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STORAGE, TRANSFER, AND USAGE OF  
ALASKAN ENVIRONMENTAL INFORMATION

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Historically, resource development in the Arctic has prompted major scientific research and dissemination of information. Each phase of resource exploitation has triggered a new round of efforts to find out what is known about the Arctic and to learn more.

The discovery of oil reserves on the North Slope spurred the most recent environmental research response in Alaska. Past cycles resulted from whaling, fisheries, gold, agriculture, Naval Petroleum Reserve No. 4 (NPR 4)<sup>1/</sup> reconnaissance, and activities related to national defense systems. Establishment of the Naval Arctic Research Laboratory, growth of organized research in the University of Alaska, and the expansion of state and federal agencies have generally followed in response to these cycles.

Funding and production of scientific information in recent years has depended on national priorities. Almost 25 years ago the Conservation Foundation conducted an Alaskan resource study for the Department of the Interior. The report recommended that more information should be compiled on the location and extent of resources, opportunities and risks of development, and methods of arctic resources management. Nearly every Alaskan

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<sup>1/</sup>Pursuant to P.L. 94-258, renamed as of June 1, 1977, the National Petroleum Reserve in Alaska

Science Conference during this period recommended that an Alaskan-based center of arctic knowledge should be established. In 1967 the Federal Field Committee for Development Planning in Alaska and the President's Review Committee for Alaska (at this time mostly members of the Cabinet) endorsed this concept.

The Alaska legislature established the Arctic Environmental Information and Data Center in 1971 in response to this need. Since then, demands for reliable scientific information on Alaska's resources and environment have increased rapidly due to trans-Alaska oil pipeline construction, inventory and transfer of ownership of land and resources involved in the Alaska Native Claims Settlement Act, oil and gas leasing activity by the state and federal government on land and the outer continental shelf, and increased exploration activities in NPR 4.

Despite the recurrent myth that knowledge is lacking, a great deal is known about Alaska; however, many sources are unpublished and obscure. Collection of these often valuable data is impractical for most individual users. Although Alaska does not have a large technical library, a number of smaller specialized libraries and resource centers cooperate to avoid duplicate collections through information exchange and promotion of awareness of current projects and reports. Figure 1 shows locations of major information centers in Alaska.

#### INFORMATION CENTERS IN ALASKA

Major collections are at the following locations:

University of Alaska, Fairbanks--The Elmer E. Rasmuson Library houses the largest collection in the state with more than half a million books and

government documents. The Fairbanks campus publishes quarterly a computer printout of the serials of the Fairbanks campus libraries. The University is also developing a union list of serials that will list the holdings of the major libraries in the state of Alaska. Presently, a pilot project is underway involving a few of the major libraries, such as the State Library in Juneau, Loussac Library in Anchorage, and the Anchorage and Fairbanks University campus libraries. Publication is scheduled for the first of the year. The University publishes the Bibliography of Alaskana, which each month indexes periodical articles on Alaska by key word and is cumulated annually.

University of Alaska, Anchorage, Library--This library has the second largest research collection with approximately 290,000 books and government documents. Emphasis was placed on the social sciences until 1975 when the scope of the collection was broadened to include more natural science publications.

Alaska State Library, Juneau--The State Library has approximately 90,000 books and government documents, many of historical significance. Much of its service is through interlibrary loans. The Alaska Division of State Libraries and Museums publishes the Alaska Library Network Resource Directory, Alaskana Project. The 1975 publication has author, title and subject indexes to the Skinner Collection of the Elmer E. Rasmuson Library. This Division also compiled A Guide to Alaska's Newspapers in 1976.

Unique subject collections and information services are available at the following locations:

Naval Arctic Research Laboratory Library, Barrow--The "Barrow File" comprises 10 five-drawer file cabinets containing reprints of articles

written by researchers using the Laboratory's facilities and copies of interim and final reports on research supported by the Laboratory. Findings and results in some reports have never been published and are not available anywhere else.

Geophysical Institute, University of Alaska, Fairbanks--This library contains ERTS/LANDSAT imagery, U2 photos of Alaska, an archives of worldwide auroral investigations (including magnetic and color video tapes), and ice fog and climatic data.

Institute of Marine Science, University of Alaska, Fairbanks--The IMS library produces a computerized keyword in context index to its reprint file, which includes several thousand articles on marine sciences. Unpublished and uncompiled oceanographic data on Alaskan waters are in the Institute's files.

Alaska Cooperative Wildlife Unit, University of Alaska, Fairbanks--This library maintains a file of worldwide wildlife research papers with emphasis on Alaskan caribou, reindeer, bear, ptarmigan, and marine mammals.

Alaska Health Sciences Information Center, Anchorage--This center has a science subject collection which concentrates on cold weather human physiology, medicine, and arctic environmental health problems. Computer searches through the national MEDLINE system are available. This center stresses service to the Alaskan medical profession and provides telephone and mail service.

Alaska Resources Library, Anchorage--The Department of the Interior regional library emphasizes published environmental information about Alaska. This library receives copies of reports indexed in the Cold Regions Research and Engineering Laboratory's Current Literature: Cold Regions Science and Technology. (The Corps of Engineers District Library receives reports listed in the USA CRREL Technical Publications.)

Arctic Environmental Information and Data Center, University of Alaska, Anchorage--This center is a repository of unpublished reports and information and is staffed with subject analysts who are available for in-depth consultation. A referral file of people with expertise in specific subject areas provides additional depth. AEIDC indexes publications by author, title, subject and geographic area and can manually create bibliographies on demand. AEIDC maintains the only comprehensive file of Alaska weather records in the state and also serves as a source of ERTS/LANDSAT imagery for the Anchorage area. The center publishes current information on Alaskan resources and natural systems with appropriate maps and graphics and annually produces the Current Research Profile for Alaska, which documents natural resource investigations and environmental research underway in Alaska. AEIDC also operates a microfiche duplicating service for many hard-to-get Alaskan publications. Although heavily used by government agencies and consulting firms these services are also available to the general public.

Sheldon Jackson College Library, Sitka--This library contains the Andrews Collection of historical documents and photographs.

Auke Bay Fisheries Laboratory Library, National Marine Fisheries Service, Auke Bay--This laboratory has an in-depth collection of oceanographic and fisheries biology information, including published reports.

U.S. Bureau of Mines, Alaska Field Operations Center, Juneau--This center maintains a collection on Alaskan mining and mineral resources. Publications and maps are available.

U.S. Geological Survey, Public Inquiries Office, Anchorage--This office sells USGS publications and maps and maintains an extensive collection of their past publications.

Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys--This agency has a Kardex file of Alaskan mining claims. This information appears on computer listings and data sheets and provides records of all patented and unpatented mineral claims since 1953 by quadrangle, owner, and mineral. The Kardex file is available at the four Mining Information Offices in Anchorage, Fairbanks, Juneau and Ketchikan.

#### OTHER INFORMATION CENTERS

Other Information Centers pertinent to Alaska are:

Arctic Institute of North America, Calgary, Alberta, Canada--Founded in 1945, AINA has its headquarters and its library at the University of Calgary. The primary objective of AINA is to study arctic and cold weather conditions. The library has arctic materials in many languages, subjects, and formats. They publish the Northern Research Survey listing ongoing research and Arctic, a quarterly journal.

Boreal Institute of Northern Studies, University of Alberta, Edmonton, Alberta, Canada--This institute concentrates on the northern circumpolar area, especially Canada's North. The library has information on scientific developments (particularly conference proceedings), theses, and technical reports. The library maintains the Carl Lomen collection on Alaska. Since July 1972 the library has published Northern Titles, an index of selected English titles of northern, antarctic, and alpine articles from journals received at the institute.

U.S. Army Cold Regions Research and Engineering Laboratory Library, Hanover, New Hampshire--The library collection supports research on physics

and mechanics of cold region materials and engineering. Most of the collection is in English, but pertinent Russian information is also available. CRREL publishes technical reports, and the Library of Congress prepares the monthly announcement bulletin, Bibliography on Cold Regions Science and Technology.

Ohio State University, Institute of Polar Studies, Columbus, Ohio--The institute has a collection of approximately 7,000 items, mainly on physical and biological sciences.

Dartmouth College Library, Stefansson Collection, Hanover, New Hampshire--The Stefansson Collection has documents on the history of arctic regions through 1925 and antarctic regions through 1940 as well as other specialized areas. The library publishes the annual Polar Notes, which contains articles of general and scientific interest on polar topics.

Center for Northern Studies, Wolcott, Vermont--The center has a small northern regions collection and emphasizes the flora of Alaska and the Bering Land Bridge (Beringia). An adjacent herbarium has many plant specimens from Alaska.

University of Colorado, Institute of Arctic and Alpine Research Library, Boulder, Colorado--This environmental information library covers all alpine and arctic areas but concentrates on northern Canada and alpine Colorado. The institute publishes the quarterly journal, Arctic and Alpine Research.

Battelle Memorial Institute, Columbus, Ohio--Battelle archives a complete file of bioenvironmental information relevant to nuclear testing and its effects at Amchitka Island and the western Aleutian Islands.

U.S. Geological Survey, Technical Data Unit, Alaskan Geology Branch, Menlo Park, California--All field and research files by this unit are kept,

and copies are sent to several depositories in Alaska. A 10-year project, the Alaskan Mineral Resource Assessment Program, began in 1974 to appraise Alaska's mineral resources through mapping and aeromagnetic and geochemical analyses.

University of Washington, Fisheries Research Institute, Seattle--This institute's data files on Alaskan salmon fisheries are among the most complete. In the late 1940s and early 1950s salmon fisheries in the Prince William Sound area and southeast Alaska were emphasized, but by the mid-1950s Bristol Bay and the Kodiak-Chignik areas gained importance. This institute is the best source of information for a history of Alaskan salmon fisheries.

U.S. Forest Service, College of Forest Resources, University of Washington, Seattle--The Forest Service has an information system called the Pacific Coast Forest Research Information Network. The principal points of service are at the Forest Service Offices in Berkeley, California, and at the University of Washington. This system provides information services to forestry researchers in Alaska, Washington, Oregon, California, and Hawaii. It provides interlibrary loan services, literature searches (manual and computer), reference services, and publication of Monthly Alert (a selected listing of new acquisitions from the libraries of the information network).

National Computerized Information Systems--Some Alaskan and arctic information is stored in the computerized data bases of such information systems as NOAA's, Oceanographic and Atmospheric Scientific Information System (OASIS) and Environmental Data Index (ENDEX), EPA's, Storage and Retrieval of Data for Water Quality Control (STORET), Interior's, Water Resources Scientific Information Center (WRSIC) and Commerce's, National

Technical Information Service (NTIS). However, the quantity of arctic data included is small compared to the amount available, and there is a long delay before information is incorporated in these systems. Private computerized indexes, such as the Systems Development Corporation and the Lockheed systems contain some data bases included in OASIS but have similar limitations for retrieving Alaskan information. The Smithsonian Science Information Exchange (SSIE) indexes research funded by both federal and nonfederal sources in Alaska, but their data base is limited by their suppliers of information.

