

Briefing

AK Water

Resources Bd.

3-26-93

**MEMORANDUM**  
Department of Natural Resources

**State of Alaska**  
Division of Water

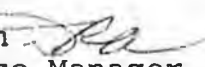
TO: Mary McDowl  
House Resources Staff

DATE: March 10, 1993

TELEPHONE NO: 762-2575

THRU:

SUBJECT: Ak Water Resources  
Board

FROM: Danny R Allison   
Natural Resource Manager

Enclosed is the information on the Alaska Water Resources Board that you requested prior to their meeting on March 26 with the House Resources Committee. The Board will probably want to discuss some of the following issues:

- 1) Elimination or consolidation of the Ak Water Resources Board. The Division of Water would need \$28,700 to continue to support the Board with staff support and travel expenses.
- 2) Water Quality issues and the proposed CIP for Village Safe Water Programs.
- 3) The lack of funding to carry out essential Division of Water functions and to support the Water Resources Board.
- 4) Resource development.
- 5) Water sales and the development of an export market.

cc: Ric Davidge  
Mike Neimeyer

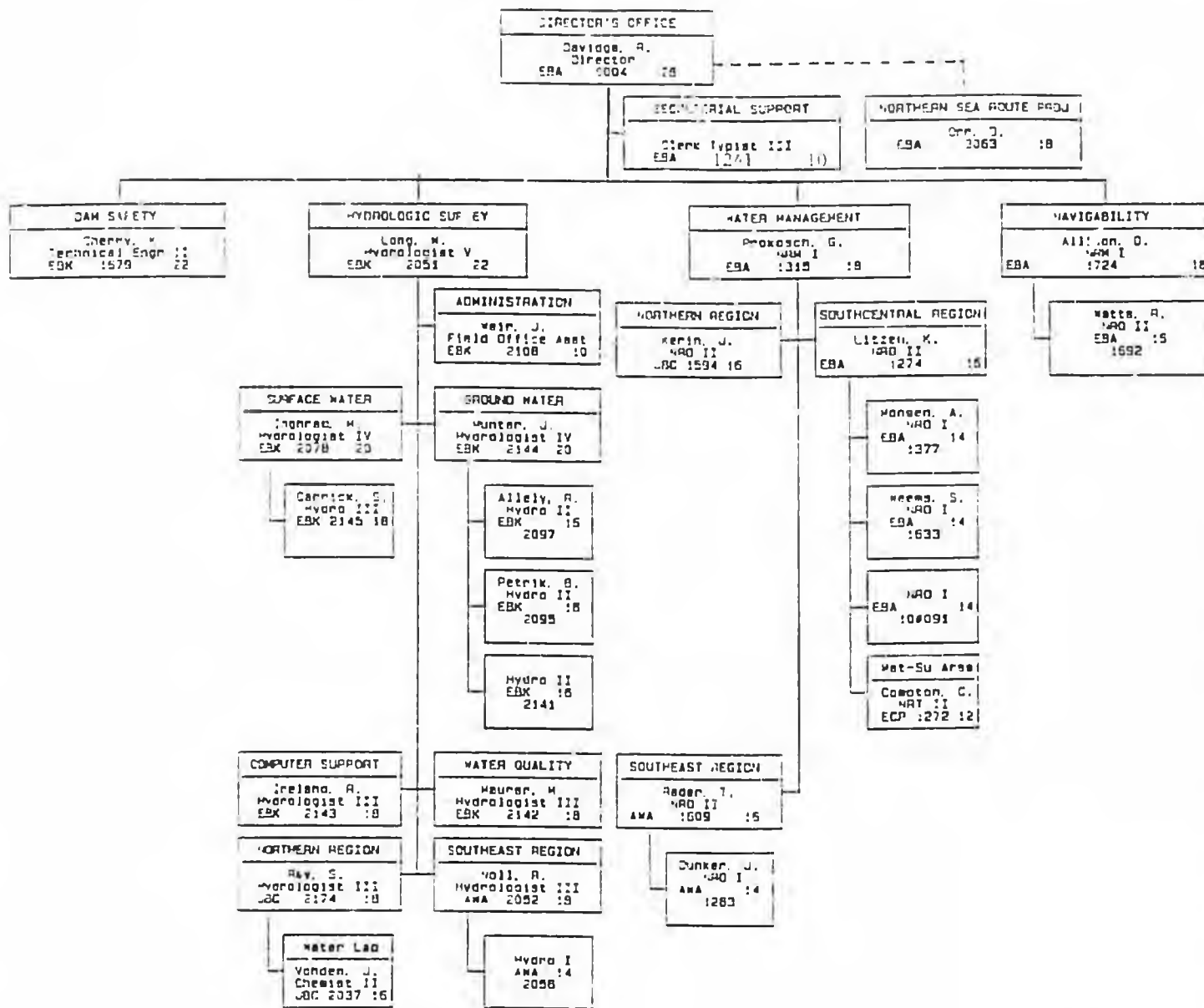


## THE DIVISION OF WATER

The Alaska Division of Water manages an estimated 40% of our Nation's free (not frozen) fresh water resources including over 3 million lakes larger than 50 acres and an estimated 30,000 streams. These responsibilities include the State Water Policy and Water Management Strategy; issuing water rights; administering the dam safety program; rendering and reviewing administrative navigability determinations, asserting ownership and management of submerged lands; surveying, collecting and distributing water resource data related to the quantity and quality of surface, ground and coastal waters of Alaska; coordinating water related data collection and management activities with other agencies; providing support to the State Water Board; advocating responsible water development including water exports. The Director of the Division represents the Governor at the Western States Water Council consisting of 17 western states.

In addition to the Office of the Director, the Division of Water is comprised of four sections: The Alaska Hydrologic Survey which includes the State Water Lab, Water Management and Development, Dam Safety and Construction, and Navigability. The Division has offices in Anchorage, Fairbanks, Juneau, Eagle River, and Palmer.

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF WATER



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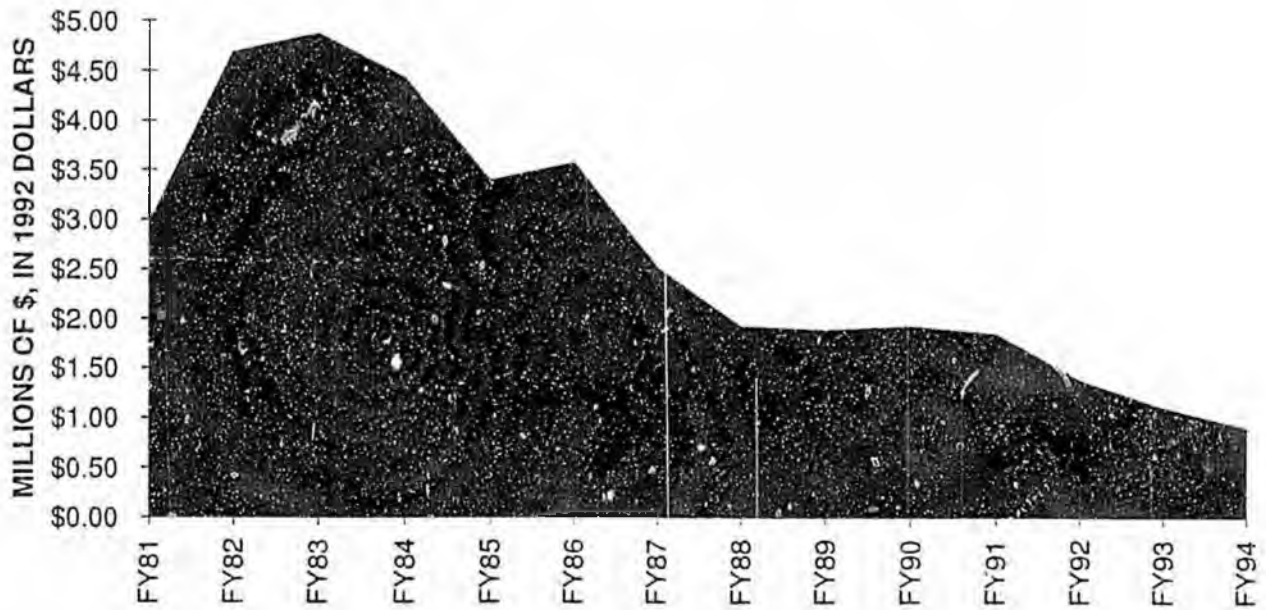
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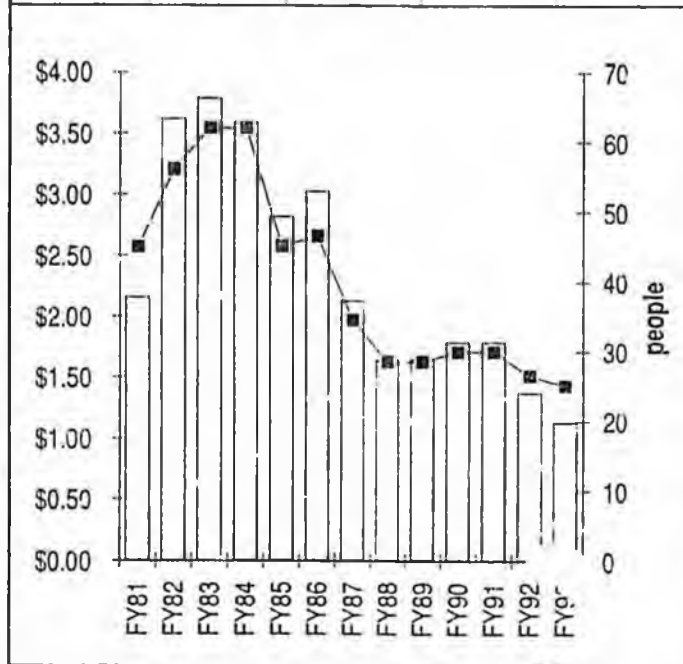
# DIVISION OF WATER

## BUDGET TRENDS

### GENERAL FUND TRENDS



year	millions	people
FY81	\$2.16	45
FY82	\$3.62	56
FY83	\$3.79	62
FY84	\$3.59	62
FY85	\$2.82	45.2
FY86	\$3.03	46.5
FY87	\$2.13	34.5
FY88	\$1.64	28.5
FY89	\$1.65	28.5
FY90	\$1.79	30
FY91	\$1.79	30
FY92	\$1.37	26.5
FY93	\$1.13	25



# TESTIMONY

Senate Finance Committee  
Ric Davidge, Director of Water  
March 4, 1993

Although specifically authorized in 1966 with the passage of the Alaska Water Use Act, the Division of Water was not created until June of 1991. In response to a number of studies and recommendations from former DNR commissioners and long standing recommendations by the State Water Resources Board, Commissioner Heinze and Governor Hickel created the new Division of Water. Sensitive to the concern that new agencies not increase to cost of government, the new division was created out of a consolidation of various water related programs within the Department of Natural Resources. Even with the appointment of a Director using a PCN from the Commissioner's office, the new division began with less (less 1 PFT Senior Adjudicator, 2 PPT clerks) state employees then were involved in water management before it was created.

The key reasons for the creation of the Division of Water had nothing to do with my availability or press discussion of a possible sub-sea water pipeline to California. It was made clear by the Governor that the Division would not be actively involved in the water pipeline issue. The key reason for the creation of the Division of Water was to bring higher public and political profile to water management issues. As a step-child in the former Division of Land and Water, the water programs never seemed to raise above land issues even though there were growing and pressing needs.

This Division is organized into five functioning units, with 26 employees, as expressed in the attached organizational chart.

**Navigability Section:** The highest priority of the division is formal acquisition (title transfer) of all submerged lands from federal to state title. When Alaska became a state, title to all submerged lands (up to ordinary high water) transferred to the State under the Equal Footing Doctrine in the US Constitution and other federal laws. Potentially 14,000,000 acres will transfer to the state after the state asserts that each waterbody is "navigable" consistent with a variety of court decisions. With about 30,000 streams and over 3 million lakes that are potentially navigable this is a formidable task, with only two staff and part of the time of the director. The Navigability Section is augmented by the Division of Lands, Title Section; the Attorney General's Office; and the Alaska Hydrologic Survey depending on need. Once a water body is determined navigable by the Division of Water, a batch of such determinations are organized and the Ags office files a 180 day notice to all applicable federal agencies. Once that notice is completed all adjacent land owners are Noticed and a court action is filed in federal court for Quiet Title. The work of the Navigability Section sets the basis for all Quiet Title actions on submerged lands. Once the title is secured through a federal court order, our case files are passed to the Division of Lands for management. Potential state owned submerged lands exist in the 1002 Area of ANWR, National Petroleum Reserve, and other federal management areas not only allowing important resource development such as oil and gas, minerals, gravel, subsistence resources, but also ensuring critical access through federal areas under state control. Often the only

source of gravel to support economic development in rural areas is found on state owned submerged lands.

Given the importance and complexities of this program, the fact that costs increase over time including the fast growing cost of legal Notice and necessary field verification, even with the use of volunteers, we have had to request a supplemental for FY93. We have also requested a CIP of \$330.0 for FY94 allowing an acceleration of one time field work to take advantage of sympathetic federal courts. We anticipate the attitude of the federal court to change over the next two years as the new Clinton Administration appoints federal judges. The longer it takes to assert navigability the more difficult it will be as historical information is less likely readily available.

**Water Management and Development Section:** The heart of the Division of Water is water management and development which has seen a reduction in staff of 65% over the past ten years. With 8 full time and one part time adjudicators for the entire state, two positions are currently vacant due to budget constraints. This section had 23 PFT adjudicators in 1984. Although this section processes about 650 water right files a year, as a result of this reduction in staff the **backlog** of applications and necessary administrative actions on case files continues to grow and is now at 1661. This growing backlog directly impacts citizens and businesses who need water rights in compliance with law and is causing delays in a number of important projects. The Division has addressed this problem by streamlining water permitting in both process and permit consolidation, and regular review of permitting priorities. A detailed analysis of the backlog and related costs is attached.

The Alaska Water Use Act is considered one of the best state water laws in the western states. Currently the State of Nevada is considering modifying their state water laws after those of Alaska, an action similar to those taken by a number of other western states over the past few years. Alaska has one of the best "public interest" and instream flow statutes in the west.

Under the Alaska Water Use Act, any significant use of water must be permitted by the State. This is to ensure the protection of prior water rights, consideration of public interest issues such as fish and wildlife, water quality, recreation, etc. If an individual or business does not secure water rights through the state they have no legal standing to assert a right to water being taken by an upstream or associated groundwater user.

