manufacturers in the Duluth, Two Harbors,

Grand Marais, and Silver Bay areas. A majority of these are located in the Duluth area.

TOURISM

The primary objective of the Division of Tourism is marketing Minnesota as a tourism destination, that is to encourage out-of-state travelers to come to Minnesota and to induce Minnesota residents to enjoy the vacation endowments of their own state.

In order to satisfy the above objective, it is necessary to carry out a planned advertising campaign. This includes a number of programs geared toward reaching a primary market in a 1,000 mile radius of Minnesota. Various media used to reach this market includes out-of-state newspapers, Twin City newspapers, regional television and occasionally National Trade magazines.

A prominent feature that the Tourism Division offers is the Minnetour. There are eleven mapped Minnetours covering various regions of the state. They include visits to historic sites, museums, state parks, natural or man-made attractions, interesting communities, and scenic areas. The promotion of these Minnetours are concentrated on Minnesota residents and those in the Chicago area. The Chicago Metropolitan Area is the second largest market for Minnesota tourism, ranking after the State of Minnesota itself. The popularity of the Minnetours became evident when the Tourism Division received over 140,000 requests in 1974 for Minnetour brochures. The Minnetours are a contributing factor to Minnesota's ranking as the ninth largest tourism revenue producers among the 50 states.

As the number of tourists increase in Minnesota, the production and expansion of new facilities are also on the upswing. There seems to be a positive correlation between the two. The industry growth planned for the future in Minnesota will undoubtedly have a satisfying affect on the future of tourism in Minnesota.

The "Superior Trek" Minnetour is directed along the North Shore region. Duluth is a good starting point for this tour. It provides a wide variety of exploring opportunities. The visitor can watch ships pass under the famous aerial lift bridge from the big picture window in the Marine Museum, or drive the 30-mile Skyline Drive for a spectacular view of the city and harbor. The new Lake Superior Transportation and Industrial Museum is located in the Area Cultural Center in the old Union Depot. Spirit Mountain, one of the largest ski areas in the Midwest, is a new year-round recreational area.

At Two Harbors, ore loading operations exist easily viewed from Paul Van Hoven Park or from Fisherman's Point. Two Harbors is also the home of the Lake County Historical Society Museum. Two locomotives - "Three Spot", the first locomotive to carry ore from Soudan Mine - and the 20th Century "Mallet", the most powerful locomotive in the world - are on display.

Continuing north on highway 61, Gooseberry Falls and Split Rock Lighthouse State Parks are encountered. These historic parks are located outside of Two Harbors just before reaching Silver Bay.

At Silver Bay, the Palisade Baptist Church is a good landmark to watch for before turning off to the 350-foot rock cliff providing an awesome view of Lake Superior, and, inland, the jagged Sawtooth Mountains. The Baptism River State Park sports a scenic foot trail which leads to the Baptism waterfall.

In addition to the above sites, additional points of interest include sites that were studied by two local citizens. John and Janet Green recently listed sites they have explored and found to be of interest. These sites, located near the North Shore and Arrowhead Region include the following:

High Falls Pigeon River
Mt. Josephine Area
Deconda Bay Area
Big Bay Area
Paradise Beach Area
Five Mile (Guano) Rock Area
Grand Marais "The Point"
Cascade River
Onron River Valley
Carlton Peak
Gull Island/Bear Island
Sugar Loaf
Manitou River
Palisade Head
Bud Hill
Flood Bay
Susie Islands
Hollow Rock
Blueberry & Pancake Island
Brule River
Kaducie Creek
Devil Track River
Good Harbor Bay
Sawtooth Mountains
Tofte Town Park
Temperence River
Heartbreak Ridge
Caribou River
Crystal Bay
Tetagouche Highlands
Silver Cliff
Knife River - Knife Island

Listed below are some Tourist-Travel Indicators which are applicable to the Arrowhead Coastal Zone:

ARROWHEAD COASTAL ZONE REGION
TRAFFIC COUNTS AT AUTOMATIC COUNTER STATIONS

Route	Counter Location		Annual Total	June-August Total
TH 61	St. Louis/Lake	1973	1,317,650	421,491
	County Line	1974	1,255,600	414,312
I-35	27th Ave. W.	1973	7,557,690	2,043,929
	Duluth	1974	7,332,850	2,012,002
I-35	Garfield Ave.	1973	9,327,575	2,774,767
	Duluth	1974	10,486,085	3,136,444
I-35	63rd Ave. W.	1973	5,018,020	1,492,073
	Duluth	1974	4,470,520	1,341,195
	Totals	1973	23,221,036	6,732,260
		1974	23,545,055	6,903,953

TRAFFIC COUNTS ON FEEDER ROUTES TO ARROWHEAD COASTAL ZONE

TH 53	S of Eveleth	1973	1,846,900	621,512
		1974	1,796,875	596,627
I-35	N County Line	1973	3,866,515	1,261,878
	Chisago Co.	1974	3,595,250	1,178,465
TH 1	NW of Finland	1973	132,495	48,243
		1974	132,860	50,112
TH 73	N of Floodwood	1973	142,350	44,549
		1974	148,920	45,346
	Totals	1973	5,988,260	1,976,182
		1974	5,673,905	1,870,550

SOURCE: MINNESOTA DEPARTMENT OF HIGHWAYS. OFFICE OF PROGRAM PLANNING

STATE PARK ACTIVITY IN THE
ARROWHEAD REGION

State Park	Total Park Visitors 1974	Total Park Visitors 1973	Tourist Camping Guests 1974	Tourist Camping Guests 1973
Banning	24,927	25,338	4,519	4,193
Bear Head	32,351	31,872	16,462	16,078
Cascade River	51,568	66,142	1,347	6,947
Gooseberry Falls	403,975	428,291	42,215	42,895
George Crosby, Manitou	4,442	4,918	1,183	1,456
Interstate	396,651	383,151	17,817	19,857
Jay Cooke	306,109	308,078	24,179	23,505
Judge C.R. Magney	24,089	21,440	6,581	7,480
McCarthy Beach	89,364	96,924	18,599	20,248
Savanna Portage	52,442	55,241	8,508	8,604
Scenic	47,250	54,981	21,056	23,743
Split Rock Lighthouse	190,219	196,921	---	---
St. Croix	262,123*	N.C.	56,909*	N.C.
Temperance River	109,905	95,904	11,681	10,052
Tower Soudan	81,166	62,822	---	---
Regional Totals	1,814,458	1,832,023	174,147	195,058
Percent Change	-1.0%		-10.7%	

*Not included in Regional Totals

SOURCE: Minnesota Department of Natural Resources, Parks and Recreation Division

GRAND PORTAGE BORDER CROSSINGS
INCOMING

	1974	1973
April	16,751	18,456
May	30,117	30,119
June	55,489	52,000
July	75,751	73,849
August	77,427	82,325
September	43,075	43,627
6 Month Total	298,610	300,376

SOURCE: U. S. IMMIGRATION SERVICE

FINANCE AND INTERNATIONAL TRADE

Minnesota's growing role in international trade is the focus of work performed by the Finance and International Trade (FIT) Division. The division's chief duty is to promote Minnesota export sales and attract foreign industrial investment as a means of creating new jobs and contributing to the overall economic growth of the State.

Although it is important to attract foreign industry to Minnesota, it is equally important to Minnesota industry to export abroad. Basically, the division aids exporters in three ways: providing a technical counseling and referral service for new and established exporters; trouble-shooting problems of exporters; and providing marketing information including trade leads for exporters.

The division also works directly with exporters by assisting them in reaching their foreign markets. In addition to providing information and advice through personal contact, the division sponsors seminars and workshops to aid new exporters desiring to enter the international marketing field and to keep the business community informed of new trade opportunities and procedures. Many of these seminars have been co-sponsored by the U. S. Department of Commerce as a means of maximizing the use of state funds and including federal participation. The division also puts out publications to guide the exporter.

RESEARCH

The primary purpose of the Research Division is to collect, compile, interpret and publish economic information on the State of Minnesota. It does this through developing economic barometers, analyses of industrial and tourism activities and potentials, industrial market analyses, specific indepth research on many subjects related to the development of the state's economy, and also maintains a library of business and economic information.

As an indication of the scope of the Research Division's involvement in matters of concern to Minnesota, the division provides input to numerous task forces, committees and commissions. The following list is some of those task forces pertaining to the Coastal Zone:

Great Lakes Basin Project
Copper-Nickel
Voyageurs National Park
Forestry and Timber
Coastal Zone Land Use Management Study Group
Transportation and Recreation

Most of the division's research is conducted to fulfill a specific need. When it is evident, however, that a given project is of more widespread interest, it receives general distribution. The following is a list of existing general distribution research papers pertaining to the study area:

Minnesota Profile
New and Expanded Industries
Minnesota Director of Manufacturers
Recreation and Open Spaces
Review of Duluth Area Manufacturing Industries
Copper-Nickel
Taconite
Minnesota Tourist-Travel Industry

PUBLICITY AND PROMOTION

The Publicity and Promotion Division is charged with the responsibility of supporting the Tourism, Industrial Development, and Finance and International Trade Divisions in the areas of public relations and advertising.

For the Industrial Development Division, the Publicity and Promotion Division puts out the following publications:

Industrial Development News
Industrial Park Profiles
Community Profiles
Industrial Development Service Brochure

In the tourism support area, the division puts out several publications including:

Guide to Skiing in Minnesota
Calendar of Events
Camping Guide
Tourism News
Shell Brochure
Minnetours

The Finance and International Trade receives major emphasis in its publications program. The Publicity Division produced such publications as:

Exporters Assistance Guide
Export Survey Summary
Minnesota Profile (3 languages)
International Trade and Investment News
International Trade Directory
Minnesota Role in International Trade

The Publicity and Promotion Division prepares news releases covering a wide variety of information. Speech writing for the department personnel is another important function of the division.

Area Redevelopment Administration (State) and Economic Development Administration (Federal) programs provide a grass roots level approach on the part of government to aid areas of high unemployment throughout the state.

The local community, the State and the Federal governments join together in their efforts to attain a common goal in the creation of new permanent job opportunities. ARA makes favorable loans for business investment on the part of both the Federal and State governments.

Minnesota, through legislative action, is the only state that participates in ARA loans up to 20% of the cost of an ARA project at a low interest rate.

Effective April 1 through the end of the fiscal year on June 30, the EDA public works loan rate is 7½%. The agency's business development loan rate is 7-3/4%. For most of this year, the rates had been 6-3/4% for public works and 7¼% for business development loans. An interim reduction in mid-March lowered these rates to 5-5/8% and 6¼%, respectively.

Historically, EDA's interest rates have been set once a year, and the reduction was the first rate change during a fiscal year. The agency has instituted a quarterly review of interest rates because of fluctuations in the private money market.

EDA public works loans to states or their subdivisions are made to help build facilities that will attract private industry. These include industrial parks, water and sewer systems, access roads, and vocational-technical schools. The loans can run for up to 40 years.

Business development loans are made directly to individuals, partnerships, and corporations as well as to public or nonprofit organizations to help build or expand industrial or commercial facilities and to create jobs. These loans are limited to 25 years maximum. This is a powerful inducement for new industry to locate, or to expand, in the distressed areas of Minnesota.

In the State of Minnesota, Chapter 629 - 1961 Session Laws there is a provision that any local subdivision of government in the designated areas of high unemployment, may organize an Area Redevelopment Agency composed of five (5) members. Through these local agencies which are found in each of the 25 ARA counties, applicants interested in the development of new industries or expansion of existing industries can proceed to take advantage of the ARA program. All applications for such presented to the State and Federal offices must be recommended by the local agency.

ARA does not provide working capital and an applicant must show that he is able to provide a minimal 10 per cent of the

total cost of the project proposal. These State and Federal loans are mainly for land, buildings and equipment. In the case of the local Development Corporation, the requirement is 5% - State 20% - Federal 65%.

In the State of Minnesota, Chapter 629 - 1961 Session Laws provide that the Executive Council administers the State ARA program. The members of the Executive Council are:

1. The Governor
2. The Attorney General
3. The Secretary of State
4. The State Auditor
5. The State Treasurer
6. Lieutenant Governor

They have delegated the responsibility of administering the State ARA program to the Department of Economic Development.

In 1965 the title ARA under the U. S. Department of Commerce was changed to Economic Development Administration. The State of Minnesota, however, to date has not changed its title to conform with the Federal title, but functions, under the same authority, were originally authorized in 1961. Therefore, all references to ARA of the State of Minnesota is actually the EDA of the Department of Economic Development of the State of Minnesota.

The Area Redevelopment Act of 1961, passed by the U. S. Congress, created an Area Redevelopment Administration under

the Department of Commerce. Field officers are located in Duluth and Bemidji. Their responsibility is that of carrying out the EDA (ARA) program by working together with other federal agencies such as the Small Business Administration, Department of Agriculture, Department of the Interior and others. They also coordinate their efforts with the Federal EDA Regional Office located in Chicago, State ARA office in St. Paul and various local development agencies.

Generally, those who want to establish a new industry or expand an existing industry, first apply to their local agency in the county in which the new industry is proposed. ARA does not allow funds for the relocation of existing industries.

Contact should be made with the local agency where explanation of project proposal is first made. Upon preliminary approval by the local agency, the applicant can obtain project proposal forms from:

1) Area Coordinator, Economic Development Administration, 405 Sellwood Building, Duluth 55802

2) Economic Development Representative, EDA 409 Federal Building, Bemidji 56601

3) The State Agency, ARA, Department of Economic Development

Upon submitting the project proposal application for approval by the local agency the applicant should make arrangements for a minimum 10 percent participation in the total

cost of the project exclusive of the applicant's 5 percent and operating capital.

After approval of the project proposal application by the local agency, the application is submitted to the Federal EDA coordinators.

The Federal EDA coordinator plays a major role in the processing of the project proposal application. Since the Federal government participates up to 65 percent of the loan in land, buildings, machinery and equipment at an interest rate of 4 percent that can run as long as 25 years, the Federal coordinator must establish such things as (1) location of the project and its relationship to the Overall Economic Development Program, (2) number of permanent jobs that it will create, (3) indirect employment generated by the project, (4) cost of project for land, buildings, machinery, equipment, etc., (5) how it is to be financed: percentage of Federal, State and equity capital in loan participation and working capital, and (6) coordination with the Small Business Administration and other Federal agencies to determine the financial soundness of proposed project, managerial ability of applicants, marketability of product or service and the like. After the project proposal application has met the requirements of the Federal coordinator's office it is transmitted to the State ARA director.

Upon receipt of the project proposal application from

the Federal coordinator, the State ARA determines the following:

1. Applicant has ability to secure the required 10 percent equity capital as provided in both state and federal laws.
2. That the 5 percent local loan participation will be available upon project approval from some local public or semi-public agency.
3. Sufficient working capital will be provided by the applicant for his proposed project.
4. An adequate market analysis has been made for potential new or expanded industry.
5. Satisfactory evidence has been provided as to the managerial ability for the applicant's proposed project.

After these conditions have been met to the satisfaction of the State administrator, the project proposal application is then submitted to the Federal EDA and other Federal agencies responsible for the program in Washington, D.C., for their findings, approval or disapproval as to a loan authorization.

If the Washington, D.C. EDA grants a loan authorization to applicant, the Executive Council of the State of Minnesota must then ascertain that the applicant has a firm commitment for all their funds other than State and Federal funds which

shall be necessary to secure completion and operation of the plant, enterprise or facility proposed. The Executive Council must also determine that the applicant himself has expended or has funds on hand equal to 5 percent of the total cost of the project. The Executive Council can then, after determining that the project for which the State loan is requested fulfills the public purpose of the Minnesota Area Redevelopment Act, allocate funds from the Department of Economic Development to enter into a contract with the local Redevelopment Agency for a loan to cover up to 20 percent of the capital investment required for the particular project proposed. This contract will set forth the terms and conditions of the proposed loan. It will provide terms and conditions such as private lending institutions and other governmental loan agencies require. The interest rate will be determined by the Federal EDA contract for a term not to exceed 25 years.

The Public Works and Economic Development Act of 1965 prohibits EDA from making loan grants which will have the effect of assisting an employer in moving jobs from one area to another. An expansion of an existing business to a new location may be assisted if such an expansion will not cause unemployment in other areas where the business conducts operations, or will not enable contractors or subcontractors to undertake contracts or subcontracts heretofore performed

elsewhere, the performance of which would result in an increase of unemployment at the previous location of such work. Execution of the following Certificate is necessary for EDA to determine the eligibility of the subject project in this regard.

Although this is in outline form as to the various steps taken for ARA loans there is complete coordination and cooperation with the local, state and federal agencies. Much of the work is done simultaneously by all agencies involved in order to expedite the loan authorization as quickly as possible.

These guidelines are provided to all applicants, local ARA agencies, industrial foundations, county agents and other interested groups for the purpose of familiarizing them with the ARA program and how to make application for such loans. The Federal EDA coordinator and the State ARA administrator, are at all times ready to provide any additional information or direction regarding the ARA loan program or the related programs such as those for federal technical assistance, federal public facility loans and grants and the federal technical training and retraining programs carried out by State and Federal agencies.

LAWS OF MINNESOTA 1961, CHAPTER 629 established the Area Redevelopment Agency. The purpose was --

"To eliminate chronic unemployment in depressed areas within the State; providing for the establishment of industrial development projects in such areas; providing for the establishment of area redevelopment agencies to promote and assist economic redevelopment by private enterprise, and appropriating money therefor."

The Legislature appropriated $1,500,000 for the State's share of participating funds in cooperation with the Federal ARA projects. The 1963 Legislature appropriated an additional $750,000 making $2,250,000 available.

In the 1969 Session, according to Chapter 1139 Section 4 Subdivision 1, $125,000 was transferred to State Planning to be used for assistance in organizing regional commissions. In 1971 $150,000 was transferred for the same purpose.

STATE OF MINNESOTA
ECONOMIC DEVELOPMENT ADMINISTRATION COUNTIES
(As of Feb. 1, 1975)
TITLE IV
(Qualified for full financial assistance)

---

1. Aitkin
2. Becker
3. Beltrami
4. Carlton
5. Cass
6. Chippewa
7. Clearwater
8. Cook
9. Crow Wing
10. Douglas
11. Duluth, City of (certain parts)
12. Freeborn
13. Hubbard
14. Itasca
15. Kanabec
16. Kittson
17. Lake
18. Lake of the Woods
19. Mahnomen
20. Marshall
21. Meeker
22. Mille Lacs
23. Morrison
24. Mower
25. Norman
26. Otter Tail
27. Pennington
28. Pine
29. Polk
30. Pope
31. Red Lake
32. Roseau
33. St. Louis
34. South St. Paul, City of
35. Todd
36. Wadena
37. Wright

Qualified but <u>not</u> designated

1. Benton
2. Chisago
3. Isanti
4. Kandihohi
5. LeSueur
6. Lincoln
7. Lyon
8. Murray
9. Renville
10. Sherburne
11. Sibley
12. Stearns
13. Stevens
14. Yellow Medicine

<u>Indian Reservations</u>

1. Fond du Lac
2. Grand Portage
3. Leech Lake
4. Mille Lacs
5. Net Lake
6. Red Lake
7. White Earth

The structure and function of this organization can best be set forth in excerpts for its enabling legislation:

458.09 PORT AUTHORITY COMMISSION, APPLICATION TO SEAWAY PORT AUTHORITIES. Subdivision 1. A commission to be known as "Port Authority of ....." is hereby established in and for every city of the state which has, or shall have over 50,000 inhabitants and which is or shall be situated upon, or adjacent to, or which embraces or shall embrace within its boundaries, in whole or in part, a port or harbor located on a navigable lake or stream. Sections 458.09 to 458.19 are expressly declared to be applicable to all such cities. Those port authorities now or hereafter having jurisdiction over harbors located on the Great Lakes-St. Lawrence seaway system shall be known and are referred to in sections 458.09 to 458.19 as seaway port authorities. A port authority shall be a body politic and corporate in the state of Minnesota with the right to sue and be sued in the names above designated. A port authority shall also be considered a governmental subdivision within the meaning of Minnesota Statutes, Section 282.01. The exercise by any such authority or commission of any of its powers shall be deemed and held to be essential governmental functions of the state of Minnesota, but any such authority

shall not be immune from liability by reason thereof.

Subd. 2. Any port authority, created and existing pursuant to this section, the membership of which has been appointed under section 458.10, subdivisions 1 or 2, shall have jurisdiction and shall be empowered to exercise and apply any and all of its powers and duties, as defined in sections 458.09 to 458.1991, at any place or places within the entire geographical area included within the boundary limits of the city of the first class in which said port authority is located, and said area of operations shall be known and described as the port district. The power to lease property which the port authority, in its discretion, believes suitable and proper to be put to use by the port authority in the execution of its duties and responsibilities is not to be deemed limited to said port district, but the port authority shall have the power to lease such property either within or without said port district for such purpose.

Subd. 3. The term "port authority" when used in those sections shall be deemed to include seaway port authorities.

(1929 c 61 s 1; 1931 c 132 s 1; 1955 c 685 s 1; 1957 c 812 s 1; 1957 c 831 s 1; 1959 c 316 s 1; 1961 c 357 s 1; 1965 c 45 s 61; 1969 c 731 s 1, 2) (1372-7½)

458.10 MEMBERSHIP. Subdivision 1. Such port authority for any city shall consist of three commissioners who shall

be appointed by the council of each city in and for which such port authority is hereby created. The first commissioners of any such port authority shall be appointed for terms as follows: one for two years; one for four years; and one for six years.

Upon passage of a formal resolution of the governing body of any city having a port authority created under the terms of this subdivision and now existing, the port authority of such city shall be increased to seven commissioners, two of whom shall be members of the governing body of such city. The members of such port authority shall be chosen by the mayor with the approval and consent of the governing body of such city and shall serve for a period of six years, provided that the members of any such port authority now existing shall be appointed for the remainder of their unexpired terms to such port authority.

The members of the governing body of the city appointed to such port authority shall hold such office for a period of six years, provided that they are, at all times of such service on the port authority, members of the governing body of such city. When such members are no longer members of the governing body of such city, their terms on such port authority shall terminate, and the mayor of such city with the approval and consent of the governing body of such city shall then fill such vacancies.

458.16 POWERS AND DUTIES. Subdivision 1. It shall be the general duty of any such port authority to promote the general welfare of the port district, and of the port as a whole; to endeavor to increase the volume of the commerce thereof; to promote the efficient, safe and economical handling of such commerce, and to provide or promote adequate docks, railroad and terminal facilities open to all upon reasonable and equal terms for the handling, storage, care and shipment of freight and passengers to, from and through the port.

Subd. 2. It shall further be the special duty of such port authority:

(1) To confer with any similar body created under laws of any state embracing within its boundaries any part of any port or harbor of which the port district forms a part, and in so far as agreement shall be possible to adopt in conjunction with said similar body a comprehensive plan for the regulation and future development and improvement of the entire harbor and port;

(2) To consider and adopt detailed and comprehensive plans for the regulation, future development and improvement of the port district, which plans shall, so far as may be, be consistent with the general plan above referred to;

(3) To confer from time to time with any such similar body and, so far as may be, to agree therewith upon legislation and regulations needed for the regulation and control of the

port as a whole, and to recommend the adoption of such legislation and regulations to the appropriate councils, legislatures or other legislative and regulatory bodies;

(4) To determine upon legislation and regulations needed for the regulation and improvement of the conduct of navigation and commerce within the port district and to similarly recommend the same;

(5) Either jointly with a similar body, or separately, to recommend to the proper departments of the government of the United States, or any state or subdivision of either, or to any other body, the carrying out of any public improvement for the benefit of the port or port district;

(6) To investigate the practices, rates and conduct of privately owned or operated dock, terminal and port facilities within the port district, and to institute such proceedings and take such steps to remedy any abuses as may seem in the public interest; in connection with any such investigation, the port authority shall have power, by subpoena issued out of the district court of the county where the port authority is situated, to require the attendance of witnesses and the production of books and documents, and to examine witnesses under oath;

(7) Annually by April 1 of each year to make written report to the council of such city, giving a detailed account

of its activities and of its receipts and expenditures during the preceding calendar year, together with such further matters and recommendations as it shall deem advisable for the advancement of the commerce and welfare of the port district.

The frequently used phrase for the Duluth Port - "Minnesota's World Port" - is in some respects, a misnomer. For, the importance of the economic activity generated by international commerce at the Port of Duluth, not only transcends the immediate geographic boundaries of the Duluth-Superior harbor area, but transcends the boundaries of the State of Minnesota as well.

Farmers, grain terminal operators, and truck drivers from Montana, North and South Dakota, as well as similar people in states as far away from the tip of Lake Superior as Kansas and Nebraska depend on shipping activity at the Head of the Lakes. Steelworkers in Iowa, tire manufacturers in Wisconsin, a manufacturer in Nebraska, a jobber in Colorado, or a Cooperative in Canada--the list of those dependent on a healthy viable world port some 2400 miles deep in the American and Canadian heartlands grows on a daily basis.

To provide these people with the services they expect from a first-class world port, increased growth and expansion have become the by-words of the Seaway Port Authority of Duluth. With over $120 million in new port improvements either

underway or scheduled for completion within the next two years, the Head of the Lakes is moving rapidly to meet the challenge of the Seaway Seventies.

Traditionally a leader among Lakes Ports, the Port of Duluth will be the first on the U. S. side of the Great Lakes to offer a full-service container facility, when the construction of a new Paceco 30 Long Ton capacity Economy Portainer crane is completed this fall at the Clure Public Marine Terminal in Duluth.

Presently served by over 15 international shipping lines, as well as a myriad of domestic and Canadian lake carriers, the Port of Duluth with its sister Port of Superior, continuously ranks high among the top 30 United States ports on the basis of tonnage.

The figures below are from the U. S. Corps of Engineers, 1973, the latest available. International and Domestic totals also shown. Tons are Short Tons of 2000#.