#### PROBLEMS IN ALASKA DATA TRANSFER

Seldom has an adequate background understanding of an Alaskan area or resource been obtained prior to development. Although not a unique situation, it has been accentuated in the Alaskan experience. Early residents of the Territory were almost all concerned with resource exploitation and there is but sketchy reference to their works. Additionally, early scientists, developers, and later, managers were most often headquartered outside Alaska, and their data usually remained outside as well. Comprehensive information was seldom available for those who remained in the North. The results of early Alaskan environmental and resource work have been scattered across the United States and, indeed, the world. Much of it is lost to today's researcher, and if it is discovered, its meaning and value are rarely recognized.

Prior to this century, scientific research was usually part of an expedition such as the 1850s investigation by Western Union of the possibility of running a telegraph cable through Canada, Alaska, Siberia and eastern Europe

to connect the United States and Europe. The effort ended abruptly when a successful trans-Atlantic link was announced, and the excellent scientific observations begun along the proposed northern route were inadequately recorded and never completed. Scientific interest in Alaska seemed to run in cycles, often determined by some totally unrelated scheme or goal. As a result, the historic record of scientific investigations in Alaska is patchy in geographic coverage, discipline, validity, accessibility, and current acceptability.

Today, amid the rush for resource information, the "expedition mentality" is still found as librarians and research technicians delve separately into the literature and the environment of the latest popular subject. Funding fluctuates, and duplication is inevitable. Each succeeding "platoon" of information seekers turns up the same readily accessible literature as the previous group and justifies it as appropriate because it was used before. The same data and published literature are recycled many times to produce "current" reports, environmental impact statements, and studies. Another problem is that job mobility and harsh climate produce a high turnover of people who take their expertise with them when they leave the state.

No completely adequate system for rapid and comprehensive data transfer exists in Alaska. This hampers district offices of state and federal agencies in their resource management tasks, industrial efforts, academic pursuits, and the public's right to know situation facts. Since the limited information resources are concentrated in Juneau, Fairbanks, and Anchorage, researchers, as well as the general public, in outlying areas are handicapped by inadequate access. Even the information flow between these three

centers is slow. In early 1976 a computer system became available state-wide to the university community, but few of the information resource centers are accessible through this system.

Information transfer between Alaska and other states is even worse. No computerized information system dealing primarily with environmental or resource information links an Alaskan entity to the lower 48, and the information in these national networks is largely unknown and inaccessible to all but a few. A reason for this situation lies in the fact that there is no time-share network for Alaska. Available telephone circuits are expensive and risky for data transfer.

Transient or new researchers in Alaska face phenomenal problems. Information sources and systems are not well known as to location, subject specialty, or documented services. Most people find out about the existence of these sources by "word of mouth." Currently, maximum efficient use cannot be made of available Alaskan data.

Other than the document depository system at the Alaska State Library in Juneau, no systematic update system exists for continuous information resource currency. Researchers are not required to file data or publications with any information system except research projects of certain federally funded programs, such as those of the National Oceanographic and Atmospheric Administration's Outer Continental Shelf Assessment Program which requires that this information be sent to the National Oceanographic Data Center. Recent and in-progress research are difficult to keep track of on certain subjects. Several services attempt to document ongoing research in Alaska: Northern Research Survey (Arctic Institute of North America), Smithsonian

Scientific Information Exchange, and the Current Research Profile for Alaska (Arctic Environmental Information and Data Center), which is the most complete.

#### ALASKA DATA TRANSFER--PRESENT AND FUTURE

Existing information centers in Alaska should be linked by computer system to form a master information network with information transfer, storage, and access. Each resource center would maintain its unique collections but have computer terminal access to a master listing of the others. This list could be indexed by author, title, and key words. All identified Alaskan material which is unavailable in the state should be listed and an "outside" source identified, if known. Published and unpublished Alaskan material unavailable within the state should be actively sought for inclusion in the network. Eventually, terminal access should be established into this system from every library, secondary school, and higher education unit in Alaska. Expansion of satellite stations throughout Alaska makes public communication and computer access from rural areas a realistic goal for the future.

Cooperation already exists between most of these centers through the Alaska Library Association. Several attempts at compiling a listing of statewide holdings have been made, and the statewide University of Alaska computer system makes an information network of communication terminals a possibility.

The four necessary ongoing activities to maintain such a system are:

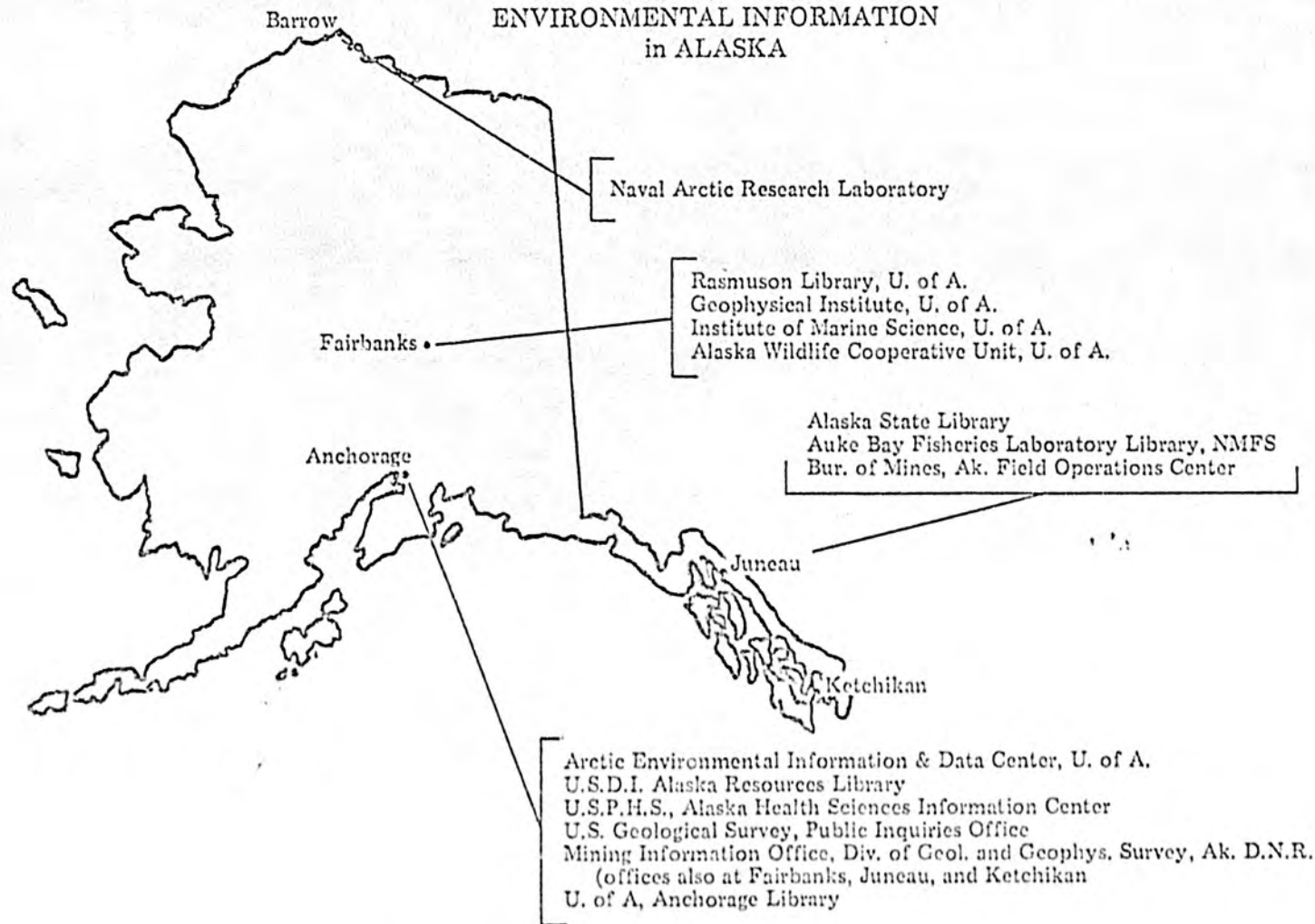
1. Mandatory archiving of all reports, studies, theses, manuscripts, publications, and other documents pertaining to Alaska by the most appropriate center in the network with submission of materials by all local, State, and Federal agencies;
2. Registration of all new research begun in or about Alaska with one designated unit in the master network;
3. Maintenance of files, identifying key individuals (inside and outside Alaska) who have expertise in a given field; and
4. Acceptance by all parties of a single coordinating organization.

Computer access must be established between the network (through one or more centers) and comprehensive or complementary national computerized information systems. This would provide access for Alaskans to broader policy, theory, and management documentation which is lacking now, and it would open a wealth of Alaskan information to individuals outside Alaska.

A monthly newsletter could acquaint potential users with the services available, new acquisitions, and general information transfer news and would automatically be mailed to registered researchers, key experts, libraries and schools in Alaska, and all local, state and federal agencies.

In summary, Alaska is the subject of extremely rapid resource and environmental decisions. The knowledge for most of these decisions either exists or is being rapidly acquired. The research, management, and information dissemination community concerned is relatively small. It is manageable. We need only to organize, fund, and operate a cooperative and efficient system.

MAJOR SOURCES  
of  
ENVIRONMENTAL INFORMATION  
in ALASKA



## ALASKA RESOURCE INFORMATION SYSTEM

(ARIS)

## PREFACE

A modern state, like a modern business, must have information on all its assets, liabilities, products, and markets to be able to arrive at sound decisions that will benefit all of its "owners." The knowledge of "land and water," the State's prime assets, has become increasingly important as the state and federal governments plan to maximize the best use of these assets and try to avoid the mistakes made in other parts of the world where uncontrolled developments, unwise loss of prime agricultural lands, destruction of important wetlands, loss of fish and wildlife habitat have created irreversible disruption of land and water cycles.

State and federal agencies need a variety of information and a common data base to effectively administer various programs directed to land conservation and development. Data needs range from water resource inventory, flood control, and waste-water treatment to the need for comprehensive land use inventories of existing and changing activities on public and private lands to improve management. Federal and state agencies also need data to assess the environmental impact of the development of energy resources, to manage wildlife resources and minimize man-wildlife ecosystem conflicts, to make national summaries of

land use patterns and changes for national policy decisions, and to prepare environmental impact statements and assess future impacts on environmental quality.

Unique to most of the nation, the State of Alaska has already developed documents designed to distribute data to policy makers, scientists, and the public. The six volumes of The Alaska Regional Profiles establish the first systematic filing of maps, statistical data, and text that can be updated and refined. The Profiles were based on information on the physical and biological environments compiled by the Resources Planning Team of the Joint State-Federal Land Use Planning Commission in the first phase of its operations. These data were refined, correlated, updated, and published by the staff of the University of Alaska's Arctic Environmental Information and Data Center, which was established by the Alaska legislature in 1971 to assist in the retrieval and distribution of data related to land and water use.

