

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY Water Resources Division 1209 Orca Street Anchorage, Alaska 99501

March 4, 1980

Mr. Greg Doggett Dept. of Natural Resources 323 E. 4th Avenue Anchorage, Alaska 99501

Dear Mr. Doggett:

The enclosed report is CACI's review of their August 1979 visit. We welcome your response.

Ray George

Enclosure cc: Brent Petrie



2.0 WATER USE STATUS REPORT ALASKA

2.1 INTRODUCTION

On August 24, 1979, Bill Knecht and John Harding of CACI, and Ed Leggat of the USGS visited the USGS subdistrict office in Anchorage, Alaska. During the day meetings were held with people from the USGS and the Alaska Department of Natural Resources (ADNR). On August 27, 1979, Bill Knecht and John Harding met with people from the USGS, the Anchorage Water and Sewer Utilities, and the U.S. Environmental Protection Agency (EPA).

2.2 Current Status of the Program

There is no organized comprehensive water use program in Alaska. The most important natural resource is land, and little emphasis is placed on management of the state's water resources. Water use data are collected by the USGS, EPA, various state agencies, municipal agencies, and private organizations. A very small percentage of the data are in computerized form.

Ray George and Leslie Patrick of the USGS are involved somewhat in water use but spend little of their time with the National Water Use Data Program. A few people outside the USGS devote some time to activities that are related to water use, but no one is fully or partially dedicated to specific water use activities.

In summary, the water use program in Alaska is in a very primitive stage. There are some useful data scattered among numerous organizations but there is no leadership, planning, or coordination of the state's water use data collection efforts.

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2.3 Unique Features of the State

Alaska has a few characteristics that make some of its water use problems unique. First, the vast size of the state presents a problem. Very little of the state is accessible by highway, airplane being the main form of transportation. However, Alaska is also unique in that half the state's population is in a single metropolitan area, Anchorage, and most of the water use is there also. The only major water users outside of Anchorage or other metropolitan areas are fish canneries, some of which are located on remote islands over a thousand miles from Anchorage.

Alaska is also a state in the initial stages of development and growth. The state's water supply is still of relatively high quality and there are no water shortages. A "frontier" spirit is very prevalent in Alaska, and government control is resented. Permits are required by law for both withdrawal and return of water, but few water users obtain permits. An attempt to permit 100% of users or to require periodic reporting of withdrawals and returns by all permit holders would probably not be successful for many years.

2.4 Background of the Water Use Program

There is no relevant information to present in this section.

2.5 Future Directions

There are no established plans for the future direction of the water use program. Overall planning and direction will have to be done by the USGS District Office in Alaska, with a significant amount of assistance being initially supplied by the National Center in Reston through the water use Western Region Representative. The Alaska Department of Natural Resources also needs to develop a plan for future expansion of the water use program, since they are the principal cooperator. But in order to develop such a plan, ADNR needs a clear understanding of NWUDS goals and priorities.

2.6 Agencies Contacted

U.S. Geological Survey

- Ray George, Leslie Patrick, Richmond Brown, Derrill Cowing Alaska Department of Natural Resources - Greg Doggett, Mary Lu Harle Anchorage Water and Sewer Utilities - Bill Armstrong U.S. Environmental Protection Agency - Wally Scarburgh

2.7 AGENCY SUMMARY

2.7.1 U.S. Geological Survey

The USGS has water use data from four sources: (1) surface and ground water withdrawals by the major Anchorage municipal water supplier; (2) industrial surface water withdrawals by Tesoro and Union Carbide in Kenai (near Anchorage); (3) surface water diversions by the Cooper Landing hydroelectric plant; (4) surface water diversions by military bases along Ship Creek.

None of the data are computerized. All have monthly figures available. The data on withdrawals by the major Anchorage municipal water supplier are discussed in more detail in Section 2.3. The data from the other three sources are sufficient for estimating total self-supplied withdrawals for the census division (Alaska has no counties) in which Anchorage in located. This would be more than half of the total for the entire state.

2.7.2 Alaska Department of Natural Resources

ADNR is the principal state cooperator and has the statutory responsibility for issuing permits for withdrawals. According to the law, all withdrawals, both from surface and ground water, must be permitted by ADNR. However, it is estimated that only 10-20% of all withdrawals have actually been permitted. Because most of the largest water users (except canneries) do have permits, it is estimated that over 50% of the total volume of withdrawals is permitted. Approximately 4,700 permits have been issued statewide.

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Presently the data from approximately 3,000 permits is in computerized form, on the Water Rights File. Information on the name and address of permit holders is on the file, but the file does not include monthly or annual withdrawals. Most permit holders are not required to report actual usage and therefore ADNR has almost no data on how much water is actually being withdrawn. This may change in the future but not any time soon.