The Division is now reviewing the possibility of segregating single family domestic use applications (necessary to protect their water rights although not required by law due to the low volume of water use) in areas with no anticipated water use conflicts, to allow these water rights to be expedited.

One of the key tools needed by the Water Management and Development Section is completion of the STOrage and RETrieval (STORET) system as requested under our CIP budget. Although 50% of this essential system is finished, and \$239.4 is necessary for completion, we will leverage the \$125.0 requested by the Governor against funds from EPA, USGS, BLM and other federal agencies. The completion of this critical water management system will allow greater accuracy and significant efficiencies in our water adjudication process when dealing with surface water resources. With STORET and modification of our

adjudication of single family domestic applications in areas of no known water conflict, we should be able to keep up with annual demands, although make only modest inroads on our case file backlog.

**The Office of the Director:** The Director of Water is not only responsible for overall management of the division, the director is the staff person responsible for water export development, our second highest priority - development of new revenue. A copy of our discussion paper on water exports has been provided to the committee. We have found this the most cost effective means of helping our market area and Alaskans understand the feasibility of bulk water transfers from Alaska to markets in the southwestern states and northern Mexico. Bulk water exports have the potential of developing \$20,000,000 in new annual revenue to the state in fees alone.

The Director represents the Governor and the State of Alaska on the Western State's Water Council which consists of 17 states. This council, a sub group of the Western Governor's Association, is the mechanism through which western state's interact with Congress and Federal agencies on a wide spectrum of water issues. In his participation at WSWC meetings the Director has also been able to promote Alaskan water exports and take advantage of a wide range of water experts in our market area reducing the cost of travel and contractual services needed for this program. The next quarterly meeting of the WSWC will be in Anchorage in July of this year.

Since creation of the Division of Water, the Director has successfully promulgated Alaska's first water management policy, stimulated the scheduling of our first State Water Summit, coordinated and lead the creation of the Alaska Water Management Council, successfully worked with the Legislature to pass the Water Fees bill in the first special session last year, and developed national and international attention to the potential for water exports. The profile of our water resources has been raised in both the political and public mind.

The **State Water Resources Board**, established by law, is also funded out of the Office of the Director at a cost of \$28.7 a year. This includes Board travel, per diem, staff support, materials, space rental when necessary, etc. Although the board was not funded by the Legislature in FY93 the Division has still been asked to provide staff support and other costs. The members of the Board are now traveling at their own expense and do not receive any per diem. The Governor has suggested to consolidation of this Board with the Soil and Water Conservation Board.

**The Alaska Hydrologic Survey:** With 40% of our nation's free flowing fresh water, in order to responsibly manage these water resources, accurate resource inventory and use data are essential. No significant economic activity can take place in Alaska without some water interaction. The construction of public transportation, public water supplies, mining, forestry, hydro-power generation, sport and commercial fishing, tourism, water quality, flood and erosion mitigation efforts - all are dependent on high quality water information.

The Survey consists of 11 scientists and one administrative field assistant, requiring an annual budget of about \$1,000.0. The General Fund budgeted amount of \$613.7 represents about half of the necessary budget for this program. In past years this difference has been off set by CIPs, Interagency transfers, Federal funds, and program receipts. During FY93,

to date, \$350.0 has been received from these other sources which is the largest amount ever. Half of this revenue was a one time transfer from DOT/PF for work as a part of their cooperative agreement on the environmental assessment for the Copper River Road project. Many of the Survey's activities are in response to requests by small communities for assistance in quantifying existing water uses or identification of new water sources. In these cases the Survey negotiates a match of state and local funds and often leverages federal funds for the project.

The Survey develops and maintains six (6) critical water data bases used by public and private groups statewide. They include a groundwater data base with 24,000+ entries, stream and lake data basis with over 16,000 entries, a water use data base with about 400 large water users, and a wind and precipitation data base with about 50 stations.

The Survey works very closely with the US Geological Survey in collecting water inventory and use data. Our Cooperative Water Resource Inventory Program is a federal/state matching effort to better understand our vast water resources. This effort has most often been focused to some immediate need rather than the more comprehensive and possibly more cost effective approach of a statewide stream gaging network.

In order to explore this cost efficiency, we have requested \$275.0 in the Network/Gaging CIP, which will be matched with USGS funds, to do a stream gaging network evaluation and establish regional gaging stations. These two actions have been requested as the highest priority of the State Water Resources Board, have been introduced in legislation in the past, and are anticipated to be endorsed as the highest priority for water resource management by the new Alaska Water Management Council a coordinating group representing 21 state and federal agencies, the University of Alaska, and the Water Resources Board. With the network evaluation and placement of regional gaging stations a much broader understanding of our water resources can be obtained, over time, at less cost to individual projects due to the use of synthetic data built on the information collected by the regional stations.

With 80% of Alaska's public water systems dependent on groundwater, common problems of inadequate yield and poor water quality create the need for technical assistance to citizens, local governments, and state agencies. Groundwater issues in Alaska present technically very difficult problems. The only certified groundwater professional in Alaska is one of our senior scientist.

Over the past year the Alaska Hydrologic Survey has emerged as a valuable asset in all aspects of water resource management across the state. With combined Alaskan experience of over 130 years, these 11 scientists and the water resources laboratory provide the essential inventory and use data upon which water management decisions are made. Without this critical data major projects can be delayed as much as 10 years.

**Dam Safety and Construction:** With over 80 structures under state Dam Safety authority and responsibility and only one full time engineer (with 23 years of Alaska experience), this program presents unique challenges in meeting our statutory responsibilities to protect public safety and the investment in these structures. With the creation of the Division of Water a review was initiated of all regulated (88) structures and a status report requested. It was discovered that the state engineer had not physically inspected a number high risk structures due to limitations in travel funding. By rearranging priorities within

the division the engineer was directed to visit all high risk structures in FY93. This resulted in discovery of a number of compliance issues which have been addressed over the past year. A formal report is now being prepared on the status of all structures annually. This report will be available to the legislature and the public.

In addition to general compliance issues on water impoundment structures, this section is very involved in reviewing and permitting dams for projects such as the Fort Knox Mine, the AJ Mine, the Kensington Mine. By using fees assessed against the developers of these mining activities we are able to secure assistance from a number of world class dam safety engineers. This approach has been very successful in augmenting the capabilities of our limited staff and in resolving design conflicts as there are many variations of such structures in Alaska.

Two other programs I would like to highlight.

1) We have requested \$60.0 in a CIP for one time wetlands work. The basic purpose of this CIP is to prepare scientific papers on four wetland issues that continue to raise questions. Is all tundra wetland? Does permafrost cause a wetland in current definition that does not function as a true wetland? In SE Alaska can you have organic material on bedrock that is considered a wetland, but again has no wetland function? Does glacial sediment cause wetlands under the Delineation Manual that do not function as wetlands?

With these four scientific papers the state will attempt to persuade the Army Corps and EPA that wetlands in Alaska be delineated based more on their function rather than arbitrary federal delineation criteria. This could mean a change in the location and extent of regulated wetlands in Alaska and alter the State's approach to wetland program assumption or general permit development.

2) The Division of Water has begun to assume responsibility for a number of flood and erosion mitigation efforts. Last year we assisted the Mat-Su Borough in their efforts to mitigate a significant loss of private land and homes along the Matanuska River. With the design and construction of four finger dikes at a total cost of \$500.0 a temporary solution was put in place for far less than the \$50,000,000 originally suggested by the Army Corps of Engineers.

By providing low-tech, low-cost flood and erosion mitigation alternatives to local communities through a matching effort we can leverage local participation with state funds with cost effective applications that solve problems. This effort takes a small amount of time from our Dam Safety Engineer who is very familiar with water related structures and one of our hydrologists who is also very familiar with such efforts. Let emphasize that this is a cooperative effort with local participation and investment.

Finally, the Division of Water will continue to pursue the philosophy of "leveraging". When ever presented with a challenge we will attempt to find others to participate with us in a team effort in crafting solutions. This is reflected in our coop-programs with USGS, our local assistance programs in water and flood and erosion mitigation, our dam safety program, and our cooperative planning efforts with federal and private sector partnerships. The Alaska Water Management Council will quickly develop as a valuable mechanism in these cooperative efforts.

# Navigability

With the submitted budget the navigability section will;

- 1) Review all federal navigability decisions to ensure that the state's title to submerged lands is properly addressed and challenge decisions that are not in the state's interest under the equal footing doctrine.
- 2) Prepare additional 180 day notices to be given to all federal land management agencies of intent to file for Quiet Title lands beneath 300 lakes and streams.
- 3) Support the AGO on the current federal court filings for quiet title to the submerged lands beneath 195 lakes and streams. Obtain clear title to over 300,000 + acres of state owned land.
- 4) Prepare navigability reports necessary to assert and defend the state's title to submerged land that contain oil and Gas, mineral, and gravel resources.

The navigability section cannot do the following under the submitted budget;

- 1) Continue to support the Water Resources Board.
- 2) Properly inventory and distribute accurate graphic depiction (maps) of the current status of the Quiet Title filings in federal courts.
- 3) Collect required physical field data to support the Quiet Title actions in federal court.
- 4) Identify state owned submerged lands within the Mental Health Trust settlement.

## DAM SAFETY & CONSTRUCTION

A realistic analysis of the proposed FY 94 budget for the Dam Safety & Construction Section reveals a very dismal picture for supervision of the safety of dams with the State of Alaska. The only real dollars available to the program will be the 56.3 General Fund money. Realistically, no significant federal funding or program receipts are anticipated. This general fund money will provide approximately 7 months of personal services for the State Dam Safety Engineer (PCN 10-1679)(the only position in the program) and no funding for 200 - 500 items.

Work planned for accomplishment is identified in the Division of Water Tactical Plan. This work includes continued work on issuing permits for dams associated with the AJ, Kensington, and Fort Knox Projects; insuring that statutorily required owner inspections of dams are accomplished; insuring owner completion of emergency action plans for high risk dams; maintaining and updating the inventory of dams; and assistance to local governments in dealing with flood and erosion mitigation. However, the funding which will be provided in the proposed FY 94 Budget will severely limited the amount of work which will be accomplished in the above areas.

It is estimated that issuance of the statutorily required permits for the AJ, Kensington, and Fort Knox Dams will be delayed. The schedule of statutorily required owner inspection of dams will not be maintained, creating the possibility of undetected threats to lives and property. Emergency Action Plans which detail coordinated actions of the dam owner and the local emergency management agency will not be completed, leaving the public at risk in the event of an emergency involving a dam. The inventory of dams, the data base from which the program is operated, will not be updated in a timely manner. This causes hazard classifications not to reflect real conditions and impedes the correct scheduling of inspections. Assistance to local governments for flood and erosion mitigation will be severely curtailed.

In short the Dam Safety and Construction Section cannot operate effectively under the proposed FY 94 budget and cannot fulfil its statutory responsibility for protection of public safety. A more immediate problem will be the certain delay in the issuance of permits for dams for large mining projects which will affect the Alaskan economy in a positive way.

## DIVISION OF WATER WATER MANAGEMENT AND DEVELOPMENT

It is estimated that Alaska has 30,000 streams and over 3,000,000 lakes with 40% of the Nation's surface water resources. The WMDS has 8.5 professionals managing this vast resource. Two of these positions are currently vacant due to budget constraints. It is estimated that 82.2% of the water needs in Alaska are from surface water sources and 17.8% are provided from groundwater. This same water, necessary for day to day use for domestic supplies, commercial, or industrial development, also provides for the unique Alaska experience by adding to Alaska's scenic wonders, rich fish and wildlife resources, and recreational and cultural values.

The WMDS is statutorily responsible for permitting any significant water use in the State. This section currently has a backlog of 1,661 casefiles that require action in FY93. As a result of permit consolidation and process streamlining, the section has kept this backlog from increasing, but, if adequate funding is not obtained, the backlog will increase to over 1750 casefiles by June 30, 1993. The WMDS anticipates a number of new projects starting this spring, including increased drilling activity on the North Slope, Goat Lake Hydroelectric project near Haines, Black Bear Lake Hydroelectric project, the new Elmendorf Hospital, Terror Lake Hydroelectric project amendment, Leanne Lake Hydroelectric project (Kodiak), Tazimina Hydroelectric, and the New State Court Building (Anchorage).

### WMDS PRIORITIES

1. Adjudication of water rights applications > 500 gpd and Temporary Water Use Applications
2. Expired permits
3. Regulations, annual administrative service fees, and water appropriated and sold by the State.
4. Compliance with AS 46.15.040 and AS 46.15.180.
5. Planning team / Task Force work/ pre-application work
6. Water rights applications < 500 gpd and Instream Flow
7. Permit coordination ( state, federal and local agencies)
8. Policy and Procedure (regulations)

In FY 92 the WMDS averaged 2.8 persondays/casefile. Based on a current backlog of 1661 adjudication actions (507 pending applications, 802 expired permits and 352 applications expected in FY93) it would take 4597.6 persondays to adjudicate the pending and backlog files, or 20.5 people 1 year working 37.5 hours per week, taking into account normal leave and holidays. Each existing water manager (7.5 people) within the WMDS would be responsible for 221 files which would take them 2.75 years to complete and would not include, future applications, water resource planning, task force participation, regulations review or drafting, permit coordination, policy & procedures review or drafting, special or large project reviews or any other water management function normally done on a day to day bases.

The proposed FY94 budgets will result in an increase in the backlog of applications and expired permits and increase in the time it will take to adjudicate a water rights request. Of the priorities listed above, the WMDS will have trouble doing an adequate job on the first three and will not be funded to do the required work listed in priorities 4-8.

## Water Right Backlog as of 1/1/93

Southcentral	230 Single Family Applications Pending (some dated 1985)
	169 Commercial Applications Pending
	275 Expired Permits requiring action
	74 Permits to expire in FY93
	50 Temporary Water Use Applications expected in FY93
	180 New Water Rights applications expected in FY93
Northern	12 Single Family Applications Pending (some dated 1985)
	24 Commercial Applications Pending
	271 Expired Permits requiring action
	43 Permits to expire in FY93
	40 Temporary Water Use Applications expected in FY93
	40 New Water Rights applications expected in FY93
Southeast	11 Single Family Applications Pending (some dated 1984)
	61 Commercial Applications Pending
	125 Expired Permits requiring action
	14 Permits to expire in FY93
	12 Temporary Water Use Applications expected in FY93
	30 New Water Rights applications expected in FY93
WMDS Backlog	507 Applications Pending
	671 Expired Permits requiring action
	131 Permits to expire in FY93
	102 Temporary Water Use Applications expected in FY93
	<u>250</u> New Water Rights applications expected in FY93
<b>TOTAL BACKLOG:</b>	<b>1,661</b>

Commercial Applications include: Industrial, agriculture, mining, construction, hydroelectric, seafood processing, public water supplies (cities, towns, and villages), logging, oil and gas exploration and development, instream flow reservations, community water (subdivisions), and other large water users.