The Profiles have already been used extensively by Federal and State agencies, and members of Congress as they gather the facts needed to determine policy for management, tenure, and use of Alaska's land and resources. Even greater use can be expected when Congress reconvenes with new members to consider these issues. The importance of providing these data to those who will make these determinations cannot be over-emphasized. The detailed maps in the Profiles graphically illustrate the complexities and variety in the natural and man-made systems in Alaska, and they provide a concrete, factual framework on which to base a permanent retrieval data system.

One of the major justifications for funding of the Profile series was that they would develop a permanent method of data retrieval and updating and would provide the experience to make recommendations directed to establishing the most effective system to accomplish this task. We believe that the state and federal governments will receive the greatest benefit from their investment in the Profiles by developing an automated filing system which can input new data, update existing data, manipulate the data, retrieve the data quickly, and provide new information in a variety of formats for the maximum amount of users and topics. Such an interagency data collection system of retrieval, storage, and publication could become a model for the rest of the country.

## Justification

The need for coordinated land use planning by informed decision makers has become imperative. Land use planning, natural resource management, and environmental control are among the most important national issues. The pressures of expanding population, urban growth, shrinking energy supplies, and environmental deterioration have brought the public to the realization that we must carefully plan for the wise use and optimum development of our land and natural resources. The establishment of new agencies to deal with environmental protection and energy crisis along with the introduction of legislation directed to minimize adverse environmental impacts reflects these concerns at a national level. State and local governments have enacted legislation dealing with development controls and systematic land use planning. Industry has responded by developing new techniques and tools to comply with new regulations and solve some of the problems created by past neglect or expediency.

To develop a natural resource policy or strategy for the balanced conservation and development of natural resources decision makers must have ready access to current and meaningful natural resources data. Most of the necessary data exist but they are often widely scattered among many agencies which have never standardized the type of data collected, the scale of maps used, the format of data presented, geographical reporting region, and frequency of updating. Consequently, data generated by one agency is frequently unknown or unusable by another, which, results in confusion, unnecessary duplication of effort, and unnecessary cost for the taxpayer.

A single integrated information system that is flexible enough to permit manipulation and display of a wide variety of data in many formats for various users would eliminate much of this waste.

## Benefits

The immense amounts of data required to develop and manage land use plans can no longer be simply and manually controlled. For many federal and state organizations, the problems of data distribution have reached unmanageable proportions. For example, the Federal-State Land Use Planning Commission, with responsibilities for identification of and recommendations concerning the uses of lands in federal ownership, faces a tremendous challenge. To conserve where necessary, to develop where practical, and to offer knowledgeable leadership and cooperation with private and public interests require knowledge and responsible judgement.

The proposed Alaska Resource Information System (ARIS), is designed to aid various Federal and State agencies and private interest decision makers in land use planning and management.

The initial step in developing a management oriented system requires an in-depth understanding of specific problems confronting the Federal-State Land Use Planning Commission management. A preliminary outline of goals, policies, development direction, limitations, and potentials has been developed to channel this effort toward the most productive results. This outline will undoubtedly undergo modifications and refinements as Phase I work uncovers new factors to be considered. Nevertheless, a working framework has been designed to govern and direct the ongoing program of developing the appropriate and necessary tools for the Federal-

State Land Use Planning Commission to better manage its responsibilities. The Commission supported the preparation of the Profile series as a summary of the data base needed for planning.

The next step to make this unique resource information repository current and accessible to the maximum amount of users is to develop an automated filing system. The correlation of maps in the Profiles will provide a framework for evaluating the interrelationships between various resources and the effect of climate, soils, topography, and other factors that affect development in Alaska. A computer system could provide accurate, detailed information rapidly, and data could be easily updated.

## Objectives

Alaska is a logical testing ground for the development of an interagency (state-federal) computer-based information system designed to aid resource development and land use planning. Land use, development, and management decisions are of such large magnitude that they demand the most innovative methods and approaches.

This project has the following goals:

1. To provide a computer retrievable file of all natural resources data (including mineral occurrences of potential economic significance).
2. To make available data to all users on Alaska resources that are now largely inaccessible.
3. To prevent the duplication of cost in data gathering retrieval and distribution that is presently causing a sizeable drain on the various agency budgets.
4. To identify needs for additional data and refinement of available data.
5. To obtain needed information on the technology, costs, and manpower requirements for the development of a permanent computer-based natural resource information system.
6. To test user acceptance of the new approaches to continuing information as well as to seek answers to questions concerning security and availability to computer-stored data.

## Implementation Plan

The approach is presented as a three phase structure developed under the coordination of the Federal State Land Use Planning Commission for the first two years, and directed by the user's and technical committee, (See Figure 1.). The value of such a development philosophy is that the basic organizational structure of the system can be established along with a basic level of service which documents the utility of the overall approach and thereby encourages voluntary cooperation. The major elements of the proposed phases are as follows:

o Phase I - First year

- Research coordination
- Reference and referral service
- Publication of sources
- Computerized mapping demonstration with remote sensing
- Users' and Technical committee
- Monitor use of service

o Phase II - Second year

- All of Phase I
- Formal procedures for cooperation
- Compatible data definitions, classifications, etc.
- Computerized resource information system
- Map updating process
- Monitor use of services

o Phase III - each year thereafter

- All of Phase II
- Operation and maintenance of the resource information system center
- Monitor resource information
- Record management activities