In summary, ADNR has identified only a small portion of the state's water users and most of those who have been identified do not report amounts of withdrawal. However, they are interested in expanding the water use program to include annual or monthly withdrawals, and they want to obtain data from a much larger percentage of the population. The constraints are manpower and money. It will be difficult to expand the program with current levels of staffing and funding.

ADNR has also purchased ADABAS for use on the state computer. Gregg Doggett wants to convert the current Water Rights File to an ADABAS data base as soon as possible.

2.7.3 Anchorage Water and Sewer Utilities

AWSU is the major municipal water supplier for the city of Anchorage. There is a smaller municipal supplier, Central Alaska Utilities. AWSU withdraws its water from nine wells and one surface water diversion at Ship Creek. It has good records on metered monthly withdrawals from those sources. None of the data are computerized.

Customers of AWSU fall into domestic, commercial, and industrial categories. In general, commercial and industrial users are metered and domestic are not. There are over 1,200 commercial users, and approximately 90% of them are metered. A goal is to have 100% of them metered within two years. There are only twelve industrial users and all are metered. The Alaska Public Utilities Commission determines if a user is commercial or industrial. Few domestic users are metered. However, meters are now required on newly-constructed fourplexes and larger multi-family dwellings. Trailer parks are also metered, with one meter per park. AWSU? can supply monthly withdrawal data for metered users and annual withdrawals for non-metered users.

AWSU also operates a sewage treatment plant which dumps treated waste into Cook Inlet. The total returns from this plant are metered. Trailer parks that return waste to the sewage treatment plant are metered, but other commercial, industrial, and domestic users are not.

2.7.4 U.S. Environmental Protection Agency

EPA issues permits for discharge of municipal and industrial waste into surface water bodies. By law, anyone who discharges into surface water must have a permit, but because of EPA staffing limitations only the major dischargers, are permitted. About 400-500 permits are currently active. Most permits require monthly reporting of discharges, and most permit holders comply with the reporting requirement. Meters are not required to measure discharges. The data on permits are computerized but it was unclear if the monthly discharge figures were computerized. A file summary form was left with Wally Scarburgh and he will complete it and return it to Leslie Patrick.

2.7.5 Department of Environmental Conservation

DEC issues permits for discharge into ground water bodies. It also has a file identifying the municipal water suppliers throughout the state. This agency was not visited because the principal contact was out of town. Leslie Patrick will attempt to follow up with DEC and find out what water use data they have.

2.8 SUMMARY

2.8.1 Amount of Data Available Now

Among all agencies visited plus DEC, water use data is probably available for 75% of the total withdrawais in the state. This excludes canneries, which

are large users of water with unknown amounts of withdrawals. Data on over half the returns are also available. Although most of the total population of users do not report water use, the largest ones do (except canneries).

2.8.2 Methods of Obtaining Data

Data are collected by a number of different organizations by different methods. The USGS, Alaska Department of Natural Resources, and EPA obtain data reported by water users and permit holders. The Anchorage Water and Sewer Utilities organization collects data from metered customers. It is difficult to estimate the amount of effort required to collect the water use data, because it is collected by many organizations.

The central state system idea was discussed with Leslie Patrick and Ray George of the USGS, and Greg Doggett and Mary Lu Harle of ADNR. All agreed that the detailed state-level water use data needs to be stored in computerized form in Alaska. The data will probably be stored in the Alaska Land and Resource System (ALARS) using ADABAS as the data base management system. There is no objection to furnishing the data to a central system in Reston as long as the data are also on the state computer in Alaska. Greg and Mary Lu were interested in the possibility of using the same ADABAS schema designed for the central state-level system proposed for Reston.

2.8.3 Future Data Available

The amount of data that will be available in future years is unpredictable. If there is any substantial change it will probably come from ADNR, which may begin collecting annual or monthly withdrawal data from permit holders. Nowever, it is unlikely that there will be a significant increase in data collection efforts on the part of any organization.

2.8.4 Recommendations

A number of actions must be taken if Alaska is to meet minimum NWUDS requirements. Improving the current water use data collection program

is a long-term project which will require leadership, planning, and coordination. The recommendations given here are directed toward taking the first steps in the improvement of the program.

2.8.4.1 Inventory Data Holdings

The USGS should inventory water use data holdings statewide. This can be done by using the same inventory forms shown in the Appendices. Among the organizations that should be contacted are the Department of Environmental Conservation and municipal water suppliers in Anchorage, Juneau, and Fairbanks.

2.8.4.2 Develop a Water Use Plan

The USGS should develop a written plan describing how the requirements of the National Water Use Data System are going to be met. The plan should describe the water use data currently available statewide, which of that data is useful to the NWUDS, and how the data can be used to produce aggregated amounts by census division and/or hydrologic unit and entered into the NWUDS national-level data base in Reston. The plan should also discuss the role of ADNR in water use, including which responsibilities belong to ADNR and which to USGS. Water-use-related activities should be forecast for at least one year, along with specific goals to be med, products to be produced, and accomplishments to be made, and milestone dates should be established as a means of measuring progress.