## ALASKA HYDROLOGIC SURVEY

FY 94 Projected Task Potential (based on "requested budget")

### BACKGROUND:

The extreme difficulty in closing out FY 93 using the FY 93 general fund and other budgets has shown that many of the projected accomplishments of the Alaska Hydrologic Survey (AHS) are not reasonable to expect in FY94. The AHS is composed of 12 scientists and two administrative personnel, and requires a yearly budget of about \$1,100,000.00 dollars. The general fund budgeted amount of \$613,700.00 approximates one half of the necessary budget for operation of the AHS.

In past years general fund shortfalls have been made up through CIP, Interagency, Federal and Program receipts; BUT these other funds have never equalled one half of the needed budget. During FY 93 the \$360,000.00 received is the largest amount the AHS has received from other sources in the history of the section. A single RSA from DOT for \$170,000.00 accounts for the increase in the FY 93 "soft money". Such a large single contract is not expected in FY 94.

### PROJECTION:

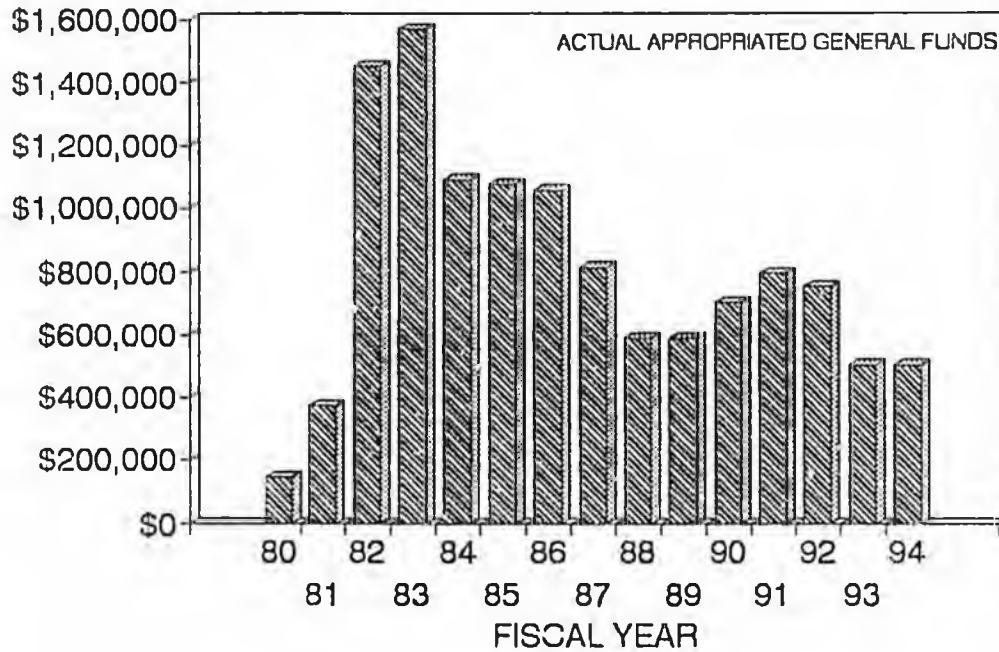
The FY 93 funds are **not adequate** for the AHS to operate at full strength for the fiscal year. Extreme measures of VLWOP, shortened work week, reorganization and potential layoffs threaten the continued performance of the AHS. **FY 94 projections are a continuation of this critically inadequate budget.** Therefore, only minimal important tasks and projects will be accomplished. A summary follows:

- Limited Navigability technical support
- Very few streams gaged for streamflow monitoring
- Reduced technical data for management of Alaska's waters
- Some data and analyses for development of Alaska's natural resources (minerals, timber, agriculture, oil and gas, tourism, parks, community water supplies).
- Maintain a ground water database but with no expansion of the database
- Provide limited information to public and agency requests for hydrologic information
- Operate a water quality laboratory at minimal levels
- Conduct site-specific projects, through contracts, for agencies or organizations

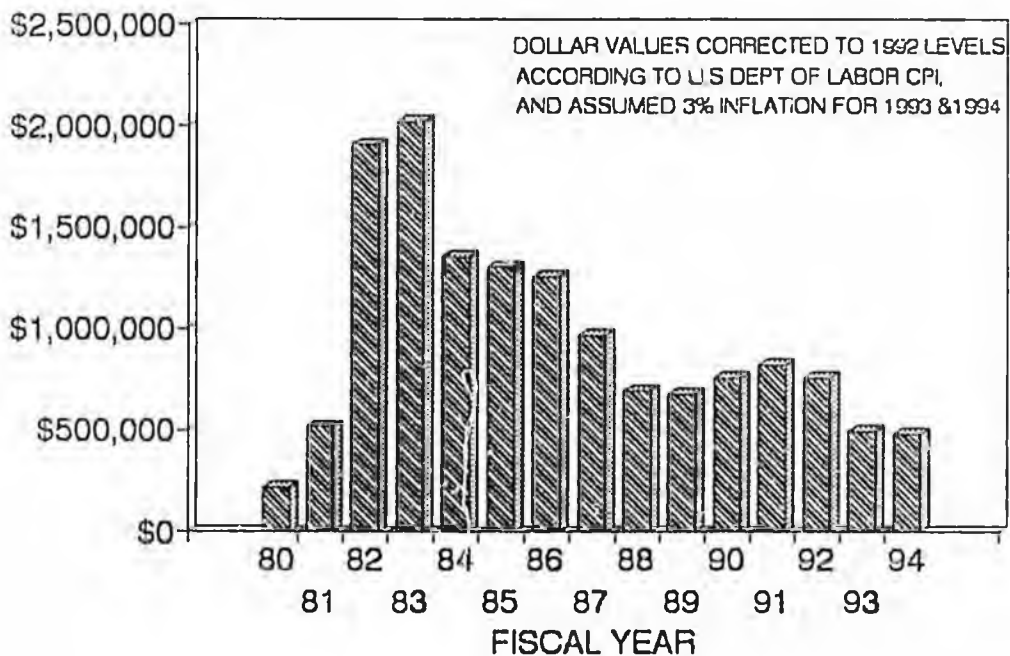
A general fund budget level of 50% of needed funds reduces the critical mass of scientific personnel necessary for projected operation and the following items **will not be achieved:**

- Technical navigability determinations
- USGS cooperative matching program for stream gages and well monitoring
- Wetlands evaluation and technical support
- Improvement and expansion of surface water and ground water databases
- Erosion and flood evaluation and interpretation
- Support through water resources data and information for development of other natural resources including fish and game.
- Evaluation of placer mining waters to stimulate mining in the state
- Strong state involvement in analyzing Kenai Peninsula ground water
- USGS stream gaging and cooperative program
- Assistance for providing drinking water for villages, promoting public health and safety

## HYDROLOGIC SURVEY BUDGET HISTORY



## HYDROLOGIC SURVEY BUDGET HISTORY



DNR reductions-closeout-final

FINAL-House Finance DNR budget subcommittee			
BRU/Component	GF Reduction	PR	Comments
Management & Admin			
Commissions-CACFA	(89.0)		Proposed by Dept - Eliminates CACFA staff
Resource Development			
Water Development-hydrology		(300.0)	Unrealized Program receipts
Oil & Gas Cons. Comm	(52.6)		Proposed by Dept-reduce vacancy, eliminate 1 engineer
Oil & Gas Development	(102.0)		Dept. Proposal 205.0 will need Fiscal Note for new legislation
Mining Development	(45.0)		Proposed by Dept-Admin asst. position
Land-Mining Reclamation		(83.3)	Proposed by Dept-Unrealized Program Receipts
Geological Development	(118.0)		Proposed by Department - 5% scenario eliminates GF increment
Land-Public Information Center	(360.0)	270.0	Partial change to PR
Water Development	(175.5)		eliminates GF increment
IRM-Status Graphics	(110.0)		Proposed by Dept-Verif. of graphic land records-reduces quality control
Land-RPL		(33.9)	Recreation Rivers-leaves 21.6
Land-RPL		(30.0)	Publications-leaves 25.0
Parks & Rec. Mgmt	(175.0)	175.0	Proposed by Department-Increase PR auth. Park maint. and operations
Challenge Alaska	(35.0)		Proposed by Department-eliminates grant
Agricultural Development			
Nursery Operations	(100.0)		Prop by Dept-Poss. Fed funds, incorp w/PMC, Priv seedling producers
Foundation Seed Production	(36.2)		Prop by Dept-rely on private producers-1PFT to 1PPT, reduce equip
S&W Board Travel	(18.6)		Prop by Dept-travel reduced, rely on teleconf, seek other sources
State Fairs	(43.3)		Leaves 75.0 for statewide fairs
Kawerak Reindeer Grant	(13.3)		Proposed by Department-eliminates grant
<b>TOTAL</b>	<b>(1,473.5)</b>	<b>(2.2)</b>	

# STATE OF ALASKA

## DEPARTMENT OF NATURAL RESOURCES

### DIVISION OF WATER

WALTER J. HICKEL, GOVERNOR

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March 29, 1993

Representative Con Bunde  
House Resources Committee  
State Capitol  
Juneau, Alaska 99801

Representative Bunde:

During the meeting between the State Water Resources Board and the House Resources Committee you offered some comments and criticisms that I, and members of the Board, felt needed response and clarification. But first, let me express my appreciation for your statement of appreciation to the members of the Board who are truly volunteers in that they pay their own travel, room and board, and take time away from their jobs to serve on the Board. As you know the legislature did not fund this board last year and we anticipate that it will not be funded again in FY94 based on both House and Senate Finance Committee efforts.

When the Division of Water was created in June of 1991, although authorized in statute in the early 60's, it was immediately faced with efforts by private companies to export bulk quantities of water from Alaska. In fact, one export permit had already been approved. As Director, I was initially very skeptical of the economic and environmental viability of such an enterprise. As Director of a resource agency, and consistent with law, I maintain a reasonable level of skepticism. I was also very concerned that, under existing law, the state had no mechanism to receive any revenue for such exports or adequate statutory guidance in permitting exports. As a result, and with the Governor's support, we presented the legislature a Water Fees Bill, a portion of which passed during the first special session in 1992. This legislation authorized the assessment of a Conservation Fee for any water removed and not returned to a Hydrologic Unit. Although the state is constrained by the US Constitution (Commerce Clause) from assessing "export" fees, this law now allows fees to be assessed in a manner that we believe will withstand challenge. As Director, I was able to convince one of the leading firms attempting to export water from Alaska to support the legislation in formal testimony.

The efforts of the Division of Water, in response to bulk water exports, are driven by law, regulations, permit applications, constant inquiries from around the world, and the pressing need for new jobs and new revenue for the state. Any person may apply for water rights from the State of Alaska. But we are concerned that the State have some understanding of this new industry, its market demands, transport logistics, economics, its viability - in the long-term interest of the State. Because of these concerns and the requirements we must consider "in the public interest" in our permit adjudication processes, the Director has spent a small portion of his time - with very limited assistance from the Hydrologic Survey and Water Management Sections as well as the US Geologic Survey, US Forest Service and other federal and state agencies - attempting to understand and guide the water export industry "in the public interest".

We have provided a map of "potential" export sources to steer applicants away from areas of conflict. One application has been withdrawn at the Director's request as it would have impacted a federal wilderness area. Another application will be withdrawn as it could impact recreational uses, again at the Director's request. The Director concluded that rather than continue to second guess applicants and spend limited funds responding to applications that are not realistic, we should give some direction to areas that may be more accommodating.

Although the Director has received dozens of requests to speak before various interest groups, media, and water districts in the southwestern states, due to very limited travel only a few invitations have been accepted and then in most cases coordinated with other out-of-state travel already required. In most cases, tele-conferencing is used. An annual report of expenditures by the Division on water exports is provided, as required by statute, in January of every year. I have enclosed a copy of our latest report.

Late last year, it became clear that the general issue of bulk water exports was becoming more and more complex, technical, and the same questions were being asked and answered. In an effort to use limited resources more productively, a discussion paper was crafted by the Director addressing key issues. This paper continues to be updated as new information becomes available. The paper has been reviewed by most of the top leaders in water management in the western states, financial groups interested in financing private efforts to export water from Alaska, national publications on water issues (with very positive results), marine transport experts, and many critics. With this discussion paper, we respond to most inquiries in the following manner: 1) Upon request we provide copies of the discussion paper to the group or person expressing interest at a fee of \$8 plus \$2 handling and postage. 2) A tele-conference is then scheduled in 10 to 14 days to discuss concerns or further interest. 3) If it is necessary, and the Director will be in the area of the party expressing interest while attending a Western State's Water Council meeting, at which he represents the Governor and the State of Alaska - a meeting may be scheduled. 4) An invitation is extended to the party expressing interest to visit Alaska. For example, the Director of the Colorado River Commission visited Anchorage and Juneau last year, nine "new leaders" from Mexico visited this month.

By using the discussion paper, tele-conferences, insistence that the party visit Alaska, or by trailering meetings at times the Director may be in the area - we have greatly increased our productivity, kept costs to a minimum, and returned revenue to the state as market representatives visit Alaska. In July of this year, at the invitation of the Director, over 100 experts from the southwest will visit Alaska (spending an estimated \$63,000 in our economy) and many will spend up to two weeks on business and personal travel in our state.

But why do any of this? If the use of water can pay for the management of water and generate a perpetual revenue stream that can begin to address the host of other water problems in Alaska - is that not good public policy? With the export of one million acre feet a year, spread across many sources in order to limit any impact, the Division can stimulate the creation of hundreds of new jobs and generate initially \$20 Million a year in fees alone for the state treasury. This is NEW revenue, from a resource that is more renewable than trees, fish, wildlife, minerals, oil or gas, and land. With over 300 million acre feet a year discharged in SE Alaska alone, and one billion acre feet discharged from Alaska every year - this is a very small amount of water to Alaska. It is however, a lot of water to the southwestern states.