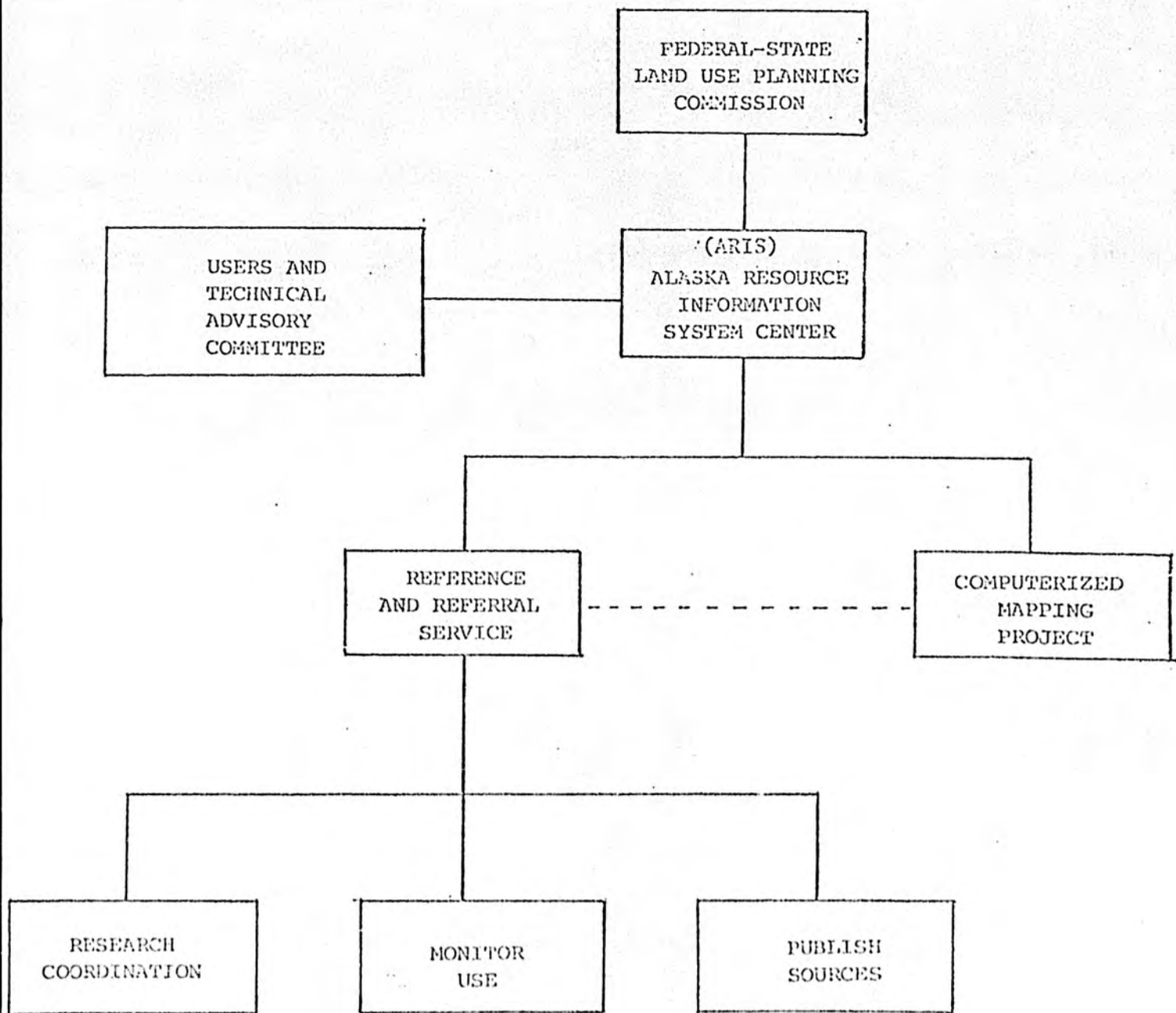


Figure 1. PHASE I AND PHASE II Operational Structure

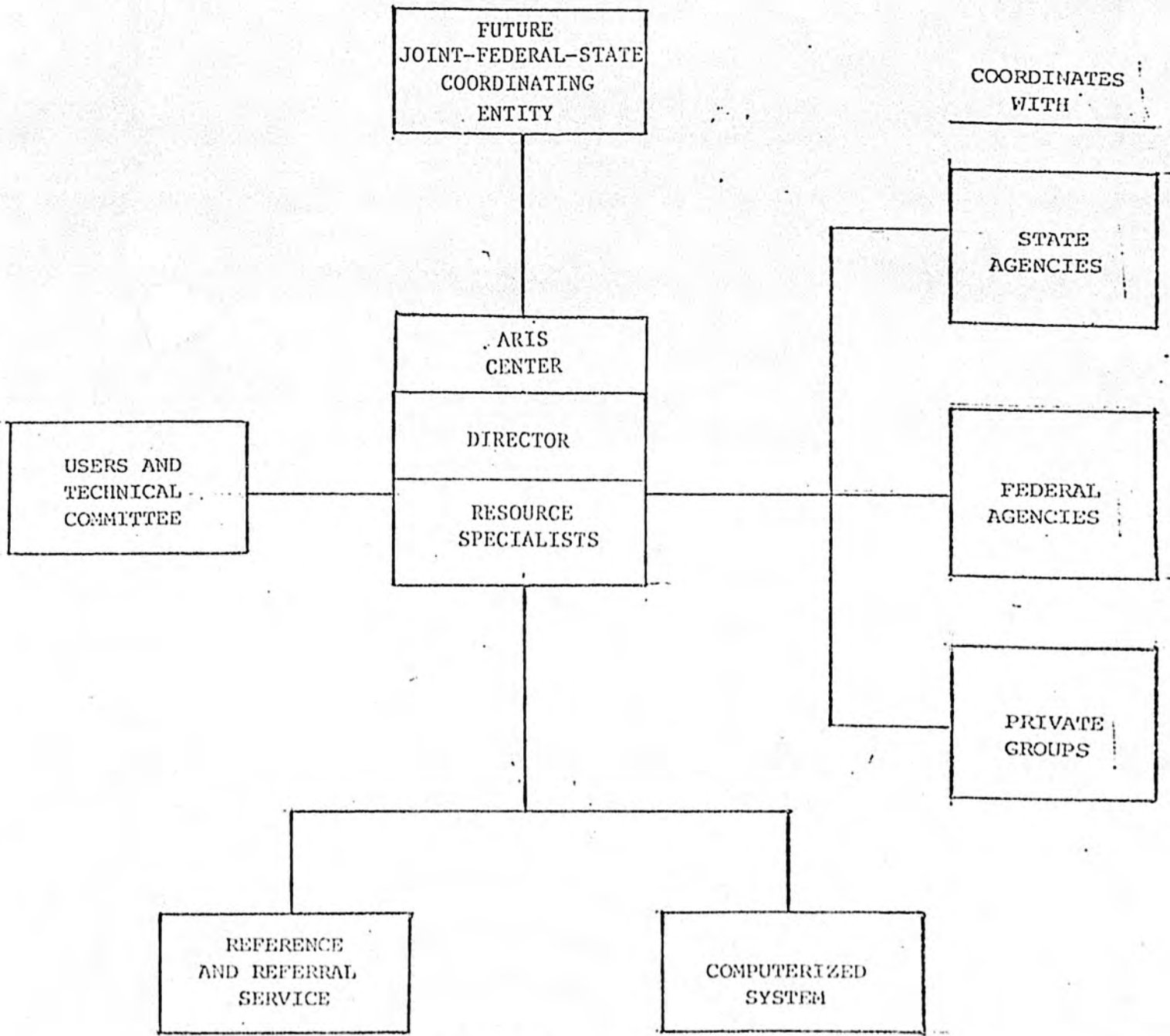


Figure 4. PHASE III - Operational Structure of the Alaska Resource Information System Center

### Conclusions

- o The statewide resource information system would be assigned to the Federal-State Land Use Planning Commission for the development of phases. Phase III would be assigned to a newly created joint Federal-State entity (see Fig. 4).
- o The system would be operated by a separate and distinct organization within the commission initially.
- o The system must be a mandated function in order to serve high priority support of associated agencies.
- o The system would be developed in stages to test the approach and to encourage voluntary cooperation
- o The demonstration project for the mapping system would be conducted before a commitment is made to a complete statewide resource information system
- o A major effort to utilize existing data and to coordinate research must be developed in a reference and referral service
- o Definitive land management policies, objectives, and programs would guide the development of the statewide system.

Cost of developing an Alaska Resource Information Center: (see Appendix A for detailed implementation plans)

Phase I - First year budget

o Reference and referral service	\$ 250,000
o Computerized mapping demonstration	<u>150,000</u>
Total:	\$ 400,000

Phase II - 2nd Year Budget

o Continuation of Phase I activities	\$ 300,000
o Design and develop a statewide resource information system	<u>700,000</u>
Total:	\$1,000,000

Phase III - Each year thereafter

o Operation and maintenance of the computerized resource information system center for the State of Alaska including the updating of the data base and dissemination of information.	
Total:	\$1,500,000

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED  
AS A UNIT IN THE ORIGINAL DOCUMENT.



UNIVERSITY OF ALASKA

February 25, 1977

Rep. Terry Gardiner  
Alaska State House of Representatives  
State of Alaska  
Pouch V  
Juneau, AK 99811

Dear Terry:

Following up on our brief conversation on the resource and science information situation in Alaska, I am enclosing the materials which I gave Hugh Malone and John Rader.

My letter is self-explanatory and requests oversight hearings on AEIDC policy matters. If this is done, light will also be shed on what State and Federal agencies are and are not doing in providing information for public decision processes.

The enclosures are background pieces on the information situation here in Alaska.

I plan to return to Juneau, March 1, 2 and 3 and hope we may be able to schedule a discussion on the matter at that time.

Sincerely,

David M. Hickok  
Director

Enclosures



UNIVERSITY OF ALASKA

February 21, 1977

Hon. Hugh Malone  
Speaker  
State House of Representatives  
State of Alaska  
Pouch V  
Juneau, AK 99811

Dear Hugh:

This letter is to suggest to you the scheduling of an oversight hearing by the Resource Committees of the Senate and House on the current operations and future directions of the Arctic Environmental Information and Data Center (AEIDC).

I make this suggestion since it was the resources Committees of the legislature with the support of then House Speaker Gene Guess and Senate President Jay Hammond who created AEIDC in 1972, as a central focus for Alaskan environmental and natural resource information analysis, synthesis and dissemination. During the five years of our existence we have achieved the distinction of being the only viable information center of its kind in the Nation. In fact, several proposals exist to emulate our operation elsewhere in the country to act as other centers of information analysis, synthesis and dissemination on coastal zone, outer continental shelf, natural resource and land use planning matters. Our operations, however, despite several apparent successes and national recognition, are beset by a number of policy problems for which I feel the need of legislative guidance.

Listed below for initial consideration and discussion are ten basic policy questions which trouble the administration of AEIDC. Each policy question is followed by a brief summary background statement.

# UNIVERSITY OF ALASKA

Hon. Hugh Malone  
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1. What is the clientele to be served by AEIDC?

## BACKGROUND

In 1976, AEIDC responded to approximately 12,500 requests for environmental and natural resource information and program advice. Of these, about one-third came from state agencies, one-third from federal agencies and the remaining one-third from a large variety of consultant firms, Alaskan industries, public interest groups, Native corporations, educators and the general public. The Center also engages in contract services; in 1976, 67% of the contractual effort was in support of state requests, 21% for federal agencies, 12% for private organizations (primarily oil industry and Native groups).

2. Should AEIDC render free services and/or enter into contractual arrangements with all users of its services equally?

## BACKGROUND

In 1976, AEIDC's response to inquiries and requests for advisory services required the dedication of 12,564 man hours, or a little over six man years, of non-reimbursed effort. Additionally, the Center performed twenty-nine contractual tasks for state and federal agencies, Native corporations and private industry. All inquiries or contractual requests are treated equally regardless of source. For much of the information sought, AEIDC is the only source available. Because of budgetary and staff limitations, we need to know the sense of the legislature regarding priorities of both free and contractual services.

3. Should AEIDC establish a formal user charge program beyond present levels?

## BACKGROUND

Presently AEIDC only charges inquirers for duplication of materials such as maps, reports, microfiche, etc., on an actual cost basis. Staff time for such duplication is not charged.

4. What should be the proper relationship between AEIDC and governmental agencies? Should AEIDC administratively or the legislature by law, establish long-range terms of reference between AEIDC and local, state or federal agencies for AEIDC's information services?

## BACKGROUND

All AEIDC governmental relationships are either through the furnishing of free services responding to requests for information or program advice or pursuant to relatively short-range contracts for specific tasks. A question for consideration is whether government agencies and/or AEIDC could be more efficiently served by long-term agreements under legislatively established guidelines.

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Hon. Hugh Malone

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February 21, 1977

5. Should a special informational service relationship between AEIDC and the Joint Federal-State Land Use Planning Commission be established?

## BACKGROUND

AEIDC has had a particularly special relationship with the F-SLUPC in the furnishing of information for the Commission decision processes. However, this relationship has been generally informal except for contractual tasks. Resource and land use planning depends upon a dynamic process of factual application. As a future role for the Commission or its successor evolves, should AEIDC be formally identified as a central information service for the Commission.

6. What should the long-range continuing administrative relationship of AEIDC be with the University of Alaska?

## Alternatives:

- a. An administrative function of the U of A Anchorage or Fairbanks;
- b. An administrative function of the President's office;
- c. Administration through a State-University foundation.

## BACKGROUND

AEIDC operates its informational service and scientific program on a statewide basis. When first established, the Director of AEIDC reported to the Vice President for Research in the Office of the President. University reorganization in 1976 resulted in organizational cognizance of AEIDC being vested with the Fairbanks campus Chancellor until such time as research management competence was developed in Anchorage. Neither arrangement (i.e. reporting to regional campus Chancellors in Anchorage or Fairbanks) seems adequate for the administration and direction of statewide programs.

7. Should the environmental science and natural resource functions of AEIDC be expanded to include socio-economics and public land, resource and environmental law under a new aegis as an "applied" science center or institute?

## BACKGROUND

Analysis or synthesis of natural resource, land use and environmental issues is never complete unless knowledge of biology and physical sciences and resources is correlated with the social and economic value systems of man and the framework of laws established by man. AEIDC has sometimes utilized the services of the Institute of Social and Economic Research and other economic and legal sources of expertise in preparing particular reports. In future terms of reference, however, consideration of a formal structure combining natural science and resource specialists with individuals well versed in the social, economic and legal fields deserves some thought.

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8. Is it desirable to centralize all sources of various types of information in the State of Alaska or should there be coordination between several types and kinds of informational centers? In either case, what should be the role of AEIDC?

BACKGROUND

A discussion paper on this subject prepared for the National Academy of Science is appended. Additionally, the F-SIUPC is currently proposing the establishment of an interagency Alaska Resource Information System (ARIS). A paper explaining their approach is also appended.

9. Within what levels and forms of funding should AEIDC operate?

BACKGROUND

AEIDC is currently budgeted a State appropriation within the Organized Research budget unit of the University of Alaska. This appropriation takes care of only about one-half of the cost of AEIDC's public service expenditures. The cost of this public service is, therefore, borne only partly by appropriation. The remainder comes from overhead revenues from contractual services and small grants from the federal or state governments. An analysis of the services performed by AEIDC in relation to funding sources and levels is badly needed.

10. How should the "educational" functions of AEIDC be defined?

BACKGROUND

"Educational" functions currently involving AEIDC personnel include:  
teaching of academic courses on a reimbursable basis with the University of Alaska Anchorage;

conducting workshops and seminars on natural resource or environmental issues or problems; and

publication and dissemination of books on Alaskan resources and environments.

Should AEIDC personnel be involved in teaching as well as information analysis and synthesis? Should "educational" activities be expanded to include the development of innovative techniques of information dissemination?

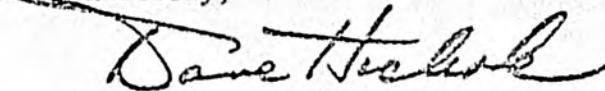
In conclusion may I simply say that I need your help. The entire staff of AEIDC is dedicated to the future of Alaska. We live in a rapidly changing world and our organization needs a dynamic and vital role in delivering readily comprehensible environmental knowledge and understanding to the land and resource use issues of our state.

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Along this line I have had conversations at the national level with our delegation, legislative committee staff members and heads of several federal agencies in late January. I am not sure at this point whether federal interest hearings pertinent to AEIDC will be held by the Congress but in any event I would welcome a public dialogue on our role in this regard, here in Alaska, and urge you to give this suggestion serious consideration.