	Port	Total Cargo	Import/ Export	Domestic
1	New York, N. Y.	216,896,434	79,369,121	137,527,313
2	New Orleans, La.	136,104,315	46,472,162	89,632,153
3	Houston, Tx.	88,517,992	33,429,192	55,088,800
4	Philadelphia, Pa.	54,629,926	33,238,868	21,391,058
5	Baltimore, Md.	53,786,715	31,344,564	22,442,151
6	Baton Rouge, La.	53,568,530	17,441,933	36,126,597
7	Norfolk, Va.	52,333,200	38,309,467	14,023,733
8	Duluth/Superior	48,158,190	10,563,929	37,594,261
9	Chicago, Ill.	47,381,242	6,840,289	40,540,953
10	Tampa, Fla	41,923,222	18,979,488	22,943,734

	Port	Total Cargo	Import/ Export	Domestic
11	Beaumont, Tex.	34,490,769	9,618,459	24,872,310
12	Detroit, Mich.	31,541,566	4,921,762	26,619,804
13	Mobile, Ala.	30,518,422	11,766,026	18,752,396
14	Portland, Me.	28,844,110	24,093,475	4,750,635
15	Paulsboro, N.J.	28,296,140	14,016,586	14,279,554
16	Long Beach, Calif.	27,133,022	17,863,182	9,269,840
17	Boston, Mass.	27,056,868	1,005,441	16,051,427
18	Los Angeles, Calif.	25,977,491	13,608,742	12,368,749
19	Marcus Hook, Pa.	25,024,409	10,809,484	14,214,925
20	Port Arthur, Tex.	24,931,373	6,474,892	18,456,481
21	Toledo, Ohio	24,921,753	7,030,882	17,890,871
22	Cleveland, Ohio	24,828,323	6,646,000	18,182,323
23	Corpus Christi, Tex.	24,794,711	13,067,489	11,727,222
24	Portland, Ore.	20,077,043	7,903,519	12,173,524
25	Texas City, Tex.	19,959,038	3,279,171	16,679,867
26	Richmond, Calif.	18,259,836	5,859,452	12,400,384
27	Indiana Harbor	17,897,777	3,531,944	14,275,833
28	Conneaut Harbor, Oh.	16,731,912	7,029,674	9,702,238
29	Lake Charles, La.	16,505,262	2,757,581	13,747,681
30	Jacksonville, Fla.	15,513,590	8,069,803	7,443,787

A showpiece of Great Lakes port development, the Arthur M. Clure Public Marine Terminal in Duluth offers shippers and ship operators the ultimate in general cargo handling facilities.

Commonly known as "the Port Terminal," the complex features two 90-ton Clyde gantry cranes, fully-heated, fire-proof warehouse space totaling 234,000 square feet; vast open storage yards; direct access, all-weather loading docks for motor carriers and rail cars, and accommodations for loading and/or unloading five general cargo ships at one time.

Twenty- and 40-foot containers also move through the facility in ever-increasing numbers. The big boxes are shuttled efficiently and swiftly between ship and shore by the gantry cranes, jumbo forklift trucks and other specialized equipment.

The terminal's location in the heart of the waterfront assures fast cargo movement in and out of port. It's less than a mile to Interstate Highway 35 and rail service is available via six major lines.

In addition to the general cargo operation, the terminal is the site of a U. S. Customs-bonded warehouse, a tank farm and a refrigerated cargo facility.

Built at a cost of $10 million, the complex was opened in 1959 in conjunction with the opening of the St. Lawrence Seaway. Over-all activities are directed by the Seaway Port Authority of Duluth. Stevedoring and warehousing operations in the general cargo section are handled by Ceres Incorporated, the Port Authority's managing agent.

Altogether, the terminal encompasses more than 120 acres of excellent waterfront property. Many choice sites are still available through the Seaway Port Authority of Duluth, which offers complete industrial development financing and is the city's industrial development agent.

Privately owned terminals in the expansive Duluth-Superior Harbor handle a wide variety of export-import cargoes, ranging from general cargo to scrap iron, bentonite clay to steel products.

All operated by widely-known, long-established firms, these terminals offer excellent dock and storage facilities

with quick access to rail and freeway routes. They play an important role in keeping the port's rates and services keenly competitive, a distinct advantage to the port-user.

As the list of the port's commodities has grown both in size and scope, the exporters, importers and ship operators have come to know they will be served by modern techniques and experienced hands.

Great Lakes Storage and Contracting Co. operates two general cargo facilities, one on each side of the harbor: Northern Pacific Dock No. 2 in Duluth, and Great Lakes Storage and Contracting Dock in Superior. The Duluth dock can accommodate two oceangoing ships at one time adjacent to a transit shed with warehouse space for up to 10,000 tons of general cargo. The Superior dock is equipped with two overhead cranes and has spacious open and closed storage areas.

Hallett Dock Co. operates three large bulk and general cargo facilities in Duluth. Each is equipped with bridge cranes and has open storage space for more than 500,000 tons of bulk cargo or steel products. Hallett's Dock No. 6 also features a 175-acre tract available for industrial development.

Scrap iron exports move primarily via a 1,700-foot dock operated by the Duluth Iron & Metal Division of Hyman-Michaels Co. Four mobile cranes are kept active as part of this round-

the-clock waterfront operation.

Oceangoing tankers have provided service to the Port of Duluth-Superior for more than a decade with scheduled calls at the Clure Public Marine Terminal's tank farm.

Opened in 1961, the facility has become one of the Great Lakes leaders for storage and shipment of edible and commercial grade fats and oils.

More than a score of mid-American and Canadian meat packing and grain companies regularly route their liquid by-products through Minnesota's World Port. Cargoes most commonly shipped include edible lard, choice white grease, tallow, safflour, linseed oil and soybean oil.

The tank farm's dockside location promotes rapid shipment of fats and oils from either the huge storage tanks or directly from tank cars, or both. Further, because it is located in the terminal complex, it has the capability of providing simultaneous deep-tank loading in dry cargo ships with general cargo loading/unloading operations.

At peak delivery, tankers and conventional deep-tanks can be loaded at a rate of about 250 tons an hour.

Refrigerated cargoes began moving through Minnesota's World Port in 1970, further enhancing Duluth-Superior's reputation as a full-service port.

Entry into the "reefer" trade was a natural for Duluth-

Superior in view of its proximity to the many regional companies engaged in production and distribution of meat and poultry products.

The cargoes are routed through an ultramodern public dry and refrigerated warehouse built by Mid-Continent Warehouse Co. on property leased from the Seaway Port Authority of Duluth. The Mid-Continent facility, part of the Clure Public Marine Terminal complex is only a forklift trip away from shipside, less than a mile from Interstate Highway 35 and has a direct link to all six railroads serving the port.

Storage space for refrigerated products totals 440,000 cubic feet (there's also more than 650,000 cubic feet in the adjoining dry cargo warehouse). The loading-unloading dock can accommodate five rail cars and 10 semi-trailers at one time.

Altogether, Mid-Continent offers exporters, importers and domestic firms refrigerated storage, general storage, cargo consolidation and cargo distribution services.

Duluth-Superior is THE bulk port of the Great Lakes-St. Lawrence Seaway system. Its cargoes have been building a better United States and Canada for nearly a century; now they're helping to shape a better world.

Since the opening of the Seaway in 1959, Duluth-Superior has handled a wide variety of new cargoes, but has not lost

its identity as a bulk port.

Located near the foot of Minnesota's famous iron ore ranges, it is the largest ore-shipping port in the world, supplying the major natural resource for North America's largest steel-producing companies. Its six gravity-fed ore docks, capable of handling up to 24 bulk carriers simultaneously, have for decades shipped between 30 and 50 million tons during a nine-month navigation season. They often load ships in the 700-foot class with 25,000 tons of cargo in less than four hours.

In keeping up with trends in the iron mining and steel industries, millions of dollars have been invested in modernizing these facilities to handle taconite pellets as well as the traditional natural ores. While ore shipments have customarily been consigned to the blast furnaces in the lower Great Lakes area, they are now beginning to move to transhipment ports on the St. Lawrence River for export.

Coal, another major bulk commodity, has a rich history and an exciting future. Six modern unloading terminals receive coal from the eastern Great Lakes for use by industrial and power plants throughout the Upper Midwest. And a rapidly growing market for low-sulphur coal mined in Montana and Wyoming gives promise that Duluth-Superior may reverse its longtime status as a coal-receiving port. Thus, coal docks

are being transformed into serving a dual role as loading and unloading facilities.

Sharing the port's harbor skyline with the famous iron ore docks and grain elevators are bulk terminals handling large quantities of limestone, salt, bentonite, potash and finished cement. Three other docks exclusively handle inbound and outbound shipments of petroleum products.

More than 2,000 ships in the bulk trades call at Duluth-Superior every year, a figure which underlines the port's prominence in the Great Lakes-Seaway region.

Grain is Duluth-Superior's principal export and the port annually ranks among the nation's leaders as a grain shipping center.

Ten elevator systems--all privately operated--handle virtually all commodities: There's spring wheat, durum, wheat, corn, barley, oats, soybeans, flaxseed and rye, plus an expanding assortment of grain and vegetable by-products shipped in the form of meals and pellets.

The elevator systems serving the port's 14 grain loading berths have a total storage capacity of more than 70 million bushels. More than 170 million bushes are shipped in an average year by U. S. flag freighters to other Great Lakes ports, by king-sized Canadian lakers to St. Lawrence River ports for transhipment over-seas and by oceangoing ships to

ports throughout the world.

The face of "Elevator Row" has changed substantially since the 1959 opening of the St. Lawrence Seaway, the result of major expenditures by the grain companies. One new elevator was constructed in the mid-1960's and the existing facilities have undergone extensive alteration and remodeling. New automated equipment has been installed at most elevators, the slips are dredged to Seaway depth and, in short, the port continues to fill the needs of the nation's grain shippers.

AIRPARK is a new 240-ACRE INDUSTRIAL PARK adjoining Duluth International Airport. It is being DEVELOPED BY THE SEAWAY PORT AUTHORITY of Duluth to complement HARBORPARK the Authority's waterfront industrial park for businesses requiring both ship and rail cargo service. AIRPARK is for LIGHT INDUSTRY, industry which favors air and highway cargo service. Duluth International Airport is at the center of the North American continent; it features a 10,000 foot runway and modern air traffic control facilities; it is STRATEGICALLY LOCATED for international flights as well as domestic distribution. AIR CARGO TERMINAL, conveniently located for AIRPARK industries, is also AIRPARK-managed. AIRPARK is served by a four-land highway which links Duluth and Mesabi Iron Range Cities, and connects to INTERSTATE HIGHWAY I-35

for traffic to the Twin Cities and beyond.

AIRPARK SITES are tailored to your business in size, shape, growth potential, and relationship to other commerce in and near the Park. All are SERVED by 36-foot paved roadway with concrete curb and gutter, natural gas, underground electric service, sewer to city of Duluth treatment system, and Lake Superior water. Physical development of AIRPARK is FINANCED by the process of $1,670,000 in bonds issued by the Seaway Port Authority of Duluth in 1971. A companion issue by the Duluth Airport Authority will be used in construction of the new Duluth International Airport TERMINAL. Industries wishing to locate in AIRPARK may choose from a variety of ways to acquire property and construct buildings. Land may be PURCHASED OR LEASED. Minnesota Statutes (Chapters 458 and 474 MSA) permit the Seaway Port Authority to provide REVENUE BOND FINANCING for plant construction. Revenue bond financing allows lessee to move into a new, efficient, one-story building for virtually NO CAPITAL OUTLAY. This allows AIRPARK tenants to shift capital from plant expansion to operations expansion. STEP-LEASES are available, allowing orderly growth of lessee's business. SUB-LEASING is permitted, providing space for business expansion and contraction. Rental fees run for duration of LONG-TERM AGREEMENT, and do not increase with

inflationary spiral. Rental fees continue as constant, while plant investment appreciates. Each original lease agreement includes assurance that additional REVENUE BOND FINANCING for future growth will be provided on request of tenant. SITES AND OPTIONS are available.

Other scheduled harbor improvements reflect the diversity of cargo handled by the Twin Ports:

* A new $40 million taconite-handling facility joins six large gravity-fed ore docks to more efficiently handle this traditional Head of the Lakes cargo which originates on Minnesota's Iron Range.

* A $12 million investment by Lakehead Pipeline Co. of Superior is scheduled for the construction of storage tanks handling petroleum products and renovation of its marine terminal for modern Great Lakes tankers.

* A $6 million program by Incan Marine, Ltd. has introduced roll-on, roll-off service between Superior and Thunder Bay, Ontario.

* A $5.5 million investment by American Hoist & Derrick Co. in a new hydraulic backhoe manufacturing plant at the Clure Public Marine Terminal is designed to utilize convenient waterfront access for the inbound shipping of steel and the outbound shipment of products.

* A $2.2 million expansion of the grain elevator complex

in Superior operated by M & O Elevators, Inc., Minneapolis, will incorporate meal and grain by-product handling facilities.

All of these investments--and countless lesser ones in deeper berths, dust control systems, truck and rail facilities and dock improvements--express confidence in the future. They also represent welcomed news to the over 2000 people who directly depend on a strong and viable waterfront economy in the Twin Ports for their livelihood.

An extended navigation season on the Great Lakes to a ten-month international shipping season and a year-round domestic shipping season could become a reality within the next five years.

The positive results achieved in experiments by the U. S. Army Corps of Engineers in the St. Lawrence River with new winter navigational aids indicate there is a feasibility for a ten-month international shipping season. This extended shipping season is viewed as a real key to the continued growth and economic stability of Great Lakes Ports.

Among the dozens of techniques being utilized in the demonstration program to aid ship transits of ice-covered waters are new ice navigation concepts and systems, advanced weather forecasting systems, new ice control techniques, intensified ice-breaker assistance and the use of bubbler systems, which bring warmer below-surface water to the sur-

face to minimize ice coverage.

All of these factors are involved in the extension options discussed in the special report. Operational features, information systems and remedial measure elements are, in fact, identical for all season extensions, except that the year-round alternative requires the more extensive use of ice control devices.

Great Lakes shipping is an obviously indispensible link in the industrial and the agricultural economy of the mid-continent. When we consider that the Great Lakes area contains 26% of the nation's population (80% classified as urban), is responsible for 36% of the nation's value-added-thru-manufacturing; 47% of the nation's steel production, (as well, the Great Lakes hinterland produces over 80% of the raw materials required for steel production in the United States); 12% of the nation's mining, (71% of the nation's iron ore and 40% of its limestone) and 37% of the nation's grain, it is abundantly clear how dependent the economies of the Great Lake states are on low-cost transportation.

The extension of the presently restricted shipping is vital to the nation in its efforts to expand the capacities of our national transportation network and at the same time, reduce transportation costs and conserve transportation fuels.

What is the next step?

Federal agencies involved in the effort to extend the

navigational season should take immediate steps to implement the programs which have been successfully demonstrated to date on an on-going basis on the four upper Great Lakes. The Coast Guard should step up planning for replacement of obsolescent general purpose tugs with vessels of greater icebreaking capability. Congressional support is urged for a permanent extension of the navigation season on the four upper Great Lakes. Finally, an intensification of effort for the development of an extended season for the balance of the system -- Lake Ontario and the St. Lawrence River System coordinated with the Government of Canada -- is necessary so that the entire system might achieve, at some early future date, an extended navigation season.

Demonstration Program technical activities and preliminary economic analyses indicate that an extended season is feasible both economically and technically. The national interest now requires that we move to implement material and procedural improvements and provide funds necessary to extend the navigation season.

While international trade and a myriad of maritime activities dominate much of the efforts of the Seaway Port Authority of Duluth, another one of its major and increasingly important functions is that of chief industrial development agent for the city of Duluth.

Since assuming that role, at the request of the Duluth City Council in 1970, efforts aimed at increasing and diversifying Duluth's industrial base have made considerable strides.

During the past two and one-half years alone, the Port Authority's Board of Commissioners has authorized the issuance of over $51 million in industrial revenue bonds for some 19 job-generating projects. As a result of these efforts and with the cooperation of other local industrial development agencies, 1,615 jobs have either been added or retained to strengthen the Duluth economy.

One of the most recent and more significant projects aided by Port Authority financing is the new $5.5 million American Hoist and Derrick plant now under construction at the Clure Public Marine Terminal. When completed early this fall, the plant will engage approximately 300 highly-skilled workers in the construction of hydraulic backhoes for both international and domestic consumption. Completion of a proposed second phase of production within the next five years could bring that total to a level of 600 or more.

From a numbers standpoint, the 500 new jobs to be created by Jeno's, Inc., through the issuance of $1 million in industrial revenue bonds to finance the rejuvenation of the former Chun King plant, makes it the largest number of people

to be employed by a single bond issue.

A Port-aided $4 million expansion of Duluth's Clyde Iron Works will add 100 new, well-paid employees to its workforce bringing total employment at the plant up to 500 people.

What started out as a $15 million project aided by Port Authority bonds and EDA participation, has since grown to some $33 million as Cargill, Inc. of Minneapolis continues work on its new meal and grain handling facility along Duluth's famed "elevator row." It will employ approximately 60 new people.

A $4 million bond issue will mean new jobs for between 30 and 60 people when North Star Steel Company of St. Paul completes its grinding ball facility during the coming year in the Twin Ports, while a $400,000 expansion by National Iron will mean another 50 new jobs for the community.

One-hundred and ten jobs for the City were retained with the construction of a new $1.3 million building in the Oneota Industrial Park for Bombardier Limited. Port Authority industrial revenue bonds were used to finance the project.

The other Port Authority-assisted projects represent a broad cross-section of industrial diversity as well: $700,000 for a urea facility at Hallett Dock -- 30 new jobs; $700,000 for remodeling and expanding Elliott Packing Company -- saving 175 jobs; an $800,000 truck service and maintenance center for Arrowhead Equipment Company -- 30 new jobs; location

assistance to North Country Equipment Company -- 10 jobs; land acquisition and staff assistance to Twin Town Box Corporation -- a new $500,000 facility and 35 new jobs; building location for Ziegler, Inc. -- 15 jobs; an Airpark location for Gardner-Denver Company -- 20 new jobs; a $150,000 structure for Medi Associates -- 20 jobs; and $250,000 in industrial revenue bond financing for Kemp Fisheries to aid in the expansion of its frozen fish business.

U. S. DEPARTMENT OF THE ARMY
BURLINGTON NORTHERN
TACONITE TRANSSHIPMENT FACILITY
DULUTH-SUPERIOR HARBOR

PROJECT DESCRIPTION

"Project Location. The proposed expansion would be located immediately adjacent to the existing facility in the western Lake Superior port of Duluth-Superior. The proposed site for the new dock would be on the bayward end of the existing C. Reiss Coal Dock located to the east of the present Burlington Northern ore docks. The stockpile expansion would be immediately southwest of the existing stockpiling area. The general locality is bounded by the Nemadji River on the northwest and by Bluff Creek to the southeast. Neither the stockpiles nor the construction site will affect the banks of the two streams.

Project Purposes. A number of taconite producers including Butler Taconite, The National Steel Company, and the Bethlehem Steel Company have indicated that they will increase taconite production in the Mesabi Iron Range near Hibbing, Minnesota. In order to accommodate the increased rail and ship traffic generated by this increased production, Burlington Northern proposes an expansion and modification of its existing taconite transshipment facility in Superior, Wisconsin.

Existing Project. The existing transshipment facility handles a throughput of five million long tons (5 mlt) annually. The ore is delivered by unit train to a car dumping facility where it is unloaded at the rate of 3,000 long tons per hours.

Currently an average of one train per day passes through the facility. Trains are comprised of 200 bottom dump hopper cars, each having a capacity of 70 long tons. The cars are unloaded, automatically two at a time, in an unloading shed.

From the unloading shed, the ore travels by conveyor belt, either to the ship loading facility or to the ground storage area.

During the non-navigational season, (approximately January through March) the conveyor belt delivers taconite directly to the stockpile via a track-mounted stacker system. At the commencement of navigation, the taconite in the stockpile is reclaimed by means of a crawler-mounted bucket-wheel reclaimer at the rate of 3,000 long tons per hour and deposited on the conveyor system which runs to the shiploading facilities.

The existing conveyor system is a series of belts approximately 5,000 ft. in total length. Each change of direction requires a "transfer point" where the taconite pellets are transferred from one belt to another. Exhibit 2 shows these "transfer points" for both the existing and proposed facilities.

Since the delivery of taconite to the facility is conducted on a year-round basis, substantial stockpiling takes place during the non-navigational season. At the existing taconite facility, approximately 1,600,000 long tons are stockpiled annually. This stockpile would be reduced to approximately 800,000 long tons if the new facility is constructed. With the possibility of year-round navigation on Lake Superior, the stockpile could be reduced substantially and might even be unnecessary.

A portable conveyor will be used in conjunction with the stacker boom to stockpile and reclaim the storage piles beyond the reach of the stacker boom.

On the existing facility, the shiploading operation consists of a pocket dock, whose pockets are so positioned that taconite can be loaded directly into the holds on the lake vessels by means of chutes.

Proposed Project. Expansion of the total operation to handle the projected 17.5 mlt in 1976 and 22.9 mlt in 1980 would be accomplished by building a new 100-acre stockpiling area, a new loop unloading track, a new car-unloading facility, an additional conveyor system, and a shiploading facility on an existing dock.

Taconite handled by the expanded system would originate at pelletizing plants operated by The Hanna Mining Company and

Pickands Mather and Company in the Mesabi Iron Range. The ore would be rail hauled to the Allouez transshipment facility. After transshipment, transportation of ore from the terminal to the Lower Great Lakes ports would be in vessels of approximately 21,000-ton capacity. Use of vessels with 58,000-ton capacity is planned to begin by 1978. Primary consumers of the taconite handled through the facility would be Inland Steel Company, Wheeling-Pittsburgh Steel Company, National Steel Company, and Bethlehem Steel Company at their steel mills in the Lower Great Lakes Region.

At the new facility, two stockpiles are proposed, one 25 feet high, 4,700 feet long and 365 feet wide at the base and one 25 feet high, 4,700 feet long and 220 feet wide at the base, when throughput is 12.5 mlt. At 17.9 throughput, the stockpile widths would be increased to 400 feet. Initially, both stockpiles would hold approximately 3.5 mlt with maximum capacity of approximately 5 mlt when the facility handles 17.9 mlt throughput. Thus, the final tonnage available as stockpile would be about 5.8 million long tons for the existing and proposed facility. The site of the 100-acre stockpile expansion is immediately southwest of the existing stockpiles, which cover 39 acres.

Improvement of the C. Reiss Coal Dock includes the dredging of approximately 150,000 cubic yards of material from the

existing slip. The permit application by Burlington Northern designated a diked containment area across the foot of the existing Burlington Northern and C. Reiss Coal Docks for the disposal of the dredged materials. This is the preferred dredge material disposal area, and would be the least costly as compared to the alternative methods.

Ship Loading Facility. The new shiploading system would consist of 36 storage bins and shuttle conveyors. The capacity of each storage bin would be 2,000 long tons; each shuttle conveyor would deliver approximately 182 long tons per hour. Thus, the total delivery capacity of the shuttle conveyor system would be 13,000 long tons per hour.

Although designed for loading a wide range of ships, the loading system for the new facility is specifically designed for vessels of the maximum size permitted through the Sault Ste. Marie Locks. Vessels in this class, such as the Roger Blough and the Stewart J. Cort, are capable of transporting 50,000 to 60,000 net long tons of ore.

Permits and Approvals. To obtain approval to construct and operate proposed taconite terminal, Burlington Northern must apply for, submit, and receive review of permits from federal, state, and local agencies.

At the federal level, a U. S. Army Corps of Engineers application for a permit to construct in navigable waters is

required. Dock construction and modification taking place in the waterway below the normal high water mark fall under regulations stated in Section 10 of the River and Harbors Act of 1899. Outfalls, settling pond discharges, and similar water pollution control activities are regulated by the provisions of Section 404 of the Federal Water Pollution Control Act Amendments of 1972.

Operation Related Impacts - Socio-Economic

Economics. Continued favorable economic impacts both direct and spinoff, can be expected if the transshipment facility expansion becomes operational. These impacts would be long-term. Employees would spend portions of their disposal incomes within the local economy. Spinoff or secondary impacts would occur as wages are passed from laborer to storekeeper along the economic chain. Taxes on earnings would benefit the communities in which the workers reside. Supplies and maintenance materials purchased locally would also contribute dollars to the local economy.

The projected level of employment for the operational phase of the proposed taconite transshipment facility expansion is approximately 60 new positions, with employees to be hired from the local labor force. These positions would, for the most part, be year round, full-time employment opportunities. Non-navigational employment levels would be approximately

50-55 and this would increase to 60 or 70 during the shipping season when ship loading operations are taking place. There would be three shifts with approximately one third of the work force working each shift.

In addition to those 60 jobs directly related to the daily operations of the facility, there would be secondary or service jobs created in other segments of the economic community. Using the economic multiplier 1.90 can be anticipated that approximately fifty-four service jobs would also be created bringing the total to 114 new employment opportunities to the area. This amounts to nearly 2.85 percent of the annual average unemployed in the area.

Annual payroll for direct employment at the 17.9 million ton throughput level would be approximately $1,400,000. This money would be spent by these 60 wage earners and it would change hands many times within the community until an estimated total dollar impact (using the 1.90 multiplier) resultant from wages along would approach $2,660,000.

In addition to the economic impact of increased employment and the flow of dollars for wages, would be the additional taxes paid with respect to the assets being used at the expanded facility. It seems reasonable to assume that the central assessment for the expanded operations by the State of Wisconsin would increase by 1977. While it is impossible to estimate

MINNESOTA STATE PLANNING AGENCY

Grain Transportation

The 1973 legislature directed the State Planning Agency to study the movement of grain from northwestern Minnesota to Duluth, and from Minneapolis-St. Paul down the Mississippi to the Gulf of Mexico. Because these specific corridors are important links in the grain transportation system, they are affected by all aspects of grain movement in Minnesota. Therefore, it is important to evaluate these corridors as part of the entire system.

The purpose of this study is to describe the grain transportation system in Minnesota including an identification of the characteristics and problems of the system. Within this framework the movement of grain across northern Minnesota and down the Mississippi can be analyzed. Options for the future development of the transportation system in Minnesota are also included.

Several factors must be examined in analyzing the effectiveness of the transportation system in handling grain.

GRAIN PRODUCTION AND MARKETING - Historical trends of grain production show past and present demands on the transportation system and allow the projection of probable demand ranges through 1980. Marketing patterns indicate how grain production

is expressed as a demand on the transportation system.

GRAIN MOVEMENT PATTERNS - A survey taken from a sample of country elevators was used to analyze the way Minnesota shippers move their grain. Elevator operators were asked what kinds of grain they handled, how much grain they handled, where it was shipped, and whether it was shipped by truck or rail.

HIGHWAY SYSTEM - A description of the present highway system and analysis of current grain truck traffic provides a measure with which to determine the ability of the highway network to absorb the anticipated grain traffic.