Can we export bulk quantities of water in a sustainable and environmentally sound manner? Alaska statutes are generally considered the toughest in the west. Our "public interest" considerations are a model copied by other states, including Nevada this year. Our instream reservations for fish, required in any source adjudicated for export, are clear and specific. Our other instream protection laws are also a model for western states. As I often say, I can not permit the export of water necessary for the State - the water must clearly be surplus.

But you commented that, in essence, there is no such thing as "surplus water". The Division of Water, consistent with law, permits the taking and use of water for hundreds of sources for hundreds of commercial and industrial, domestic, and public drinking water uses daily. Our instream adjudications for fish have illustrated that in many cases there is surplus water even in streams with fish. But what about estuary impacts? This is an important question that must be examined on a case-by-case basis depending on the character of the source under application, the amount requested, and the area within which the discharge is located. We have made it very clear, from the beginning, that any environmental impacts that must be assessed will be done at the cost of the applicants.

But now comes the difficulty. How can the state adequately adjudicate permits and review environmental impact studies if the skill/talent bases needed to do so is cut from the state budget? The House and Senate proposed cuts in the Division, with programs already reduced by almost 70% in the last ten years, will harm our efforts to protect the public interest and responsibly apply state laws and regulations.

I have enclosed for your review a copy of the water export discussion paper and an assessment of the impacts of FY94 cuts on our ability to protect the public interest and responsibly manage our water resources. Those that understand the basic essential of water in any economic activity in Alaska understand that cuts in these budgets are harming jobs, economic growth, and economic diversification rather than accelerating it.

If you desire any additional information or would like an opportunity to discuss our efforts to serve the people of Alaska please let us know.



Ric Davidge  
Director of Water

Enclosures

cc: Raga/Olds  
Water Board

# ALASKA

*40% of our Nation's Freshwater Resources*

## ***WATER EXPORTS***

A discussion paper of key issues involved in moving bulk quantities of water from Alaska to the southwestern states and Mexico using marine transport.

Developed by

**Ric Davidge**

Director of Water  
Department of Natural Resources  
State of Alaska

(907) 762-2294

This paper will continue to be updated as new information becomes available.

March 17, 1993

# POTENTIAL WATER EXPORT SITES IN SOUTHEAST ALASKA

## LEGEND

- ★ Hydro-Electric Facility with Development
- ▲ Undeveloped Site

### Juneau Area

- 1) **Long and Crater Lakes (Snettisham Power Project):**  
These two lakes form the Snettisham Power Project that uses approximately 350,000 acre feet of water per year. The hydroelectric facility is located at tidewater. The combined drainage area is over 50 square miles. The area receives 200 to 240 inches of precipitation yearly. This site is located just south of Juneau and has an air strip and filled dock facilities.
- 2) **Tease Lake:**  
Tease Lake is a small lake located near the Snettisham Power Project. It is located just over one mile from tidewater at an elevation of 1,006 feet. The basin area is greater than 15 square miles, and receives 100 to 200 inches of precipitation yearly. There is an abandoned pipeline between the lake and tidewater.
- 3) **Turner Lake:**  
Turner Lake is located south of Juneau. It is nine miles long, and up to 1,500 feet wide. The lake is located less than one mile from tidewater and has a surface elevation of 73 feet, but is over 800 feet deep. Turner Lake has a drainage area over 40 square miles, and the area receives 140 to 160 inches of precipitation yearly.

### Sitka Area

- 4) **Blue Lake near Sitka:**  
This lake is over three miles long and up to 4,200 feet wide. The lake has a hydroelectric facility located at tidewater. The basin drainage area is over 37 square miles. The area receives 180 to 220 inches of precipitation yearly. This site is located near Sitka and has road access. From 13 years of USGS records, the average annual flow is 351,124 ac-ft.
- 5) **Green Lake near Sitka:**  
This lake is over one mile long and up to 1,200 feet wide. The lake has a hydroelectric facility located at tidewater. The basin drainage area is over 29 square miles. The area receives 180 to 220 inches of precipitation yearly. This site is located near Sitka. From nine years of USGS records, the average annual flow is 212,846 ac-ft.

### Western Islands (Chichagof and Baranof)

- 6) **Lake Eva:**  
Lake Eva is over one mile long, and 1,500 feet wide. The lake is located one mile from tidewater at an elevation of less than 100 feet with a drainage basin area of over ten square miles. The area receives 120 to 160 inches of precipitation yearly.
- 7) **Basket and Kook Lakes:**  
These lakes are located next to each other and have a combined drainage area of over 35 square miles. The lakes are located less than two miles from tidewater at an elevation less than 100 feet. The area receives 60 to 100 inches of precipitation yearly.
- 8) **Cliff and Deer Lakes:**  
These lakes are located within two miles of each other and have a combined drainage area greater than ten square miles. Deer Lake is approximately four miles long and 3,200 feet wide, and Cliff Lake is one mile long and 1,800 feet wide. The lakes are located less than one half mile from tidewater at elevations of 134 feet (Cliff Lake) and 400 feet (Deer Lake). The area receives 280 to 300 inches of precipitation yearly. From 16 years of USGS records, the average annual flow from Deer Lake is 112,215 ac-ft.
- 9) **Rosifal Lakes:**  
This is an inter-connected system over two miles long and up to 3,000 feet wide. The lakes are located less than one mile from tidewater at an elevation of 607 feet. Although the drainage area is only five square miles, the area receives 300 to 400 inches of precipitation yearly.

### Petersburg Area

- 10) **Scenery Creek and Lake:**  
Scenery Lake is three miles long and up to 1,800 feet wide with a drainage basin of 30 square miles. The lake is located four miles from tidewater at an elevation of 957 feet. The area receives 160 to 200 inches of precipitation yearly. From two years of USGS records, the average annual flow is 188,955 ac-ft.
- 11) **Cascade Creek (Swan Lake) near Petersburg:**  
This lake is over two miles long and up to 2,500 feet wide. The lake has a hydroelectric facility located at tidewater. The basin drainage area is over 23 square miles. The area receives 160 to 200 inches of precipitation yearly. This site is located near Scenery Creek and Petersburg. From 28 years of USGS records, the average annual flow is 533,563 ac-ft.

### Bradfield-Harding-Eagle Rivers Area

- 12) **Tye Lake:**  
This lake is two miles long and up to 2,000 feet wide. The lake has a hydroelectric facility located at tidewater. The basin drainage area is over 15 square miles. The area receives 140 to 180 inches of precipitation yearly. This site is located near four other sites. From seven years of USGS records, the average annual flow out of the lake is 126,694 ac-ft.
- 13) **Bradfield River:**  
This river system drains over 63 square miles. The area receives 140 to 180 inches of precipitation yearly. This site is located near four other sites. From two years of USGS records, the average annual flow is 545,871 ac-ft.
- 14) **Harding River:**  
This river system drains over 67 square miles. The area receives 140 to 200 inches of precipitation yearly. This site is located near four other sites. From 40 years of USGS records, the average annual flow is 535,736 ac-ft.
- 15) **Eagle River:**  
This river system drains over 25 square miles. The area receives 140 to 160 inches of precipitation yearly. This site is located near four other sites.
- 16) **Annan Creek and Lake:**  
This drainage system consists of two interconnected lakes over four miles long and up to 1,800 feet wide in a drainage basin of 20 square miles. The lakes are less than two miles from tidewater at an elevation of 231 feet. The area receives 80 to 100 inches of precipitation yearly.

### Ketchikan Area

- 17) **Swan Lake near Ketchikan:**  
This lake is two miles long and up to 4,200 feet wide. The lake has a hydroelectric facility located at tidewater. The basin drainage area is over 35 square miles. The area receives 160 to 180 inches of precipitation yearly. From 32 years of USGS records, the average annual flow from it is 333,025 ac-ft.
- 18) **Margaret Creek and Lake:**  
This drainage system is over 15 square miles in area with some development. Margaret Lake is one mile long, has a surface elevation of 135 feet, and is within two miles of tidewater. The area receives 100 to 120 inches of precipitation yearly.

### Prince of Wales Island Area

- 19) **Old Frank and Mary Lakes:**  
Old Frank and Mary Lakes form an interconnected system over two miles long and up to 2,100 feet wide, with a drainage area greater than 15 square miles. The lakes are located two miles from tidewater at an elevation of 200 feet. The area receives 120 to 140 inches of precipitation yearly.
- 20) **Ratz and Eagle Creeks:**  
These two creeks are near each other, have a combined drainage area of over 27 square miles, and both contain lakes. The lake on Eagle Creek is two miles long, 2,500 feet wide, at an elevation of 80 feet and within two miles of tidewater. Ratz Creek has two small lakes at 182 and 31 feet. The area receives 120 to 140 inches of precipitation yearly.

Base map provided by USGS - Export sites and narrative developed by Alaska Division of Water



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## FY94 Impacts of Senate Budget Reduction Targets

### DIVISION OF WATER

(3/30/93)

The proposed budget reduction of \$175,500 in General Funds, \$70,100 in line items 200-500, \$425,000 in proposed CIP, and \$520,000 in Program Receipt authorizations is a 40% reduction of the proposed FY94 budget resulting in major impacts to many public and private enterprises. It will also result in a drastic reorganization of the Division including the elimination of the Alaska Hydrologic Survey Section (AHS) as a separate section of the division. This reduction, combined with FY93 cuts, may require the layoff of 7 scientists from the AHS, the elimination of the Federal/State Cooperative Water Data Collection programs, the elimination of DNR's support of the Alaska Water Resources Board, and future participation in the Western State's Water Council.

It is estimated by the US Geologic Survey that Alaska has 30,000 streams and over 3,000,000 lakes with 40% of the Nation's free flowing surface water resources. In addition 75% of Alaska's water is frozen in glaciers and permanent snow fields. The Division of Water (DOW) has only 25 professionals statewide managing this vast resource. The proposed FY94 reduction will result in a 28% staff reduction. DOW's options are very limited. The programs in the Division of Water have seen a 66% reduction in General Fund Authorizations and a 60% reduction in staff since FY83. The knowledge and understanding of our waters are essential to accelerated economic diversification and sound resource development; and, as required by statute, the AHS is responsible for the collection, storage, and dissemination of this knowledge.

A reduction of \$30,200 from the travel budget and \$53,400 from the contractual budget of the Division will make it impossible to continue the critical and essential field work and permit monitoring required to effectively manage the use of water in most areas of the state. Also the already limited travel essential to generate additional revenues (\$20 million annually) from water exports will be further hindered, resulting in costly delays in implementing the water export program in response to pending applications.

The Alaska Hydrologic Survey plays an essential role for the Division and also for the other users of water resource data. Much of the hydrologic data used by water managers (state/private) for the purpose of decision making on projects is collected, stored, and disseminated by the Hydrologic Survey Section. The loss of any of our highly specialized Alaskan experienced (130 years) hydrologists will hinder the State's permitting functions, not only in DNR but in DEC, ADF&G, and OME/DGC, as well as the private sector in their planning and permitting for project development.

As a result of FY93 legislative cuts, and projected revenue short-falls, beginning April 1, 1993 the Division will go on 30 hour work weeks with most sections closed on Mondays. The Division is also implementing layoffs due to FY93 legislative cuts. Any cuts to the FY94 budget will greatly compound this problem and will result in additional layoffs and project delays that will be quickly felt by the public and private sectors. The Senate proposed cuts in FY94 will result in significant permitting delays, fewer navigability determinations, fewer dam safety inspections, and, most of all, a serious decline in the collection and evaluating of hydrologic data that is essential to support Alaska's economy and the water management responsibilities of the Division, other state and federal agencies, and the private sector. These impacts will be felt from small residential subdivisions to major mining projects.

Any delays in water use permitting, dam safety inspections, or navigability determinations resulting from additional budget cuts will also expose the state to unnecessary and costly litigation, for failure

to protect the rights of the public, and water users as required by law, and for failure to issue permits within a responsible time. Additionally, opportunities would be created for groups interested in stopping or seriously delaying projects such as Fort Knox, AJ Mine, and Kensington Mine.

### Office of the Director

The Senate note that a \$175.5 "increment" in the Director's Office be denied is incorrect. The \$175.5 is a total of all changes (which are not increments) in the Division of Water, not in the Director's Office. In addition, there are no (Senate notes 3) new positions in the Division other than the one proposed as a part of the CIP budget.

An increased authorization of \$70.0 has been requested for the Director's Office in IA revenue to continue to cover Mr. David Orr, who is on temporary duty with the Department of Commerce and Economic Development as the leading expert on the Northern Sea Route opening Europe to Alaskan markets. Mr. Orr was transferred from the former Policy and Procedures Section in the Division of Water to this position. As noted in the budget presentation the Policy and Procedures Section was eliminated as a result of FY93 budget reductions and the responsibilities of this section assumed by the Director and the Chief, Water Management and Development Section.

Included in the budget of the Office of the Director is the budget for the State Water Resources Board. This board was not funded in FY93 although it continues to exist and the Division is still expected to pay travel, per diem, space rent, staff support, supplies, notice publication of all meetings, etc. Although travel and per diem are not being covered in FY93 all other costs had to be covered resulting in a deficit. The cost of the Water Resources Board is \$28.7 in the Director's Office budget for FY94. The House Finance Committee has recommended denying this component. DNR has reluctantly agreed to this cut. If this cut is sustained by the legislature, the Division will no longer provide services to the Board.

The Director of Water functions as the only staff person in the Division dedicating a portion of his time developing new revenue sources for the state. The development of a new industry in response to market demand and pending applications, has the initial potential of generating \$20 million in NEW annual revenue to the state in Conservation Fees alone. The Division currently has four applications for export of close to 500,000 AFY. The Director has developed a discussion paper on the viability of bulk water exports that has attracted national attention and is hailed as an important development in the market area (southwestern states and northern Mexico) as many southwestern states and water districts try to find NEW WATER.

Southern Nevada will be out of water by 2006, northern Mexico will be out of water by 2005, and California will have a 4 - 6 million AF deficit by 2010. All water experts agree that the first decade of the next century (in 10 years) will face a water crisis, even with normal annual rain fall. The market is in demand, Alaska has the supply (40% of our Nation's free flowing fresh water), and the annual export of 1 million AFY from Alaska to this market opens significant new economic opportunities in SE Alaska and creates hundreds of new jobs.