Sincerely,



David M. Hickok  
Director

Attachments

Identical letters sent to:  
Hon. John Rader  
Hon. Kay Poland  
Hon. Al Osterback

STORAGE, TRANSFER, AND USAGE OF  
ALASKAN ENVIRONMENTAL INFORMATION

David M. Hickok  
Director  
Arctic Environmental Information and Data Center  
University of Alaska  
707 A Street.  
Anchorage, Alaska 99501

Historically, resource development in the Arctic has prompted major scientific research and dissemination of information. Each phase of resource exploitation has triggered a new round of efforts to find out what is known about the Arctic and to learn more.

The discovery of oil reserves on the North Slope spurred the most recent environmental research response in Alaska. Past cycles resulted from whaling, fisheries, gold, agriculture, Naval Petroleum Reserve No. 4 (NPR 4)<sup>1/</sup> reconnaissance, and activities related to national defense systems. Establishment of the Naval Arctic Research Laboratory, growth of organized research in the University of Alaska, and the expansion of state and federal agencies have generally followed in response to these cycles.

Funding and production of scientific information in recent years has depended on national priorities. Almost 25 years ago the Conservation Foundation conducted an Alaskan resource study for the Department of the Interior. The report recommended that more information should be compiled on the location and extent of resources, opportunities and risks of development, and methods of arctic resources management. Nearly every Alaskan

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<sup>1/</sup>Pursuant to P.L. 94-258, renamed as of June 1, 1977, the National Petroleum Reserve in Alaska

Science Conference during this period recommended that an Alaskan-based center of arctic knowledge should be established. In 1967 the Federal Field Committee for Development Planning in Alaska and the President's Review Committee for Alaska (at this time mostly members of the Cabinet) endorsed this concept.

The Alaska legislature established the Arctic Environmental Information and Data Center in 1971 in response to this need. Since then, demands for reliable scientific information on Alaska's resources and environment have increased rapidly due to trans-Alaska oil pipeline construction, inventory and transfer of ownership of land and resources involved in the Alaska Native Claims Settlement Act, oil and gas leasing activity by the state and federal government on land and the outer continental shelf, and increased exploration activities in NPR 4.

Despite the recurrent myth that knowledge is lacking, a great deal is known about Alaska; however, many sources are unpublished and obscure. Collection of these often valuable data is impractical for most individual users. Although Alaska does not have a large technical library, a number of smaller specialized libraries and resource centers cooperate to avoid duplicate collections through information exchange and promotion of awareness of current projects and reports. Figure 1 shows locations of major information centers in Alaska.

#### INFORMATION CENTERS IN ALASKA

Major collections are at the following locations:

University of Alaska, Fairbanks--The Elmer E. Rasmuson Library houses the largest collection in the state with more than half a million books and

government documents. The Fairbanks campus publishes quarterly a computer printout of the serials of the Fairbanks campus libraries. The University is also developing a union list of serials that will list the holdings of the major libraries in the state of Alaska. Presently, a pilot project is underway involving a few of the major libraries, such as the State Library in Juneau, Loussac Library in Anchorage, and the Anchorage and Fairbanks University campus libraries. Publication is scheduled for the first of the year. The University publishes the Bibliography of Alaskana, which each month indexes periodical articles on Alaska by key word and is cumulated annually.

University of Alaska, Anchorage, Library--This library has the second largest research collection with approximately 290,000 books and government documents. Emphasis was placed on the social sciences until 1975 when the scope of the collection was broadened to include more natural science publications.

Alaska State Library, Juneau--The State Library has approximately 90,000 books and government documents, many of historical significance. Much of its service is through interlibrary loans. The Alaska Division of State Libraries and Museums publishes the Alaska Library Network Resource Directory, Alaskana Project. The 1975 publication has author, title and subject indexes to the Skinner Collection of the Elmer E. Rasmuson Library. This Division also compiled A Guide to Alaska's Newspapers in 1976.

Unique subject collections and information services are available at the following locations:

Naval Arctic Research Laboratory Library, Barrow--The "Barrow File" comprises 10 five-drawer file cabinets containing reprints of articles

written by researchers using the Laboratory's facilities and copies of interim and final reports on research supported by the Laboratory. Findings and results in some reports have never been published and are not available anywhere else.

Geophysical Institute, University of Alaska, Fairbanks--This library contains ERTS/LANDSAT imagery, U2 photos of Alaska, an archives of worldwide auroral investigations (including magnetic and color video tapes), and ice fog and climatic data.

Institute of Marine Science, University of Alaska, Fairbanks--The IMS library produces a computerized keyword in context index to its reprint file, which includes several thousand articles on marine sciences. Unpublished and uncompiled oceanographic data on Alaskan waters are in the Institute's files.

Alaska Cooperative Wildlife Unit, University of Alaska, Fairbanks--This library maintains a file of worldwide wildlife research papers with emphasis on Alaskan caribou, reindeer, bear, ptarmigan, and marine mammals.

Alaska Health Sciences Information Center, Anchorage--This center has a science subject collection which concentrates on cold weather human physiology, medicine, and arctic environmental health problems. Computer searches through the national MEDLINE system are available. This center stresses service to the Alaskan medical profession and provides telephone and mail service.

Alaska Resources Library, Anchorage--The Department of the Interior regional library emphasizes published environmental information about Alaska. This library receives copies of reports indexed in the Cold Regions Research and Engineering Laboratory's Current Literature: Cold Regions Science and Technology. (The Corps of Engineers District Library receives reports listed in the USA CRREL Technical Publications.)

Arctic Environmental Information and Data Center, University of Alaska, Anchorage--This center is a repository of unpublished reports and information and is staffed with subject analysts who are available for in-depth consultation. A referral file of people with expertise in specific subject areas provides additional depth. AEIDC indexes publications by author, title, subject and geographic area and can manually create bibliographies on demand. AEIDC maintains the only comprehensive file of Alaska weather records in the state and also serves as a source of ERTS/LANDSAT imagery for the Anchorage area. The center publishes current information on Alaskan resources and natural systems with appropriate maps and graphics and annually produces the Current Research Profile for Alaska, which documents natural resource investigations and environmental research underway in Alaska. AEIDC also operates a microfiche duplicating service for many hard-to-get Alaskan publications. Although heavily used by government agencies and consulting firms these services are also available to the general public.

Sheldon Jackson College Library, Sitka--This library contains the Andrews Collection of historical documents and photographs.

Auke Bay Fisheries Laboratory Library, National Marine Fisheries Service, Auke Bay--This laboratory has an in-depth collection of oceanographic and fisheries biology information, including published reports.

U.S. Bureau of Mines, Alaska Field Operations Center, Juneau--This center maintains a collection on Alaskan mining and mineral resources. Publications and maps are available.

U.S. Geological Survey, Public Inquiries Office, Anchorage--This office sells USGS publications and maps and maintains an extensive collection of their past publications.

Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys--This agency has a Kardex file of Alaskan mining claims. This information appears on computer listings and data sheets and provides records of all patented and unpatented mineral claims since 1953 by quadrangle, owner, and mineral. The Kardex file is available at the four Mining Information Offices in Anchorage, Fairbanks, Juneau and Ketchikan.

#### OTHER INFORMATION CENTERS

Other Information Centers pertinent to Alaska are:

Arctic Institute of North America, Calgary, Alberta, Canada---Founded in 1945, AINA has its headquarters and its library at the University of Calgary. The primary objective of AINA is to study arctic and cold weather conditions. The library has arctic materials in many languages, subjects, and formats. They publish the Northern Research Survey listing ongoing research and Arctic, a quarterly journal.

Boreal Institute of Northern Studies, University of Alberta, Edmonton, Alberta, Canada--This institute concentrates on the northern circumpolar area, especially Canada's North. The library has information on scientific developments (particularly conference proceedings), theses, and technical reports. The library maintains the Carl Lomen collection on Alaska. Since July 1972 the library has published Northern Titles, an index of selected English titles of northern, antarctic, and alpine articles from journals received at the institute.

U.S. Army Cold Regions Research and Engineering Laboratory Library, Hanover, New Hampshire--The library collection supports research on physics

and mechanics of cold region materials and engineering. Most of the collection is in English, but pertinent Russian information is also available. CRREL publishes technical reports, and the Library of Congress prepares the monthly announcement bulletin, Bibliography on Cold Regions Science and Technology.

Ohio State University, Institute of Polar Studies, Columbus, Ohio--The institute has a collection of approximately 7,000 items, mainly on physical and biological sciences.

Dartmouth College Library, Stefansson Collection, Hanover, New Hampshire--The Stefansson Collection has documents on the history of arctic regions through 1925 and antarctic regions through 1940 as well as other specialized areas. The library publishes the annual Polar Notes, which contains articles of general and scientific interest on polar topics.

Center for Northern Studies, Wolcott, Vermont--The center has a small northern regions collection and emphasizes the flora of Alaska and the Bering Land Bridge (Beringia). An adjacent herbarium has many plant specimens from Alaska.

University of Colorado, Institute of Arctic and Alpine Research Library, Boulder, Colorado--This environmental information library covers all alpine and arctic areas but concentrates on northern Canada and alpine Colorado. The institute publishes the quarterly journal, Arctic and Alpine Research.

Battelle Memorial Institute, Columbus, Ohio--Battelle archives a complete file of bioenvironmental information relevant to nuclear testing and its effects at Amchitka Island and the western Aleutian Islands.

U.S. Geological Survey, Technical Data Unit, Alaskan Geology Branch, Menlo Park, California--All field and research files by this unit are kept,

and copies are sent to several depositories in Alaska. A 10-year project, the Alaskan Mineral Resource Assessment Program, began in 1974 to appraise Alaska's mineral resources through mapping and aeromagnetic and geochemical analyses.

University of Washington, Fisheries Research Institute, Seattle--This institute's data files on Alaskan salmon fisheries are among the most complete. In the late 1940s and early 1950s salmon fisheries in the Prince William Sound area and southeast Alaska were emphasized, but by the mid-1950s Bristol Bay and the Kodiak-Chignik areas gained importance. This institute is the best source of information for a history of Alaskan salmon fisheries.

U.S. Forest Service, College of Forest Resources, University of Washington, Seattle---The Forest Service has an information system called the Pacific Coast Forest Research Information Network. The principal points of service are at the Forest Service Offices in Berkeley, California, and at the University of Washington. This system provides information services to forestry researchers in Alaska, Washington, Oregon, California, and Hawaii. It provides interlibrary loan services, literature searches (manual and computer), reference services, and publication of Monthly Alert (a selected listing of new acquisitions from the libraries of the information network).