RAILROAD SYSTEM - A description of historic trends and recent developments in railroad service provides basic information needed to analyze the changing pattern of grain transportation in the state. Freight car service shortages and rail branch-line abandonments are two of the major problems in Minnesota and the nation.

WATER TRANSPORTATION - The Mississippi River and the Great Lakes are major routes for grain movements from Minnesota. An examination of these waterways indicates the continuing importance of the Duluth-Superior and the Twin Cities-Savage ports as grain export centers.

HOLDING AND TRANSFER FACILITIES - Historically, both country elevators and port terminals have played major roles in the movement of grain. Examining their continued role as well as the rapid growth of sub-terminal elevators will indicate

projected changes in shipping patterns.

POTENTIAL NEW METHODS OF TRANSPORTING GRAIN - In addition to the traditional methods of transporting grain, two other methods of moving grain have been suggested: pipeline and conveyor belt.

COMPARISON OF MODAL CHARACTERISTICS - Each method of moving grain has advantages and disadvantages. A comparison of these factors indicates which methods of transportation are most suitable for the movement of grain in Minnesota.

Time restraints and the lack of available information required that some subjects be given less attention. Subjects such as carrier regulation, crop prices, freight rates and the foreign export market are extremely complicated. Also, state government has little control over them. Because of this, these subjects will be treated as independent constants. These effects are expressed in grain shipment patterns and modal choice making.

CONCLUSIONS

1. Minnesota's transportation system will likely be called upon again to move at least as much grain as was moved through Minnesota in 1973. At that time the demand was met and the grain was moved, but it was done at an extra cost to the farmer, the elevator operator, and the buyer. If the transportation system is going to be able to

efficiently handle these expected large grain volumes in the future, there will have to be an increase in the efficiency and capacity of the grain transportation system.

2. Traditional shipping patterns are beginning to change with the advent of the sub-terminal facilities and the unit train. These more efficient uses of the railroad system along with greater capacity freight cars are indicators of the type of rail system that is coming. While these innovations will do much to increase the capacity of the transportation system, it will put great stress on those shippers and buyers who do not have access to the more efficient loading and transporting facilities. The governmental regulatory agencies should encourage the development of the more efficient loading and shipping methods among all shippers throughout Minnesota.

3. The Minnesota Highway Department's "Backbone System" was developed because of lack of funds, to priorities among the needs of the highway system. The criteria used to identify that system included: traffic volumes, recreational travel and the promotion of outstate economic development. These criteria do not give sufficient attention to grain and other commodity movements. One priority of the State Trunk Highway System should be the provision of highway facilities for commodity movement.

4. Truck movements of grain from the farm to elevators and to the ports are important elements of the grain transportation system. Some of the highways and highway bridges in rural Minnesota are substandard to the point of impeding the movement of grain truck traffic. If truck movements of grain are to continue, and be efficient, some improvements must be made to these substandard facilities.

5. The movement of grain by truck across Northern Minnesota primarily originates in North Dakota. Any solution or reduction in that traffic will require the cooperation of the State of North Dakota.

6. Rail line abandonments will continue unless some level of government or private institution purchases, subsidizes or otherwise assists those lines which are presently unprofitable. The answer to the rail abandonment problem in Minnesota is not necessarily to oppose all abandonments, but for the state to determine the importance of each individual line to Minnesota and to the affected region of the state.

7. The movement of grain on our waterways is important to Minnesota and Minnesota's farmers. The potential for increased exporting of grain from Minnesota by water is dependent on the number and size of the barges and vessels

that come into Minnesota ports. The number of ships and barges available for grain shipments is limited by the amount of commodities imported and the capacity of the navigation systems serving the ports in Duluth-Superior and the Minneapolis-St. Paul area. Any efforts toward major increases in barge and ship movements of grain will need to deal with these problems.

8. There is a need for government to control and regulate transportation carriers. There must be enough regulation to maintain the sensitive balance between the maintenance of competition and the need for increased efficiency of operation. It appears that there is currently too much regulation unevenly enforced between the modes. A reevaluation of present regulations is needed to identify these effects on the efficiency, cost and level of service provided by each mode.

9. It does not appear likely that pipelines or conveyor belts will play a major role in the long distance movement of grains in the near future. Truck, rail and water movements of grain have risen to their present position of importance because of their adaptability to the movement of grain. It is unlikely that the importance of these modes will change.

10. In the conduct of this study, it became apparent that there

was a lack of accurate data on rate structures, modal operating costs and a total lack of information on commodity movements in Minnesota. This kind of information is necessary to appraise and evaluate the effectiveness of the transportation system.

RECOMMENDATIONS

HIGHWAYS

1. Because of the need to include commodity movements in the criteria for the Minnesota Highway Department's "Backbone System", the "Backbone System" should be reevaluated. This reevaluation should be based in part on the results of a complete commodities movement study in Minnesota.
2. The Minnesota Highway Department should continue its efforts in making a detailed analysis of all roads with spring road restrictions. If the analysis reveals that some highways would not be adversely affected by anticipated truck traffic during the current restricted periods, the restrictions should be raised on those highways.
3. The State of Minnesota should provide increased highway revenues for both the state and state-aid highway funds so needed improvements can be made to the highway system.
4. Minnesota should attempt to work closely with North Dakota to divert more of North Dakota's grain off the highway and onto the rails.

RAILROADS

5. There is a serious lack of information available concerning the rail system in Minnesota. Detailed information should be collected and analyzed concerning all aspects of the economics and operation of the rail industry. Based on that analysis, a policy should be identified as to the state's role in maintaining rail service with particular emphasis on proposals for rail abandonments. Some alternative approaches that the state could implement are:

   a. Oppose abandonment of needed lines.

   b. Subsidize unprofitable rail line operations.

   c. Provide bonding or loans for the upgrading of substandard rail trackage.

   d. Buy rail trackage and bring up to minimum standards, then lease the trackage to a management organization.

   e. Aid local municipalities in buying and operating the line.

   f. Seek Federal assistance for rail abandonments.

   g. Allow unnecessary trackage to be abandoned and dismantled.

Each individual proposed abandonment should be subject to a detailed analysis to identify the best approach for the state to take concerning that particular line.

WATERWAYS

6. The size and efficiency of the locks on the Mississippi and St. Lawrence Seaway are extremely important to the level of service and cost of shipping that Minnesotans experience. At the present time, the Mississippi River waterway has a bottleneck in Lock and Dam 26. If Minnesota is going to continue to have good accessibility to the Gulf Coast, Lock and Dam 26 in Afton, Illinois will have to be improved. The State of Minnesota should consider the passage of a resolution supporting the rebuilding of Lock and Dam 26 with proper attention given to safeguards for the environment.

ORGANIZATION

7. Recommendations 4 and 5 identify major tasks which presently are not the responsibility of any agency of state government. They suggest the need for liaison and coordination with North Dakota and other states, the Interstate Commerce Commission and the railroads on an ongoing basis and they indicate studies which would result in state legislative action. Because of the need for an ongoing expertise and involvement, there should be a group in state government with responsibility for the performance of these functions. If a Department of Transportation is formed, this function should be placed there.

However, if a Department of Transportation is not formed, or until one is formed, the responsibility for the performance of this function should rest with the Intergovernmental Transportation Task Force.

On the following pages is an outline of the Table of Contents and a listing of the illustrations and tables used to give an idea of the scope of the report:

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To round the national grain movement picture, following are excerpts from an Interregional analysis of U. S. Domestic Grain Transportation.

Written by: Jerry A. Fedeler
Earl O. Heady
Won W. Koo

Center for Agricultural and Rural Development
Iowa State University
Card Report 54T
February, 1975

"The grain industry in the United States has expanded rapidly since World War II. Concurrent with this expansion has been an increase in the demand for grain transportation services. There have been periods of excess demand for grain hauling equipment and grain handling facilities. This excess demand distorts the normal grain price-space relationships and results in the usual problems and inefficiencies which correspond to such distortions. Associated with the expansion of the grain distribution industry has been a greater degree of production specialization among farms, an expansion of the domestic waterways, the near completion of the Federal Interstate Highway System, difficult financial conditions for some railroads, and the partial abandonment of the railroad system. In 1973 the United States faced a new problem, an energy crisis, which brought about new problems for the transportation

industry. The energy crisis was especially intense because all modes of transportation depend heavily on gasoline and diesel fuels which were in especially short supply because of the depletion of domestic oil supplies and restricted oil imports.

"The research reported is directed towards these general problems in transportation and the interrelationships between efficient grain transportation networks and the location of grain production and demand. This study is the result of a contract between the Federal Railroad Administration of the Department of Transportation and Iowa State University. It is designed to project the 1980 domestic flows of wheat, feed grains, and soybeans under alternative transportation cost structures and export demands. The analysis includes projecting the domestic and export demands for grain and finding the least cost location for producing each grain. Problems of grain transportation can be avoided only if the supply, transportation, and demand sectors of the grain industry are each mutually aware of the potentials and limitations of the other sectors in the industry. This research coordinates these three sectors within 10 mathematical optimization models.

"Although parts of sections II, VI, and VII contain information inessential to the models or discuss issues that may be familiar to some readers, they are included in the

spirit of snythesizing the supply and demand of grain with its transportation. Readers familiar with analyzing grain sales may be unfamiliar with transportation and vice versa. Sections IV and V illustrate that many details about transportation can be obtained from national models ..."

Following is an outline of the Table of Contents which give the scope of the material contained in the full report:

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PURPOSE OF THE STUDY

An investigation of the economic and social impact of aviation at three selected communities in Minnesota, Duluth, Austin and Thief River Falls, was undertaken to provide an understanding of the relationship of aviation to the economy of each community. It was anticipated that if the results proved tenable, a method for the examination of other communities throughout the State would be thus established.

USEFUL DEFINITIONS

Economic impact may be either direct or indirect. Direct impact is measured by primary wages and expenditures of airport and aviation related businesses, and by secondary income generated through the regional multipliers. Indirect impact is measured by other related or ancillary income which is generated because of the existence of aviation service to the community. Medical, educational, cultural and other services provided through air transportation account for social impact. The social and economic impacts herein derived may be considered as part of the benefits in a generalized benefit/cost analysis for community airport needs. Socio-economic variables used in this study are industry mix, unemployment, and per capita income.

SELECTION OF AIRPORTS

Airports at three communities in diversified economic regions of the State were selected as typical of facilities within Minnesota.

Thief River Falls in the Northwestern Region and Duluth in the Arrowhead Region both have scheduled air service. They differ in that the former serves as a market center in a primarily agricultural region while Duluth is in a Standard Metropolitan Statistical Area. Austin in the Southeastern Region is served only by general aviation.

Aircraft movements for 1973 at the three airports are given below.

Airport	Total Operations	Percent Air Carrier	Percent Military
Austin	18,500	0	0
Thief River Falls	21,000	14	0
Duluth	79,916	15	30

STUDY CONCEPTS

Air passenger surveys were distributed to boarding passengers for one and two week periods. General aviation survey techniques varied for the three airports and yielded a 55 percent response at Duluth. Major industrial and institutional users of aviation were interviewed to define the role of this mode of

transportation in company location and operations.

Interindustry transaction tables were constructed as part of the regional input/output model for the smallest independent economic region in which each community is located. These tables indicate the distribution of industry sales and purchases within and outside of each region. Employment trends have been examined through excess employment and shift/share analysis. Excess employment is that percentage of employment in a specific sector which is above the national employment average for that sector. Shift/share analysis is a measure of the relative growth of a specific economic sector compared to the growth of that same sector on a national level.

Regional socio-economic characteristics have been established from census data and data from Minnesota State agencies. Industry mix, employment, and per capita income are used as measures of the socio-economic well-being of a region. Medical and educational services, as well as cultural and sports activities, are also considered to be part of the social well-being of a community, as is access to large metropolitan areas, where such services may be obtained.

RELATIONSHIP TO OTHER ECONOMIC IMPACT STUDIES

A study for the New York Port Authority in 1961 indicated that the direct income from aviation related activities in the

New York Metropolitan Area amounted to $1.1 billion in 1959. A more recent study showed this figure has increased to $3.3 billion. Results of the Minnesota study revealed direct impacts ranging from $500,000 at Austin to $7.2 million at Duluth, including both primary and secondary incomes. This does not include airport related military pay and procurement of $23 million in the Duluth area.

A comparison of the percentage of gross regional output of the direct dollar impact from the smaller communities studied and larger metropolitan hubs indicates that the role (percentage) of direct dollar impact from aviation activities increases as the regional output increases. This may be attributed to the additional service and ancillary industries which are associated with increased aircraft operations. This percentage varies from .1 percent at small airports to 4 percent at large hubs.

In other studies, indirect income from industries has been attributed to the existence of an airport. This income may also be attributed, however, to the existence of labor supply, utilities, or highways. Thus it may be concluded that the airport is a necessary part of the overall regional economic structure but is not in and of itself solely responsible or sufficient for the attraction of many industries.

Studies dealing with aviation at the national level have

assumed that the redistribution of economic activity and employment does not play a role in the economic well-being of the Nation. For communities with high levels of unemployment, high rates of out-migration, and low per capita income, such redistribution may be important. These studies also did not address the important role of access to other services and amenities for small non-metropolitan communities.

SUMMARY OF FINDINGS FOR SELECTED MINNESOTA AIRPORTS

Summaries of the principal findings for the three airports are presented below.

DULUTH

SUMMARY OF FINDINGS

* Duluth International Airport and aviation-related activities contribute $7,200,000 directly to the economy of the Arrowhead Region, which amounts to .4 percent of the regional gross industry output. This increases to .6 percent when the impact for all airports within the region is considered.

* Airport related military pay and procurement in the immediate Duluth area contribute an additional $23 million to the economy.

* Business travel accounts for 60 percent of the scheduled air passenger trips and 70 percent of the general aviation trips.

* Non-residents arriving in Duluth by commercial aircraft and remaining overnight spend an average of $31.29 per day, with an average stay of 3.4 days. The respective figures for general aviation are $22.81 and a one-half day stay. These figures account for indirect expenditures of $8,200,000 annually in Duluth.

* If no airport facilities were available, business conducted in Duluth would be reduced 24 percent by those persons presently utilizing scheduled air service and 41 percent by those utilizing general aviation. Of the $8.2 million in indirect income, approximately $2.7 million in indirect income, approximately $2.7 million would be lost.

* Sixty-six percent of those presently using the airport would make alternate arrangements if the airport were not available, travelling an estimated 5.7 hours for each one-way trip. Assuming a value of $10 per hour for these travellers, the additional cost would equal $2,900,000 annually.

HIGHLIGHTS

* In small communities, one or two trips per day of larger corporate aircraft may mean more in indirect

economic impact than a large number of operations of smaller aircraft, depending upon trip purpose.

* The direct economic impact of airports in small communities comprises a smaller percentage of the gross regional output than it does for larger hubs. This may be attributed to the increased interrelationships of primary and secondary support industries associated with aircraft operations at larger hubs.

* An airport is necessary, but not solely sufficient, for attracting many industries into a community. Other essential economic factors are an adequate labor force, utilities, a favorable tax structure and the availability of other transportation modes.

* From the point of view of an individual community, relocation or redistribution of industry is important, especially if the community has unemployment higher than the national level, a high rate of outmigration, and a low per capita income.

MINNESOTA HIGHWAY DEPARTMENT

Coastal Zone Traffic Data

Present (1974) Traffic Volumes

Existing traffic volumes on the state trunk highways and county state aid (CSAH) routes shown on the accompanying maps were compiled based upon traffic counts taken on county roads at 5-year intervals and on traffic counts taken on the state trunk highway system at 2-year intervals. In cases where the most recent county traffic counts were made several years ago, the data was factored up to attain a 1974 estimate based upon past growth rates in the county. In the case of Cook and Lake Counties base data was from 1973 and in the case of St. Louis and Carlton Counties 1969 and 1970, respectively.

Heavy commercial truck volumes on the state trunk highway system were estimated based upon annual vehicle classification counts made at automatic traffic recorder stations and upon additional vehicle classification counts made at other locations periodically.

Projected 1995 Traffic Volumes

Projected 1995 traffic volumes on the state trunk highway system are based upon a computerized statewide travel forecasting model. The model projects future travel through-

out the state based upon relationships between a city's projected population and the number of trips of various lengths it generates. The population-trip length and population-trip generation relationships were developed based upon field data collected at roadside interviews conducted throughout the state in 1966. Trip volumes at state line boundaries, such as the Pigeon River crossing, are projected based upon historical trends at the location.

Travel volumes on the county state aid road system were projected based upon historical trends on each specific route.

It should be noted that the forecasted volumes do not reflect additional traffic which would develop should extensive copper-nickel development take place in the Coastal Zone.

AUTOMATIC TRAFFIC RECORDER DATA

Automatic traffic recorders (ATR's) are automated devices which record hourly traffic volumes throughout the year at selected locations throughout the state. Such automatic traffic recorders are located on T.H. 61 near French River (ATR 213) and on T.H. 1 near Finland (ATR 214) in the Lake Superior coastal zone.

Annual Average Daily Traffic (AADT)

Graph No. 1 presents long term trends in traffic volume at both locations. It should be noted that while data is available since 1946 (28 years) at the T.H. 61 locations, data

is available for a much shorter period of time (since 1970) at the T.H. 1 location. It should also be noted that a disruption in the continuity of data occurred at the T.H. 61 location during construction of the 4-lane expressway which replaced old T.H. 61 in 1966. During 1966 and 1967 an ATR was in operation on both old and new T.H. 61 (see Graph 1).

It should be noted that while traffic volumes increased sharply on T.H. 61 in the immediate post W.W. II period, from 1946 through 1955, traffic has remained rather stable since that time. Not until 1971 and 1972 did volumes again reach the levels established in 1955 and 1956. The year 1974 recorded a decline probably due to the energy situation, from the record high volume achieved in 1973.

Very slow growth in average annual daily traffic has been recorded at the ATR on T.H. 1 near Finland and traffic volume remains at a very low level here.

Monthly And Weekday-Weekend Variations In Travel

Graph No. 2 depicts monthly and weekday-weekend variation in travel at the French River location on T.H. 61 from 1970 through 1973. It should be noted that travel reaches a high point during the summer months, generally July and August, at this location. The graph also indicates that travel during the winter months is substantially below the annual average, falling about 70-80 percent below the summer peaks. It should

also be noted that while weekend traffic is substantially higher than weekday traffic during the spring, summer and fall, the difference between weekday and weekend travel during the winter is not great.

The third graph shows data similar to that contained on Graph 2, but for the T.H. 1 location near Finland. Seasonal variation at this location is even greater than at the T.H. 61 location, which also has a high seasonal variation. An item of some interest however, is that the seasonal variation seems to have decreased significantly over the 4-year time span shown on the graph. The reason for this decrease is not obvious, and would require further study to evaluate properly. Although weekend traffic appears to be higher than weekday traffic throughout the year at the T.H. 1 location, the difference is greatest during the summer months.

Heavy Commercial Truck Traffic

Heavy Commercial Average Daily Traffic (HCADT) is determined annually at ATR locations based upon manual vehicle type classification counts made at each ATR. Heavy commercial vehicles include all types of trucks and buses except panel and pickup (2 axle, 4 tire) vehicles.

It should be noted that at the T.H. 61 location where long term trend data is available, except for 5 axle semi-trailers, heavy commercial traffic showed a general decline

between 1963 and 1971 as a percentage of total traffic. A sharp reversal took place between 1971 and 1973. During this 2-year time period truck volumes as a percentage of total traffic increased markedly for virtually all truck types (see Graph No. 4). Since total traffic volume at the location increased during this period, (see Graph 1) the jump in percentage heavy commercial represents a sizeable increase in actual truck volumes.

Heavy commercial truck volumes at the ATR on T.H. 1 near Finland also showed a substantial increase as a percentage of total traffic between 1971 and 1973. Since the growth in total traffic volume at this location was small however, the sizeable percentage increase in truck traffic reflects only a small increase in actual truck volume.

Traffic Volume During the Highest 100 Hours

Graph No. 5 shows traffic volumes at the T.H. 61 and T.H. 1 ATR locations during the 100 highest volume hours of the year, expressed as a percentage of annual average daily traffic volume at these locations.

Roads are generally designed so as to accommodate traffic volume during the 30th highest hour without unreasonable delay and congestion. This design criterion is based on the assumption that hourly traffic volumes decline very slowly beyond the 30 highest hours. Based upon the data presented

in Graph No. 5, traffic volumes at the ATR locations on T.H. 61 and T.H. 1 would seem to reflect "typical" conditions in that beyond the 30th highest hour, hourly volumes decline slowly.

Highway Scenic Easements In the Coastal Zone

The Minnesota Highway Department has obtained a number of scenic easements adjacent to T.H. 61 in the Lake Superior Coastal Zone. These scenic easements are in perpetuity and include the following stipulations:

"(The State) may cause to be removed from the scenic area any unauthorized materials or advertising devices, except: (1) signs, displays, and devices advertising the sale or lease of the property and (2) signs, displays and devices advertising activities conducted on the property. The State shall also have the right to cut and remove brush, undergrowth, and dead or diseased trees from the scenic area, and also may enhance or perpetuate the scenic area by planting additional trees and perform selective tree cutting and trimming in the scenic area. Any material so cut, if not diseased, may at grantors' option be retained by grantors.

"No rights are hereby granted to the general public to enter upon the scenic area for any purpose.

"The grantors for themselves, their heirs, executors, and assigns, do hereby covenant that:

"1. No use or occupation other than as herein specified shall be made established or maintained within or upon said scenic area.

"2. No dumping of ashes, trash, junk, rubbish, sawdust, garbage or offal, shall hereafter be allowed upon the scenic area. Existing use for any such purpose shall be terminated, and any such materials shall be removed within 120 days of the date of this instrument or as hereinafter set forth.

"3. No trees or shrubs shall be destroyed, cut or removed from the scenic area except as may be required for reasons of sanitation and disease control and except for selective cutting of timber as specifically authorized by written permit from the Commissioner of Highways.

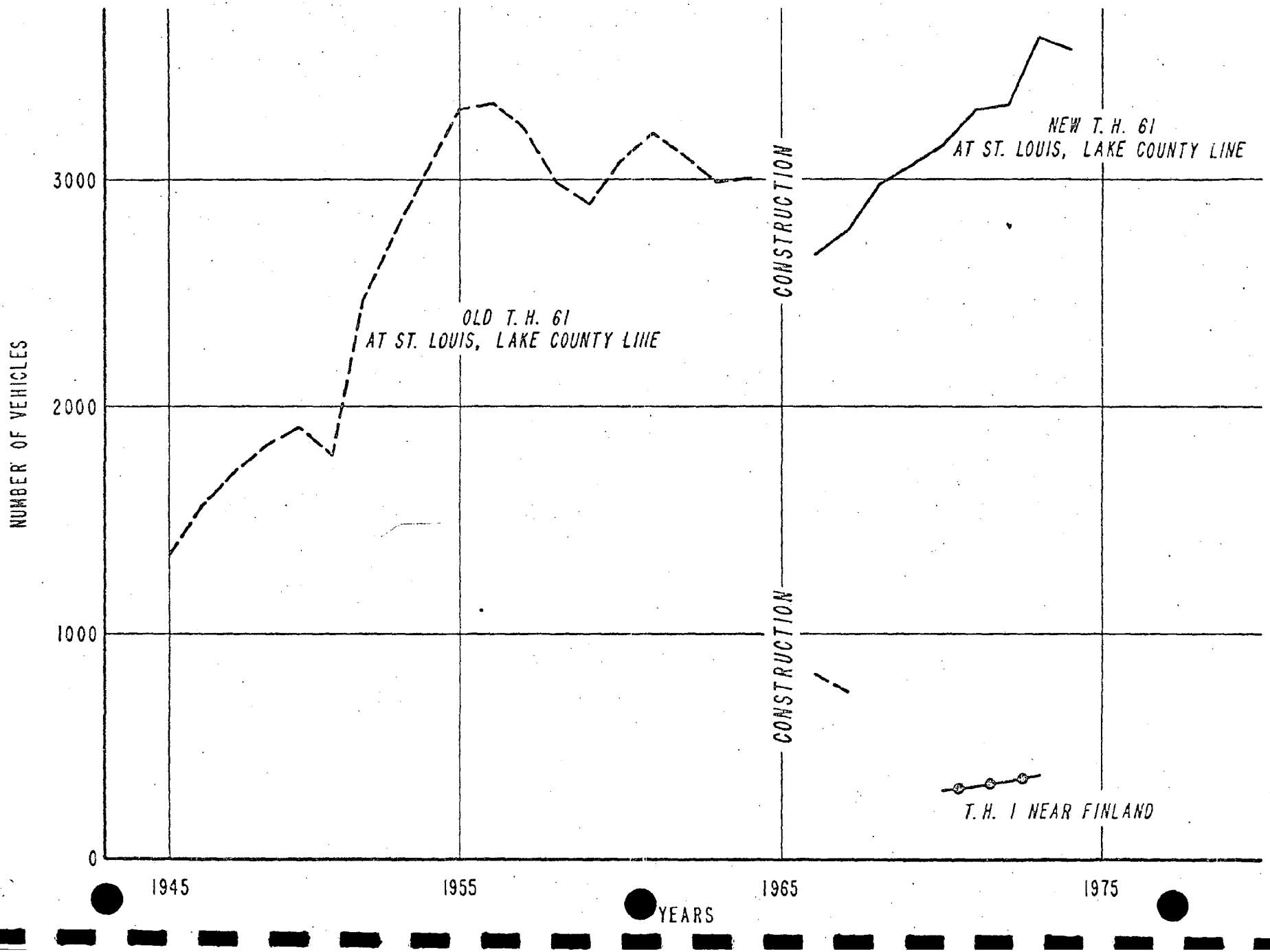
"4. No new installation of any public or privately owned utility line shall be made upon or within the scenic area except pursuant to a written permit from the Commissioner of Highways.

"5. No advertising devices in any form or size shall be constructed, placed or permitted to be constructed or placed upon the scenic area except: (1) signs, displays and devices advertising the sale or lease of the property and (2) signs, displays and devices advertising activities conducted on the property, which are approved by the Commissioner of Highways. No structures other than those in existence

on the date first written below shall be constructed, erected or placed upon the scenic area without a written authorization from the Commissioner of Highways."