Without adequate personnel and travel funding, in general fund dollars, until revenues from water exports can support the effort in late FY95, the development of this new economy will falter. Alaska must be in the forefront, with strong visible support of water exports, or the market will not take seriously what has already been accomplished and others will meet this demand.

Since the creation of the Division of Water less than two years ago, significant tasks have been accomplished. Alaska now has its first Water Management Policy, signed by the Governor after extensive public and agency review. Alaska has passed nationally prominent legislation assessing conservation fees for water taken out (exported) of hydrologic systems. Alaska is the first state to establish a federal/state water management council which institutionalizes interagency coordination and collaboration (22 state and federal agencies, the University of Alaska, and the Alaska Water Resources Board) on water management. Major efficiencies have been identified in permit coordination, processes streamlined, data standards established, etc. None of these accomplishments

would have likely occurred without the creation of the Division of Water which started with fewer staff in water management then before it was created.

The Director of Water also is the point person for the Department of Natural Resources on wetlands issues. As the state attempts to secure a Statewide General Permit and "activity" or "regional" general permits, the role of DNR in wetlands management has become more and more critical. Although DEC is preparing the wetland management regulations under an EPA grant, it will be DNR that eventually manages state owned wetlands. Without adequate funding for the Director, this essential function will be lost - at the most critical time in the development of this program which will allow Alaska to manage its own wetlands.

One of the most important network contacts of the State of Alaska on all water issues is the Western State's Water Council. This council of 17 western states, a subgroup of the Western Governor's Association, is THE most important water issues group in the west. With important Congressional re-authorizations of the Clean Water Act, the Endangered Species Act, the Drinking Water Act, etc. Alaska's voice will not be heard if the Director of Water, who represents the Governor and the state, is not at the table. Without adequate personnel, travel, and contractual services funding - this key function will be lost.

Finally, because the Director of Water is responsible for the management and development of our water resources, he provides an important and often different point of view in resolving resource management conflicts in Alaska. As almost every significant project requires water, his responsibility as a resource manager, rather than pollution mitigation which is principally the role of DEC, provides an important balance. Without this position, this perspective will be lost.

#### **Water Management and Development Section**

The Water Management and Development Section has the statutory responsibility to determine and adjudicate rights to the use of the waters of the State of Alaska and to administer the Water Use Act. **Any person using water in excess of 500 gallons per day without a permit is subject to criminal penalties including possible fines and jail.** The Water Management and Development Section has a current backlog of 1,661 water permitting actions. Of these backlog case files, many are requests for water use associated with large scale development projects, commercial construction, business expansion, public water supplies, village safe water projects, and individual homes. These are projects that are located in all parts of the state from the oil and gas fields of the North Slope, to placer mines in the interior and along the Canadian border, to new commercial development in Anchorage, to expanded seafood processing in Unalaska, to new or expanded public water supplies in every populated area of the State, to major hard rock mining in Fairbanks and Juneau. These projects effect hundreds of jobs in all walks of life, including contractors, consultants, labors, suppliers, special interest groups, and the general public. The common denominator is they all require water and the right to use water. Their receipt of a permit granting the right to use water helps protect the investment they have made in Alaska. Attached is an example of projects that this section is currently working on, and with 250+ new case files a year and the current backlog in permitting actions, most of these projects will continue to be open during FY94.

#### **Dam Safety and Construction Section**

The Dam Safety Program is statutorily responsible for issuing permits and reviewing structural design and public safety concerns on activities related to almost 100 existing impoundment structures. The Dam Safety Engineer is already only funded for 9 months of the year. Without this program many annual or semi-annual inspections will not be conducted putting at risk both life and property. Without sufficient travel funds critical inspections can not be conducted. As new dams are constructed in the state to facilitate resource development or to provide drinking water or power, the safety and reliability of dams will be in question without certification by the state Dam Safety program. Currently this program is working on major dams associated with the Kensington Mine, AJ Mine, and Fort Knox Mine.

## **Navigability Section**

The Navigability Section is already under funded and is struggling to keep up the complex workload that is being requested for it. A contractual, travel, and personnel reduction in this two person section will result in significant harm to the state's efforts to secure title to 14 million acres of submerged lands.

The Navigability Section will not be able to support ongoing litigation to assert and defend the state's title to 14 million acres of submerged lands. This is a two person section with highly specialized knowledge of navigability criteria, statutes and case law. It is vital that this staff continue to be supported if the state is to aggressively assert its ownership to submerged lands. Many of the 14 million acres of submerged lands have oil, gas, coal, gravel, and mineral potential. When we prove that these lands belong to the state the federal government must allow the state access. The submerged lands in ANWR alone may add millions of dollars to the general fund and the Alaska Permanent Fund from oil and gas development. The federal courts are currently supporting states rights, however, this is expected to change over the next two years. The Division and AGO have filed Quiet Title for 195 lakes and streams and anticipate another Quiet Title Notice of up to 200 additional waterbodies by the end of FY93.

**The federal government is selling gravel from land that rightfully belongs to the state in the pipeline corridor.** We will not be able to gather the data needed to challenge this federal trespass and prepare the documentation to enter into litigation. The state is and will continue to lose significant revenue from gravel and material sales - taken by the feds. It is critical that Alaska assert ownership to these 14 million acres as soon as possible.

This section will also not be able to assist Skagway and other communities resolve land title issues along navigable waterbodies. Owners and occupiers of land along navigable waters will not be able to clear their titles and thus be unable to borrow funds for improvements or sell their lands.

## **The Alaska Hydrologic Survey**

Senate proposed cuts in the Alaska Hydrologic Survey, combined with FY93 reductions, will result in the reduction of professional staff from 11 to 4 scientists. This is because a significant amount of other funds are generated by those supported by General Funds in this section. Such a staff reduction, in the most fundamental water resource inventory and use staff will destroy the Hydrologic Survey. This action will have drastic impact on economic, social and political activities in Alaska.

Community Water Supplies - Ground water and surface water databases and technical files have been developed and have been used regularly over decades to solve water supply crises for communities from the largest (Anchorage) to the very small Eek, Gambell, St. Paul, Slana, Kenny Lake, Elfin Cove, and many more. The data and expertise used to solve the water supply problems for these Alaskan communities can only come from a long-term ongoing hydrologic program dedicated to the mandate of Alaska statutes that require the collection and distribution of data on the surface and subsurface waters of the state.

In the Kenai Peninsula, the AHS has been the key agency in coordinating a massive state/federal/private investigation of the ground waters and aquifers in the vicinity of the industrial complexes of the peninsula. The results of this investigation, supported financially by industry and the local borough, will allow the Kenai Peninsula to continue to develop in the manner planned. Industry will continue to be able to provide a stable economic base for residents. Local communities will have abundant high quality water, the rivers will continue to provide outstanding runs of salmon, the forests will flourish, wildlife will have critical habitat, tourism will experience abundant clear, pure water for lakes, streams and in the motels and hotels. In order for all this life to occur we must know, understand, and responsibly manage the water resources of the Kenai. This is a single example of the essential and critical role of the Division of Water, Hydrologic Survey.

Petroleum Development - Wherever exploration and development of oil and gas occurs, water must be available and managed. Water is needed for road and pad construction, drilling operations, and for the workers. AHS projects from Cook Inlet to Prudhoe Bay provide critical information and advice requested by industry and state regulators to assure successful resource development operations and management of state owned resources. AHS will not be able to identify and quantify water sources for use and/or protection in the arctic and this lack of information will delay or stop responsible resource development.

Evaluation of river erosion and review of flood/erosion control installations will not be available to pipeline managers and regulators. An example of such work is the AHS evaluation of erosion impacting a bridge across the Theodore River in the Cook Inlet area. The investigation resulted in the design of a mitigation structure protecting the Unocal bridge and road as well as protecting the wildlife and fish of the area as required by law. Intelligent use of water information serves all aspects of our economy and society.

Mining Development - Detailed and extensive water data are critical and required for mining to occur in the state. AHS has actively participated in monitoring of stream flows and the quality of the waters in the streams for more than a decade. Sediment transported and its effect on the habitat for fish and for public water systems has been the focus of AHS investigations in the Birch Creek mining district. Results continue to be essential to the mining industry and to state and federal regulators. Studies of the sediment transported by the streams draining the Usibelli Coal Mine are critical to the ongoing success of a very progressive and productive mining operation. Water information also provides essential knowledge to mining law regulators who review and permit mining. **The water data must be present for mining to proceed. Miners and regulators both require data. THE AHS PROVIDES THE CRITICAL INFORMATION NEEDED.** This critical function will disappear if the AHS is eliminated.

Fish and Game Habitat - Water in streams and lakes must be present for fish and game to survive. State resource managers, hunters, recreational users all agree. But how much water is needed, how much water is there to be shared with all the other uses and activities? These questions create management conflicts and costly delays. Water data for managing Alaska's fish and wildlife is critical. AHS hydrologists investigated the waters of Potter's Marsh and accurately described the sources of water and the quality of the water. From this information the Division of Parks was able to maintain a high profile and successful water fowl viewing area. Critical water data makes possible good habitat management.

Agriculture and Forest Development - The necessity of water for agriculture is obvious. Farmers must know the amounts of water available in the ground for wells and in the streams, if they are to be used for water. The harvest of forests must be conducted in such a way that streams are minimally impacted and habitat continues to be productive. Water data are required for agriculture, the timber industry, and for the managers of state resources. Erosion can destroy valuable agricultural and forest land. AHS provides streamflow and precipitation monitoring in the Delta Agricultural area. The data are critical to designing erosion protection measures resulting in protection of soil and extremely unique habitat...especially the Clear Creek fishery. Ground water, surface water, precipitation and geography have combined to create year-round flowing water and outstanding fish habitat.

Stream Gaging and Network Evaluation - Stream data must be present for any activities occurring on state, private or federal land. The FY94 CIP request for funding of regional stream gaging stations and a critical network evaluation is essential. These basic tools provide the data used and necessary for the resource development scenarios discussed above as well as many more.

An example is hydropower development. Streamflow data is absolutely critical. AHS has measured flows at Cordova, Atka, Unalaska, Umnak, Elfin Cove and other locations to evaluate power generation potential. Federal and state budget cuts from past years have nearly eliminated the

state/federal cooperative stream-gaging programs. This data must be made available again. Federal matching funds double state dollars with this CIP.

### **Capital Projects**

The proposed CIP projects are essential in water management decision making. The state is entering an important era in its resource development history, with many large resource projects planned or under consideration. The proposed CIP projects will help fill a major water resource data gap which will result in money saved as decisions on project locations, environmental effects, and permitting will be made with knowledge of the water resources and water's effects on the development and the development's effects on water and its dependent resources such as fish and wildlife. A sound water resource data base, which Alaska lacks, can save millions of dollars - demonstrated by millions wasted in the past by not having adequate data to make development decisions.

### **Stream Gage Network Evaluation/Regional Gaging Stations**

For years the State Water Resources Board has called for a cooperative stream gaging network evaluation and the establishment of regional gaging stations. This is a cooperative state/federal effort that leverages an equal amount of federal funds. The network evaluation will determine where we need regional gages that allow the state and federal agencies to manage and develop our water resources. This is a most fundamental tool in water management. Once accomplished it will save not only state and federal agencies significant dollars it will also save the private economy significant costs and time delays which could stop projects. This CIP was endorsed by the Alaska Water Management Council (22 state/federal agencies and the Univ of Alaska) as one of the highest priorities for the state in water resource management.

Without the network evaluation and regional gaging stations private projects will have great difficulty designing, securing permits for, and developing major resource or transportation projects. The general rule is without 10 years of stream flow data it is very difficult to analyze water related impacts to projects. Regional gaging, with the network evaluation can allow area or regional extrapolations or synthetic data to be developed for assessing specific project impacts.

### **STORET System Completion**

One of the most fundamental tools for water resource management is an information system that assists an adjudicator in understanding cumulative allocations and water quality relationships. The Division of Water has a system that is over half completed, but not usable. With these capital funds, and with federal funds from EPA and BLM, this system can be completed.

The completion of the STORET system has also been one of the highest priorities of the State Water Resources Board and was recently endorsed by the Alaska Water Management Council as one of its highest priorities. The completion of this system will greatly increase the productivity of water adjudicators in issuing water development permits allowing some progress on the growing backlog (1661) of water rights case files. Without this essential tool the cost of water permitting will grow due to the inefficient necessity to manually review all case files for a waterbody prior to issuing permits. This includes groundwater allocations that may be interactive with surface water sources.

Navigability - Unless Alaska asserts ownership of its 14 million acres of submerged lands, and supports the required litigation to secure actual title to these extremely valuable resources and access they secure, efforts in Congress may be successful in stopping Alaska from receiving its statehood entitlement to these lands. We have proposed a capital project that supports the acceleration of field work critical and essential to securing title to these lands. Proving a waterbody is navigable under the current legal standards requires field investigation, especially of the upper limits of a stream. This CIP request will be augmented by volunteers in the field that are being organized by the Division to greatly extend the dollar per stream mile productivity of this effort. With the change in the federal

administration, sympathetic federal courts are expected to change within the next two years in their strong support of state's rights in this area.

Since statehood, Alaska has only secured title to about 20 streams. Only a federal court can transfer title to the state. We have accelerated Quiet Title Notice to secure title and currently have almost 200 waterbodies ready for court action. By the end of FY93 this list will expand to well over 400 waterbodies. The longer we delay, due to lack of adequate funding, the greater the cost and the likelihood we will not secure title.

The submerged lands and navigable waters in ANWR are a clear example of the significance of this effort. With state title we not only secure "state controlled" access but also ownership of the oil and gas contained in those submerged lands.

#### Wetlands Investigation & Classification

The Division of Water has identified four key wetlands issues that, if resolved, could make significant differences in wetlands delineation and regulation for Alaska.

Alaska has for years claimed that its hydrology is different than places like Arizona, Florida, New Jersey, or Idaho. National wetland delineation criteria do not take into consideration permafrost, glacial sediments, tundra, or organic material accumulations on bedrock. For the United States these are unique Alaskan conditions in wetland management.

This CIP requests only \$60.0 to be leveraged against federal funds to prepare creditable scientific papers that make clear these differences and their relationship to regulated wetlands. This is a low cost opportunity, due to unique staff qualifications, to address these core differences in wetland management. Without this funding, this work can not be accomplished and large areas of Alaska impacted by these four unique hydro-geologic differences remain under federal wetland regulations.