National Computerized Information Systems--Some Alaskan and arctic information is stored in the computerized data bases of such information systems as NOAA's, Oceanographic and Atmospheric Scientific Information System (OASIS) and Environmental Data Index (ENDEX), EPA's, Storage and Retrieval of Data for Water Quality Control (STORET), Interior's, Water Resources Scientific Information Center (WRSIC) and Commerce's, National

Technical Information Service (NTIS). However, the quantity of arctic data included is small compared to the amount available, and there is a long delay before information is incorporated in these systems. Private computerized indexes, such as the Systems Development Corporation and the Lockheed systems contain some data bases included in OASIS but have similar limitations for retrieving Alaskan information. The Smithsonian Science Information Exchange (SSIE) indexes research funded by both federal and nonfederal sources in Alaska, but their data base is limited by their suppliers of information.

#### PROBLEMS IN ALASKA DATA TRANSFER

Seldom has an adequate background understanding of an Alaskan area or resource been obtained prior to development. Although not a unique situation, it has been accentuated in the Alaskan experience. Early residents of the Territory were almost all concerned with resource exploitation and there is but sketchy reference to their works. Additionally, early scientists, developers, and later, managers were most often headquartered outside Alaska, and their data usually remained outside as well. Comprehensive information was seldom available for those who remained in the North. The results of early Alaskan environmental and resource work have been scattered across the United States and, indeed, the world. Much of it is lost to today's researcher, and if it is discovered, its meaning and value are rarely recognized.

Prior to this century, scientific research was usually part of an expedition such as the 1850s investigation by Western Union of the possibility of running a telegraph cable through Canada, Alaska, Siberia and eastern Europe

to connect the United States and Europe. The effort ended abruptly when a successful trans-Atlantic link was announced, and the excellent scientific observations begun along the proposed northern route were inadequately recorded and never completed. Scientific interest in Alaska seemed to run in cycles, often determined by some totally unrelated scheme or goal. As a result, the historic record of scientific investigations in Alaska is patchy in geographic coverage, discipline, validity, accessibility, and current acceptability.

Today, amid the rush for resource information, the "expedition mentality" is still found as librarians and research technicians delve separately into the literature and the environment of the latest popular subject. Funding fluctuates, and duplication is inevitable. Each succeeding "platoon" of information seekers turns up the same readily accessible literature as the previous group and justifies it as appropriate because it was used before. The same data and published literature are recycled many times to produce "current" reports, environmental impact statements, and studies. Another problem is that job mobility and harsh climate produce a high turnover of people who take their expertise with them when they leave the state.

No completely adequate system for rapid and comprehensive data transfer exists in Alaska. This hampers district offices of state and federal agencies in their resource management tasks, industrial efforts, academic pursuits, and the public's right to know situation facts. Since the limited information resources are concentrated in Juneau, Fairbanks, and Anchorage, researchers, as well as the general public, in outlying areas are handicapped by inadequate access. Even the information flow between these three

centers is slow. In early 1976 a computer system became available state-wide to the university community, but few of the information resource centers are accessible through this system.

Information transfer between Alaska and other states is even worse. No computerized information system dealing primarily with environmental or resource information links an Alaskan entity to the lower 48, and the information in these national networks is largely unknown and inaccessible to all but a few. A reason for this situation lies in the fact that there is no time-share network for Alaska. Available telephone circuits are expensive and risky for data transfer.

Transient or new researchers in Alaska face phenomenal problems. Information sources and systems are not well known as to location, subject specialty, or documented services. Most people find out about the existence of these sources by "word of mouth." Currently, maximum efficient use cannot be made of available Alaskan data.

Other than the document depository system at the Alaska State Library in Juneau, no systematic update system exists for continuous information resource currency. Researchers are not required to file data or publications with any information system except research projects of certain federally funded programs, such as those of the National Oceanographic and Atmospheric Administration's Outer Continental Shelf Assessment Program which requires that this information be sent to the National Oceanographic Data Center. Recent and in-progress research are difficult to keep track of on certain subjects. Several services attempt to document ongoing research in Alaska: Northern Research Survey (Arctic Institute of North America), Smithsonian

Scientific Information Exchange, and the Current Research Profile for Alaska (Arctic Environmental Information and Data Center), which is the most complete.

#### ALASKA DATA TRANSFER--PRESENT AND FUTURE

Existing information centers in Alaska should be linked by computer system to form a master information network with information transfer, storage, and access. Each resource center would maintain its unique collections but have computer terminal access to a master listing of the others. This list could be indexed by author, title, and key words. All identified Alaskan material which is unavailable in the state should be listed and an "outside" source identified, if known. Published and unpublished Alaskan material unavailable within the state should be actively sought for inclusion in the network. Eventually, terminal access should be established into this system from every library, secondary school, and higher education unit in Alaska. Expansion of satellite stations throughout Alaska makes public communication and computer access from rural areas a realistic goal for the future.

Cooperation already exists between most of these centers through the Alaska Library Association. Several attempts at compiling a listing of statewide holdings have been made, and the statewide University of Alaska computer system makes an information network of communication terminals a possibility.

The four necessary ongoing activities to maintain such a system are:

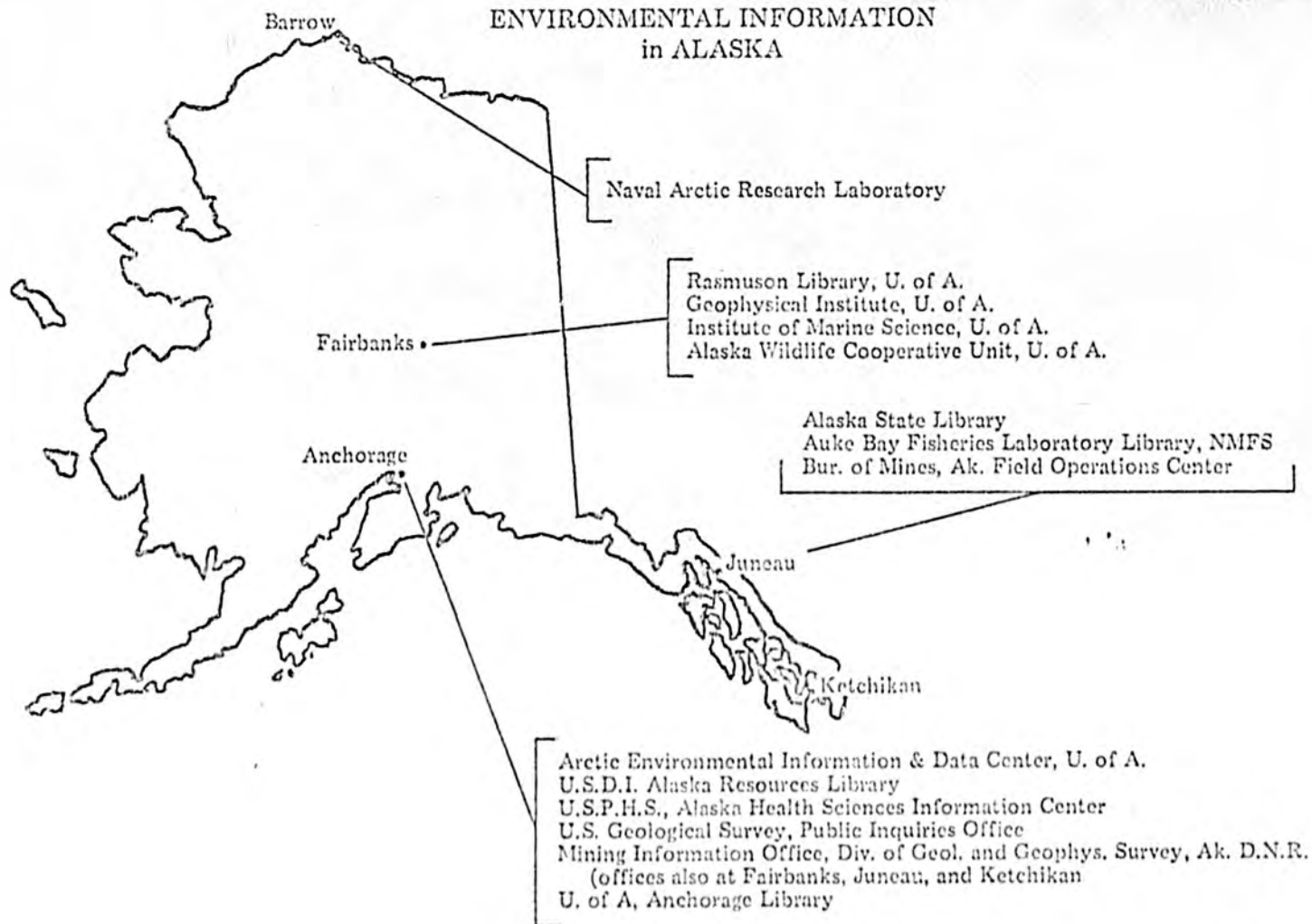
1. Mandatory archiving of all reports, studies, theses, manuscripts, publications, and other documents pertaining to Alaska by the most appropriate center in the network with submission of materials by all local, State, and Federal agencies;
2. Registration of all new research begun in or about Alaska with one designated unit in the master network;
3. Maintenance of files, identifying key individuals (inside and outside Alaska) who have expertise in a given field; and
4. Acceptance by all parties of a single coordinating organization.

Computer access must be established between the network (through one or more centers) and comprehensive or complementary national computerized information systems. This would provide access for Alaskans to broader policy, theory, and management documentation which is lacking now, and it would open a wealth of Alaskan information to individuals outside Alaska.

A monthly newsletter could acquaint potential users with the services available, new acquisitions, and general information transfer news and would automatically be mailed to registered researchers, key experts, libraries and schools in Alaska, and all local, state and federal agencies.

In summary, Alaska is the subject of extremely rapid resource and environmental decisions. The knowledge for most of these decisions either exists or is being rapidly acquired. The research, management, and information dissemination community concerned is relatively small. It is manageable. We need only to organize, fund, and operate a cooperative and efficient system.

MAJOR SOURCES  
of  
ENVIRONMENTAL INFORMATION  
in ALASKA



## ALASKA RESOURCE INFORMATION SYSTEM

(ARIS)

### PREFACE

A modern state, like a modern business, must have information on all its assets, liabilities, products, and markets to be able to arrive at sound decisions that will benefit all of its "owners." The knowledge of "land and water," the State's prime assets, has become increasingly important as the state and federal governments plan to maximize the best use of these assets and try to avoid the mistakes made in other parts of the world where uncontrolled developments, unwise loss of prime agricultural lands, destruction of important wetlands, loss of fish and wildlife habitat have created irreversible disruption of land and water cycles.

State and federal agencies need a variety of information and a common data base to effectively administer various programs directed to land conservation and development. Data needs range from water resource inventory, flood control, and waste-water treatment to the need for comprehensive land use inventories of existing and changing activities on public and private lands to improve management. Federal and state agencies also need data to assess the environmental impact of the development of energy resources, to manage wildlife resources and minimize man-wildlife ecosystem conflicts, to make national summaries of

land use patterns and changes for national policy decisions, and to prepare environmental impact statements and assess future impacts on environmental quality.