Graph I

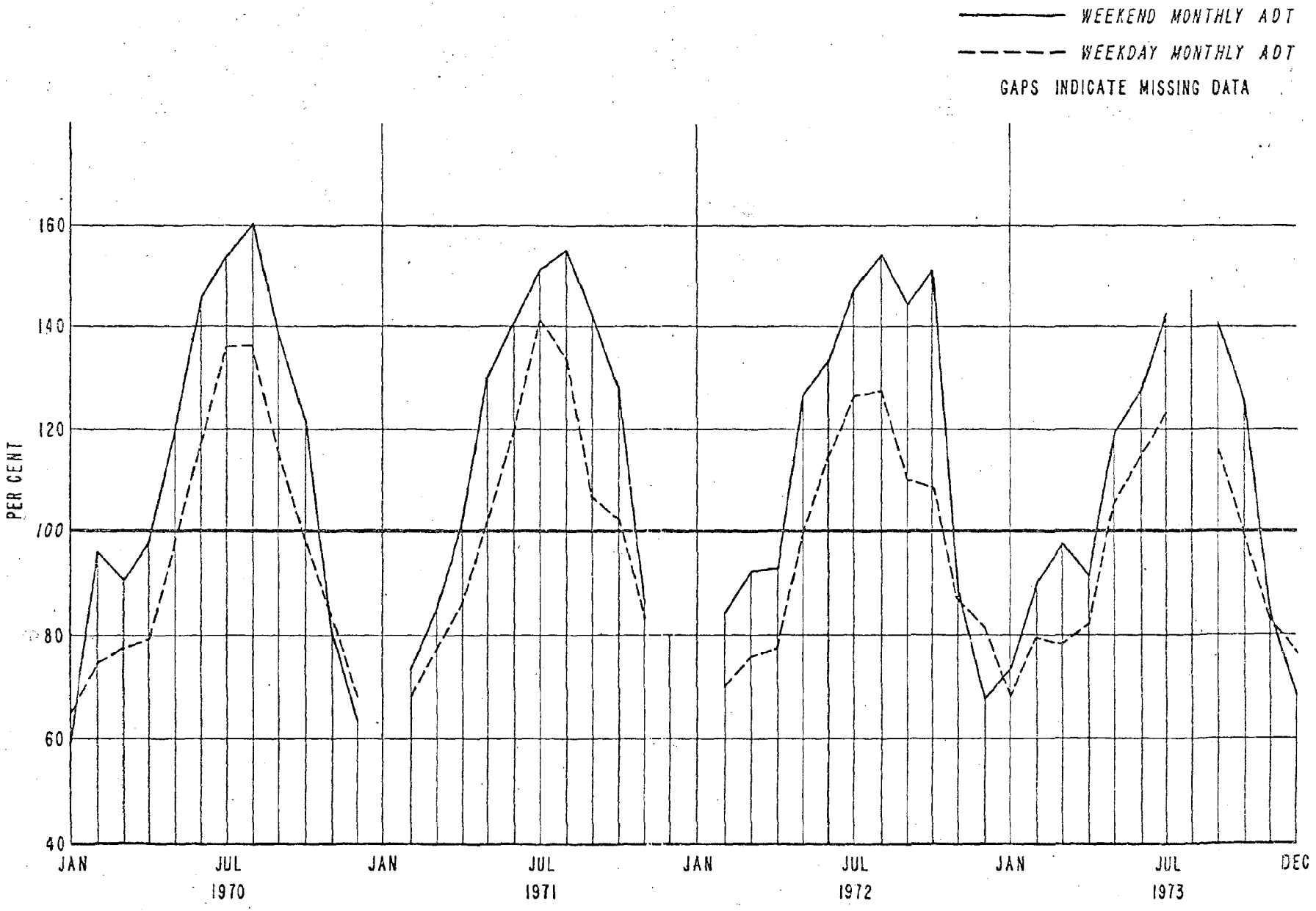
ANNUAL AVERAGE DAILY TRAFFIC



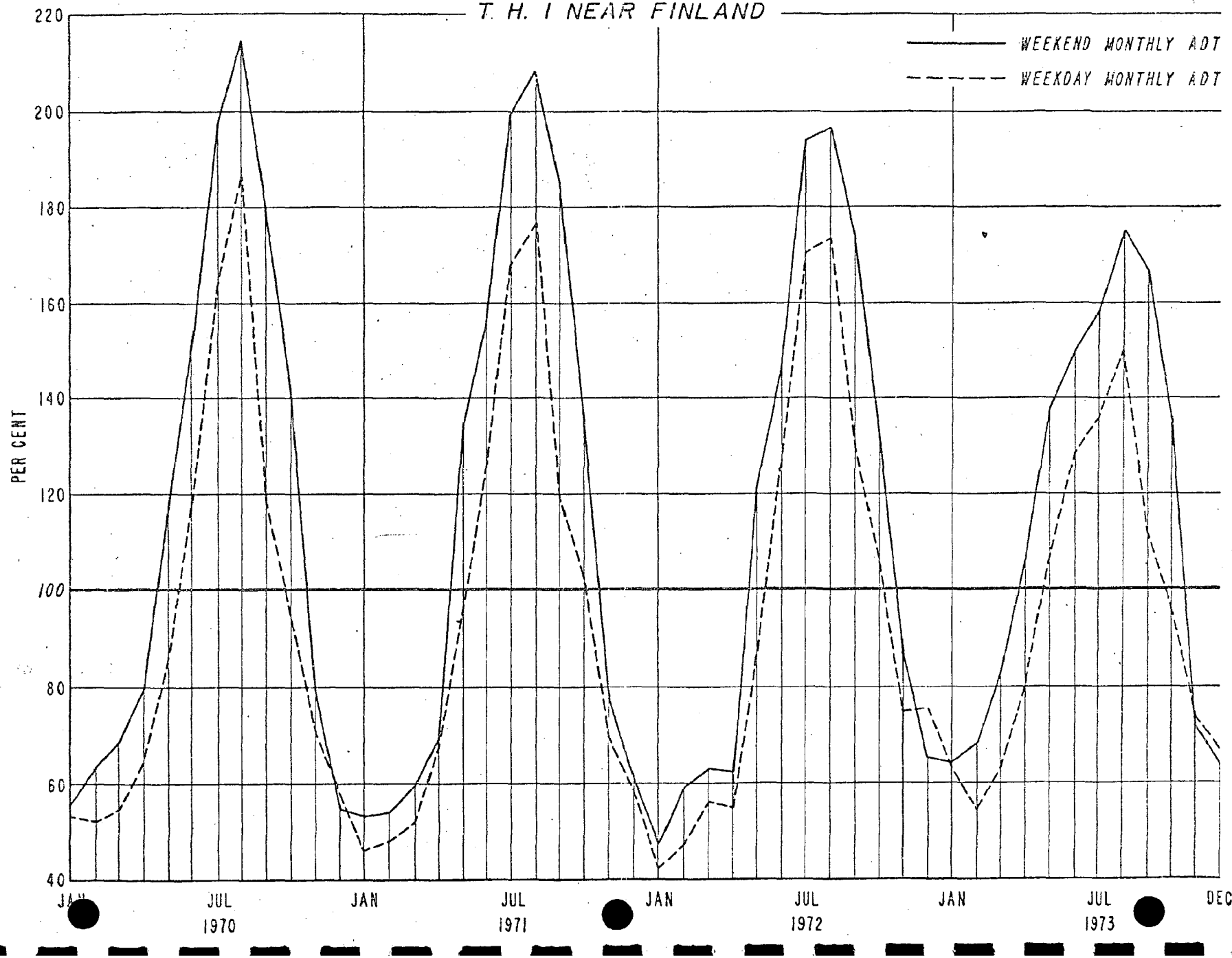
Graph 2

MONTHLY VARIATION OF AVERAGE DAILY TRAFFIC AS A PER CENT OF ANNUAL ADT

T. H. 61 AT ST. LOUIS, LAKE COUNTY LINE

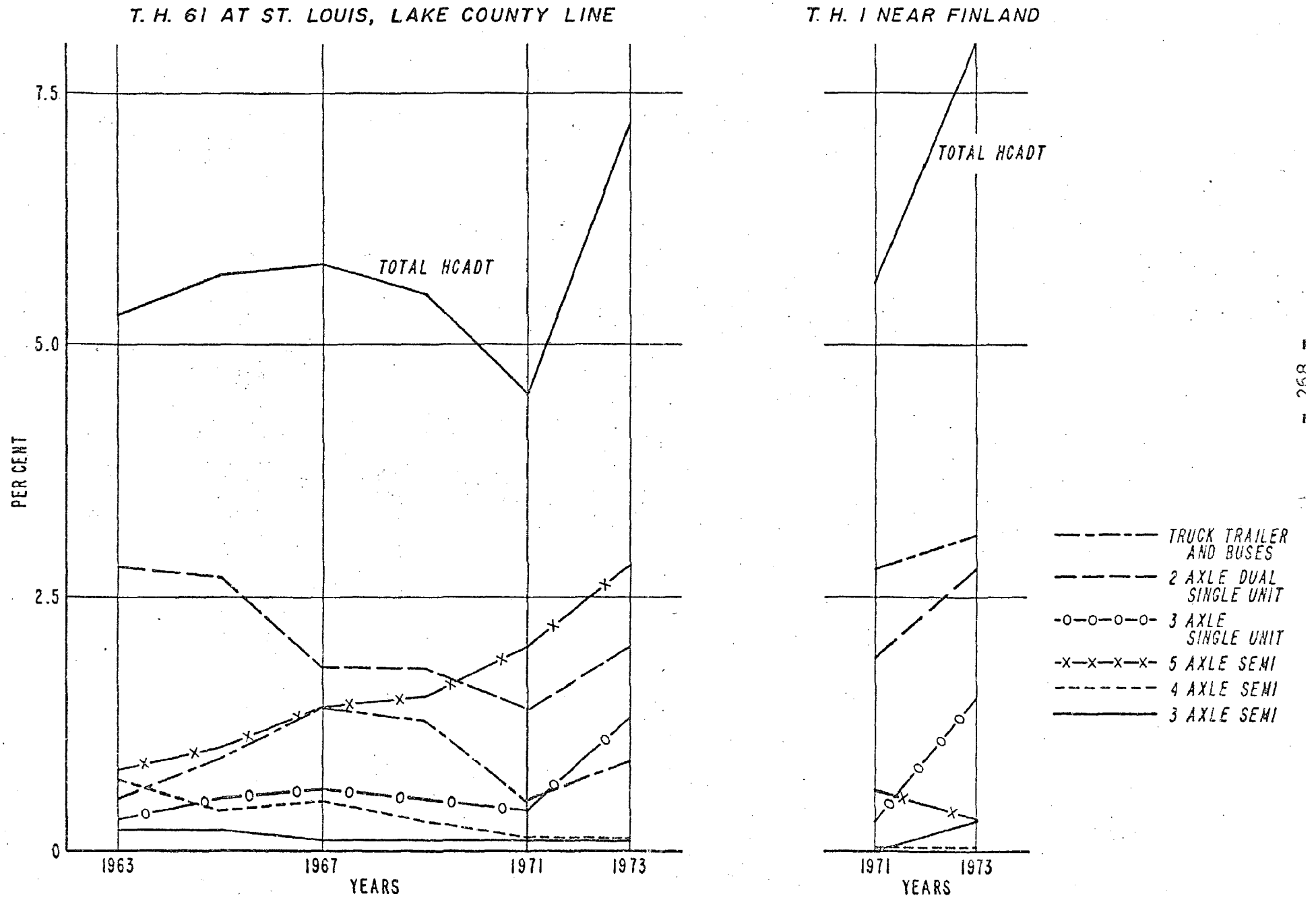


Graph 3 MONTHLY VARIATION OF AVERAGE DAILY TRAFFIC AS A PER CENT OF ANNUAL ADT



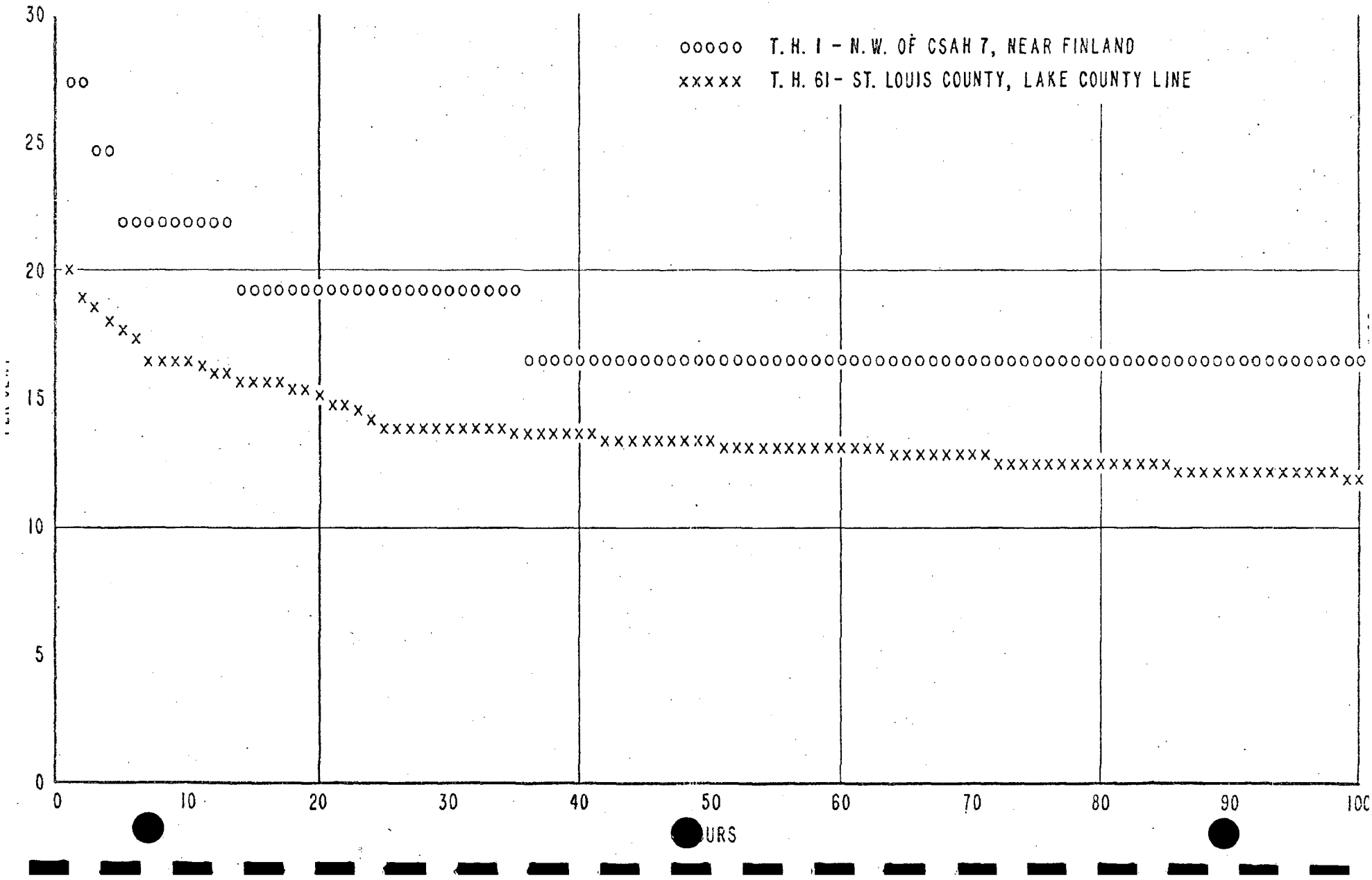
Graph

HEAVY COMMERCIAL ADT AS A PER CENT OF ANNUAL ADT



Graph 5

HIGHEST 100 HOURS TRAFFIC VOLUME AS A PER CENT OF 1974 AVERAGE DAILY TRAFFIC VOLUME



MINNESOTA HIGHWAY DEPARTMENT
Trunk Highway 61 - Northshore
Two Harbors to Illgen City

The introduction to this study consists of four parts; PURPOSE (what the study was intended to do), BACKGROUND (why the study was done), REGIONAL SETTING, and APPROACH (how the study was done).

PURPOSE

The purpose of this report is to provide District 1, Duluth with information for use in accord with the improvement, upgrade, or re-alignment of Trunk Highway 61. As requested by the District in November, 1971, (see Appendix A) this report documents the social, economic, environmental, and engineering factors that influence the Trunk Highway 61 location. The District Office pointed out two considerations in their request. First, the study would be of value in determining the eventual proper highway alignment. And second, the study would then provide a basis for the required documentation of the environmental impacts. This North Shore study fulfills the first phase of their request in assessing the resources of the scenic corridor.

BACKGROUND

The North Shore Study was initiated in 1972 to examine the sensitive social and environmental areas of a scenic region of Minnesota to provide information for the improvement of Trunk Highway 61. It follows a 1972 report by Edwards and Kelsey, titled

"Compatibility of Leisure and High Mobility Traffic in a Scenic Corridor, Minnesota, Northshore - U.S. 61." The Edwards and Kelsey report primarily considered the economic aspects of the North Shore of Lake Superior and the potential for development of a major highway. This study focuses on a specific area and the specific issues of the social and environmental factors.

The study area consists of a corridor, approximately four miles wide, which stretches from the city of Two Harbors to the intersection with Trunk Highway 1 at Illgen City. A new four-lane divided highway has been constructed from Duluth to Two Harbors, and the inplace route from Two Harbors to the Canadian Border has been up-graded with turn lanes, additional traffic lanes, and overlays.

Because of the Department's and other citizens interests and other concerns about Trunk Highway 61 along the North Shore, this study was originally requested when a high construction priority was given to this project. After data was collected and analyzed, the Back-bone Plan of the Highway Department revised priorities more realistic with present funding capabilities for the next 20 years. Because of this, Trunk Highway 61 was rated near the end of the 20 year program. With this lower construction priority, this project also received a lower planning status. For these reasons, this study completes only Phase1 as indicated on the Planning Approach diagram on page .

REGIONAL SETTING

The study area itself is characteristic of the North Shore. Within its approximate four mile width and thirty-seven mile length, the natural features vary from lakes and rivers to forests, bluffs, cliffs, and rock out-croppings such as palisade head. This variation in scenery, along with other desirable features, attracts many tourists and vacationers to the area. They are served by numerous state parks, along with public and private campgrounds. The transient business is an important part of this region's rural economy but not essential to the two major urban centers. The cities of Two Harbors and Silver Bay are primarily oriented toward the mining and logging activities found on the North Shore.

Presently, the only major route paralleling the North Shore is Trunk Highway 61 connects Northeast from Duluth to Thunder Bay, Ontario, In addition to being an International link in Eastern Minnesota, this highway serves the population centers of Two Harbors, Silver Bay, Little Marais, Grand Marais, and Grand Portage, as well as major, seasonal, all-season and seasonal vacation and recreation centers.

PLANNING APPROACH

This section explains the computer process as well as the planning approach diagram on the adjacent page. The steps on the diagram in Phase 1 are discussed, including data, analysis and assessment. A succeeding phase may include the resource evaluation, identification of alternatives and route location evaluation.

THE COMPUTER PROCESS

The planning approach is based on a computer program termed "Environmental Planning and Programming Language" (EPPL). EPPL is a "packaged" computer data storage and manipulation program, developed by the Department of Landscapte Architecture at the University of Minnesota.

The EPPL program does a number of things many programs can not do, and it does them very efficiently, saving time and money. The program handles large amounts of data and liberates the planner and engineer from purely mechanical tasks. The University of Minnesota Cyber 74 System was used to run the EPPL program.

Essentially, the computer output maps reveal the locations most sensitive to a highway location shown by the darkest tones or the areas most desirable in the lightest tones. The planning approach illustrated contains three major steps including 1) the data, 2) analysis, and 3) assessment contained in Phase 1 and documented in this report.

THE DATA

The planning approach begins with a collection of information about the resources of the study area. The first step in the North Shore Study was to define the study area and establish a grid system for the data base. The grid consisted of rectangular cells 264 x 440 feet which contain 2.67 acres. The adjacent diagram entitled "the

cell" shows the relationship of the computer cell to a 40 acre parcel as well as the one mile section and the six mile township. Once the grid was established, data was collected, then coded and stored in the computer. The data consisted of two types, physical characteristics of the land and land use.

All data that could influence the suitability of the site for a highway location was collected for each cell. The information collected for this study includes all those listed under Data on the Planning Approach Diagram.

THE ANALYSIS

The next step in the Approach was the analysis of data. This combined the various data categories to determine the suitability of the site for a highway route location. For instance, formulas were developed to illustrate wildlife habitat areas based on characteristics of slopes, aspect (slope orientation) and elevation data. The computer then searches the study area to see which areas qualify. Similarly areas susceptible to potential erosion were determined by soil types, percentage of slope, as well as the aspect.

The maps shown in the Analysis part are based on the social, economic, and environmental effects suggested in Policy and Procedure Memorandum 20-8 from the Federal Highway Administration.

THE ASSESSMENT

After the data has been analyzed and the best uses of the study area determined, the information is combined into sensitive land uses called the assessment. The maps shown in the assessment

are based on information required in Instructional Memorandum 20-4-72 from the Federal Highway Administration. While the computer indicates the best location for the highway route as well as other activities within the study area, it is necessary to use human judgment in blending the uses into a cohesive solution.

The future phase of work may carry on from the assessment, including resource evaluation, identifying alternatives and route location evaluation. The assessment maps may be used to show opportunities and constraints and to identify route location possibilities. The route locations may then be tested and impacts quantified to evaluate the possible options.

The data section is an inventory of the basic information required for a computer aided site evaluation. The data maps display the physical characteristics of the study area along with the present land uses. Each data available has been mapped separately as a unique symbol (Data Level) which represents the condition of each respective cell. Raw data variables must be studied individually and in detail before they can be analyzed; therefore, tones have been applied to the data variables to assist in the interpretation of the condition existing in each cell of the computer map. This application of tones does not indicate a series of ascending or descending values. Values are only assigned in the analysis and assessment status.

U. S. Highway 61 is a primary, heavy duty route which serves as the main traffic artery through the study area as well as for the entire North Shore. Highway 61, from Duluth, enters the study area at Two Harbors and runs along the shore of Lake Superior to Illgen City where it leaves the study area and continues to the Canadian Border.

Four other routes intersect Highway 61, providing access to inland areas. Minnesota Trunk Highway 1 begins at Illgen City and bears northwest toward Ely and is the only other primary road in the area. In addition to these two routes, secondary roads such as Lake County Highways 2, 3, and 4 provide circulation through the entire region.

Utilities serving the study area are; telephones, electric power, and railroads. These are generally confined to specific corridors such as highway rights-of-way and to the two major urban centers.

Telephone service throughout the area is provided by the Gopher State Telephone Company. Transmission lines are usually located within public rights-of-way as over head lines, but some are being relocated underground.

Electric power for the study area is provided by three distributors. The city of Two Harbors is supplied by Two Harbors Public Utilities which purchases power from other sources while Silver Bay is supplied by Minnesota Power and Light. The rural areas and essentially the remainder of Lake County receives electric service from the Lake County Co-operative Power Associ-

ation located in Two Harbors. Reserve Mining Company, located in Silver Bay, produces its own electric power.

Railroads in this region primarily serve industrial - extractive activities. Two Harbors is served by the Duluth, Mesabi, and Iron Range Railroad which transports processed taconite to the United States Steel Docks at Agate Bay. Silver Bay has the Reserve Mining Company Railroad which transports taconite ore to Reserve's processing plant located on Lake Superior.

Another major utility in the area is Northern Natural Gas Company, which owns a 16 inch underground line that serves Two Harbors and Silver Bay. It is primarily located outside of the area under study except in the immediate vicinity at the respective communities.

Lands within the study area are subjected to many diverse uses. These range from agricultural, residential, commercial and industrial use to recreation and tourism.

Agriculture along the North Shore is primarily devoted to livestock production with only minimal areas devoted to small grain crops. Vegetable production is mostly on a family garden basis.

Commercial land use within the region varies with location. The urban centers do not specifically cater to tourist or vacation trade but are oriented towards the respective communities. Along Highway 61 establishments oriented towards transient trade are common. These include the businesses affording lodging, service stations, restaurants and novelty shops.

Industrial land use is somewhat varied in Two Harbors but is primarily process oriented within Silver Bay. This is evidenced by the large Reserve Mining facility there. In outlying areas lumbering and pulpwood harvesting are common land use activities.

Due to its fine natural features, the North Shore provides a great deal of attraction for recreation, vacation and tourism. The study area itself primarily serves a seasonal, transient tourist trade, with numerous motels and resorts along Highway 61 and around the lake in the area of Silver Bay.

Property values within the study area are generally highest along the shore of Lake Superior and decrease as view of the lake or access to the lake is lost. A few exceptions to this are found where inland waters or scenic vistas make parcels desirable for recreational use, transient tourist trade, and vacation retreats.

At greater distances from the shoreline, property values become dependent upon suitability of the land for recreation, forest crop application or agricultural production.

The estimation of Land Value was done by the District 1 office in Duluth. Samplings were taken throughout the study area and values were assigned to individual cells based on present market value.

The panoramic vistas, sheer cliffs, rugged hills, magnificent forests, cascading streams, crystal clear waters of Lake Superior and access provide the prerequisites necessary to make the study area suitable for recreation.

Some recreational uses of North Shore lands and waters include camping, bicycling, horseback riding, swimming, boating, picnicing, snowshoeing, skiing, snowmobiling, hiking, sightseeing, and photography. Fishing, hunting and trapping provide many hours of recreational enjoyment, and in the case of trapping, a source of supplemental income. North Shore streams abound with trout, both native and stocked. Hunters may pursue deer, ruffed and spruce grouse, moose, and black bear when these are in season. Trappers harvest beaver primarily but may also take fox, coyote, lynx, bobcat, mink, weasel, and muskrat.

Camping and related activities are provided by numerous public and private facilities within the area.

Data collected on existing recreational facilities are summarized in the map below.

Unique features are those sites that are of a local or regional significance due to present use, past history, or visual quality. These features can be divided into cultural or natural features.

Cultural features are those sites which have historical or archeological value or are of social significance due to current usage. Historic sites include Indian burial sites, pioneer settlements, early industrial sites,and the existing county historical society. The areas previously mentioned were identified by the Minnesota Historical Society and the Department of Highways in order to prevent possible conflicts with highway alignments.

Natural features within the study area include geologic formations, cascades, virgin timber stands, exceptional trout habitat, and scenic views or vistas. Features considered to be scenic include islands, bluffs, cliffs, shoreline, and dominant geologic formations inland from Lake Superior. There are two reasons for identifying the natural features of the study area; some areas such as scientific or natural areas should be preserved while areas such as scenic views have been identified for their aesthetic appeal and should be utilized.