*(Attached is a list of some of the pending actions in the Division of Water that will be adversely impacted by the reductions suggested by the Senate)*

## Water Right Backlog as of 1/1/93

Southcentral	230 Single Family Applications Pending (some dated 1985) 169 Commercial Applications Pending 275 Expired Permits requiring action 74 Permits to expire in FY93 50 Temporary Water Use Applications expected in FY93 180 New Water Rights applications expected in FY93
Northern	12 Single Family Applications Pending (some dated 1985) 24 Commercial Applications Pending 271 Expired Permits requiring action 43 Permits to expire in FY93 40 Temporary Water Use Applications expected in FY93 40 New Water Rights applications expected in FY93
Southeast	11 Single Family Applications Pending (some dated 1984) 61 Commercial Applications Pending 125 Expired Permits requiring action 14 Permits to expire in FY93 12 Temporary Water Use Applications expected in FY93 30 New Water Rights applications expected in FY93
WM&DS Backlog	507 Applications Pending 671 Expired Permits requiring action 131 Permits to expire in FY93 102 Temporary Water Use Applications expected in FY93 <u>250</u> New Water Rights applications expected in FY93

**TOTAL BACKLOG: 1661**

Commercial Applications include: Industrial, agriculture, mining, construction, hydroelectric, seafood processing, public water supplies (cities, towns, and villages), logging, oil and gas exploration and development, instream flow reservations, community water (subdivisions), and other large water users.

**PENDING ACTIONS**

<u>FILE #</u>	<u>NAME, PROJECT, LOC., ETC.</u>	<u>Action</u>	<u>DEAD- LINE</u>	<u>COMMENTS ON NEEDS</u>
LAS 13044	CBJ; Pub. Water , Gold Creek, Juneau	Permit	Late spring 1993	Adjudicate concurrent with A-J Project
LAS 13216	GSA; Fed. Bldg. cooling system	Permit	Spring 1993	As above, but expedite to meet deadline
LAS 13128	Echo Bay; A-J Mine Project; Gold Creek	Permit	Now	Also, coord. w. CBJ permitting & mitigation, etc.
LAS 13129	Echo Bay; A-J Mine Project; Sheep Creek	Permit	Now	Also, coord. w. CBJ permitting & mitigation, etc.
ADL 44439, 100066	CBJ; public waters Gold Creek	Cert. Amend.	Now	Partial revocation, transfer, etc.
ADL 43152	AEL&P; hydro; Gold Creek	Cert. Amend.	Now	Partial revocation, transfer, etc.
LAS 13147	K-V; Kensington Mine project	Permit	Spring 1993	Coord. w. CBJ permitting, etc.
LAS 13148	"	"	"	"
LAS 13149	"	"	"	"
aplns. pending	State of Ak.; water export sites	Permit	4-5/93	ASAP after regs in place; needed to secure benefits to public.
LAS 208	Armstrong-Keta; hatchery expansion	Permit Amend.	6/93	Amend old permit; new application for expansion
LAS 11649	Kerr; Thomas Bay floating lodge	Permit	Spring 1993	
LAS 11335	Sitka Sound Seafoods fish buying scow	Permit	6/93 in use	
LAS 13366	Velikanje; placer mining; Hyder	Permit	4/93	

LAS 13666	KPC; Calder Bay float camp	Permit	5/93 in use	pulp mill logging site
LAS 13900	Marsh; microhydro	Permit	7/93	
ADL 44079	KPU; Beaver Falls hydro	Amend Cert., Permit	7/93	Parts of hydro system w.o. WR; hatchery w.o. WR.
LAS 11400- 11405	City of Sitka; Baranof Warm Springs pws	Amend Permit	7/93	Permit compliance key to other pending aplns. public water supply
LAS 7141	Port Protection public water	Permit	in use	extension of permit
LAS 7166	SE Ak. Sportfishing Adventures; lodge	Permit Amend	in use	extension of permit
LAS 12689	NSRAA; 17 1/2- Mi. Cr. incubation boxes	Permit	Summer 1993	fishery enhancement
LAS 13097	DOT&PF; Brouillette's Cr. fish enhancement	Permit	in use	Project to mitigate for Haines airport expansion
LAS 13107	Cross & Young; microhydro	Permit	in use	Possible energy savings for several families
LAS 13381	NSRAA; Shakuseyi Cr. incubation boxes	Permit	in use	
LAS 13162	Williams/Savik- ko; Hohlkam Bay glacier ice harvest	Permit	Summer 1993	ACMP review coastal consistency
<u>33</u> Files	Mat-Su Borough	Permit	Spring 1993	Schools, firehalls, community centers
New apln	Rainbow Mining	Permit	Spring 1993	
ADL 80095	AL-VON Mining Company	Permit	Spring 1993	
<u>12</u> Files	City of Unalaska public water	Permit	Now	Dam safety
<u>6</u> Files	City of Soldotna public water	Apln or Revoke	Now	Coastal consistency

<u>2</u> Files	Southcentral Utilities public water	Cert	Spring 1993	Calculate quantity
<u>2</u> Files	Eklutna Utilities public water	Permit	Spring 1993	Legal actions, Eagle River water supply expansion
LAS 13190	Sea Catch Inc	Permit	Spring 1993	quantify water use, evaluate meter records
LAS 12791	Seasonal Seafood	Permit	Spring 1993	Public notice, respond to objections
LAS 12663	Fort Rich Fish Hatchery	Cert	Spring 1993	proposed expansion, Ship Creek Water
LAS 13378	Elmendorf Hatchery	Permit	Spring 1993	Additional quantity
TWP 92-17	Tesoro remediation	Amend Permit	Spring 1993	Expand project
TWP 92-35	PetroStar hydro testing	Permit	Spring 1993	Coastal consistency
LAS 14030	BP's Yukon Gold oil well	Permit	Spring 1993	Coastal consistency
LAS 13944	Arco's Colville well	Permit	Spring 1993	Exploration
<u>13</u> Files	Arco's Kuparuk Oil Field	Permit	Spring 1993	Maintain current production
<u>2</u> Files	Healy Clean Coal Project	Permit	Spring 1993	Power Plant
<u>4</u> Files	Ft. Knox Gold Project	Permit	Spring 1993	Mental health lands
LAS 12853	Chena Hot Springs Resort	Cert	Spring 1993	Ownership transfer, new application needed
<u>6</u> Files	Northern Community Public Supply	Permit	Late spring 1993	Permit or certificate
New apln	Sun Belt Water	Permit	summer 1993	Coastal consistency, water export SE Alaska
New aplns	City of Sitka	Permit	Summer 1993	Coastal consistency, potential export site
pending	Arco's Swanson River new well	Permit	Summer 1993	Coastal consistency

pending	New Elmendorf Medical Facility	Permit	Summer 1993	Determine senior water right holders actual water use
LAS 14099	Unalaska Hatchery relocation	Permit	Spring 1993	Coastal consistency
LAS 14069	Anchorage Courthouse expansion	Permit	Spring 1993	Coastal consistency
not assigned	Alyeska Prince Hotel snow making	Permit	Summer 1993	Gather stream flow data
LAS 13868	City of Seward New Small Boat Harbor	Permit	Summer 1993	Quantify water needs for associated uses
not assigned	Turnagain Road Reconstruction	Permit	Spring 1993	Coastal consistency
ADL 62233	Trident Seafood Corporation	Permit	Summer 1993	Change water source; new application
pending	Eyak Corporation Logging	Permit	Summer 1993	Coastal consistency
LAS 11813	Alyeska Pipeline Company	Permit	ASAP	Terminal facility amended permit additional water
<u>6</u> files	City of Cordova	Permit	Summer 1993	amend permits and new applications expected
<u>2</u> files	Larson Bay public water	Cert and Permit	Summer 1993	amend certificate city hydro develop
LAS 13864	UAA Business Education Bldg	Permit	Spring 1993	respond to objection
<u>2</u> files	FAA Control Center	Permit	Now	permit extension
<u>2</u> files	City of Valdez	Cert	Now	field inspection and possible extension
LAS 13673	David Gottstein	Permit	Summer	
ADL 204276	Wasilla West Owners Assoc	Cert	Now	need to work on quantity of water use, community water

LAS 13976	International Shipping Services	Permit	Now	coastal consistency for new cold storage facility in Unalaska
LAS 13813	City of Palmer Public Water	Permit	Summer 1993	additional water supply
LAS 14049	City of Palmer	Permit	Summer 1993	Water for the Golf Course Club House
Las 13849	Salamatof Native Association	Permit	Summer 1993	Retreat facility
LAS 13786	Village of Takotna	Permit	Summer 1993	Watering point, public water
Las 13680	Calista Corporation	Permit	Fall 1993	Nyac hydropower
Las 13681	Calista Corporation	Permit	Fall 1993	Nyac hydropower, additional water source
<u>17</u> files	Tuluksak Mining	amend permits	ASAP	litigation
pending	City of King Cove	aplns/ permits	fall 1993	Proposed hydropower facility
pending	Iliamna- Newhalen- Nondalton	aplns/ permit	Summer 1993	Tazimina River hydropower project
<u>9</u> files	William Lorensen glacier ice	amend permits	spring 1993	Glacier ice harvesting Prince William Sound
pending	Haines Light and Power	pre-apln permit	1994	proposed hydropower facility
Las 11766	NSRAA Deer Lake fish bypass	Amend permit	Fall 1993	Fish enhancement project
pending	City of Petersburg	pre-apln	fall 1993	Public water supply addition
ADL 44121	City of Saxmen	Cert. pending	ASAP	Public water supply
39 pending	ADF&G Instream flow reservations	Cert pending	ASAP	Fish habitat protection
4 pending	Valdez Fisheries Development Corp	apln/ permit	ASAP	Fish Hatchery, Solomon Gulch, Valdez Alaska

7 pending	DOT&PF	Permit	Spring Summer	construction projects Dalton & Richardson Hwy and Deadhorse Airport
LAS 14113	Arctic Slope Regional Corp.	Permit	Spring	Western Arctic Surface Coal Mine
LAS 6744	ARA/ Outdoor World	amend Permit	ASAP	Mckinley Chalets
LAS 14035	City of Koyuk	Permit	Summer 1993	Public Water Supply
LAS 14031	City of Salawik	Permit	Summer 1993	Public Water Supply

# TABLE OF CONTENTS

INTRODUCTION	1
THE MARKET DEMAND FOR WATER	2
Inland States and Water Transfers	3
POTENTIAL SOURCES OF WATER	4
DELIVERY SYSTEMS	5
Pipelines	
Tankers and Bags	
Bags and Tugs	
ECONOMICS OF WATER EXPORTS	7
Market Price of Water	
Cost of Water Delivery	8
COMPETITORS	10
Bulk Water Imports	
Desalinization	
LIMITATIONS	13
The Jones Act	
Public Perception	
The Political Infrastructure of Water	
Development in Southern California	
Can Alaska - Just Say NO?	
Conservation and Social Implications	14
Permitting and Land Management	15
STRATEGY	15
WATER RIGHTS APPLICATIONS	17
Alaska Aquaculture, Inc.	
Sun Belt Water, Inc. & Sun Belt Marine, Ltd	
City and Borough of Sitka	
THE FUTURE	18
THE NUMBERS	19
Annual Payload Per Tanker	
Gross Receipts	
Operational Costs	
Capital Amortization	
Net Receipts	
Bag/Tug Costs	20
Bag Dimensions and Costs	21
Drag Force Calculations	22
Tugs	23
Miscellaneous	24
State of Alaska	25
Revenue to the State	
Jobs for Alaskans	
Uses for this new Revenue Stream	
BOTTLED WATER	26
ABOUT THE AUTHOR	27

# ALASKA

## WATER EXPORTS

*[One Acre Foot = 325,851 gallons or 1,360 short tons]*

The vast water resource export potential of Alaska was not seriously considered until the election of Walter J. Hickel as Governor in 1980. Governor Hickel, who 20 years ago as Secretary of the Interior advocated construction of a water pipeline from Alaska to California, was asked by the City Council of Los Angeles if he would again consider the pipeline concept. The Governor made it clear that the state would work with the people of Los Angeles as they took initiative to review the sub-sea water pipeline. The City Council and the Congressional Office of Technology Assessment evaluated the pipeline idea, spurring interest in developing the less costly bulk marine transport of water by tankers or other technologies.

With recent legislation passed by the 1992 Alaska Legislature, the Division of Water is moving forward to finalize regulations that facilitate Alaska's first bulk water export. According to the US Geological Survey, Alaska discharges about 1 billion acre feet a year into the ocean. With 100 to over 400 inches of annual precipitation in some areas of southeast Alaska, we believe it appropriate to offer our vast water resources to the world. These water resources are viewed by Alaska as potential new revenue sources, partially offsetting declining oil and gas income. To assist those with interest in the development of this resource, we provide this general discussion of the key issues affecting Alaska bulk water exports and sales. This paper is intended to demonstrate that: 1) the bulk marine transport of water to Mexico or California and wheeling agreements with inland states could readily happen before 1995; 2) if it did happen, the economic benefits accruing to Mexico, California, and other southwestern states, and Alaska, could be significant; and 3) further cooperative work between all interested parties can make bulk water export a reality.

Water law in Alaska is recognized as very comprehensive, contemporary, forward thinking, and environmentally responsible. Our "public interest" considerations are specific and comprehensive. Our instream protection for fish, recreation, water quality is a model copied by many other states. The export of bulk quantities of water from Alaska can not be done in a manner that would allow harm to fish, wildlife, recreation or other public interest values.

The key concepts described in this paper are: the market for water; sources of water; delivery systems; economics of source development, transport and marketing; environmental and social impacts; limitations; and strategies for development. For specific information, copies of applicable source materials, or contacts with experts relied upon in the development of this paper, you may contact the Director of Water, Department of Natural Resources, State of Alaska at (907) 762-2294.

## THE MARKET DEMAND FOR WATER

The most attractive water export markets for Alaska water are southern California, southern Nevada, and the northern regions of Mexico including Baja California. These areas are most vulnerable to drought and rapidly growing population pressures. California coastal communities not directly connected to a surface water delivery system, mainly the California Water Project, and northern Mexico including Baja California are the most probable delivery points. In addition, coastal communities receiving water from the Colorado River may be delivery points for up river exchanges (wheeling agreements) for areas such as southern Nevada.