Unique to most of the nation, the State of Alaska has already developed documents designed to distribute data to policy makers, scientists, and the public. The six volumes of The Alaska Regional Profiles establish the first systematic filing of maps, statistical data, and text that can be updated and refined. The Profiles were based on information on the physical and biological environments compiled by the Resources Planning Team of the Joint State-Federal Land Use Planning Commission in the first phase of its operations. These data were refined, correlated, updated, and published by the staff of the University of Alaska's Arctic Environmental Information and Data Center, which was established by the Alaska legislature in 1971 to assist in the retrieval and distribution of data related to land and water use.

The Profiles have already been used extensively by Federal and State agencies, and members of Congress as they gather the facts needed to determine policy for management, tenure, and use of Alaska's land and resources. Even greater use can be expected when Congress reconvenes with new members to consider these issues. The importance of providing these data to those who will make these determinations cannot be over-emphasized. The detailed maps in the Profiles graphically illustrate the complexities and variety in the natural and man-made systems in Alaska, and they provide a concrete, factual framework on which to base a permanent retrieval data system.

One of the major justifications for funding of the Profile series was that it would develop a permanent method of data retrieval and updating and would provide the experience to make recommendations directed to establishing the most effective system to accomplish this task. We believe that the state and federal governments will receive the greatest benefit from their investment in the Profiles by developing an automated filing system which can input new data, update existing data, manipulate the data, retrieve the data quickly, and provide new information in a variety of formats for the maximum amount of users and topics. Such an interagency data collection system of retrieval, storage, and publication could become a model for the rest of the country.

## Justification

The need for coordinated land use planning by informed decision makers has become imperative. Land use planning, natural resource management, and environmental control are among the most important national issues. The pressures of expanding population, urban growth, shrinking energy supplies, and environmental deterioration have brought the public to the realization that we must carefully plan for the wise use and optimum development of our land and natural resources. The establishment of new agencies to deal with environmental protection and energy crisis along with the introduction of legislation directed to minimize adverse environmental impacts reflects these concerns at a national level. State and local governments have enacted legislation dealing with development controls and systematic land use planning. Industry has responded by developing new techniques and tools to comply with new regulations and solve some of the problems created by past neglect or expediency.

To develop a natural resource policy or strategy for the balanced conservation and development of natural resources decision makers must have ready access to current and meaningful natural resources data. Most of the necessary data exist but they are often widely scattered among many agencies which have never standardized the type of data collected, the scale of maps used, the format of data presented, geographical reporting region, and frequency of updating. Consequently, data generated by one agency is frequently unknown or unusable by another, which, results in confusion, unnecessary duplication of effort, and unnecessary cost for the taxpayer.

A single integrated information system that is flexible enough to permit manipulation and display of a wide variety of data in many formats for various users would eliminate much of this waste.

## Benefits

The immense amounts of data required to develop and manage land use plans can no longer be simply and manually controlled. For many federal and state organizations, the problems of data distribution have reached unmanageable proportions. For example, the Federal-State Land Use Planning Commission, with responsibilities for identification of and recommendations concerning the uses of lands in federal ownership, faces a tremendous challenge. To conserve where necessary, to develop where practical, and to offer knowledgeable leadership and cooperation with private and public interests require knowledge and responsible judgement.

The proposed Alaska Resource Information System (ARIS), is designed to aid various Federal and State agencies and private interest decision makers in land use planning and management.

The initial step in developing a management oriented system requires an in-depth understanding of specific problems confronting the Federal-State Land Use Planning Commission management. A preliminary outline of goals, policies, development direction, limitations, and potentials has been developed to channel this effort toward the most productive results. This outline will undoubtedly undergo modifications and refinements as Phase I work uncovers new factors to be considered. Nevertheless, a working framework has been designed to govern and direct the ongoing program of developing the appropriate and necessary tools for the Federal-

State Land Use Planning Commission to better manage its responsibilities. The Commission supported the preparation of the Profile series as a summary of the data base needed for planning.

The next step to make this unique resource information repository current and accessible to the maximum amount of users is to develop an automated filing system. The correlation of maps in the Profiles will provide a framework for evaluating the interrelationships between various resources and the effect of climate, soils, topography, and other factors that affect development in Alaska. A computer system could provide accurate, detailed information rapidly, and data could be easily updated.

## Objectives

Alaska is a logical testing ground for the development of an interagency (state-federal) computer-based information system designed to aid resource development and land use planning. Land use, development, and management decisions are of such large magnitude that they demand the most innovative methods and approaches.

This project has the following goals:

1. To provide a computer retrievable file of all natural resources data (including mineral occurrences of potential economic significance).
2. To make available data to all users on Alaska resources that are now largely inaccessible.
3. To prevent the duplication of cost in data gathering retrieval and distribution that is presently causing a sizeable drain on the various agency budgets.
4. To identify needs for additional data and refinement of available data.
5. To obtain needed information on the technology, costs, and manpower requirements for the development of a permanent computer-based natural resource information system.
6. To test user acceptance of the new approaches to continuing information as well as to seek answers to questions concerning security and availability to computer-stored data.

## Implementation Plan

The approach is presented as a three phase structure developed under the coordination of the Federal State Land Use Planning Commission for the first two years, and directed by the user's and technical committee, (See Figure 1.). The value of such a development philosophy is that the basic organizational structure of the system can be established along with a basic level of service which documents the utility of the overall approach and thereby encourages voluntary cooperation. The major elements of the proposed phases are as follows:

- o Phase I - First year
  - Research coordination
  - Reference and referral service
  - Publication of sources
  - Computerized mapping demonstration with remote sensing
  - Users' and Technical committee
  - Monitor use of service
  
- o Phase II - Second year
  - All of Phase I
  - Formal procedures for cooperation
  - Compatible data definitions, classifications, etc.
  - Computerized resource information system
  - Map updating process
  - Monitor use of services
  
- o Phase III - each year thereafter
  - All of Phase II
  - Operation and maintenance of the resource information system center
  - Monitor resource information
  - Record management activities