This analysis was carried out in order to forecast possible development within the study area. Access is dependent upon existing transportation routes through the corridor but also indicates isolated land uses. The criteria for transportation related access was established as one-half mile on each side of existing roadways.

Accessibility is essential to the North Shore region. Due to the distance between urban centers good roads are necessary to serve the rural residents. Also, resource development relies upon the highway system for commercial transportation and to serve the tourist industry. Access to the vast forest areas is an important factor in suppressing and fighting forest fires.

Existing access influences the development and economy of the study area; improved accessibility for transportation facilities generally increases land use possibilities with resulting increases in land value.

Lake Superior's North Shore has a great diversification of recreational activities for the visitor as well as the local resident. Three state parks which are located within the study area are: Gooseberry Falls, Split Rock Lighthouse and Baptism River. Encompassed within each state park are many unique natural features. Out-of-door activities such as: fishing, hiking, snowmobiling, camping, bicycling, and picnicking are provided for at the state parks. There are also private campgrounds which offer some of the same recreational activities and facilities as the publicly-owned parks. A large number of private resorts serve as jump-off points for the many recreational activities that exist in the area. Winter snow ski runs and tows operate at Two Harbors and Silver Bay. Hunting and trapping occur throughout the area on both public and private lands. Two golf courses exist; one at Two Harbors and the other at Silver Bay. With the wide range in recreational activities, the individual user may find excitement year-round.

The map below illustrates State Parks and other designated recreation areas. These areas should be given special consideration when T.H. 61 is upgraded. They are all dependent on access, but increased traffic or realignment could have adverse affects in the form of congestion, or vehicular oriented pollution.

For the purposes of this report, local centers are those areas which provide seasonal commercial services. These include park concessions, motels, cabins, vacation retreats and tourist related facilities that cater to the summer vacation trade.

The local centers have been identified because they are dependent on highway oriented businesses. They should continue to be easily accessible by persons using T.H. 61 for business and pleasure. Bypass of these areas would be undesirable because of the detrimental economic impact upon such businesses.

The two major urban centers in the study area are Two Harbors (population 4,437) and Silver Bay (population 3,504). Together they represent approximately ½ of the total population of Lake County.

Two Harbors is the county seat for Lake County and is the major commercial center within the area. It is also the location for various industries and serves as a shipping point for processed taconite for United States Steel.

The economy of Silver Bay is almost entirely dependent upon Reserve Mining. This firm is the major employer within the community and accounts for a large share of the tax base. Other businesses are service oriented and provide the basic services for the people of the Silver Bay Area.

In addition to the two urban areas previously mentioned, Beaver Bay contains a significant number of people and businesses. The population of this community is three hundred sixty two persons. It is located on U.S. Highway 61 southeast of Silver Bay.

Highway 61 serves as the major transportation route between Two Harbors and Silver Bay through Beaver Bay and the various, tourist dependent, local centers.

The local communities, and the recreation facilites in the study area are served by state, county, city, and township roads. These roads provide access for local residents and vacationers, as well as access to the natural resources of the study area.

Township roads are an extension of the county road system. They provide service to residents, vacation homes, and commercial operations located in more rural areas.

The county roads within the study area link rural areas with Two Harbors, Silver Bay, and T.H. 61 which serves as the main circulation routes.

Within the urban centers, city streets yield access to commercial establishments which provide services to the respective communities, vacationers and tourists.

The cost of maintaining a roadway is directly proportionate to the number of man hours, equipment and the materials expended in keeping the road in good, safe driving condition. It is an additional function of soils, slopes, grades and vegetation. The darkest tones on the map below represent cells that have combinations of the most severe factors of each. They should be avoided to keep maintenance costs to a minimum in the future.

During the summer, time and money must be spent mowing and spraying the right of way, collecting litter and maintaining signs and markings.

Winter months, time and money is spent keeping road and bridge surfaces free of ice, snow and debris.

In addition, major repairs may be necessary throughout the year on the road, shoulders, ditches, and related appurtenances such as signs, guard rails, and drainage structures.

Certain physical features such as steep slopes, streams, easily erodible soils and poorly drained soils, make it more difficult to keep the road in good condition thus increasing the cost of maintenance.

The right-of-way costs expressed here are relative costs. No attempt has been made to fix an exact dollar and cent value to the land in question. The factors used to determine right-of-way costs are; existing land use, recreational land use, land values and utilities which have been estimated by District 1, Duluth. Each of these has been further divided into specific uses, value ranges and type of utility. These are the factors which add to the value of a specific parcel of land.

For example, a lake shore development with existing public services would have a relatively high cost and an undeveloped area inland from the lake would have a relatively low cost.

Highway construction costs are dependent on several variables. Those included in this report are soil type, percent of slope, erosion potential, the type of vegetation, and the watershed in which the highway is constructed.

The variables given may influence highway construction costs in many ways. An example for each case follows:

1.) Soil type is an important factor in stability of the highway and the ease of construction. It is important, because the availability of borrow and gravel, along with the presence of rock and peat affect construction costs. Soil type will also effect the type of equipment needed by the construction contractor. The more expensive it is to operate specialized equipment, the higher the overall cost of construction.

2.) Percent slope determines the amount of cut or fill required.

3.) Erosion potential determines degree of slope on back slopes and type of soil stabilization required. Construction costs will be influenced by the amount of soil and rock that must be moved or disposed of when cutting back slopes. Also, the stability of the soil will determine the type of vegetative and mechanical stabilization necessary, again having an impact on construction cost.

4.) Amount and size of vegetation can significantly affect removal costs prior to construction.

5.) Watersheds and drainage systems vary greatly and may require construction of various culverts and bridges.

The factors influencing construction costs vary greatly within the study area and with respect to highway location within the study area.

The North Shore Region of Minnesota is famous for its unique scenic quality. The major scenic features that give the area its distinct character are Lake Superior and its rocky shoreline, along with the spectacular water falls and cascades that have formed in the gorges as the rivers draining the upland forest areas have eroded through the volcanic rock of varying resistance.

The present route is where most of the scenic features are located and it offers the greatest variety. Most of the features are located in the river gorges which run perpendicular to the present highway alignment and cannot be viewed without stopping. Viewing angles appropriate for even low speed viewing could not be achieved without endangering the features themselves.

There are no single areas inland which are scenically complex enough to justify a complete new route. Rather, scenic points are located individually and are suited for roadside pull-offs. An inland route could offer a number of panoramic vistas of Lake Superior which could lend themselves

to high speed viewing, supplemented by selected pull-offs.

The scenic quality of the present route could be improved by opening up more vistas; providing better pull-off areas; and also by providing for pedestrian and bicycle traffic along the route. Also, by maintaining the present route location, high intensity use would remain confined to the immediate area of the lake. An inland route would weaken both the intensive reaction uses near the lake and the extensive inland recreational uses.

The scenic intervisibility map depicts those areas or features of the Unique Features Map that are seen from certain distances. The map below illustrates the darker tones where the following views are possible: (the darkest tone depicts the area or feature from which the view is run).

1) Views of unique features such as water falls, cascades, Split Rock Lighthouse, trout streams and islands. The viewshed is one mile maximum distance.
2) View of land forms include Palisade Head, Islands, Silver Cliff and other dominant geological formations which are seen up to one mile distance.
3) Views of the shoreline show the area up to one mile distance in which the edge of the Lake Superior is visible.
4) The horizon view of Lake Superior is depicted as a view to a series of points approximately one mile into the lake from the shoreline. This 3-mile search graphically portrays the line where the sky seems to meet the surface of Lake Superior.

DEPARTMENT OF NATURAL RESOURCES

State Comprehensive Outdoor Recreation Plan

Purpose of the Plan

The purpose of the Plan is to provide a guide and framework for management, protection and development for the outdoor recreation system. This will be done through the presentation of background information, outlining of needs and deficiencies, the setting of priorities, and by presenting alternatives for action.

Goals For Outdoor Recreation in Minnesota

The goal for outdoor recreation in Minnesota is to manage and protect the appropriate natural, historic and archaeological resources in Minnesota and develop supporting facilities and programs for an outdoor recreational system providing quality recreational and aesthetic experiences.

Manage and protect . . . would imply proper planning for future natural resource needs. Protection of certain resources is preferable to development; while development of certain resources is necessary to provide for use of the air, water and land (including the fish, wildlife and vegetation managed as ecological communities), and the landforms represented in parks, forests and other recreational resources. A proper balance

of protection, development and use of the resource is assumed.

The Outdoor Recreation System

The Minnesota Outdoor Recreation System, as the phrase is used in this Plan, includes the broad spectrum of areas and facilities for all types of outdoor recreation provided by all levels of government, plus the private sector. It is composed of several components (See Table 1-1), and consists of a wide variety of areas which will provide readily available opportunities to urban, suburban and rural residents, irrespective of age, sex, color, residence, economic status or physical disability.

Objectives For the Outdoor Recreation System

In order to achieve the goal for the outdoor recreation system as stated above, certain objectives have been established to provide specific targets.

These objectives are general in nature and intended to provide an overall direction or guide for developing the recreational system.

(Specific objectives stated in quantitative terms are discussed in the Action section; Chapter 7.)

1. Incorporate into the Outdoor Recreation System in Minnesota, by 1990, resource areas of high quality and diversity in

sufficient quantity to conserve and portray the state's natural, historical and archaeological heritage.

2. Provide a suitable base for outdoor recreation experience and activities to meet participation levels projected for 1990.

3. Attain a fully coordinated partnership among the various agencies and the private sector having administrative jurisdiction over all components of the recreation system. The specific capabilities of each agency should be recognized and shared by the others in order to achieve the best planning, development, operation, maintenance, protection and visitor satisfaction of outdoor recreation areas.

4. Assist the several levels of government to develop recreational facilities which are best suited to meet their needs, within the system goals. Standards and guidelines will be prepared to outline the responsibilities of the various levels of government.

5. Seek financing for all levels of government to achieve the stated objectives.

6. Maximize the participation of non-governmental entities in the development and operation of recreation facilities, to complement those provided by public agencies. The public sector should provide only those facilities which

the private sector cannot provide.

7. The outdoor recreation system must be flexible enough to meet changing needs of the people or conditions of the resources.

8. Expand research into recreation problems to a level sufficient to provide planners and administrators the necessary tools to adequately protect resources and meet recreation needs.

9. Monitor conditions of recreation and open space areas on a continuing basis, at all levels of the recreation system, so that deterioration of resources can be arrested before it becomes irreversible.

10. Provide, wherever feasible, facilities and programs for environmental education.

DNR Park and Recreation Areas (161,600 acres)

The state park and recreation system includes 59 parks, 6 recreation areas, 12 waysides, 8 monuments, 16 boating and canoeing rivers, 11 special authorized long distance trails and 4 scientific and natural areas. The purpose of these areas is to preserve the best examples of the scenic, cultural and historical features of Minnesota's environment, while accommodating the public in utilizing the educational and recreational benefits inherent in these resources. At least 22 parks have particular historic interest.

These lands are managed under the jurisdiction of the regional administrators of DNR, with planning and central administrative services provided by the Division of Parks and Recreation.

Minnesota's 59 State Parks present a wide diversity of natural and historic features and recreational opportunities. They are a composite of our remaining open space and natural areas and are designed to capture and hold the unique identity of a region -- its rocks and waters, its legend and lore. At the same time they provide recreational opportunities for fishing, swimming, camping and trail use, as well as valuable areas for study and research.

Minnesota has six designated state recreation areas: sites that are adaptable to heavy use and offer a broad range of opportunities for active outdoor recreation.

The waysides and monuments generally are small areas set aside to preserve sites of historic interest and, in some cases, serve as rest areas for travelers.

Designated state trails are a relatively new component of the state-administered system. These are long-distance, overland trails which eventually will form a network throughout the state. New trails were authorized by the 1973 Legislature, bringing the number to 11, totalling more than 700 miles. The trail system is being developed as an all-season,

multi-use network which will link many state parks, recreation areas, waysides and forests. The system will be coordinated with and supplemented by secondary and tertiary trails in state parks and forests, and trails.

TABLE 4-4

Minnesota State Parks, Recreation Areas, Monuments And Waysides

Region	County	Year Established	Total Authorized Land Area	Total Lands Acquired
STATE PARKS				
Region 3				
Baptism River	Lake	1945	705.85	705.85
Bear Head Lake	St. Louis	1961	4,371.00	4,111.00
Cascade River	Cook	1957	2,813.00	1,895.00
George Crosby-Manitou	Lake	1955	5,160.00	4,790.00
Gooseberry Falls	Lake	1937	1,662.00	741.83
Jay Cooke	Carlton	1915	11,196.00	8,920.00
Judge C.R.Magney	Cook	1957	4,514.00	4,195.00
McCarthy Beach	St. Louis	1945	2,562.00	1,743.91
Savanna Portage	St. Louis	1961	15,758.00	14,605.55
Scenic	Itasca	1921	1,334.79	1,334.79
Split Rock Lighthouse	Lake	1945	996.00	155.17
Temperance River	Cook	1957	133.00	133.00
Tower Soudan	St. Louis	1963	982.20	982.20
STATE WAYSIDES				
Region 3				
Caribou Falls	Lake	1947	91.62	91.62
Cross River	Cook	1961	2,560.00	600.00
Devils Track Falls	Cook	1961	240.00	240.00
Flood Bay	Lake	1961	19.00	27.00
Franz Jevne	Koochiching	1967	117.83	117.83
Kodonce River	Cook	1947	127.80	127.80
Ray Berglund	Cook	1951	45.90	45.90

Region 3 - Overview of Recreation Potentials

Bounded on the north and east by the province of Ontario and Lake Superior, Region 3 ranks first in water and forest acreage, contains Minnesota's only National Park and has a wealth of history, including fur trading, Indian culture, mining, lumbering, and commercial fishing.

Surveys indicate that fishing is the principal reason Minnesotans and other Midwesterners vacation in this region (excluding the 160-mile North Shore). In the soft water lakes of northeastern St. Louis and northern Cook and Lake counties, sucker removal programs can enhance walleye catches. Also, lake-stream trout are being planted in those counties' coldest lakes to provide greater fishing diversity. These activities, in addition to continued intensive walleye stocking programs, hold much promise in expanding the area's game fish harvest.

Lake Superior also has significant sport fishing potentials. During the 1950's Lamprey infestation virtually eliminated sport fish from North Shore streams and the Lake. With the infestation now being controlled, the recently enlarged North Shore fisheries management program (lake trout, steelhead and chinook salmon) has the potential to expand fishing opportunities from a ten-week spring steelhead run, to a five-month multi-species season.

Potential 1977 North Shore Fishing Season

Steelhead	April - June and September
Chinook Salmon	June - September
Lake Trout	June - September

The popularity of fishing and boating on Lake Superior also could be enhanced by an expanded harbor of refuge system to assure boating safety.

In the central part of the region, public access to water resources is being reduced by private developments, particularly seasonal homes.

As a case in point, the south shore of Lake Vermilion has undergone rapid conversion, from resorts and open space to seasonal homes. Fortunately, the region's more southerly located lakes -- such as Bass, Trout, Bluewater-Wabana and Deer in Itasca County do have public recreation potentials. Recreation areas partially bordering lakes of such size and quality could help assure adequate public water recreation opportunities (swimming, fishing and boating) without unduly disturbing already established resorts and private campgrounds, which constitute an important part of the region's economic base.

Northeastern Minnesota's streams also offer substantial potentials in meeting the water recreation demands of Minnesotans and visitors. Although the B.W.C.A. lakes complex faces a major challenge in balancing recreational demands with ecological

concerns, alternative waters can be promoted. Much of the Mississippi River flowing through Region 3 is suitable for canoeing. Likewise, the Cloquet and St. Louis Rivers in the southeast, and Little Fork, Big Fork, and Vermilion Rivers feeding the Border Lakes - Rainy River complex in the north, could add substantial canoeing opportunities. Public preservation of stream quality, through Minnesota's Wild and Scenic Rivers System together with private outfitting operations, holds much promise for accommodating increased canoeing.

Region 3 hunting opportunities serve a statewide clientele. Moose populations, particularly in the northern areas, have increased in numbers to where a harvestable surplus is present. The first season since 1922 was held in 1971. Similarly, large numbers of bear thrive in these counties and were given game status during the same year. Moving to the west and south, parts of Itasca and Aitkin counties offer good waterfowl hunting and deer hunting opportunities. Along with deer, ruffed grouse have long been primary viewing and hunting attractions. The Region also hosts the last viable timber wolf population in the lower 48 states. Maintaining or expanding the aforementioned populations is highly dependent upon forest management practices. Insufficient vegetative disturbance, resulting in mature forests, has been one of the primary reasons for the decline of these species.

The Region also has significant camping, trail and sightseeing potentials. The Superior National Forest, as well as state forest lands in northern Itasca County and along the North Shore, could absorb substantially more primitive camping. Located adjacent to the Park, the Kabetogama State Forest's significant camping potentials may be needed to help assure adequate lodging for Voyageurs National Park visitors.

Opportunities for accommodating hiking include development of additional hiking trails paralleling North Shore streams and a connecting north-south hiking corridor paralleling the shore and following old dog sled trails, logging roads, railroad grades and cleared boundaries between state forests, parks, etc. Such a corridor, running three to ten miles "up from the shore," could significantly expand existing hiking as well as winter activity trail capabilities of the North Shore's state parks; linking up with the North Country National Scenic Trail, covering 386 miles through Northern Minnesota from Danbury, Wisconsin, to Wahpeton, North Dakota.

Expansion of certain North Shore state parks could also facilitate development of the North Shore trails system, as well as providing additional land for intensive uses (developed camping, picnicking, short nature interpretation trails, etc.).

Other Region 3 trail potentials include connecting public

and private lands to form an Iron Range Hiking and Snow Activity Trails System, linking the Range with Voyageurs National Park. Potentials for shorter trail systems also exist in the state and private forests and county tax-forfeited lands. The Hibbing-Grand Rapids area and Aitkin County have developed many miles of trails using county and private forest lands. Significant opportunities for expanding trail mileage through such land aggregations pertain to much of the Region's central and southern areas. Additional trail system information is provided later in this Chapter.

The Region also has a significant opportunity for interpretation of natural history. An expanded naturalist-staffed interpretation program in state parks can definitely enhance visitor appreciation of the area's diverse natural resources.

Such programs take on even greater meaning when full recognition of man's interaction with natural resources (trapping, fishing, lumbering and mining) is realized. A primary objective of Voyageurs National Park is interpretation of the northern reaches of this region, particularly the fur trade. However, the fur trading story extends well beyond the Park to the south and east, involving portages such as Fond Du Lac, Savanna and Grand Portage.

Such portages were part of a waterways system used by

the British, Americans and French attracted to the prime furs available in Northern Minnesota, Western Ontario and Manitoba. Numbered among key interpretation possibilities are the historic fur trade cemetery located near Jay Cooke State Park and nearby Fond Du Lac site (American Fur Company headquarters).

During the 19th century settlement period, the Savanna area's Mississippi Waters hosted small cargo-carrying vessels making trips upriver, facilitated by a system of hand-operated locks. Later, during the 1920s, placer gold mining took place in the same vicinity. These interpretive "credentials," together with the state-owned shoreline along Big Sandy Reservoir, justify considering part of this area for a state park site.

Another major state park potential, a "Mesabi Iron Range State Park" (in the proposed Giants Ridge location), could focus on the open pit mines which, during World War II, supplied high grade ore, accounting for the bulk of America's iron ore inputs for steel products. Interpretation of rock outcroppings and socio-economic interpretation of the industry's technological adjustments (verified by open-pit ghost towns and nearby thriving taconite cities) could provide a quality recreational/ educational experience. In addition, the miners' strong ethnic identifications, evidenced by festivals, could provide recreational opportunities to visitors.

The iron ore mining story extends beyond the Range, to the North Shore with its rail heads, ore boats and taconite plants. The Shore also provides a base for interpreting the commercial fisheries industry (Grand Marais-Isle Royale) which attracted the Norwegian population which set the ethnic tone of many North Shore communities. In addition, sites such as Duluth's Minnesota Point, with its outstanding beach, lighthouse, dunes and waterbirds, and the high Pigeon River Falls located 160 miles north, provide scientific and natural area interpretation potentials.

Important private interpretation opportunities are also available. For example, inland paper mills (Grand Rapids, Cloquet, International Falls, etc.) through developing combined plant-forest tours, have a unique opportunity to relate the complexities involved in meeting man's needs and sustaining a renewable resource. A recent survey of northern Minnesota industrial tours indicates that such tours not only provide good public relations, but are also considered interesting and educational by visitors. Greater emphasis could be placed upon these industries in strengthening the Region's sightseeing opportunities.

Providing a summary of this Region's potentials is a virtually impossible task, given its wealth of recreation resources. Many significant features, such as battle sites and geologic structures, have been omitted in the previous

discussion in order to stress key themes. In spite of these omissions, much of the overview has dwelt on the Region's natural, historical, and cultural interpretation possibilities because its vast sightseeing-educational capabilities probably constitute its greatest recreational potential.

The interrelated historical and nature interpretation potentials of the Kabetogama area played a major role in the establishment of Voyageurs National Park. The direct impact of the Park, in bringing new visitors to northeastern Minnesota, will be very substantial. Equally, and perhaps more important, the Park's program will provide a needed quality example of the recreational opportunities which can be built upon diverse natural and historical resources through interpretive efforts. Throughout this Region, history in its broadest sense can be traced; from a geologic time frame through early man (Indian Mounds), 17th-18th century commerce (fur trading), and 19th-20th century industrial adaptations. Recognition of this opportunity constitutes a vast potential which has been relatively untapped.

REGION 3

Aitkin, Carlton, Cook, Itasca, Koochiching, Lake and St. Louis counties.

Swimming

Swimming water area at designated beaches and pools is adequate to meet requirements for the Region through 1990.

However, swimming opportunities should be available in every community of 5,000 population or over, and where not existing should be considered a priority item. Local swimming facilities primarily are the responsibility of municipalities. (See Note 5.)

Camping

There is a large deficiency of campsites in Region 3 -- nearly 800 less than needed to meet 1975 requirements, and nearly 2,500 short of 1980 requirements. To provide these additional sites, 198 and 622 acres of land, respectively, will be needed.

The 1972 inventory showed that in Region 3, 48 percent of the campsites (outside of the B.W.C.A.) were provided by the private sector; 21 percent by the state, 20 percent by the federal government (mostly U.S. Forest Service); and 9 percent by municipal governments. This represents a significant increase in the involvement of the private sector in recent years.

It is suggested that in this Region, 25 percent of the campsites be of the primitive type, 55 percent be of the semi-modern type, and 20 percent be modern. (See Note 7.)

It is suggested that the counties take an active role in providing campsites of the primitive and semi-modern types, utilizing some of the large acreages of county forest and tax-forfeit lands which they administers. The private sector

should continue to provide about one-half the sites in the Region, concentrating on the modern and semi-modern types. The role of the state and federal governments will be in providing primitive sites, in keeping with the wild character of the forest lands in the Region, including canoe campsites in the B.W.C.A. The state is not expected to develop any significant number of additional semi-modern sites at state parks (in fact, such sites probably will be cut back in some parks.) Municipalities will continue to have a small role in providing campsites, as a tourist-business attraction.

Picnicking

A deficiency of 1,321 picnic tables was identified for 1975 in Region 3, and the deficiency is projected to increase to 1,470 tables by 1980, and 1,762 tables by 1990. These deficiencies will require 132 acres, 147 acres, and 176 acres of land, respectively, to be satisfied (See Note 1.)

In 1972, 37 percent of the picnic tables were provided by the state, 25 percent by the private sector, 23 percent by municipalities, 9 percent by the federal government, and 5 percent by counties and townships.

The state will continue to play a key role in providing picnic facilities in the Region, in conjunction with its many parks, recreation areas, and waysides; and planned additions should maintain its share of the total at about the current

level. To meet the total deficiencies in the Region, however, counties and municipalities will have to provide significant additional picnic facilities, as part of local and county park development (some of which may be of the "regional" type). The federal government will continue to provide picnic facilities at its recreational sites in the Superior National Forest, although additions are not expected to be significant; and picnic facilities will be part of the development at the new Voyageurs National Park.

Water Accesses

There currently are 96 lakes of 150 acres or more in Region 3 which do not have public accesses: 33 in Itasca County, 27 in St. Louis, 22 in Aitkin, six in Lake, five in Cook, two in Carlton, and one in Koochiching. In addition, there are 14 smaller lakes which have been designated for intensive fish management which do not have public accesses: five each in Aitkin and St. Louis counties, two in Itasca, and one each in Cook and Lake counties.

The DNR should develop public accesses on these lakes. (See Note 2.)

Trails

Although hiking trails were considered to be in adequate supply in Region 3, snowmobile trails were deficient by 274 miles. A total of 1,096 acres of land will be required to meet

this deficiency.

In 1972, 30 percent of the snowmobile trails were provided by the federal government on national forest lands, 52 percent by the state, 6 percent by counties and municipalities, and 12 percent on private lands.

There are large state and federal land holdings in Region 3 (5.1 million acres), and the majority of additional trails probably will have to be developed on those lands. However, counties also own a substantial amount of land (two million acres) and, although the land largely is in scattered parcels, it could contribute to meeting trail needs. Therefore, it is recommended that counties take a greater responsibility in providing trails, especially to meet local needs (utilizing, where appropriate, state funds from Snowmobile Trail Assistance Program). The proposed North Country National Trail will pass through the southern part of the Region, providing additional non-motorized trail opportunities. (See Note 3.)

Golf

The existing number of golf courses in the Region exceeds the standard (18 holes per 25,000 population) by the equivalent of eight 9-hole courses.

Athletic Fields and Playgrounds

A deficiency of 206 acres of athletic fields and playgrounds was identified in Region 3 for 1975, and the deficiency will increase to 264 acres in 1980, and 346 acres in 1990.

Municipalities and school districts should have the primary responsibility in providing this type of facility. (See Note 4.)

Tennis Courts

A deficiency of 57 tennis courts was estimated for 1975, but the deficiency will be less in 1980 and 1990 (50 and 37, respectively), because of the significant population decline projected in the Region. There should be at least one tennis court provided for each 2,000 population. Tennis courts should be the responsibility of municipalities and school districts.