2.8.4.3 Increase Data Collection Efforts

The Alaska Department of Natural Resources should collect monthly withdrawal data from its permit holders. This could be accomplished by means of an annual inventory similar to that conducted by many other states. Forms could be mailed to permit holders and followup telephone calls could be made to those who do not reply. Data obtained from the inventory should be stored in computerized form.

2.8.4.4 Report Water Use Data

The USGS should report as much water use data as possible to the national-level system in Reston for 1979. The exercise will be beneficial even if only a few categories for: a few census divisions and hydrologic units can be aggregated. For example, monthly withdrawals by municipal water suppliers in the census division and hydrologic unit containing Anchorage should be feasible. No "guesses" or estimates based on very poor or very small amounts of data should be considered.

LAS: APPENDIX A -- ALASKA

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WATER USE PROGRAM OUTLINE OF REQUESTED INFORMATION STATE OF ALASKA

I. Cooperator

State of Alaska Department of Natural Resources

Federal Matching Funds

State Unmatched Funds .

Amount Reversed

II. Funding

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<u>1979</u>

Est. 1980 \$40,000 /20,000 \$90,000 70,000 ?

III. Staffing

	Number of Persons	Man Months Per Year	General Duties Expertise
USGS	1	4	Hydrologist
	1	1	Hydrologist
	1	.5	Hydrologist
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Cooperator	1	6	Systems Analyst
N	1	4	Systems Analyst
	1	6	Research Analyst
	1	12	Data Control Clerk
	1	2	Water Mgt. Officer III
	1	3	Water Mgt. Officer II
	1 N	6	Water Mgt. Officer I
	1 - N	8	Civil Eng. Assistant I
	1	3	Geologist II
	3	1.5 ea	District Mgt. Officers
· · · · · · · · · · · · · · · · · · ·	1	1.5	Water Mgt. Sec. Chief

Responsible USGS Personnel: Ray George and Leslie Patrick

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IV. Principle Water Use Data Needs

Water Use Data is needed for planning and resource management. Using water withdrawal information and streamflow and ground water yield data, we want to answer questions on:

- 1. The quantity of water used by user type
- 2. Regional water use by user type
- 3. Projected water use demand by economic and/or geographic sector
- 4. Existing and projected water use in a given land disposal area
- 5. Identifying area or seasons of water deficiencies and/or surpluses
- 6. Scheduling withdrawal and return flows
- 7. Quantifying principle user by season or region
- 8. Identifying water quantity problems and possible solutions
- 9. Water Rights adjudication

V. Data Collection

A. Known Data Sources:

Alaska Department of Natural Resources Industry Water Use Records City Water Use Records

B. Potential Sources:

State of Alaska Department of Commerce & Economic Development

Community & Regional Affairs Environmental Conservation Fish & Game Health & Social Services Natural Resources Transportation & Public Facilities

U.S. Bureau of Indian Affairs

Bureau of Land Management Corps of Engineers Environmental Protection Agency Geological Survey Federal Aviation Administration Public Health Service

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Assistance Needed

Funding

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Maintaining emphasis on what Federal needs are Meeting with CACI after the data base management system has been selected - to insure data elements are compatible

IX. Principle Accomplishments to Date

- 1. DNR has maintained a person oriented toward the water use program.
- DNR has updated the encoding form for presently captured water use/rights date.
- 3. The existing EASYTRIEVE data base has been streamlined.
- DNR has implemented the paper work necessary to hire the additional personnel required to update existing water data files.
- 5. The state (ALARS) is actively searching for a data base management system for better storage and access of the states resource data.

X. Plans

In the remainder of the Federal FY 79 it is hoped that the DBMS software package will be purchased and that in the meantime more water rights files will be updated and/or implemented on the old system.

FY 80 Objectives

Hardware purchase to supplement the new DBMS Design of a water use data base for the new DBMS Implementation of the Water Use Data Base Training in use of the new system Design of a water use gathering and recording mechanism Interagency coordination Boroughs Industry Municipalities Villages Water Resources Council Water Well Drillers Association

C. Collection Methods

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Some industry and city records are currently mailed to the state or USGS and a few field visits are made.

Future plans will probably include more extensive mail soliciting and field visits.

VI. Data Storage

The state is in the process of acquiring a data base management system software for the Alaska Land and Resource System (ALARS). System 2000, ADABASE, and RAMUS II are some of the contenders. Water Use will be one of the data bases kept on this system.

Currently Water Use information is stored in EASYTRIEVE format.

VII. Significant Problems

In the state structure land data needs have a tendency to overpower water data needs. Recently there has been a big push from the water section - and they seem to be holding their own. State departmental re-organization continues to be a problem, though water staffing seems to be stabilizing.

Establishing the orientation of the water section has been a problem. However, as objectives and goals become more concrete, operations are smoothing.

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Developing a data system is just a lengthy process.