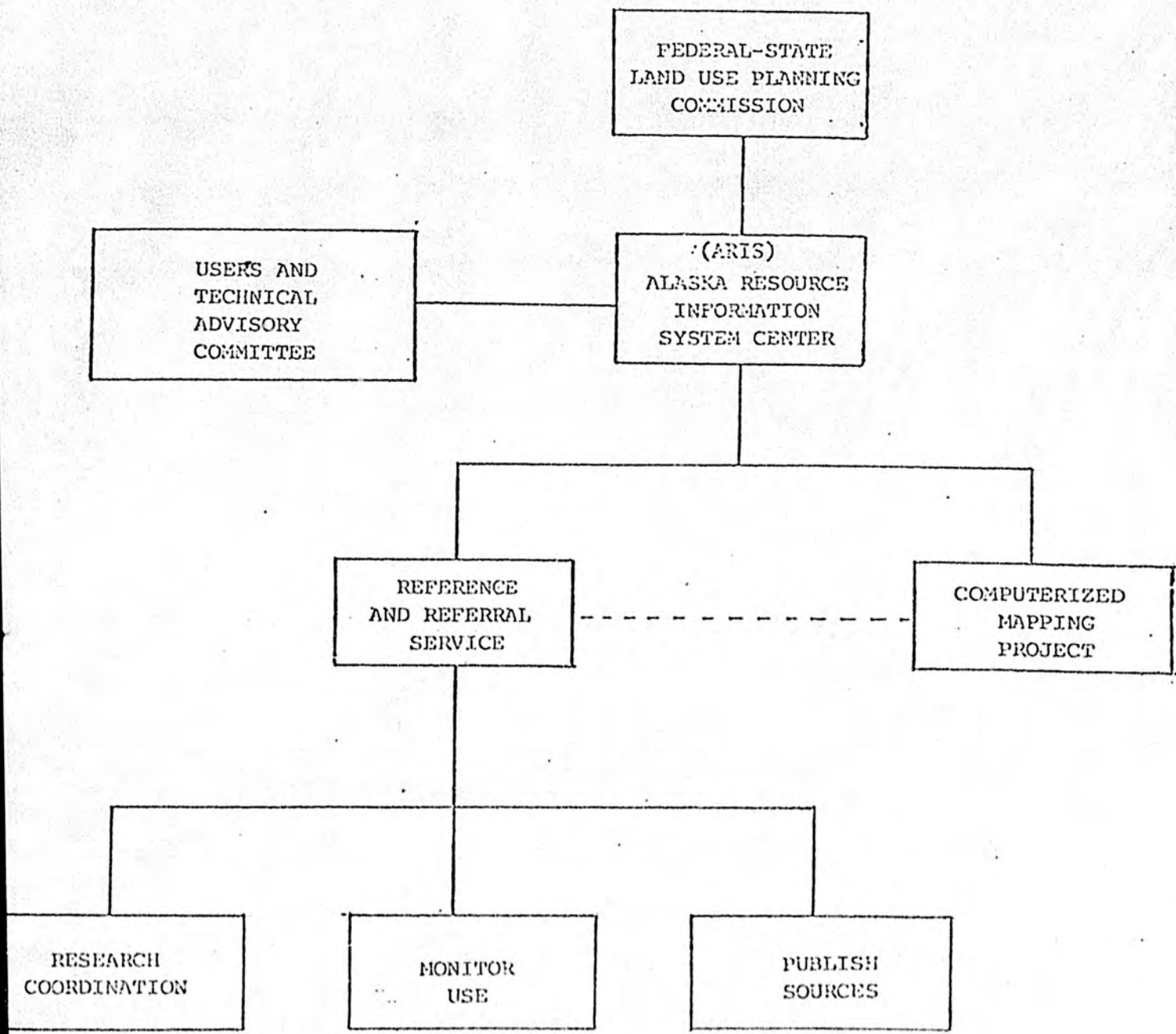


Figure 1. PHASE I AND PHASE II Operational Structure

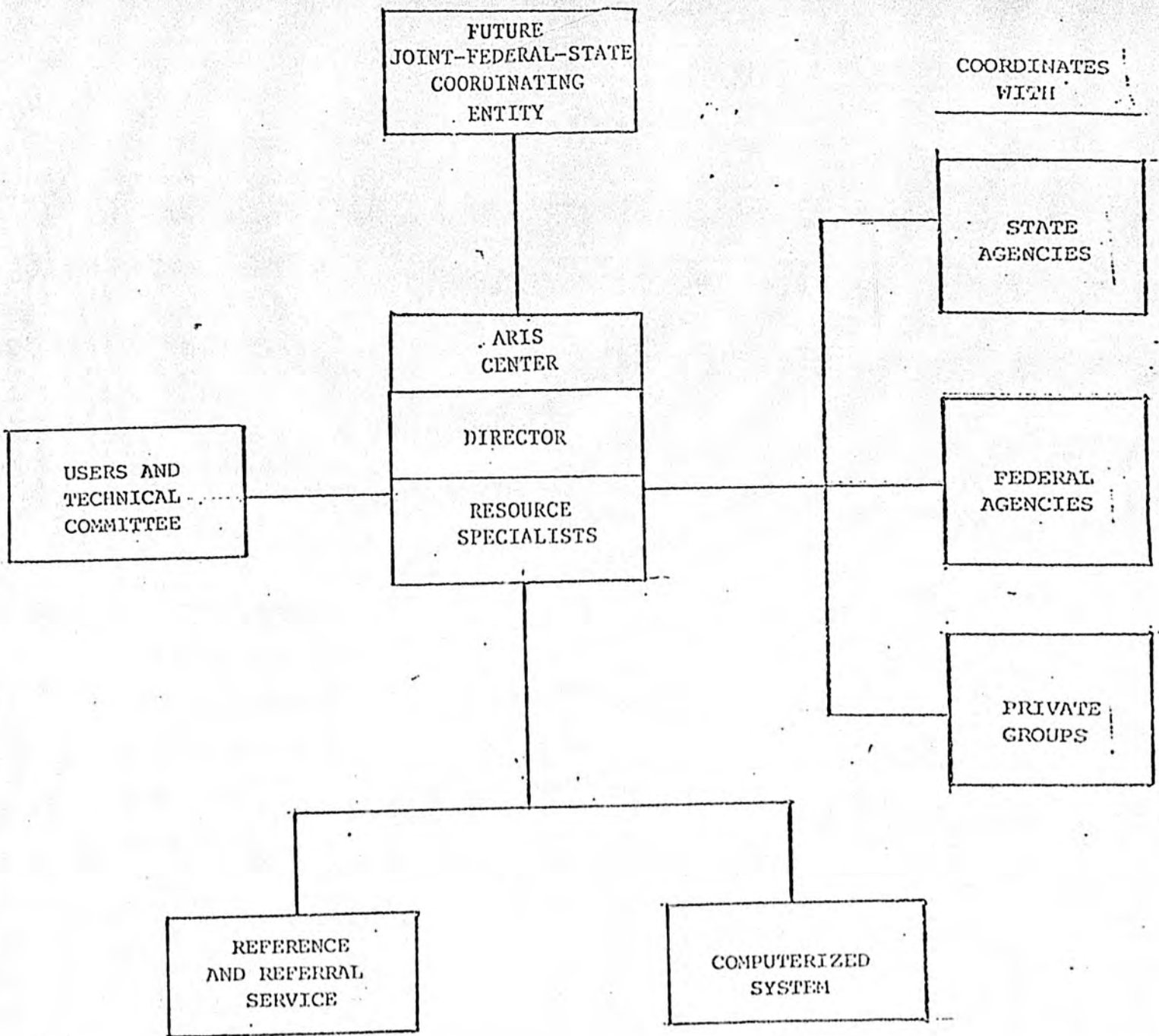


Figure 4. PHASE III - Operational Structure of the  
Alaska Resource Information System Center

## Conclusions

- o The statewide resource information system would be assigned to the Federal-State Land Use Planning Commission for the development of phases. Phase III would be assigned to a newly created joint Federal-State entity (see Fig. 4).
- o The system would be operated by a separate and distinct organization within the commission initially.
- o The system must be a mandated function in order to serve high priority support of associated agencies.
- o The system would be developed in stages to test the approach and to encourage voluntary cooperation
- o The demonstration project for the mapping system would be conducted before a commitment is made to a complete statewide resource information system
- o A major effort to utilize existing data and to coordinate research must be developed in a reference and referral service
- o Definitive land management policies, objectives, and programs would guide the development of the statewide system.

Cost of developing an Alaska Resource Information Center: (see Appendix A for detailed implementation plans)

### Phase I - First year budget

o Reference and referral service	\$ 250,000
o Computerized mapping demonstration	<u>150,000</u>
Total:	\$ 400,000

### Phase II - 2nd Year Budget

o Continuation of Phase I activities	\$ 300,000
o Design and develop a statewide resource information system	<u>700,000</u>
Total:	\$1,000,000

### Phase III - Each year thereafter

o Operation and maintenance of the computerized resource information system center for the State of Alaska including the updating of the data base and dissemination of information.	
Total:	\$1,500,000

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED  
AS A UNIT IN THE ORIGINAL DOCUMENT.

AEIDC



UNIVERSITY OF ALASKA

February 21, 1977

Hon. Hugh Malone  
Speaker  
State House of Representatives  
State of Alaska  
Pouch V  
Juneau, AK 99811

Dear Hugh:

This letter is to suggest to you the scheduling of an oversight hearing by the Resource Committees of the Senate and House on the current operations and future directions of the Arctic Environmental Information and Data Center (AEIDC).

I make this suggestion since it was the resources Committees of the legislature with the support of then House Speaker Gene Guess and Senate President Jay Hammond who created AEIDC in 1972, as a central focus for Alaskan environmental and natural resource information analysis, synthesis and dissemination. During the five years of our existence we have achieved the distinction of being the only viable information center of its kind in the Nation. In fact, several proposals exist to emulate our operation elsewhere in the country to act as other centers of information analysis, synthesis and dissemination on coastal zone, outer continental shelf, natural resource and land use planning matters. Our operations, however, despite several apparent successes and national recognition, are beset by a number of policy problems for which I feel the need of legislative guidance.

Listed below for initial consideration and discussion are ten basic policy questions which trouble the administration of AEIDC. Each policy question is followed by a brief summary background statement.

UNIVERSITY OF ALASKA

Hon. Hugh Malone

Page 2

February 21, 1977

1. What is the clientele to be served by AEIDC?

BACKGROUND

In 1976, AEIDC responded to approximately 12,500 requests for environmental and natural resource information and program advice. Of these, about one-third came from state agencies, one-third from federal agencies and the remaining one-third from a large variety of consultant firms, Alaskan industries, public interest groups, Native corporations, educators and the general public. The Center also engages in contract services; in 1976, 67% of the contractual effort was in support of state requests, 21% for federal agencies, 12% for private organizations (primarily oil industry and Native groups).

2. Should AEIDC render free services and/or enter into contractual arrangements with all users of its services equally?

BACKGROUND

In 1976, AEIDC's response to inquiries and requests for advisory services required the dedication of 12,564 man hours, or a little over six man years, of non-reimbursed effort. Additionally, the Center performed twenty-nine contractual tasks for state and federal agencies, Native corporations and private industry. All inquiries or contractual requests are treated equally regardless of source. For much of the information sought, AEIDC is the only source available. Because of budgetary and staff limitations, we need to know the sense of the legislature regarding priorities of both free and contractual services.

3. Should AEIDC establish a formal user charge program beyond present levels?

BACKGROUND

Presently AEIDC only charges inquirors for duplication of materials such as maps, reports, microfiche, etc., on an actual cost basis. Staff time for such duplication is not charged.

4. What should be the proper relationship between AEIDC and governmental agencies? Should AEIDC administratively or the legislature by law, establish long-range terms of reference between AEIDC and local, state or federal agencies for AEIDC's information services?

BACKGROUND

All AEIDC governmental relationships are either through the furnishing of free services responding to requests for information or program advice or pursuant to relatively short-range contracts for specific tasks. A question for consideration is whether government agencies and/or AEIDC could be more efficiently served by long-term agreements under legislatively established guidelines.

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5. Should a special informational service relationship between AEIDC and the Joint Federal-State Land Use Planning Commission be established?

## BACKGROUND

AEIDC has had a particularly special relationship with the F-SLUPC in the furnishing of information for the Commission decision processes. However, this relationship has been generally informal except for contractual tasks. Resource and land use planning depends upon a dynamic process of factual application. As a future role for the Commission or its successor evolves, should AEIDC be formally identified as a central information service for the Commission.

6. What should the long-range continuing administrative relationship of AEIDC be with the University of Alaska?

## Alternatives:

- a. An administrative function of the U of A Anchorage or Fairbanks;
- b. An administrative function of the President's office;
- c. Administration through a State-University foundation.

## BACKGROUND

AEIDC operates its informational service and scientific program on a statewide basis. When first established, the Director of AEIDC reported to the Vice President for Research in the Office of the President. University reorganization in 1976 resulted in organizational cognizance of AEIDC being vested with the Fairbanks campus Chancellor until such time as research management competence was developed in Anchorage. Neither arrangement (i.e. reporting to regional campus Chancellors in Anchorage or Fairbanks) seems adequate for the administration and direction of statewide programs.

7. Should the environmental science and natural resource functions of AEIDC be expanded to include socio-economics and public land, resource and environmental law under a new aegis as an "applied" science center or institute?

## BACKGROUND

Analysis or synthesis of natural resource, land use and environmental issues is never complete unless knowledge of biology and physical sciences and resources is correlated with the social and economic value systems of man and the framework of laws established by man. AEIDC has sometimes utilized the services of the Institute of Social and Economic Research and other economic and legal sources of expertise in preparing particular reports. In future terms of reference, however, consideration of a formal structure combining natural science and resource specialists with individuals well versed in the social, economic and legal fields deserves some thought.

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8. Is it desirable to centralize all sources of various types of information in the State of Alaska or should there be coordination between several types and kinds of informational centers? In either case, what should be the role of AEIDC?

## BACKGROUND

A discussion paper on this subject prepared for the National Academy of Science is appended. Additionally, the F-SLUPC is currently proposing the establishment of an interagency Alaska Resource Information System (ARIS). A paper explaining their approach is also appended.

9. Within what levels and forms of funding should AEIDC operate?

## BACKGROUND

AEIDC is currently budgeted a State appropriation within the Organized Research budget unit of the University of Alaska. This appropriation takes care of only about one-half of the cost of AEIDC's public service expenditures. The cost of this public service is, therefore, borne only partly by appropriation. The remainder comes from overhead revenues from contractual services and small grants from the federal or state governments. An analysis of the services performed by AEIDC in relation to funding sources and levels is badly needed.

10. How should the "educational" functions of AEIDC be defined?

## BACKGROUND

"Educational" functions currently involving AEIDC personnel include:  
teaching of academic courses on a reimbursable basis with the University of Alaska Anchorage;

conducting workshops and seminars on natural resource or environmental issues or problems; and

publication and dissemination of books on Alaskan resources and environments.

Should AEIDC personnel be involved in teaching as well as information analysis and synthesis? Should "educational" activities be expanded to include the development of innovative techniques of information dissemination?

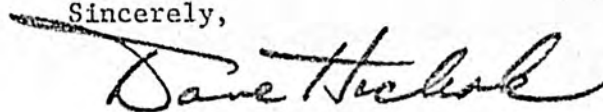
In conclusion may I simply say that I need your help. The entire staff of AEIDC is dedicated to the future of Alaska. We live in a rapidly changing world and our organization needs a dynamic and vital role in delivering readily comprehensible environmental knowledge and understanding to the land and resource use issues of our state.

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Along this line I have had conversations at the national level with our delegation, legislative committee staff members and heads of several federal agencies in late January. I am not sure at this point whether federal interest hearings pertinent to AEIDC will be held by the Congress but in any event I would welcome a public dialogue on our role in this regard, here in Alaska, and urge you to give this suggestion serious consideration.

Sincerely,



David M. Hickok  
Director

Attachments

Identical letters sent to:  
Hon. John Rader  
Hon. Kay Poland  
Hon. Al Osterback