U. S. DEPARTMENT OF THE INTERIOR

Prepared by Mineral Resources Work Group
of the Great Lakes Basin Commission (Appendix 5)
Sponsored by Bureau of Mines
U. S. Department of the Interior

"The mineral industry of the Great Lakes Region is important to local and national economics. Total value of mineral production approached 1.5 billion dollars in 1968. The Region's mineral industry also plays a strategic role by supplying 100 percent of the iodine, 69 percent of the iron ore, 51 percent of the magnesium compounds, and 42 percent of the peat, lime, and bromine produced in the United States. Other mineral products are important in the more limited regional and local markets.

"Future mineral production potential is good within the Region. The opening of new mines producing new mineral products can be anticipated because of technologic development in mineral extraction and processing, although a timetable of such events cannot be made at present.

"An adequate water supply is essential to the production of a number of mineral products. Consumptive water losses for mineral production are small and water withdrawals can be reduced through recirculation practices. Because recirculation is being used increasingly by the mineral industry, no serious

water supply problems are anticipated. Pollution of surface and ground water is limited primarily to unrecorded oil, gas, and salt wells and test wells that were abandoned many years ago. There is no easy way to detect abandoned wells or test, but legal provisions exist for their sealing when discovered. Pollution from other mineral producers is minor and technologies exist to eliminate such practices.

"Land requirements of the mineral industry are the most critical single factor governing future mineral production. Only a small portion of land within the Great Lakes Region contains mineral material economically accessible to the mining industry. In many cases the location of mineral deposits is not known, preventing adequate planning for preservation of the resource inventory. Loss of mineral-bearing land is particularly critical around urban and suburban centers of the region where the sand, gravel, and stone resources are being rapidly depleted through restrictive zoning ordinances and construction activities overlying the deposits. Future supplies of low cost, high bulk aggregate minerals will have to be imported into several planning subareas in the near future, resulting in greatly increased costs due to transportation charges. Reclamation of mined lands is an integral part of most modern mining operations and must be considered in any land use planning efforts. Sequential use of reclaimed land

varies considerably and is treated in only a very general manner ...

In subregion 1.1 which constitutes the Minnesota Arrowhead and the South Shore of Lake Superior including small portions of Northern Wisconsin the projected mineral-being land requirements are:

Planning Subarea 1.1:
Projected Mineral-Bearing Land Requirements[1] (acres)

Commodity	1968[2]	1980	1968 to 1980[3]	2000	1968 to 2000[3]	2020	1968 to 2020[3]
Iron ore	50,000	75,000	75,000	150,000	150,000	250,000	250,000
Peat	600	600	600	650	650	700	700
Sand and gravel	94	110	1,153	181	4,061	296	8,828
Stone, crushed	4 ---	4 ---	3	4 ---	11	1	27
Total	50,694	75,710	76,756	150,831	154,722	250,997	259,555

[1] Includes non-mineral-bearing surface lands required for iron ore production
[2] Estimated
[3] Cumulative
[4] Less than an acre

In 1968 the Minnesota portion of the Mesabi and Gunflint, iron ranges as well as the entire Vermilion Range, are found. At present, direct iron ore production is limited to the Mesabi Range where 29 mines and 9 stockpile recovery operations are active. Since mining first began on the Mesabi in 1892, shipments of hematite and magnetite ore from St. Louis County

have totaled 2,130,000,000 gross tons.

Current mining emphasis is on the concentrates from magnetic taconites, with a subsequent reduction in natural or direct shipping-ore production. Six taconite plants are active. Production from these six pellet operations accounted for more than 70 percent of the iron ore produced in the area. Iron ore products are transported by rail to the ports of Taconite Harbor, Silver Bay, Two Harbors, Duluth, and Superior for transshipment by lake freighter to consuming districts in the lower Great Lakes Region. Reserves of Mesabi ore include 855 million gross tons of measured ore and 500 million gross tons of indicated-inferred ore, both averaging 50 percent Fe. Magnetic taconite reserves containing 20 percent Fe include approximately 6 billion gross tons (8-15 billion Minn. DND) of potential processed ore. All iron mining activity within the planning subarea during the projection years is expected to be centered on the Mesabi Range, with taconite operations almost completely replacing natural ore production by 1980.

Exploratory work that has been carried out on the Gunflint Range resulted in numerous test pits and minor shipments of handsorted ore but no extensive mining operations. The iron formation is composed essentially of thin-bedded magnetic taconite. Average assays of the iron-bearing members range

between 22 and 25 percent Fe. No estimate of reserves is available. Thinness, low grade, steep dip, and difficulty of beneficiation preclude the development of this range at least in the foreseeable future.

Iron ore was mined on the Vermilion Range exclusively by underground methods from 1884 until cessation of production in 1967. A total of 103,752,604 gross tons of ore was shipped.

In addition to the iron ranges, reserves of titaniferous iron ore are contained in the Duluth gabbro. The bulk of these reserves are lean ore with an average assay of 25 percent Fe and 14 percent TiO_2. Reserve tonnage includes approximately 24,600,000 gross tons of measured ore, 60,500,000 gross tons of indicated ore, and 9,500,000 gross tons of inferred ore. Fourteen deposits with reserves in excess of one million tons account for more than 86 percent of the total reserve tonnage. These deposits will remain as potential iron and titanium sources until technology or market demands makes their extraction and processing economically feasible.

Basalt is produced near Duluth in St. Louis County and crushed for local use as aggregate and roadstone. Reserves of this material are extremely large, and can support production throughout the projection period. Various types of rock including basalt, granite, marble, slate, anorthosite, and sandstone have been quarried at various locations in the past

for use as dimension or crushed stone. Waste rock produced in conjunction with iron mining on the Vermilion and Mesabi has been used locally for railroad and highway construction and repair. The opening of new stone quarries depends primarily upon local demand for dimension and crushed stone products. To a lesser degree, the demand for dimension stone in larger population centers outside the planning subarea may stimulate production of specialty stones or silica sand in the future.

Glacial lake clay deposits exist at various locations within the planning subarea. The Coleraine shale in St. Louis County may have value as a clay material or for the manufacture of lightweight aggregate. Because these potential resources have not been thoroughly investigated, no reserve estimate for clay or shale is available. Future production of clay is primarily contingent upon local market demands, which may or may not develop during the projection period. (2020)

Production of peat is limited to only two locations, not by a lack of quality deposits but by excessive distances to the major market areas. Most peat produced in Carlton County and reed-sedge peat produced in St. Louis County are used for horticultural purposes as a general soil conditioner. Local demand for this material is small. Producers in other areas

of the country are closer to markets outside the area, and therefore maintain a competitive edge. Reserves of peat in Minnesota on an air-dried basis include more than 900 million tons in St. Louis County, 100 to 900 million tons in Lake County, 1 to 100 million tons in Carlton County and less than one million tons in Cook County. Reserves of peat in the planning subarea are sufficiently ample to support production well beyond the projection period. (2020)

Deposits of sand and gravel are found in the glacial and postglacial sediments that cover the entire area. Quality deposits are abundant and should be more than ample to meet local demand for many years. In those instances where glacial cover may be thin or lack sand and gravel deposits, bedrock can be quarried and crushed as a substitute material. No estimate of the quantity or quality of sand and gravel reserves is available.

In addition to the minerals currently produced, certain potential resources warrant consideration because of their prospects for future development.

A potential source of aluminum exists in the intrusive anorthosite bodies occurring along the shore of Lake Superior in Lake and Cook Counties. These anorthosite bodies contain between 29 and 32 percent Al_2O_3, no free silica, and only small amounts of extraneous mineral material. As such they

have excellent potential as low grade aluminum sources. Potential reserves of anorthosite are estimated at 100 to 500 million tons. The proximity of these deposits to water transport routes adds to their desirability. Although it is not economically feasible to use these low grade deposits while 50 to 60 percent Al_2O_3 bauxite is available, use of such low grade deposits in areas of low cost energy will probably be necessary within the next 10 to 20 years.

The presence of copper and nickel sulfides in the Duluth gabbro of Minnesota have been known since the late 1800s and has presently stimulated exploration interest. The past evaluation of the deposits has prevented the mining of this material. Recent increases in metal prices, and constantly improving mining and metallurgical technology, have again stimulated interest in these sulfide deposits. The results of much of the exploration activity are not available but from the published information it appears that some marginal ore has been found. It is anticipated that some copper-nickel mining activity will begin within the projection period, but the specifics remain open to speculation.

The Ely Greenstone belt, a portion of which lies within St. Louis and Lake Counties, may contain potential sulfide ore bodies. Considerable base metal mining activity has taken place on the Canadian extension of the formation. Indications

of mineralization on the Minnesota portion are sufficient justification for detailed exploration of the greenstones.

Mineral Production for Planning Subarea 1.1 is summarized in Table 5-7 for 1968 and for projection year 1980, 2000, and 2020. All mineral production is expected to increase during this period. Cumulative production over the projection period is also included in the table, and provides an estimate of the vast quantities of mineral material that will be produced. There is the strong possibility that aluminum-bearing anorthosite, titaniferous iron ore, and copper-nickel sulfides will be mined in the area within the next 50 years. A more remote possibility exists that base metal sulfides and kyanite will be mined during this period.

THE MINERAL INDUSTRY OF MINNESOTA IN 1974

Prepared December 26, 1974, in the Division of Ferrous Metals--Mineral Supply, U. S. Department of Interior, Bureau of Mines.

The value of Minnesota's mineral output in 1974 was estimated at $920 million, up 8% from that in 1973, according to the Bureau of Mines, U. S. Department of the Interior. The rise was due largely to substantial price increases for iron ore, which represents 93% of the State's total mineral output value.

Shipments of usable iron ore from Minnesota mines in 1974 were estimated at 57.9 million long tons, an 8% decrease from

1973 shipments. Total value was approximately $857 million, an increase of 9.5% over that of 1973. Ore shipped included approximately 39.6 million tons of iron ore pellets and 18.3 million tons of natural ore.

Construction of mine and plant facilities for the Hibbing Taconite Co. project began early in 1974. Production was expected to begin by late 1976. The pelletizing plant, being built by Dravo Corp. of Pittsburgh, Pa., will use the travelling-grate process to produce 5.4 million tons of pellets per year. Hibbing Taconite Co. is owned by Bethlehem Steel Corp. (75%), Pickands Mather & Co. (15%), and The Steel Co. of Canada, Ltd. (10%). Cost of the project was estimated at $150 million.

Inland Steel Co. broke ground in October for its Minorca taconite operation near Virginia. When completed, the pelletizing plant will have a production capacity of 2.6 million tons. The pelletizing plant will be equipped to burn natural gas, fuel oil, or coal. Cost of the project is estimated at $70 million and production is scheduled to begin in the spring of 1977.

Expansions of three existing taconite facilities were announced during the year. United States Steel Corp. will increase the productive capacity of its Minntac plant by 50% to 18 million tons of pellets annually. Eveleth Taconite Co. will increase the capacity of its operation to 6 million tons

of pellets annually. Hanna Mining Co. and National Steel Corp.'s expansion of their pelletizing plant at Keewatin will increase capacity to about 5.8 million tons per year. The three expansions will cost a total of $500 million and be completed by early 1978.

Production began in mid-1974 at two natural ore mines which were under development. Ore from the Whitney mine, operated by The Hanna Mining Co., was being concentrated at the Pierce plant. The first shipments of washed concentrate from the Rana mine, owned by Rhude and Fryberger, Inc., were made in August.

On August 1, strikes by locals of the United Steelworkers interrupted production of iron ore at mines and processing plants of five companies. The strikes were settled in from 1 to 2 weeks when 3-year labor agreements were negotiated and made retroactive to May 1, 1974.

Three price increases in 1974 for Lake Superior iron ores resulted in an average increase over 1973 prices of 17% for natural ores and 20% for pellets. Ore prices in late 1974 were 31% to 35% higher than those of the same period 1 year ago. At yearend the published price of Mesabi non-Bessemer ore, basis 51.5% Fe natural, delivered rail-of-vessel at lower lake ports, was $15.75 per long ton and that for iron ore pellets was 40.619 cents per long ton unit of iron.

According to published rates in mid-1974, the cost of transportation of iron ore from the Mesabi range to lower lake ports (rail-of-vessel) in 1974 ranged from $5.49 to $6.05 per long ton. These rates represent a 24% to 30% increase over the rates in mid-1973. They include a dock handling charge of $0.34.

Minnesota's 1974 shipping season began at Duluth on April 8 and was underway at all ports by April 17. Because of bad weather and ice build-up, the 1973 shipping season ended earlier than had been planned; the last shipment from Two Harbors was on February 5, 1974. Congress appropriated funds for a 2-year extension of the demonstration program to extend the shipping season on the Great Lakes.

After an 8-month trial of the suit brought against Reserve Mining Co. by the U. S. Department of Justice, alleging pollution of water and air by the company's taconite processing plant at Silver Bay, the U.S. District Court in Minneapolis ordered the plant closed on April 20. Two days later it was allowed to reopen, following suspension of the order by the U. S. Court of Appeals. In October, the U. S. Supreme Court refused to intervene in the case, and the District Court later ruled that the plant's discharges violated Federal and State laws. The latter decision was scheduled for review by the Court of Appeals in December. In November, the company

submitted to the State of Minnesota a preliminary plan for on-land disposal of the plant's wastes, increased air pollution controls, and changes in the production process, at an estimated cost of $243 million.

Other environmental issues in 1974 centered on the mining of copper-nickel ore in the northeastern part of the State. The Minnesota Environmental Quality Council (EQC) created an inter-agency task force to study the potential environmental, social and economic impacts of mining and processing copper-nickel ore. The EQC also voted to require an environmental-impact statement before any such mining activities could take place. In December, four environmental groups filed suit in Hennepin County District Court against the EQC, contending that the EQC violated State law with its decision not to require an impact statement on an AMAX Exploration, Inc. project to sink a 1,700 foot exploration shaft near Babbitt. The EQC would require the statement only if and when AMAX decides to actually mine ore at the site.

MINNESOTA'S TACONITE INDUSTRY

Taconite Facilities Presently in Operation	Annual Capacity	Estimated Investment	Employment
Reserve Mining Company	10,800,000 tons	$ 350,000,000	3,200
Erie Mining Company	10,500,000 tons	350,000,000	2,900
Minntac	12,500,000 tons	275,000,000	3,300
Eveleth Taconite Company	2,400,000 tons	53,000,000	475
Butler Taconite	2,400,000 tons	56,000,000	600
National Steel Pellet	2,800,000 tons	90,000,000	600
TOTAL - 6 Commercial Plants	41,400,000 tons	$1,174,000,000	11,075

Taconite Facilities under Construction or Committed:	Annual Capacity	Estimated Investment	Employment
Inland Steel (Minorca)	2,600,000 tons	$ 70,000,000	450
Minntac Expansion	6,000,000 tons	200,000,000	750
Eveleth Expansion	3,600,000 tons	150,000,000	450
Hibbing Taconite	8,300,000 tons	300,000,000	1,000
National Expansion	4,100,000 tons	150,000,000	400
Total new Expansions	24,600,000 tons	$ 870,000,000	3,050
Total Taconite Investment	66,000,000 tons	$2,044,000,000	14,125

THE ECONOMIC ASPECTS of
COPPER-NICKEL MINING IN MINNESOTA

A presentation by Commissioner James Heltzer, Department of Economic Development, State of Minnesota, to the Environmental Quality Council, State of Minnesota, October 8, 1974.

The Minnesota Implications

To view the Minnesota situation, a quote from the United States Mineral Resource, Geological Survey, Professional Paper 820, 1973, will help put the analysis in context:

"The copper-nickel deposits in the Duluth Gabbro Complex in Minnesota represent a large conditional resource. P. K. Sims (oral commun.,1972) estimated that 14 billion tons of mineralized rock exists along the lower contact of the gabbro body. This material has a lower cutoff of 0.25 percent and an average grade of 0.58 percent combined copper nickel. Assuming a 3 to 1 copper-nickel ratio, these deposits contain slightly more than 60 million tons of copper metal. Some of this copper is disseminated in bodies as large as 100 million tons and may soon become amenable to mass-mining methods,

according to Sins.

"Summing up the nation's conditional resources gives a total of 111 million tons of copper which may at some time become available in the United States."

It is important to note that Minnesota has 60 million or 54% of the total.

The Duluth Complex also called the Duluth Gabbro, and the Duluth Gabbro Complex, is a large composite body of basic igneous rocks of late Precambrian age that extends in a great arc from Duluth northeastward into the arrowhead portion of Minnesota.

Copper-nickel mineralization was discovered in the Complex about 25 years ago, southeast of Ely. Subsequent drilling and geologic studies have shown that copper and nickel sulfides are dispersed widely in the lower portion and are concentrated locally in bodies of sufficient size and grade to now have strong commercial interest.

The major deposits that have been delineated are in the area between Hoyt Lakes and the Boundary Waters Canoe Area known as the Ely-Hoyt Lakes region. According to the Geological Suvery assessment, some of the mineralized material is amenable to open pit mining, but most probably will be mined underground. The maximum area that would be directly affected by mining operations in the Ely-Hoyt Lakes region would be a linear belt along the base of the complex about 35 miles long and one mile wide.

In a 1973 study, Copper and Nickel Resources in the Duluth

Complex, Northeastern Minnesota, by Bill Bonnicksen, University of Minnesota, Minnesota Geological Survey, four conclusions were reached as to copper-nickel deposits:

"1. Large, economically marginal deposits of copper and nickel sulfides are associated with the Duluth Complex in the Ely - Hoyt Lakes region. The principal sulfide minerals are pyrrhotite, chalcopyrite, cubanite, and pentlandite.

"2. The principal concentrations of copper and nickel are disseminated deposits in the lower few hundred feet of the Duluth Complex and local massive deposits in granitic footwall rocks. The size, shape, and geometric relations of the sulfide concentrations to lithologic units and structural features of the complex are poorly known.

"3. The Ely - Hoyt Lakes region contains the largest known combined copper-nickel resource in the United States. Conservatively, the region contains more than 18 million tons of metal having an average grade of 0.82 percent Cu+Ni. At today's prices the metal has a value of more than $27 billion.

"4. The magnitude of the copper and nickel resources in the Duluth Complex compares favorably with that in some of the larger copper and nickel districts in the world. Accordingly, the region constitutes a major future source of these metals for the United States. More detailed studies of the deposits are needed in order that land-use decisions be made that will best serve the needs of Minnesota and the United States."

But perhaps one of the most astonishing assessments made of these deposits was published in the U. S. Mineral Resources, U. S. Geological Survey Professional Paper 820 which has this to say in regard to nickel:

"The United States sulfide resources are quite large (6.9 billion tons) but low grade (0.21 percent Ni). The very large estimate of nickel in the Duluth Gabbro near Ely, Minn., is based on data recently released by the Minnesota Geological Survey (P. K. Sims, written commun., 1972). Canadian reserves of minable ore are the world's largest with probably close to 2 billion tons of material that can be mined under present economic conditions. Australia probably has great potential for increasing the present estimate of 400 million tons and the yearly production rate is growing rapidly. South Africa also has potential for greater than the 200 million tons estimated here. U.S.S.R. tonnage is probably greater than 100 million, but grade is probably less than 0.6 percent nickel.

"World Nickel-Sulfide Identified Resources

(Identified resources are specific, identified mineral deposits that may or may not be evaluated as to extent and grade, and whose contained minerals may or may not be profitably recoverable with existing technology and economic conditions.)

Area	Tons of ore	Ni (percent)
United States:		
California	100,000	1.5
Colorado	70,000	.8
Montana (Stillwater)[1]	150,000,000	.25
Missouri	10,000,000	.5
Nevada	30,000	.3
Pennsylvania (Gap)	800,000	.7
Washington	100,000	.9
Minnesota (Ely)[2]	6,500,000,000	.21
Alaska, Brady Glacier	200,000,000	.25
Yakobi Island	20,000,000	.3
Funter Bay	600,000	.35
Maine	10,000,000	1
Total (0.21 percent Ni avg.)	6,900,000,000	
Canada:		
Thompson district:		
Thompson mine	150,000,000	3.0
Mystery Lake deposit	200,000,000	.45
Moak Lake deposit	400,000,000	.7
Others	250,000,000	1
Total (1.0 percent Ni avg.)	1,000,000,000	
Sudbury district	400,000,000	1.5
Other Canadian	100,000,000	1.5
Other Canadian	200,000,000	.2
South Africa	200,000,000	1
Norway	2,000,000	1
Burma	25,000,000	.3
Australia	300,000,000	.6
Australia	100,000,000	1.5
U.S.S.R.	100,000,000	.6

[1]Also contains 0.25 percent Cu.
[2]Also contains 0.64 percent Cu.

Although the nickel deposits of the Duluth Complex are substantially lower in grade than those in the Sudbury district,

it is interesting to note that the estimated tonnage of nickel resource in the Ely-Hoyt Lakes is of a higher order of magnitude than the reserves in the Sudbury district.

Two factors of paramount importance in the copper ore industry to establish economic feasibility are:

(1) the grade of ore mined, and

(2) the price per pound.

The following table shows the prices per pound for selected years since the turn of the century, the equivalent prices in 1970 dollars and a steady decline in the average grade of ore mined through this period.

Average annual price in cents per pound

Year	Quoted refinery	Equivalent 1970 dollars	Average grade of ore mined (percent copper)
1900	16.19¢	63.5¢	4.0
1910	12.73	43.5	1.88
1920	17.45	30.0	1.63
1930	12.98	32.5	1.43
1940	11.29	29.5	1.20
1950	21.32	30.0	.89
1955	37.49	41.0	.83
1960	32.05	36.5	.73
1965	35.02	39.9	.70
1970	58.20	58.2	.60

Source: United States Mineral Resources, Geological Survey, Professional Paper 820, 1973.

It is especially evident here that the lower grade deposits are moving into the profitability column. The current price of

copper is 79¢ per lb. and has been as high as 85¢ per lb.

Copper-nickel mining has drawn the interest of several companies. The Assessments of Growth Impacts on the Iron Range, May, 1974, published by the Arrowhead Regional Development Commission, shows the projected economic development of total mining for the region to be:

Projected Total Mining Development

Projects	Project Status	Location	Cost in Millions	Millions of Tons	Perm. Req. Labor	Peak Const. Labor
Taconite Plants						
Hibbing Taconite Co. (Bethlehem & PM)	Const.	Hibbing	$300	8.3	1,000	2,000
Eveleth Taconite Co. (Ogleby-Norton)	Engrg.	Eveleth	110	3.6	400	800
Minorca Tac. Plant (Inland Steel)	Engrg.	Virginia	90	2.3	500	1,500
Minntac Expansion (U. S. Steel)	Engrg.	Mt. Iron	200	6.0	750	1,500
Nat'l.Steel P.Plant (Hanna Mining Co.)	Const.	Keewatin	150	3.4	400	1,200
Butler-Cooley Expan. (Hanna Mining Co.)	Planng.	Cooley	100	3.0	350	1,000
McKinley Tac. Plant (Jones & Laughlin)	Planng.	Biwabik	150	4.0	600	1,300
Copper-Nickel (Mining & Metal Extraction)						
International Nickel Co. (INCO)	Planng.	Ely	250	unkn.	800	1,800
American Metal Climax	unkn.	Babbitt	150	unkn.	500	1,200
American Shield Corp.	unkn.	Hoyt Lakes	120	unkn.	450	1,000

U. S. Steel Company can also be added to this list of copper-nickel mining firms, although no specific data is available at this time.

With the addition of possible copper-nickel operations to the total mineral industry, a view of Minnesota production capability is significant.

The present importance of Minnesota as a source of mineral mining is best understood by the following table:

Minnesota Iron Ore Shipments as Percent of United States and World
(Thousands of gross tons)

Year	Total U.S. Shipments	Total Mn. Shipments	Mn.as % of U. S.	Total World Production	Mn.as % of World
1961	72,949	44,883	61.5	494,689	9.1
1962	70,410	44,556	63.3	499,110	8.9
1963	74,387	45,745	61.5	513,661	8.9
1964	85,184	49,794	58.5	566,716	8.8
1965	85,332	51,126	59.9	607,269	8.4
1966	90,824	55,315	60.9	627,974	8.8
1967	83,016	49,720	59.9	618,820	8.0
1968	82,531	51,436	62.3	668,142	7.7
1969	90,570	57,292	63.3	707,183	8.1
1970	87,891	55,157	62.8	754,299	7.3
1971	78,196	49,136	62.8	758,131	6.5

Source: Minnesota Department of Economic Development

The state's role in technological advance of the world iron ore industry is vividly shown by the August 24, 1974, Skillings' Mining Review. For iron ore oxide pelletizing plants, the annual gross ton, present and under construction, capacities look like this:

	Present	%	Under Const.	%
Minnesota	40,000,000	24.6	9,000,000	20.8
Rest of U.S.	21,000,000	12.9	5,800,000	13.4
Rest of World	101,000,000	62.5	28,500,000	65.8
Total	162,000,000	100.0	43,300,000	100.0

From the above it is evident that Northeastern Minnesota has the manpower base and technological skills to participate effectively in world-wide mineral mining operations.

With mineral mining magnitudes of this order, it is important to consider the general land use pattern of the Arrowhead Region:

General Land Use

	Forty acre parcels	% of region
Forested	257,197	79.3
Cultivated	5,918	1.8
Pasture and open	15,107	4.6
Water	30,566	9.4
Marsh	9,305	2.9
Urban residential	3,116	1.0
Urban mixed	1,731	.5
Extractive	1,609	.5
Transportation	143	.0
Total	325,412	(Sq. mi. 20,338)

Source: Pocket Data Book, Minnesota State Planning Agency

The extractive industries in region three have less than 1% of the general land use total.

From this presentation I think we can draw several conclusions:

1) Minnesota contains a supply of economically valuable copper-nickel ores.

2) The supply is in such quantities that the state has an important percentage of the domestic and international total.

3) The ore content of the supply is now reaching marketability levels.

4) World-wide operations have demonstrated interest in the Minnesota deposits.

5) The Arrowhead region historically has developed the manpower base and technology skills to engage successfully in a vital national and world enterprise.

6) An average facility would be a strong economic addition to the Arrowhead and state economy from the point of view of employment, sales, expenditures and capital investment.

7) The State is at a critical decision point concerning a long-term utilization of this valuable resource.

It is the hope of our Department that deep study and dispassionate thought be given to the total considerations necessary to make this decision and, further, that the economic aspects set forth here are an integral part of this consideration.