As a result of the cost of transportation, Alaska water may be more expensive depending on method of transport, source, and delivery point, than existing southwestern supplies. But local supplies are simply not sufficient to meet increasing demand, even if every effort by southwestern state and local governments is successful. According to the Secretary of Natural Resources of the State of California, if every water option is successful - even if it rains - southern California alone is facing a 4-6 million acre feet per year water deficit by 2010. The most recent and longest drought in a series of such events in the southwest over the past few decades lasted almost six years. Local water experts, however, already agree that the 1993 storms were a unique event, not likely to be repeated. In addition, storm runoff - according to some press reports, has resulted in contaminated water not readily usable in the reservoir systems were it is needed.

Officials in southern Nevada now predict that they will be out of water by 2006 with normal rainfall. Many coastal communities in northern Mexico are out of water and others will need new water by 1995. During formal hearings before the Nevada State Senate Resources Committee in February, 1993 a scientific paper developed by the University of Arizona and presented by the Desert Research Institute of Nevada caused serious concerns. This study reported that an in-depth investigation of drought cycles over the past 1000 years in the southwest clearly establishes that the area has developed at a time of unprecedented precipitation (last 200 years) and that droughts of longer than 20 years are common per century, and finally that droughts in excess of 150 years in the region have occurred.

They all need *new* water. "New Water" is water that cannot be developed locally through conservation, diversion, storage, reclamation or other means. In considering the development of new water, public officials must look at all economic and environmental costs to make informed, rational, and sustainable public policy decisions. This paper suggests that importing Alaska water to the southwestern states and Mexico is economically and environmentally more attractive than many of the other alternatives available, especially desalinization.

A report for the California Urban Water Agencies (April 1991) looked at the economic impact that extended water shortages will have on their economies. According to this report a one year 30% water shortage would cause a direct economic loss of \$8 billion and 56,000 jobs statewide. But this survey only included an analysis of 53% of all manufacturing industries in the state employing only about 18% of the work force. In addition, potential "ripple" effects could multiply the economic and job losses substantially. A similar report done in southern Nevada (1992) came to the conclusion that a loss of 100,00 jobs and a steady decline in employment over the following years would result in the appearance of a new "Great Depression" with massive out-migrations, devaluation of homes and businesses, and a catastrophic cost to families. The experts agree that a water shortage in the southwest will cause significant economic and social destruction.

In light of these studies and the reality that water has become a significant limitation on economic sustainability, many firms are already relocating or considering relocation. These include computer

and office equipment, food industries, aircraft/aerospace, and communications companies.

Many manufacturing interests in the market area are very dependent on large quantities of high quality water. Examples of such industries are:

- Breweries - The Anheuser Busch Plant in the San Fernando Valley is the largest single commercial water user in the Metropolitan Water District of Southern California.
- Computer manufacturing
- All water-based products including cosmetics and beverages
- Food industries

All solutions to developing new water for the southwest depend on local weather, except imports from Alaska and desalinization. Rather than consider relocation, these industries have the potential to obtain a competitive advantage in their markets by staying in the southwest and using Alaska water. Phrases such as "*Made from fresh Alaska water*", "*Clear Glacier Water*", or "*Alaska Ice Water*", that use the image and mystique of Alaska can be attractive marketing tools.

#### **Inland States and Water Transfers**

Many land-locked western states, particularly Nevada, are interested in augmenting their existing water supplies. Communities dependent on the Columbia River, Sacramento River, and especially the Colorado River are suitable for water imports through exchanges or "wheeling" agreements with California or Mexican coastal communities as a possible solution. This would work in the following way: If Nevada interests wished to purchase new water, they could either contract for water from a firm such as Sun Belt Water, Inc. or secure water rights directly from the State of Alaska and then contract for delivery. The actual delivery would be to a coastal community in California or Mexico served by the Colorado River or a system connected to it, allowing that community to "transfer" its downstream appropriation from the Colorado River to southern Nevada in exchange for the imported Alaskan water. Nevada users pay for the delivered Alaska water, and then receive more water from an existing source (Colorado River), and the California or Mexican community would receive the benefit of fresh water from Alaska. Due to the significant differences in water quality between Alaskan water and Colorado River water, there could be an offset payment by the California or Mexican coastal community, lowering the cost of clear Alaska water to the Nevada buyer. These types of water transfers or "wheeling" agreements are common in the western United States.

Recently the Division of Water sent a letter to the Governor of Baja California, Mexico suggesting that this area of northern Mexico could receive *free* clean water from Alaska if they could negotiate a wheeling agreement with southern Nevada. Such an exchange would allow Nevada to acquire the water for 20% less than if it were delivered to San Diego due to the Jones Act and other cost factors. Baja would receive high quality water in exchange for "dirty" Colorado River water, and could also sell its excess Alaskan water to San Diego, for a profit, using existing pipelines.

Such wheeling concepts have opened an entire new area in the market. In discussions at the Western States Water Council (17 western states), a number of states have expressed an interest in exploring this concept as they prepare their Drought Contingency Plans required under new federal law.

### **Bottled Water and Glacier Ice (see appendix for more information)**

Bottled Alaska water and glacier ice are currently marketed on a limited scale outside of Alaska and these markets are expanding.

## **POTENTIAL SOURCES OF WATER**

The southeast region of Alaska is considered to be the most probable location of sources of bulk exportable water (see enclosed map). It is approximately 42,000 sq mi in area, with 100 to over 400 inches annual precipitation; the mean annual surface runoff from southeast Alaska is estimated to be about 300 million acre-feet per year. Considering drainages that extend into Canada, total discharges of streams in the region are even greater. Several problems limit potential water capture sites, however. First, many of the larger streams drain basins containing extensive glaciers. This results in high sediment discharges and the need for more extensive treatment of the water prior to use. Also, much of southeast Alaska is comprised of low coastal mountain ranges and islands, resulting in thousands of small to moderate-sized drainages up to about 50 square miles in size. Selection of developable sites must, therefore, consider quality of water and drainage basin size in addition to precipitation, natural storage capacity (lakes), shipping access, existing delivery systems, and land ownership and management policies. As a result of the large size and diversity of southeast Alaska, initial export sites selections could be determined from an initial pool of the dozens of potential sites identified on the enclosed map.

Peak stream discharges in southeast Alaska occur in July, August, and September, coinciding with peak water demand months in the market area. Seasonally low discharges during the winter months are expected to coincide with periods of low demand in the market area.

Six potential sources of water in southeast Alaska are already developed with hydroelectric facilities, and existing municipal systems at tidewater may be useable. Use of existing developments could greatly reduce initial capital risk, minimize environmental impacts, and decrease delivery delays associated with undeveloped sites.

The water quality of many sources is expected to be very high. Many were surveyed for fish hatchery development due to low levels of organic and mineral constituents. The water is expected to be attractive for high-technology manufacturing and beverages with minimal or no treatment, depending on the end user. Chlorination can be done in the tanker during transport.

Initial review of potential export sites suggests that approximately 1 million acre feet of water per year is exportable in the near term. This could be achieved by developing 20 sites, producing an average of 140 acre feet/day per site.

## **DELIVERY SYSTEMS**

### **Pipelines**

The Congressional Office of Technology Assessment, at the request of members of Congress from California, evaluated the feasibility of constructing a sub-sea water pipeline from Alaska to California. They found that the per acre foot cost of a pipeline was high compared to market willingness. They also commented in their report that the use of tankers or other marine transport technologies may be economically viable and that eventually a pipeline may also be economically viable and should not be completely dismissed. Although interest in the pipeline concept has diminished, the Division of Water continues to receive requests from around the world for various studies on the pipeline concept. A collection of key studies and papers on the water pipeline are maintained in the files of the Division of Water.

### **Tankers and Bags**

The most promising immediate transfer technology is the use of single-hull very large crude carrier (VLCC) or ultra large crude carrier (ULCC) class tankers with near shore temporary storage in coated nylon bags. With changes in petroleum tanker regulations requiring double hulls following the Exxon Valdez spill, according to marine transport experts, many used single-hull tankers are on the wholesale market at prices from \$6 - \$10 million. In addition a number of new, never used, single-hull tankers are available at a cost of about \$80 - \$85 million.

The VLCC class tanker is most attractive because its size allows it to access a variety of sources in southeast Alaska and provides sufficient volume to make it economical. VLCC and ULCC class tankers, respectively, can carry 225 to 307 acre feet of water per trip, with a turn around time of 10-11 days depending on vessel speed and source and delivery point locations. These tankers generally have two large pumps that allow them to be filled within 20 hours.

One concern with tankers is ballast water discharge in Alaska, especially if the ballast is collected in contaminated coastal waters near California. Ballast tanks are not the same tanks used for cargo transport. Tanker engineers advise that almost all ballast is discharged prior to docking and, if contamination is an issue, standard operating procedure is to exchange ballast in the open ocean after leaving the barbor. Regardless, any discharge is subject to appropriate federal or state permitting.

### **Bags and Tugs**

Bag technology was originally developed by Dunlap Rubber of Great Britain during the 1960's to allow the capture of oil spills from tankers. Application of the technology was never achieved as a result of cost, material, and technological limitations. Research and development continued and adaptation for water transfers was explored by UNITOR (Norway), Avon Rubber (United Kingdom), Yokohama Rubber (Japan), and Medusa Corporation, Inc. (Alberta, Canada). Extensive tank testing of a patented design has been conducted by Medusa Corp. at the University of British Columbia, Vancouver (tow testing for drag and stability) and at The National Research Council in Ottawa, which has the largest wave basin in Canada. Current-generation bags are constructed of a commercially available industrial coated nylon fabric with reinforced stress-diffusing straps. The bags can be used for offshore storage or transport. The bags have an expected life of 10 years when used for storage and 7 to 8 years when towed. Bags can be constructed in shapes ranging from flattened disks to hockey pucks. The largest bag manufactured to date held 5,000 tons of water, but according to James Cran (President, Medusa Corporation) bags can be constructed to hold up to 812 acre-feet for storage. A 225 acre foot bag, sufficient to fill a VLCC tanker, would be 500 feet in diameter and 50 feet deep in a disk

shape. For additional technical data on bag technology and cost refer to The Numbers section of this paper.

Bags float just below the surface, allowing them to absorb wave and wind action. They can be filled through flexible and portable filling tubes using gravity. Tankers can load from bags using their own pumps and single mooring techniques.

Extensive testing has provided solutions for tug operator concerns with "fish-tailing" of towable bags. Solutions include speed reduction, rudders, and other design modifications. Illustrations of sea trials are appended to this discussion paper to assist in your understanding of the technology. Although the Division of Water does not endorse the Medusa Corporation, for permission to use these photographs we have included the front cover of this corporation's publication. We encourage those interested to contact other vendors as well.

Some communities in southern California are exploring the use of bags for transporting treated sewage for deep ocean disposal. Other applications under negotiation include hauling water from Turkey to Israel, according to the Wall Street Journal. The application of bag technology for storage and transport may also warrant evaluation as a solution to rural Alaska domestic drinking water needs and emergency drinking water needs in the event of a natural disaster such as the 1964 earthquake.

The use of bag technology for offshore storage offers Alaska a number of attractive solutions to storage, flow rate, transfer, and environmental problems. One challenge in using tankers is the need for sufficient on-site storage that allows a tanker to fill within 20 hours. This requires a flow rate (approximately 140 cfs) that exceeds the capturable natural flow rate of many accessible sources during most of the year. With the use of storage bags, sufficient water can be accumulated over a few days or weeks using natural diversion rates. The point of diversion of the water should not require extensive onshore pumping, pipeline, or service camp construction, thus significantly reducing permitting complexity, environmental impact, and cost.

The application of bag technology makes water exports attractive to small communities with existing tidewater delivery systems that have a surplus of potable water. With little or no investment risk and few permitting concerns, a community could either acquire a storage bag and contract with a transport firm for a scheduled stop once sufficient water is captured and available, or enter into a joint venture with a purchaser of water whereby the purchaser provides the bag, or enter into a cooperative venture with the state and a private firm. Small communities could participate in the development of this resource in a variety of ways.

The use of bag technology for offshore storage is a key ingredient in the concept of bulk water exports. The bags can greatly reduce cost and capital risk, environmental problems of onshore development, permitting costs and delays, and open new opportunities for small communities in southeast Alaska to participate in a new revenue source.

## ECONOMICS OF WATER EXPORTS

Markets for bulk water sales are relatively new in the western United States because only recently have sufficient transport systems been developed to provide sufficient market liquidity. Also, markets tend to vary somewhat from State to State because of different water rights laws amongst the states. Key to any market, however, are the concepts of price, availability, and security of source. Prices can commonly be determined by historic transactions, but availability can be a limiting factor because of lack of transportation means, drought, or the unwillingness of sellers to sell. This results in a wide variation in market prices, with low market prices not always being useful to potential buyers because of lack of availability. The water market should be viewed as a collection of individual transactions, many of which occur under somewhat unique circumstances and most subsidized by federal or state projects.

### Market Price of Water

The price of water in the market area is highly variable due to location, quantity, quality, government subsidies, source, precipitation, time of delivery, and type of water. Existing prices for water in the southwestern states are difficult to compare due to significant, long-standing subsidies by the Federal government (Bureau of Reclamation and the Army Corps of Engineers) and state governments. Capitalization, amortization, and depreciation of extensive and expensive surface delivery and storage systems are rarely totally passed on to the consumer in the delivered price of water, making it difficult to establish a market based value. The outgoing Commissioner of the Bureau of Reclamation reports that some agricultural water contracts are subsidized by as much as 93%.

Known market prices for water in the western states are:

Average cost of delivered water to coastal communities tied into the State Water Project is about \$500 per acre foot. It is not clear if this cost includes the value of all subsidies (capital and operating). For example, the federal Bureau of Reclamation reports that they have over \$16 billion (not adjusted for inflation) in water related capital investment in the west.

Average cost of reclaimed water (treated sewage) with delivery is \$700 to \$1,400 per acre foot. As a source of drinking water, California has not had good success, however, there is a willingness to use reclaimed water for agricultural use. This will require significant capital investment as most reclaimed water is in coastal communities and most agriculture is inland.

The California Water Bank purchased government subsidized water from agricultural water right holders for \$125 per acre foot in 1991 and \$75 per acre foot in 1992, and in most cases reallocated that water to urban users connected to existing delivery systems.

A new water pipeline, now under construction, for Santa Barbara, connecting it to the state water system delivering 70,000 AFY, is reported (in congressional testimony by Ionics, the developer of the desal plant in Santa Barbara) to cost \$5400 per acre foot, however, the California Director of Water, David Kennedy, claims the cost to be closer to \$1200 per acre foot.