NORTHEASTERN MINNESOTA DEVELOPMENT ASSOCIATION

Northeastern Minnesota Development Association (NEMDA), a private, non-profit corporation, was formed in 1964 to promote the economic development of Northeastern Minnesota. Financed by industry, labor unions, news media, commercial enterprises, utility companies, financial institutions and individual contributors, NEMDA's primary concern is the regional development of the Arrowhead.

The main goals of NEMDA are:

1) To bring new industry and business to the area.
2) To assist existing enterprises in expansion programs.
3) To be a coordinating agent for private, local, state, and federal governments and industrial development groups in regional development affairs.
4) To act as a regional vehicle for new jobs, new income, new tax revenue, new money and new brains for Northeastern Minnesota, and
5) To work on legislative matters both on the national and state levels which have bearing on the economic health of the region.

The Association formally began operation in November of 1964 providing a regional economic development program to the

counties of Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis.

The policies and budget of the Association are determined by a twenty-five man board representing subscribing companies and organizations as well as representatives from all parts of the region. This board meets in communities throughout the six-county area.

Site-searching company officials and industrial engineers are encouraged to investigate this region. Plant expansion and plant location services are offered on a no-cost, no-obligation, and fully coordinated basis.

In the early 1960's, Northeastern Minnesota was suffering a severe economic recess. The main cause of this downswing was the closing of the high grade natural ore mines. As is always the case in areas where the economy relies on one or two basic industries, many satellite businesses and industries that depended on mining for their income were also forced to close. As the major industries closed, the result was a high rate of unemployment and a generally poor economy.

It was at this time that the beginning of the taconite industries emerged. The processing of this low grade ore at that time had a risk factor and was expensive. Thus, the steel industry wanted some guarantee from the people of Minnesota that they would be treated equitably in the payment of taxes.

There was a massive effort to pass the Taconite Amendment, the people voted overwhelmingly in favor of the measure, and there has since been almost $2 billion invested in this industry in the past decade. The people of Minnesota expressed confidence in the taconite industry and that industry responded by investing huge sums and providing steady, year-round jobs for the people of the area.

It was also at this time, in 1964, that the area's business and governmental leaders realized that Northeastern Minnesota desperately needed economic expansion and diversification in industry other than mining and wood fiber. They felt that the area was sadly lacking in the field of industrial development. The people of Minnesota had helped with the passage of the taconite amendment. The leaders felt it was time to respond to that vote of confidence by showing the State and Nation that Northeastern Minnesota wanted to begin helping itself. In short, it was time for Northeastern Minnesota to enter the highly competitive field with industrial development.

It was at this time that NEMDA was formed. To fulfill that need, business, industry and labor invested an initial $1 million to get NEMDA in the field of economic and industrial development. Since then there have been substantial additions to NEMDA's membership and budget.

NEMDA was the first organization to sell Northeastern Minnesota on a regional basis. It was the first organization that actually went out into the market place and told people in business and industry that this area was a good business potential.

In its effort to expand the economy of Northeastern Minnesota, NEMDA realized that it would have to have the cooperation of the entire area. Cooperation and unity were the key to a successful program. In this endeavor, local development organizations were established, in every community in Northeastern Minnesota. With this intricate development network now formed, and working, it is the job of NEMDA to seek business and industrial prospects and sell them on the idea of moving or expanding to our area. It is the job of these local development organizations to sell their specific communities to the various prospects that NEMDA brings to them.

What Northeastern Minnesota now has,is a well-rounded economic and industrial development program to attract new business and industry.

LIST OF NEMDA PUBLICATIONS

N. E. Minnesota Timber Resources

Minnesota Iron Ore Future

Tomorrow Is Here

N. E. Minnesota Educational Resources

N. E. Minnesota Manufacturing Tax Comparisons

The Emerging Copper-Nickel Industry in N. E. Minnesota

Special Report * Availability and Projected Cost of Aspen Timber in Northeastern Minnesota

Availability of Processing Steam

Northeastern Minnesota's Economy - From Now to 2000!

A Luxury Resort to Serve The Northwoods Guest at Ely Minnesota

MINNESOTA ARROWHEAD ASSOCIATION (MAA)

The Minnesota Arrowhead Association (MAA) was formed on July 1, 1924. At the time of its formation, it was known as the Northeastern Minnesota Civic and Commerce Association. At the annual meeting in Duluth on July 13, 1925, the organization's name officially became the Minnesota Arrowhead Association.

The organization was created with the idea to encourage the spirit of cooperation between civic associations in the area. It consisted of fifteen (15) commercial organizations throughout the Arrowhead Region.

Today, the MAA states its purpose (objectives) as aiding in the development of Northern Minnesota by:

(1) The promotion of its recreational, agricultural, and industrial advantages.

(2) By carrying on educational activities in such civic, economic, and industrial movements as may assist in such development.

(3) By carrying on such additional or subsequent activities as the future may develop, and as will harmonize with the purposes herein before set forth.

The membership of the MAA is comprised of any individual, resort, firm, corporation, association, agency or governmental unit interested in promoting the objectives above. The annual

membership dues are forty dollars ($40.00). The membership entitles the member to voting privileges at the annual or special meetings of the Association. In the case of memberships held by organizations, an individual of each such organization acts as a representative and exercises its voting privilege.

The annual meeting is held within 120 days of the close of the fiscal year. An important issue dealt with at this meeting is the election of no less than 75 and no more than 150 Board of Directors. These members are elected from the membership and act as the management and control of the Organization. Following the annual meeting, the Board of Directors elect an Executive Committee consisting of 25 members as follows: a President, three (3) Vice Presidents and 21 other members.

Other committees include:

(1) Advisory Committee - Past MAA Presidents.

(2) Nominating Committee - Five appointed members of the Association's Directors and/or Advisory Committee to nominate officers and Directors for the ensuing year.

(3) Other Committees - The President of the MAA can, with the Executive Committee's approval, appoint

such committees that are necessary to conduct the affairs of this Association.

In 1967, the association became an active partner with the State of Minnesota in the promotion of tourism. Due to the efforts of previous Board of Directors and Legislative Committees over the many years, the state legislators recognized the importance of its state's tourist-travel industry, and decided to promote it. Through the Department of Economic Development, came a proposal that the state be divided up into six Tourism Regions and that a matching fund program be established. The details were finalized at the Governor's First Summit Conference in St. Cloud in 1967. With the establishment of the new borders, the Arrowhead Country was delineated at twelve counties. Other regions set up were Heartland to the west of Arrowhead, Vikingland in the northwest corner of the state, Pioneerland in the southwest, Hiawathaland in the southeast and Metroland covering the Twin Cities greater metropolitan district.

In 1970, promotion was initiated for the lengthening of the tourist season and a strong push was given to winter vacations as well as the other three seasons. Skiing, ice fishing and snowmobiling were promoted and resorters were urged to winterize their accommodations. The success is attested by the large number of winter facilities now available to

the tourist in the Arrowhead Country.

Early in 1974 tourism felt the shock of the oil embargo and the energy crisis. Emergency measures were taken and the Association played a significant part in educating the traveling public with more precise information as to availability of gasoline and travel energy conservation techniques.

Historically, the MAA has led the way in tourist-travel promotion and development. With the ever-increasing sophistication of resort operations and the recognition by the traveling public of the attractiveness of the Arrowhead, tourism will continue to be a major economic factor in the future and the Minnesota Arrowhead Association will continue to be the leading voice of the industry.

UNIVERSITY OF MINNESOTA IMPACT ON ECONOMIC INFORMATION FOR RESOURCE PLANNING IN MINNESOTA COASTAL ZONE*

Economic impact studies pertaining to Northeast Minnesota which have been, or are being conducted, by staff members from the University of Minnesota are presented in this report. These studies are confined to economic impact analysis, projection and related data base. Staff members from the Duluth, Minneapolis and St. Paul campuses are participants in these studies, which are summarized here with reference to their economic content and implications.

Economic studies

Much of the review of economic impact studies in Northeast Minnesota refers to the current studies on energy and infrastructure development in this part of the State. A special effort is made here to provide a preliminary report on these studies with a focus on questions relating to economic impact measurement and projection.

In reporting on the University of Minnesota studies, a certain perspective in the relation of economic research to resource management is presented. Studies have been selected which relate to one or more criteria as follows:

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*Prepared for Minnesota Department of Economic Development by Wilbur R. Maki, Professor of Resource Economics, University of Minnesota-St. Paul, June 2, 1975

1. Identification, measurement and projection of resource development activity which creates significant economic impact in the region;
2. Delineation of development activity in economic impact zones in the regions;
3. Estimation and projection of amount and incidence of specified economic impacts in the region;
4. Determination, demonstration and/or illustration of significance of specified economic impacts for present and future resource (e.g., coastal zone) management in the region.

Not excluded, therefore, are studies in physical, social and biological sciences which are supportive of the data base requirements of the economic studies emphasized in this report.

Regional data base

The regional data base for the economic studies is presented by data sources and related studies as follows:

1. Regional data files compiled from reports based on national and state censuses of population, housing, employment, agriculture, mining, manufacturing, trade and services;
2. Regional economic base and input-output studies;
3. Special purpose and/or regional case studies of related activity systems, such as outdoor recreation

and waste water treatment.

Included here are studies from other than economic fields which help build a regional data base for economic impact analysis and projection.

For most of the economic studies selected for this review, a statistical data base from national and state census reports is required. Several studies require primary data which are acquired (initially at least) on a one-shot basis. For these studies, design and implementation of a continuing reporting system may not have been completed, thus making them of only marginal importance in regional resource management. Development of a regional information system for economic impact analysis and projection is of particular concern in this review.

Economic Impact Analysis and Projection

Economic impact analysis and projection is an increasingly important activity in the regional development process. Alternative development strategies are identified and their impacts are simulated by means of large-scale computer models of the regional system. Included in the models are both economic and ecologic elements to represent the total regional environment.

Input-output modeling

A research project on improving long-range energy planning

was initiated in 1974 in the Minnesota Agricultural Experiment Station under the supervision of Professor Wilbur Maki from the Department of Agricultural and Applied Economics. This project was supported by the Minnesota Energy Agency with funds from the Upper Great Lakes Regional Development Commission. Dr. James Carter, Research Director in the Minnesota Energy Agency, was overall project supervisor. A related complement of the project was the development of a Regional Energy Information System (REIS). The REIS project is under the direction of Dr. Norman Chervany of the Department of Management Information Systems in the College of Business Administration.

Two principle elements make up the input-output modeling effort, namely, the industry surveys and the interindustry transactions tables. The industry surveys cover a selected sample of business and governmental establishments which reported on (a) energy utilization during the 1972-1974 period, and (b) capital expenditures -- actual and projected -- for the period 1972-1979. Employment data were acquired also for relating both the energy utilization and capital expenditures reports to secondary data sources on which the large-scale input-output systems are based.

The interindustry transaction tables are part of the comprehensive data base for regional impact analysis and projection. (The 1967 U. S. input-output transactions table was

used as a prototype for the Northeast Minnesota (including Douglas County, Wisconsin) interindustry transactions table. The 80 industry groups in the U. S. table were expanded to 95 industry groups in the Northeast Minnesota table (table 1). The larger number of industry groups results from the breakdown of energy-related industry groups in the U. S. table into an additional 15 industry groups. The base year for the Northeast Minnesota interindustry study is, however, calendar year 1970 rather than calendar year 1967. The 1970 base year corresponds with the study period in the University of Minnesota-Duluth input-output study for the Duluth/Superior growth pole region (i.e., the area within the municipal boundaries of Duluth, Superior, Cloquet and Two Harbors).

A Minnesota two-region input-output (TRIO) model was built first for a 1967 base year. Except for the 95-sector breakdown, this model conforms with the 1967 U. S. input-output model. By extending the Minnesota TRIO model from 1967 to 1970, a new state-level input-output data base was derived for use in the preparation of the 1970 Northeast Minnesota input-output transactions table.

Represented in the interindustry transactions tables are the flows of industry gross outputs: the goods and services produced by the commodity-producing and noncommodity-producing industry groups--all in dollar values. For the commodity-

producing industries, including contract construction, the producer value of the gross output is shown. For the noncommodity-producing activities, the gross margins are shown. Thus, for agriculture, forestry, mining, contract construction and manufacturing, the gross outputs include the cost of materials as well as the value added by the production activity. For the trade and service sector, however, the costs of materials, other than the materials used in providing the service, are not included in the gross margin valuation.

Gross output estimates were prepared for each of the 95 industry groups for Minnesota and Northeast Minnesota using secondary data sources, including U. S. censuses of population, manufacturing, wholesale and retail trade, selected services, and mining, and periodic reports of employment, population, income and tax collections from various state government agencies. For some industry groups, gross output estimates were not available directly and, hence, for these industries ratio estimators were used (e.g., employment in Minnesota vs. employment in United States) with the U. S. gross output estimates to obtain the corresponding estimate for Minnesota. Northeast Minnesota gross output estimates were obtained similarily by using the Minnesota data base rather than the U. S. data base.

Critically important in the validation of the gross output estimates was the derivation of the employment estimates for the 95 industry groups in Minnesota. These estimates were prepared for selected years from data reported in County Business Patterns and by reports of the Minnesota Department of Employment Services. Special Minnesota and Northeast Minnesota tabulation were tabulations provided for the first quarter 1974; these data were used as additional checks on the secondary sources. Output-per-worker estimates were derived for Minnesota using the gross output and employment data. These estimates were compared with the corresponding estimates for the United States. Differences between the two series were noted in the data review process and a justification for these differences was prepared. Additional data were consulted to account for probable differences in industry mix and production practices which would result in differences in output per worker ratios.

A corresponding set of employment estimates was prepared for Northeast Minnesota (table 2). Output-per-worker estimates were prepared and all differences between the Minnesota and the Northeast Minnesota data series were justified. Thus, three different data sources were consulted in the preparation of the gross output estimates for Northeast Minnesota.

All known employment estimates for the region were

consulted, also, and differences between these series were identified and evaluated. Both the validation and the final evaluation procedures are presented in the Northeast Minnesota energy-economic study reports.

The Northeast Minnesota interindustry transactions table for 1970 was used in the preparation of an industry technical coefficients table. This table is a summary representation of the input mix of each industry group in the region. The input mix, however, is confined to those inputs acquired from industries located within the region; hence, imports are excluded. To this extent, therefore, the technical coefficients table may show less than the total dollar requirements of a particular input per one dollar of total purchases. A reduction of imports because of import substitution (i.e., new industry location in the region or expansion of existing industry) would result in an increase in the numerical value of the technical coefficient.

The Minnesota TRIO model, when used for Northeast Minnesota, yields a complete interindustry import coefficients table. Each industry source outside the region is related to its purchasing sector in the industry-import matrix. The TRIO model thus provides for an extension of the conventional input-output modeling approach; this extension is essential in dealing with the problem of import substitution in a region.

The technical coefficients tables (both with and without the complete import matrix) are used in the preparation of the so-called "Leontief inverse." The inverse matrix is sometimes called an interdependency coefficients table. Because of the interindustry linkages noted in the interindustry transactions table, a given increase in the demand for a particular industry output results in a direct and indirect effect on output which, together, meet the increased requirements of the input-supplying industries in the region. Thus, to meet a one dollar increase in final demand for a given industry output, the total industry output must be increased by enough to meet the direct requirement of one dollar increase in total output and the indirect requirements of all the input-supplying industries. These indirect requirements may add up to more than the direct requirements in total dollar value for some industries. Thus, the total output multiplier maybe much larger than one for some industries and very close to one for others. The output multiplier table, therefore, is an important research tool for use in translating the final demand estimates and projections into corresponding total output estimates and projections which take into account the unique impact of each industry on every other industry.

Impact assessment

The input-output modeling effort in the energy planning-

related study is directed toward regional impact assessment. The interdependency coefficients table and the total output multipliers are used in deriving the impacts of changes in final demands upon each industry and the economic and ecologic environments in which the industry activities take place.

Preparation of a table of final demands for regional industry outputs is the first step in regional impact assessment. Such a table was prepared for the 1970 base year. This table shows the so-called final purchases (as compared with intermediate purchases represented in the interindustry transactions table) in the Northeast Minnesota economy; included here are the purchases of households for consumer goods and services, of governmental agencies, and of business establishments. The government and business purchases represent capital outlays for land, buildings, equipment and inventories.

When the 1970 base-year final demand table is multiplied by the interdependency coefficients table, a set of industry gross outputs is obtained which is identical to the industry gross outputs estimated initially. When the 1970 base year final demand table is extended, say to 1980, an entirely different set of industry gross outputs is obtained when this new table is multiplied by the industry interdependency coefficients table. Derived thusly is a set of projected 1980 industry gross outputs.

Projected industry gross outputs are used in deriving a corresponding set of industry employment, earnings and value added projections. Individual industry impacts of a projected growth in final demands thus can be determined for Northeast Minnesota. These industry impacts can be represented further in terms of projected changes in employment, earnings and value added.

Changes in industry production practices can be incorporated into the industry interdependency coefficients table. The base-year coefficients can be adjusted to count for the expected changes in input requirements as a result of the changes in production practices. Thus, when the adjusted interdependency coefficients table is used with the projected final demands table, a new set of industry gross outputs is obtained for the target year which takes into account both market and technological changes. Similarly, the effects of expected changes in imports and industry mix can be incorporated into the input-output procedures.

Fiscal-ecologic accounts

A final step in the input-output modeling and assessment procedures is the preparation of a set of fiscal-ecologic accounts. The industry output, employment, earnings and value added data are used with a corresponding set of fiscal and ecologic coefficients in building an entirely new set of fiscal

and ecologic accounts for the base-year and the target year. These accounts will show the accumulative effects of changes in both final demands and industry outputs on the fiscal and ecologic environments in which the regional development occurs.

Fiscal environment refers to the public financing functions of local, state and federal governments in the region. Regional impacts of economic development are represented in terms of changes in both public revenues and public expenditures. Sources of revenues for all levels of government in the region are identified for the base year and these sources are projected for the target year. The disposition of these revenues, both current outlays and capital outlays, also are shown for the base year and the target year. Total public expenditures, however, are related to total economic activity in the region.

Similarly, a set of ecologic coefficients is being derived. The natural resource input requirements of the base-year and the target-year economic activity are presented. This work is being initiated as part of the energy-related studies in Northeast Minnesota.

Regional economic impact analysis and projection, thus provides a total regional perspective on resource development impacts. None of the models nor studies provide for place-specific results. Rather, the results are industry-specific

and time-specific; they provide the control totals for a given regional economy. Procedures for translating these economy-wide estimates and projections to sub-areas of the region are being developed in related studies and research projects at the University of Minnesota.

Economic Resource Data base

For much of the research cited earlier, the county and the municipality were the basic building blocks of the information system. For the place-specific research, however, the basic building block is the 40-acre tract. In the aggregation of the 40-acre tract, the Minor Civil Division (MCD) is the pivitol territorial unit in regional impact assessment.

Regional information system for economic impact analysis and projection are being developed, therefore, at two levels of data aggregation for two different purposes. The site and small area data pertain primarily to land and water resources while large area data pertain primarily to population and economic activities.

Regional economic development

County-level data are used in the regional economic information system for input-output modeling. The federal and state census and related reports which provide the data base can be consulted in the data files of the Minnesota Analysis

Planning System (MAPS). Included in these files is the Regional Economic Information System (REIS) maintained by the Bureau of Economic Analysis, U. S. Department of Commerce.

Contents of the MAPS data files are described in a series of reports published by Minnesota Economic Data. This series includes also special reports based on the MAPS data.

Much of the data requirements for implementing the Northeast Minnesota Input-Output Model are not available in MAPS files. A special purpose data file is being developed as part of the Minnesota Economic Research Information System (MERIS) which supports the input-output modeling efforts on the St. Paul campus of the University of Minnesota.

The industry gross output, employment, earnings, value added, energy utilization, capital expenditures and related data series started earlier are included in the MERIS data files. Elements of these data series are being accumulated, also, by MCD for use later with the land and water resource management data files.

Input-output studies of resource based areas in Northeast Minnesota were completed before the on-going energy-related study was initiated. The first of these studies was authored by Jay M. Hughes and entitled "Forestry in Itasca County's Economy: An Input-Output Analysis". A 35-sector input-output table of the Itasca County economy in 1966 was prepared.

It was used to subsequently derive the impacts of alternative forestry sector development strategies in the county. This study is used currently in SIMLAB which is discussed in the next section.

A second study was prepared for the "Interim Commission to Make an Economic Study of the Lake of the Woods-Rainy Lake Area." This commission was established by the 1967 Minnesota legislature. Its study, entitled, "An Economic Analysis of the Lake-of-the-woods - Rainy Lakes Region of Minnesota," was authored by Jerome M. Stam . Like the Itasca County study, this study is used in SIMLAB. Also, the data from this study, are comparable, sector-by-sector, with Itasca County interindustry transactions table; they are being used now in the preparation and evaluation of the technical coefficients in the eight county Northeast Minnesota Input-Output Model .

Data on Northeast Minnesota's timber industry are obtained from a study completed in 1969 by Robert D. Knepper . This study shows employment and output levels for northern Minnesota pulp and paper establishments for selected years from 1958-1968. Projections of Minnesota wood pulp production are provided, also; these projections pertain primarily to the Northeast Minnesota timber industry.

Included in the regional economic data base are studies prepared by Richard W. Lichty and Wayne A. Jesswine from the

Department of Economics, University of Minnesota-Duluth. "An Interim Report on the Economic Base of the Duluth-Superior growth Center" was completed by the two researchers for the Northwestern Wisconsin Regional Planning and Development Commission and the Arrowhead Regional Commission in August of 1973. The first of a series of reports on the employment impact of the Reserve Mining Company was published in July of 1974. Subsequent reports in this series will include use of the Northeast Minnesota Input-Output Model, and, also, a 17-sector input-output table for the Head of the Lakes urbanized area, i.e., Duluth-Superior, Cloquet and Two Harbors. Primary data were collected, both by mail questionnaire and by personal interview for the calendar year 1970. Secondary data were used also from the 1970 U. S. Census of Population. The 17-sector input-output table will be used for ongoing impact estimates as needed by the Arrowhead Regional Commission. A report is being prepared also on regional tax and income impacts of the Reserve Mining Company. This report, however, is based on the employment estimates derived earlier from the location-quotient analysis.

The University of Minnesota-Duluth studies involve use of the Northeast Minnesota version of the TRIO model for special studies funded by the Economic Development Administration, U. S. Department of Commerce, and the Arrowhead Regional

Development Commission. In one study, the input-output tables prepared for the energy-related studies cited earlier will be used in determining the interindustry impacts of Reserve Mining Company activities on the region's economy.

Finally, Prof. Lichty has been involved in an investigation of the preference patterns of senior citizens for housing. This report is being prepared for the City of Duluth. Prof. William Fleischman from the Department of Sociology, UM-D is co-author, with Lichty, of a second report on transient housing for the elderly in Duluth .

The DULUTH BUSINESS INDICATORS reports prepared by Cecil H. Meyers, Bureau of Business Research, University of Minnesota-Duluth and Glenn O. Gronseth, Duluth Office, Minnesota Department of Employment Services, provides a monthly business activity index based on 15 activity components. In addition, a retail sales index and a hotel-motel index are published monthly. Also, a monthly labor market report and a monthly bank debits report are included with the DBI monthly reports.

Historical data relating to the current DBI reports are summarized graphically in a report published by Gronseth and Meyers in 1968. A six-county study by Meyers, also published in 1968, provides a comparable series on business indicators for Northeast Minnesota for the 1951-1966 period .

Professor O. Uel Blank from the Department of Agricultural

and Applied Economics, University of Minnesota-St. Paul, has published a series of studies which focus--all or in part--on the tourism industry in Northeast Minnesota. Of general use in the delineation of recreational subareas in the Region is Blank's concept of the Recreational Focal Area (or RFA's). He identifies 10 RFA's in Northeast Minnesota. Blank also has published his findings on the travel/tourism industry for the Duluth-Superior area. These findings pertain to only one of the 10 RFA's identified earlier, i.e., the North Shore.

Other RFA's studied by Blank are included in the Boundary Waters Canoe Area (BWCA) and the Voyageur's National Park (VNP). In one study Blank surveyed tourists in the Lake of the Woods-Rainy Lake Area to find who they are, what attracts them, and who caters to them. Another study focuses on the economic impact of visitors to VNP on one county bordering the Park. The findings have application, however, to other adjoining areas. Also, many of the visitors to both the BWCA and VNP enter these areas through Duluth and North Shore trade centers.

Two statewide studies are included in this review because of the importance of Northeast Minnesota in the overall tourism industry in Minnesota. In one study Dayton M. Larson, Area Extension Agent, and Lawrence R. Simonson, Extension Specialist, report on the resort and campground facilities and

their average weekly rates in the Arrowhead Region. In the other study, Bland, Jensen and wegeen hals report on the economic status, in 1970, of the total logging industry in each of Minnesota's 11 development regions. Detailed data are available for Northeast Minnesota which, like other regional data on the tourism industry, is being used in the preparation of the economic studies based on the input-output system models cited earlier.

The sociology of industry organization and decision making, with particular reference to the use of water resources, has been studied by R. E. Rickson and colleagues from the Department of Rural Sociology, University of Minnesota-St. Paul . Included among the interviews upon which the published reports were representatives of businesses located in Northeast Minnesota. Funding for this work was provided by the Water Resources Research Center, University of Minnesota and the Minnesota Agricultural Experiment Station.

Land and water resource management

Much of the data on land and water resource management is included in the Minnesota Land Management Information System (MLMIS). George W. Orning, Project Director, is now completing a series of reports on extensions of MLMIS in Northeast Minnesota. General reports published under this project, although not focusing entirely or even in part on Northeast Minnesota,

nontheless provide important data and descriptive material for the land and water resource management data files .

Exploratory work is underway to adapt the MLMIS data files for use with the spatial components of a regional trade-off model which depends on the MERIS data files. Descriptive data, by 40-acre tract, is being compiled at the MCD level of data aggregation for use with population, employment and related industry data which, also, are being prepared for minor civil divisions. The establishment-business, governmental or residential -- is a pivitol economic unit for relating the aggregate, regional economic data to the place-specific land and water resource data.

Computer mapping is used in the preparation of development potential maps for Northeast Minnesota. These maps show the distribution of developable resources in the region in terms of composite criteria which are prepared from descriptive data for each 40-acre tract. Development potential maps are available for timber, mineral and water resources, or combinations of these and related economic and human resources which, also, are being mapped.

Closely related to MLMIS is the research on the Minnesota Soil Atlas which is being developed by H. F. Arneman, L. D. Hanson, R. H. Rust and others in the Department of Soil Science, University of Minnesota-St. Paul, in cooperation with the Soil

Conservation Service, U. S. Department of Agriculture. Of the four sheets scheduled for completion which cover Northeast Minnesota, however, only the Hibbing Sheet is published. The Two Harbors Sheet, which includes most of the North Shore will be published shortly, given available funds. Shown on these sheets are two types of data -- broad geomorphic regions and, within those regions, specific soil landscape units. Thus, a uniform set of soil resource maps is being prepared which makes available to resource planners a description of each soil landscape unit in terms of (1) landscape position, (2) rooting zone and substratum (of most common soil texture and thickness), (3) inches of available water to 5 feet, drainage class and ph (to show moisture relationships), (4) approximate fertility in working zone (in terms of P and K), and (5) major soil series. The soil resource data are compiled by 40-acre tract for the MLMIS data base.

Because the production limitations represented of the soil landscape units can be modified by various resource development schemes, a rating system has been devised by Hanson and associates for interpreting the general soil map. These ratings apply to (1) crop production (using total digestable nutrients -- TDN -- as a common measure for a 10-category productivity index), (2) forest production (based on a key species -- suitable for soil unit -- and its estimated site index), and (3) resi-

dential development (taking into account soil strength, flooding, wetness, slope, septic field suitability, and groundwater contamination). The ratings can be modified at a cost, which can be determined for each soil landscape unit in terms of its alternative use ratings. Thus, the soil landscape unit data when transferred to the 40-acre tract data base, can be compiled by MCD for use in the input-output and related spatial modeling systems cited earlier.

Studies of the forest ecology of selected areas in Northeast Minnesota are being directed by L. C. Merriam, Jr. and associates in the College of Forestry, University of Minnesota-St. Paul. These studies focus on (a) the ecologic impacts of newly developed campsites in the Boundary Waters Canoe Area and (b) the inventoring of basic resources in primary development areas in Voyageurs National Park.

Arnett Mace, also from the College of Forestry, University of Minnesota-St. Paul, is looking at the problem of waste water disposal in the small communities in his study on "Feasibility of Using Iron Ore Overburden Material as a Media for Disposal of Secondary Effluent in Northern Minnesota". The Erie Mining Company is cooperating in this study in providing the study sites and in the preparation of these sites for effluent disposal.

R. S. Farnham, Department of Soil Science, University of

Minnesota-St. Paul, is engaged in the study peat resources of northern Minnesota. Over the past 15 years, Professor Farnham has published extensively in this field and has become an internationally recognized authority on peat resources. Farnham's work, also, is providing alternatives for the disposal of waste water in small communities and individual residential units which are located near peat bogs.

The Iron Range Resources and Rehabilitation Commission and the Minnesota Agricultural Experiment Station jointly have funded this research. Some of the work has been funded also by the Economic Development Administration, U. S. Department of Commerce.

Related to the economic analysis of the Lake of the Woods-Rainy Lake area is the study of fishery resources by Heyerdahl and Smith . This study provides a summary of the commercial fishery survey conducted by the Department of Entomology, Fisheries and Wildlife, University of Minnesota, in cooperation with the Minnesota Department of Conservation for the Lake of the Woods-Rainy Lakes Commission. Results of the survey were used in the preparation and prediction of future management options for the Minnesota Legislature during the spring of the 1971 session.

Resource Development Systems Simulator

A computer interactive resource development simulator has been prepared for use in research and planning. The initial

application of the simulator has been for teaching purposes (in a course taught jointly by Professors Robert Barrett and Wilbur Maki entitled Community Development Simulation, which is part of the Resource and Community Development curriculum in the College of Agriculture, University of Minnesota-St. Paul). Organization and potential uses of the simulator for economic resource impact assessment are discussed in this section of the report.

Organization of simulation laboratory

The Minnesota Resource Development Systems Simulator is used currently in a computer-interactive laboratory setting; hence, the designation simulation laboratory or SIMLAB. One demonstration area for testing the model is Itasca County; others are the Lake-of-the-Woods, Rainy Lake area and the Duluth, Superior, Cloquet and Two Harbor urbanized area.

SIMLAB provides a laboratory-type capability for assessing regional economic impacts of resource-related infrastructure development. Infrastructure here includes the basic community facilities, such as water supply and waste water treatment plant, solid waste collection and disposal facilities and electric power plants. Also included are transportation, education and health, and recreational and cultural facilities, and other public buildings. Of concern in the development of SIMLAB is the assessment of basic community and related

facility requirements associated with the development of agricultural, forest, mineral resources in the selected areas.

Simulation of local impacts of the driving economic forces in resource development is extremely difficult, if not impossible, without gross simplification of economic structure and process. Critical regional variables and constraints must be identified, however, and included in the simulation to achieve a reasonable measure of realism about what is happening and how and why the happenings occur. Simplification is essential, also, in making the modeling efforts manageable.

The driving forces of regional resource development are represented as submodels in a selective and a simplistic manner, at least initially. They are gross approximations of the economy of a region. Here the submodels are identified in terms of their potential relevance for coastal zone management.

Markets. In a market-dominated economy the role of markets in regional development is of primary importance, particularly in understanding a region's present and future economic status. Markets here are viewed as being local and external, or export. Local markets are the people and the industries of the area. Number of people, their earnings and income levels, and number, type and size of businesses are important sources of variability in accounting for

prospective changes in local market conditions. Export markets, on the other hand, reflect general economic conditions, or the conditions in a particular region which is a major market for the area's basic industry.

Demand. Demand is represented by the individual industry disbursements of its outputs to final users -- local household, government and business sectors. Shipments to national markets are included, also. For the household sector, annual percentage change in a specified personal consumption expenditure is related to annual percentage changes in total population, total personal income per household, and average price per unit. For government and business, total expenditures are related to total population and individual industry outputs, respectively. Finally, the annual percentage change in export demand for a given industry is a function of the national market growth rate, the industry market share, and the annual percentage change in market share. With reference to energy, demand includes the use by household and government units and in business capital formation. Intermediate demand for energy is based on industry output. Conversion coefficients are used, finally, to translate the energy requirements from physical to monetary units.

Production. Production is determined, within certain limits, by final demands. The final demands "drive" the

production system, which generates the intermediate demands, including industrial, commercial and transportation (i.e., end-use) demands for energy. With reference to energy production, a regional input-output table yields the technical and trade coefficients to derive the projected energy requirements. Production is constrained by energy supplies as well as production facilities. Production, of course, determines the levels of money flows from purchasers to producers and from producers to resource owners, e.g., employee compensation to households. An excess of money inflows over money outflows on current accounts for the area itself implies a counterbalancing flow of savings on the capital accounts. Total money flow from producers to resource owners in the area represents the "value added" to gross national product by the area's economic activity.

Employment. Production requirements for labor represent the demand for labor, which interacts with labor supply. Labor requirements are specified industry by industry. They are met in terms of an occupational distribution of employment for each industry. Thus, the occupational constraint may result in simultaneous out-migration of workers with unneeded skills and in-migration of workers with needed skills.

Commuting rather than migration adjustments occur first in response to changes in the demand for labor. SIMLAB yields

estimates of employed population by both place of work and place of residence. Migration occurs only when unemployment levels (and also commuting levels) reach the critical limits cited earlier. Transportation facility and energy constraints within the commuting area may impose further limits on commuting.

Population. The population of a region is represented by age and sex in the derivation of birth, death and migration rates. The current migration rate is based on last years' rate and the level of "excess" or "deficit" unemployment. Unemployment above some critical upper limit, e.g., six percent, results in out-migration while unemployment below some critical lower limit, e.g., three percent, results in in-migration. Thus, an age-sex distribution of unemployment also is required for the population component.

Population "drives" the local demand for goods and services. For the population sector, the consuming unit is the household. Population is converted to equivalent household units. In turn, these units are correlated with demand and supply of housing and energy.

Investment. Investment includes both replacement and expansion capital outlays. Replacement outlays are related to industry outputs. Expansion outlays are dependent on policy decisions, both internal and external. Different levels of private and public expansion outlays are assumed and their

implications for industry output and regional income growth are derived. Energy-related (including transportation) facility replacement and expansion is emphasized here. Investment-output relationships for all industries have been obtained from business surveys on energy utilization and capital expenditures. Projected increases in industry output (based on projected capital outlays) are converted into corresponding increases in energy requirements. Additional energy requirements are compared, finally, with projected expansion of energy production in the study region.

Land Use. Land use is both extensive and intensive. Extensive uses are associated with agriculture and forestry while intensive uses include mining, industrial, commercial, transportation and residential. Land use is described in terms of both space and site attributes of particular land parcels. A pivotal concept for relating production and investment to land use is the establishment. The four-digit Standard Industrial Classification (SIC) code is used to differentiate among establishments, which are related directly to the corresponding industry outputs. An employment-size distribution of establishments is presented for each industry. Eventually, each (SIC) group of establishments will be related to corresponding groupings of (40-acre) land parcels. The location of these parcels in the spatial economy of the region will be

cited along with the taxable valuation and other site characteristics.

Management and Control Systems. Management and control systems relate to both fiscal and ecologic impacts of regional infrastructure development. Regional fiscal and ecologic accounts are being prepared in the context of the regional input-output model cited earlier. The levels of investment, production and population components of the regional system depend on the constraints imposed by the regional control systems. Again, different sets of assumptions about regional fiscal and ecologics budgets, and their management, are introduced into the computer models to provide for alternative scenarios for regional investment and development.

Use of simulation in research and planning

SIMLAB is being used now in studies relating to energy planning and development. Economic impacts of national energy policy are being derived for both Northeast Minnesota and Rest-of-Nation with the Northeast Minnesota Trade-Off Model (NEMTOM). The regional impacts, of course, have only nominal repercussions in the rest-of-nation; they are not of the same order of significance as the repercussions of national policy on Northeast Minnesota.

Energy allocation, conservation and development programs depend, in their design and implementations, upon the industry

patterns of projected regional economic growth. Impacts of energy shortages for selected industries are ascertained by imposing an energy constraint upon the production activities of each sector in the use of NEMTOM. Alternative simulation runs show the industry impacts of different energy allocations strategies in terms of industry output, employment and earnings. Energy conservation practices similarly are translated into corresponding changes in energy requirements for the intermediate and final demand sectors. Finally, energy programs are translated into corresponding increases in energy supplies, thus removing the constraints imposed on industry expansion.

For dealing with problems of regional economic growth, alternative projections series are being prepared which show total industry outputs with related employment and earnings of different levels of population and market growth. The alternative future scenarios show the market implications of projected public policies and national market outlooks. The local industry implications of each projections are being derived by the Trade-off model.

Urban and inter-urban transportation issues are closely related to those dealing with energy and, also, regional economic growth. Proposed shifts from private transportation to public transportation and to different modes of public transportation can be simulated in terms of impacts on specific

industry activities and related employment requirements. For example, a shift from private auto to personalized rapid transit would drastically reduce requirements for gasoline service stations in the Duluth-Superior metropolitan area. These shifts also will be demonstrated in future applications of NEMTOM.

Manpower development and training issues are approached by means of the industry projections, coupled with corresponding projections of occupational requirements of the projected work force. The local occupational requirements of industry are compared with the corresponding industry requirements of the state and the Nation. These projections, in turn, represent the market forecasts for high schools, technical institutes and vocational schools, colleges and universities.

Finally, land use controls are introduced in the trade-off model by restricting public and private facility development, and thus, the total economic activity in a given area. Again, the implications of land use constraints on economic activity are being simulated much the same way as impacts energy constraints on the same activities.

Design and implementation of NEMTOM as a decision data source for resource planning is being undertaken as part of SIMLAB. A modular series of computer programs are used to implement the trade-off model. These programs represent a series of interdependent subsystems of the total regional

economy which are identified as follows:

(1) Markets -- export and local -- and respective roles in private sector planning;

(2) Demand -- household, business and government -- and role in "driving" production;

(3) Production -- both goods and services, private and public, current and capital;

(4) Employment and labor force -- in terms of production requirements and existing labor force of given skills distribution;

(5) Population and migration -- dynamics and dependency on jobs and overall role in "driving" demand;

(6) Income and investment -- how it is acquired and distributed and deployed in production and consumption.

Each submodel routine is linked to the preceding and succeeding submodels by a feedback loop. A series of nine parameters are presented initially for review and adjustment in a particular sequence by the model operator. Each variable, however, is determined internally, within the trade-off model, except for the starting input variables. Eventually, the input and output variables will be linked to a regional resource development game (which is patterned after the City Model used in the Community Development Simulation course cited earlier).

In addition, a series of submodels are being developed

which are linked to the preceding system model. The submodels are treated as separate modules in an expanded system model. These additional modules are identified as follows:

(1) Transportation and land use -- their interdependence and interaction with markets, production and population and with the ongoing activities in the economic, governmental and social sectors of the local community and/or regional community;

(2) Energy allocation, conservation and development -- their interaction with demand and production and with economic governmental and social sectors in the community;

(3) Waste emissions and control -- their impacts on local environmental and quality-of-life indicators and their interaction with economic, governmental and social sectors in the community;

(4) Social service delivery -- impacts of providing, using and financing essential social services on economic, governmental and social sectors in the community;

(5) Housing and municipal services -- impacts of providing, using and financing of residential units and related public infrastructure on economic, governmental and social sectors;

(6) Economic base expansion -- impacts on service delivery and role of economic, governmental and social sectors in basic economic development.

Each module thus will provide data for the total regional systems models and will receive data from the land and water resource management information system data files. NEMTOM thus provides a laboratory setting (i.e., written SIMLAB) for integrating micro-level data on local environmental conditions with macro-level data on regional economic conditions with specific applications to resource planning in Northeast Minnesota.

APPENDIX A:

MINNESOTA LAND MANAGEMENT INFORMATION SYSTEM STUDY

A Minnesota Land Management Information System pilot study is being completed for Itasca County, Minnesota. "Technical Report # 1: User's Guide to M.L.M.I.S. Data System for Itasca County" will report on this study. This report is the first of a series of reports "designed to document a wide range of aspects of the land information system for immediate users of the system". Because data for Itasca County are used, also, in SIMLAB, the MLMIS study is reviewed here in terms of its importance for economic impact studies of coastal zone resource development.

Technical Report # 1 provides for the identification,

description and documentation of each variable in MLMIS which is available for Itasca County. Two types of variables are presented --- free-standing and tabled (Table A-1). Free-standing variables are represented by the prefix V while the table variables have the prefix J or G. Several of the free-standing variables, e.g., V14 and V15, have data levels that can be used to access a group of related tabled variables. For example, 84 soil types are identified under V14, Soil Landscape Units. For each of the 84 data levels, it is possible to access 25 tabled variables, J01 to J25. Each tabled variable provides additional information about the specific soil type.

A total of 63 variables are presented in Technical Report # 1; each of these variables is in the Itasca County data system. A standard format is used in reporting on each variable as follows: variable number, variable name, source, interpretation, variable description and variable data levels. Three of the six reported items are summarized in Table A-1.

Each of the variables pertains to the basic data unit--the 40-acre parcel. This unit was adopted for MLMIS because it is the smallest consistent unit in U. S. land surveys system which employs the township and range references (with township being defined by a pair of township lines and ranges to form an area 36 miles square). Each township has 36 sections

and each section 16 forty-acre parcels. Each 40-acre parcel is located within a coordinate system.

Economic studies on local impacts of regional resource development are based, in part, on the types of data now compiled in MLMIS. Data on land use, forest cover, soil landscape units, and related physical and natural resource attributes are used in compiling estimates of the distribution of land parcels of specified attributes in a township, minor civil division or school district. Subsequent steps in the analysis involve the conversion of these data into estimates of their economic value as determined in the market place and, also, by the tax accessor.

Combinations of land attributes, which are given by the system variables identified in Table A-1, can be used in mapping the 40-acre parcels which may provide potential sites for present and future economic development in the county. This analytical capability can be extended to the study of developable sites in the coastal zone.

Additional economic variables are being identified for inclusion in the MLMIS data base. The reported and/or estimated market value of 40-acre parcels is an important economic variable, which, if accumulated by minor civil division would be helpful in measuring the differential municipal impacts of resource development activities. The economic data, however,

are more transitory than the physical and natural resource data and, hence, they are in need of periodic and frequent updating.

Use of the MLMIS Itasca County data series in SIMLAB is being considered, also. The MLMIS data again would be compiled by minor civil division and then collated with population and economic data for these statistical reporting units. Such a procedure would be particularly applicable in the investment, facilities location, and land use components of SIMLAB.

The Minnesota Land Use Information System pilot study would have direct application to the coastal zone area by an extension of the program.

Table 1: Industry Classification for 95-sector Input-Output Model, 1967

Sector No.	Title	U.S. 87-sector 1967 model	Related SIC Codes (1967 edition)
	Agriculture, forestry & fisheries		
1	Livestock & livestock prod.	1	0130, pt. 014, 0193, pt. 0729
2	Other agricultural prod.	2	011,012, pt. 014, 0192
3	Forestry & fishery products	3	091
4	Agricul., fores. & fish. serv.	4	071, 0723, pt. 0279, 085, 098, 0731
	Mining and construction		
5	Iron & ferro alloy ores	5	1011, 106
6	Nonferrous metal ores mining	6	102, 103, 104, 105, 108, 109
7	Coal mining	7	11, 12
8	Crude petroleum & natural gas	8	1311, 1321
9	Stone & clay mining & quarrying	9	14 (exc. 147)
10	Chemicals & fertilizer	10	147
11	New construction	11	pt. 15, pt. 16, pt. 17, pt. 6561
12	Maintenance & repair construc.	12	pt. 15, pt. 16, pt. 17
	Manufacturing		
13	Ordnance & accessories	13	19
14	Food & kindred products except meat prod., grain mill prod., and beverages	14.1	20 (excluding 201, 204, & 208)
15	Meat products	14.2	201
16	Grain mill products	14.3	204
17	Beverages	14.4	208
18	Tobacco	15	21

Table 1: Industry Classification for 95-sector Input-Output Model, 1967

Sector No.	Title	U.S. 87-sector 1967 model	Related SIC Codes (1967 edition)
19	Broad & narrow fabrics, yarn & thread mills	16	221-226, 228 (Excluding 225)
20	Misc. textile goods & floor coverings	17	227,229
21	Apparel	18	225,23 (excluding 239), 3992
22	Misc. fabricated textile prod.	19	239
23	Lumber & wood products	20	24 (excluding 244)
24	Wooden containers	21	244
25	Household furniture	22	251
26	Other furniture & fixtures	23	25 (excluding 251)
27	Paper & allied products exc. containers & boxes	24	26 (excluding 265)
28	Paperboard containers & boxes	25	265
29	Printing & publishing, exc. comm. print	26.1	27 (excluding 2751 and 2752)
30	Commercial printing	26.2	2751 and 2752
31	Chemicals & selected chem. prod.	27	281 (excluding 2815), 2861, 2870, 289
32	Plastics & synthetic materials	28	2821, 2822
33	Drugs, cleaning & toilet prep.	29	283,284
34	Paints & allied products	30	2851
35	Petroleum refining	31.1	2911, 299
36	Petroleum--related industries	31.2	2951, 2952
37	Rubber & miscellaneous plastics	32	30
38	Leather tanning & industrial leather products	33	3111, 3121

Table 1: Industry Classification for 95-sector Input-Output Model, 1967

Sector No.	Title	U.S. 87-sector 1967 model	Related SIC Codes (1967 edition)
39	Footwear & other leather prod.	34	31 (exc. 3111 & 3121)
40	Glass & glass products	35	3211, 3229,3231
41	Stone & clay products	36	324-329
42	Primary iron & steel manuf.	37	331, 332, 3391, 3399
43	Primary nonferrous metals manuf.	38	333-336,3392
44	Metal containers	39	3411, 3491
45	Heating, plumbing & fabricated structural metal products	40	343,344
46	Screw machine products, bolts, nuts, etc., & metal stampings	41	345, 3461
47	Other fabricated metal products	42	342,347,348,349
48	Engines & turbines	43	3511, 3519
49	Farm machinery & equipment	44	3522
50	Construction, mining, oil field machinery & equipment	45	3531-3533
51	Materials handling mach. & equip.	46	3534-3537
52	Metalworking machinery & equip.	47	354
53	Special industry mach. & equip.	48	355
54	General industrial mach. & equip.	49	356
55	Machine shop products	50	359
56	Office & accounting machines exc. computing & related mach.	51.1	357 (exc.3573)

Table 1: Industry Classification for 95-sector Input-Output Model, 1967

Sector No.	Title	U.S. 87-sector 1967 model	Related SIC Codes (1967 edition)
57	Computing & related machines	51.2	3573
58	Service industry machines	52	358
59	Electric transmission & distribution equip. & elec. industrial apparatus	53	361, 362
60	Household appliances	54	363
61	Electric lighting & wiring equip.	55	364
62	Radio, television, & communication equipment	56	365, 366
63	Electronic components & access.	57	367
64	Misc. elec. machinery, equipment & supplies	58	369
65	Motor vehicles & equipment	59	371
66	Aircraft & parts	60	372
67	Other transportation equip.	61	373,374,375,379
68	Prof., scientific & controlling instruments & supplies, exc. eng. & scientific instruments	62.1	3821,3822,3841-3843,381 (exc. 3811)
69	Engineering & scient. instr.	62.2	3811
70	Optical, ophthalmic, & photographic equip. & supplies	63	383,385,386
71	Miscellaneous manufacturing	64	39
	<u>Transportation, Communication & Utilities</u>		
72	Transportation, exc. rail, air, hwy. pass. & motor freight	65.1	44,46,47 (exc. 473,474)
73	Railroads & related services	65.2	40,474

Table 1: Industry Classification for 95-sector Input-Output Model, 1967

Sector No.	Title	U.S. 87-sector 1967 model	Related SIC Codes (1967 edition)
74	Local, suburban & interurban highway passenger transportation	65.3	41
75	Motor freight transportation & warehousing	65.4	42,473
76	Air transportation	65.5	45
77	Communication, exc. radio & television broadcasting	66	48 (exc. 483)
78	Radio & television broadcasting	67	483
79	Electric service	68.1	491, pt. 493
80	Gas service	68.2	492, pt. 493
81	Water & sanitary services	68.3	494-497, pt. 493
	Trade, finance & services		
82	Wholesale trade	69.1	50 (exc. manufacturers sales offices)
83	Retail trade	69.2	52-59, 7396, pt. 8099
84	Finance & insurance	70	60-64, 67
85	Real estate & rental	71	65 (exc. pt. 6561), 66
86	Hotels & lodging places; personal & repair serv. exc. auto rep.	72	70,72,76 (exc. 7692 & pt.7699)
87	Business services	73	73 (exc. 7396), 7694, pt.7699,81, 89 (exc.8921)
88	Automobile repair & services	75	75
89	Amusements	76	78,79
90	Medical, educ. serv. & non-profit organizations	77	80,82,84,86, 8921,0722

Table 1: Industry Classification for 95-sector Input-Output Model, 1967

Sector No.	Title	U.S. 87-sector 1967 model	Related SIC Codes (1967 edition)
91	Federal government enterprises	78	
92	State & local govt. enterprises	79	
93	Business travel, entertainment	81	
94	Office supplies	82	
95	Other non-produced inputs	83	

Table 2: NORTHEAST MINNESOTA EMPLOYMENT

I/O SECTOR	1967 EMPLOYMENT	1970 EMPLOYMENT	1972 EMPLOYMENT	1974 EMPLOYMENT
1	2,618	2,016	1,970	
2	1,666	1,283	1,253	
3	70	76	52	
4	626	500	531	
5	11,658	11,601	11,951	12,352
6	53	86	71	65
7	0	0	0	0
8	0	0	0	0
9	160	148	114	81
10	0	0	0	0
11	5,333	3,495	4,103	4,298
12	1,038	698	803	820
13	0	0	0	0
14	1,873	2,856	2,010	1,799
15	282	292	386	344
16	152	73	30	14
17	182	127	130	153
18	0	0	0	0
19	12	0	0	0
20	0	0	0	0
21	1,142	1,505	1,368	1,583
22	24	30	35	41
23	2,624	1,948	2,419	2,519
24	172	112	177	211
25	22	19	16	14
26	24	9	15	18
27	5,260	5,139	4,584	5,628
28	74	95	105	133
29	855	893	1,001	1,083
30	332	347	389	414
31	26	34	45	54
32	0	0	0	0
33	8	19	0	0
34	11	15	14	13
35	250	263	256	266
36	37	37	17	14
37	51	48	0	0
38	0	0	0	0
39	0	0	0	12
40	0	0	7	0

1/0 SECTOR	1967 EMPLOYMENT	1970 EMPLOYMENT	1972 EMPLOYMENT	1974 EMPLOYMENT
41	361	348	291	503
42	2,550	3,220	1,934	428
43	150	90	17	17
44	0	0	0	0
45	240	196	180	271
46	0	0	0	0
47	620	504	464	708
48	0	0	0	0
49	0	0	32	41
50	675	665	540	797
51	40	0	0	0
52	19	20	34	48
53	32	40	79	124
54	0	0	8	13
55	143	130	133	137
56	0	9	0	0
57	0	0	0	0
58	4	4	5	6
59	7	9	9	11
60	14	0	0	0
61	0	0	0	0
62	644	275	257	143
63	0	0	39	41
64	0	0	0	0
65	38	20	46	173
66	0	0	0	0
67	232	255	310	323
68	0	0	0	12
69	0	0	0	0
70	0	0	0	44
71	337	367	377	573
72	1,011	1,170	1,109	2,311
73	0	0		0
74	524	228	319	301
75	1,062	986	1,043	1,130
76	30	24	30	41
77	867	890	907	974
78	315	381	441	505
79	1,181	1,016	1,189	1,443
80	142	160	87	110
81	53	67	79	104
82	5,846	6,316	6,227	5,672
83	20,981	22,469	21,660	26,385
84	3,399	3,444	3,536	3,209
85	136	943	991	922

1/0 SECTOR	1967 EMPLOYMENT	1970 EMPLOYMENT	1972 EMPLOYMENT	1974 EMPLOYMENT
86	3,636	3,771	4,095	4,370
87	1,885	1,943	1,479	2,225
88	623	762	684	720
89	779	469	495	783
90	9,656	11,253	12,109	11,781
TOTALS	89,887	92,309	91,269	97,442

Note: Totals do not include Sector 1-4.

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