A purchase of water in areas of Colorado (Colorado-Big Thompson Project) is averaging about \$2,000 to \$2,143 per acre foot. These are often municipal purchases from farmers.

In Reno, Nevada, subdivision developers are purchasing water rights at \$2,000 to \$2,500 an acre foot in order to meet local ordinance requirements that stipulate that any new

development prove they have a dedicated source prior to securing local approval to build.

The contract price for desalinated water (desalinization) from the newest plant in the market area (Santa Barbara) is \$1965 per acre foot for delivered water and \$1312 per acre foot when on short-term stand by, and \$1231 per acre foot on long-term stand by against a 3200 acre foot total delivery contract with no water being produced. The original capital cost of the plant was about \$30 million, however, this was recently revised upwards by 18% to \$35 million, and the plant has shut down after operating for less than 3 months due to a resupply of natural water (rain) in the area.

Water Intelligence Monthly and Water Strategist are two key publications on water market activities in the west. Both are published by Stratcon, Inc. in California.

Since 1989 the price of water in many countries, for example Australia, Italy, and Britain, has increased substantially faster than each country's rate of inflation. This is a function of governments reducing subsidies as they face revenue difficulties. In many cases, this phased reduction of subsidization has resulted in prices rising as much as 20% in a year (US Water News). As the southwestern states, in response to state and federal budget constraints, and northern Mexico begin to face the real cost of water and pass it on to customers, the competitive edge of Alaska water imports to this region is sharpened.

An important factor in the market price of water is the cost of treatment. Treated water typically has a different value than raw water, especially if the raw water is high in dissolved minerals, making it unsuitable for some uses. The price of high quality water for specialty uses such as manufacturing and water based products can be significantly higher than general market prices. It is reported that some manufacturing firms are spending up to \$.05 per gallon for treated water. At \$1700 an acre foot, *pure* Alaska water would only cost \$.005 a gallon. More specific information on the cost of water to manufacturing and bottled water products is being solicited.

### **Cost of Water Delivery**

When the notion of using existing tanker technology to transport water from Alaska to southern California, Nevada, and northern Mexico was first proposed to the Division of Water, we were skeptical of its economic feasibility. Ed Arobio, a commodities economist with the Department of Natural Resources - and a skeptic - reviewed the economics of tankering water from Alaska to the market and determined it not only viable but attractive. The division has identified the key variables in the export business and attempted to develop preliminary cost estimates to evaluate the economic feasibility of the concept.

The important cost variables considered in marine transport systems are:

- Length of contract (depreciation, amortization)
- Annual volume of water delivered
- Distance of delivery
- Security of source
- Capital cost of tankers/bags or tugs/bags
- Capital cost of onshore or nearshore facilities at source and delivery points
- Permitting and compliance costs at source and delivery points
- Operating cost of transport system (tankers/bags or tugs/bags)

Of these variables one of the most significant is the length of contract. Capital amortization and depreciation of initial capital investment and permitting compliance costs over a ten-year contract versus a twenty-year or longer contract is a significant factor in cost per acre foot. Operation and

maintenance is generally static depending on the use of tankers versus bags and tugs.

The "day-cost" of a new tanker, fitted for water transfer, is about \$30,460 per day or less according to Robert Byrd, a noted marine transport expert from California and a former US Coast Guard officer with Alaskan experience. This includes an assumption of a 10-year debt service, with interest and capitalization, crew cost of about \$7,900 per day and fuel cost of about \$9,300 per day. If the debt service for a new tanker is extended to 20 years, the day cost would be less. Assuming a 10-day average round trip schedule and 225 acre feet per trip, the estimated cost of transporting water is \$1353/acre foot. This day cost can be reduced by acquiring a used, less expensive, or a larger tanker and by using ballast tanks to haul potable water increasing capacity by 20%. The overall cost of delivery must also include such variables as shore facilities, bags, and onshore systems as necessary. With the careful selection of an already developed source and an existing delivery system at the point of sale, these additional costs can be minimized. For more information refer to The Numbers section.

Although available for near-shore storage, bags are not yet a proven technology for towing at large scales. The use of a tug and bag configuration for storage and transport could greatly reduce the cost of transporting water. According to James Cran, President, Medusa Corporation, a 225 acre foot towable bag would cost about \$1 million with a life expectancy of 10 years. Near shore storage bags would be less expensive per acre foot depending on design needs. Transport time, according to Robert Byrd, a marine transport expert, and James Cran, for towing bags is estimated to be about 14 days when traveling south under load with return time of 4 to 5 days depending on distance and weather. These estimates are based on extensive tank simulations but limited sea trials. The amount of drag on a large bag is estimated but, without actual sea trials of a large bag, drag effect is undetermined, resulting in towable cost estimates that may prove incorrect. Assuming a 20 day turnaround time, a one-tug/one-bag configuration could make 20 trips/year. For ocean going tugs at 5000-6000 horsepower, the estimated cost of a tug and bag system is about \$5000/day as compared to \$30,000 a day for tankers. In the event larger bags are used, tugs with 10-15,000 horsepower capabilities would be necessary. (see "The Numbers" in appendix) Actual costs from reported applications in the middle east have not yet been acquired.

Although we continue to explore the numbers on bag/tanker configurations, we believe the application of bag technology for storage and especially for transport will bring the economics of transporting water into competition with reclaimed water, desalinization, and some conventional land-based delivery systems in the market area. Due to our interest in bag applications we are encouraging investment groups actively pursuing water imports from Alaska to develop a full size bag and begin sea trials immediately.

## COMPETITORS

Alaska water competes in the marketplace with desalinization, water reclamation (from sewage), redistribution, ground-water management, land-based delivery systems, conservation, expanded storage, water marketing, and new source development. All except desal and new source development focus on making better use of existing water resources in the market area. All are dependent on local weather except desal and Alaska imports. Such efforts will continue, but these techniques will become increasingly constrained by economic, political, and environmental forces as population expands and national and state efforts to dedicate more water to fish and wildlife increase. Only two prospects offer significant potential for providing new water to the market area allowing sustained growth: bulk water imports and desalinization.

### Bulk Water Imports

Potential sources of bulk import water for southern California are located in northern California, Oregon, Washington, British Columbia, Panama, and Alaska. Legal, political, economic, technical and environmental problems associated with sources in northern California, Oregon, and Washington convinced private industry to look further north, to British Columbia. Consequently, about a dozen contracts were negotiated based on water sources in British Columbia. A subsequent change in attitude and political leadership in the British Columbia government resulted in the imposition of a moratorium on all bulk water transfers. This moratorium was to be for one year; however, it has been extended for a total of three years. This action and the economic uncertainty it created caused a number of ventures to lose significant investment money, time, and delivery contracts - and for many, the courage to proceed with the concept. Recent discussions with some of the parties impacted by the moratorium report litigation that further clouds the viability, stability, and security of these competing sources, even if the moratorium is eventually lifted.

Another potential source of water is Panama. In addition to the political uncertainties in Panama and the difficulty of shipping against prevailing currents and winds, Panama is farther from southern California and northern Mexico than southeast Alaska is. Gradually, most firms have left Panama although Sun Belt Water, Inc. reports that they still retain contracts for Panamanian sources of water.

### Desalinization

A major competitor for water imports from Alaska is desalinization. Meetings with government officials in Mexico revealed that they received seven desalinization proposals and only one import proposal. The California Urban Water Agencies have also been involved in an intensive investigation of desalinization. Desalinization technology has several significant disadvantages compared to Alaska water imports: 1) the energy consumption of desalinization far exceeds the energy cost of imported water; 2) desalinization generates a significant stream of hard-to-dispose-of waste products including sludge, processed chemicals, and concentrated brine; 3) other solid waste disposal costs include membranes and cartridge filters; 4) desalinization does not typically remove all dissolved salts in water, a concern for public health as well as costly corrosive impacts on existing delivery systems; 5) desalinization plants occupy valuable coastal property; 6) since all of California's major urban areas are not in compliance with federal air quality standards, major new distillation projects will be difficult, if not impossible to permit in these areas; and 7) existing plant development costs and contract prices of desalinated water may not represent real costs or future contract prices because of underpricing of desalinated water to promote the technology. These issues are explored further below.

At the request of the California Urban Water Agencies, the Boyle Engineering Corporation conducted a comprehensive review of desalination technologies, cost comparisons with alternatives, and potential technological breakthroughs. Their 1991 report concludes that although desalination has been understood in principle since Greek sailors in the 4th Century BC used an evaporation process, the difficulty of developing practical methods to desalt water is evident in the limited worldwide use of desalination. They also concluded that desalination technology is mature and, other than the discovery of a new cheaper source of energy, no significant technological breakthroughs or cost reductions are anticipated.

Although there are a number of desalination technologies, according to the Boyle report, the three most common methods of desalination used today are:

- 1) Distillation (thermal) processes,
- 2) Membrane processes, and
- 3) Ion exchange (not cost effective for desalting sea water).

All existing technologies for desalination are greatly dependent on low energy cost. Desalination consumes energy to a point that many argue against it due to its significant environmental costs. Consumption of energy also creates fuel storage and delivery and air quality concerns. A delivery price for desalination water based on low energy cost is misleading. After the capital plant is developed (59% of the unit cost), a buyer is vulnerable to rising operation and maintenance costs (41% of unit cost) due to energy costs and constrained by fixed energy inefficient technology. According to Stratecon, Inc., publishers of Water Intelligence Monthly, current trading in crude oil options reveals a standard deviation of the annual percentage change in fuel prices equaling about 20 percent. When compounded over a 20-to-30 year term of a desalination plant, this price volatility is substantial, suggesting that operation of a desalination plant will be subject to substantial risk of escalating operating costs. With any significant increase in the cost of energy or the cost of implementing ever more restrictive environmental regulations, the price of desalination water will escalate directly. The use of VLCC tankers to transport water from Alaska to southern California use less than half of the energy desalination does with little or no impact on local air quality. A single VLCC tanker can deliver more water per year than the largest desal plant in the market area. Ocean going tugs pulling bags would use less than a third of the energy of desalination.

The various processes used to desalinate water generate waste streams. In addition to the generation of concentrated brine and sludge, depending on the technology used, one must dispose of large volumes of arsenic and other chemicals used to inhibit scale (chemical inhibitors). No one anticipates the cost of waste stream management to go down, and most expect it to increase faster than the rate of inflation. Recent studies on the ecological impacts of large-scale concentrated brine discharges offshore have raised serious questions about impacts on aquatic life and commercial and sport fishing (tourism) industries. The Santa Barbara plant was permitted under a declared water emergency, allowing it to come on-line without the normal stipulations and permitting review requirements. As a result a number of modifications are now being required, raising the capital cost of the plant by 18% and impacting operational costs. It is, therefore, difficult to make an informed analysis of all the environmental costs/questions and permitting costs that will surround other desalination proposals.

How much salt do you want in your water? A single stage reverse osmosis seawater desalination plant does not remove all salt from the water. Desalination is allowed up to 800 milligrams per liter of total dissolved solids (TDS) in its delivered water. This standard has more to do with taste than health concerns. Desalination experts report that over 90% of the TDS from seawater desalination is salt. What are the long-term human health concerns of this large unnatural consumption of salt?

We have not been able, at this point, to satisfactorily resolve this question. There are reports of medical problems in the middle east where desalination has operated for long periods of time, but we have yet to receive independent confirmation of those reports. However, in discussions of the choices between desalination and fresh Alaska water, the question is often asked, "Do you know of any health professionals that recommend putting more salt in your water?" Most health experts recommend serious reduction of salt intake. And why take the risk when pure Alaskan water is cheaper and far more environmentally responsible than desal?

In addition to the health questions about desalinated water, there are concerns with its corrosive nature (500+ TDS salt). According to Tom Maddock, PE, Chairman of the Boyle Engineering Corporation, this is a concern that many proponents of desalination have not adequately addressed in their considerations. As a result of the corrosive nature of desalinated water, post treatment or mixing facilities/zones are essential to limit infrastructure damage. This single factor may increase the delivered cost of desalinated water by \$100 to \$200 an acre foot.

Desalination plants require very expensive coastal property which, in general, is already over-utilized. Few sites are available for applications that would not compete with existing users. Siting of large scale facilities may be less controversial when associated with electrical power generation plants. Nevertheless, marine transportation, by contrast, can be implemented in a way that will have little onshore land use or cost impact.

Finally, one of the difficulties with desalination is the representation of delivery price versus real cost. The only real example we have is the new \$30 million sea water desalination plant (1992) in Santa Barbara. This facility is the only sea water desal plant of its size operating in the United States and many experts claim it was underpriced to encourage further desalination development in the market area. The headlines of the Santa Barbara newspaper on December 31, 1992, reported plant costs had increased by 18% above the original \$30 million representation by Ionics.

## LIMITATIONS

### The Jones Act

Delivery of water from Alaska to California, other than from the Yukon River, is subject to the Jones Act. This federal Act requires that cargo transported from one American port to another must use vessels constructed in the United States and operated by American crews, thereby increasing the cost of capital investment and labor. The use of existing single-hull tankers built by other nations allows a far less risky capital investment. Some of those investigating large water transfers from one American port to another advocate a specific exemption in the Jones Act for the transport of fresh water. With the use of towable bags, the bags could be constructed in Alaska creating hundreds of new jobs. Water deliveries from Alaska to Mexico do not fall under the Jones Act.

### Public Perception

*"Water from Alaska?" "You've got to be kidding!" "Get real!"* The general public, both in Alaska and in the southwestern states, thinks of the viability of water imports from Alaska as an *exotic notion*. Limited public appearances by the Director of Water in southwestern communities have had some impact on this disbelief, but this effort is greatly limited by the minimal budget of the Division. We have found that, once the technologies and economics are explained and technical questions are addressed directly and understandably, the audience is receptive to the notion of water imports by tanker or bag and willing to investigate this concept further. This paper has been a great help in this effort.

### The Political Infrastructure of Water Development in Southern California

For decades the politics of water in southern California and the southwest have dominated state and local power struggles. Massive bureaucracies and political systems have developed to support various distribution schemes. Despite all the environmental and technological problems of desalinization and despite the millions of dollars being spent by communities to research desalinization - practically nobody is opening their minds to consider a more environmentally and economically viable external solution. Considering that desalinization cannot produce the volume or quality of water that marine transport can at a lower price with no municipal facility construction or long-term debt and far less environmental damage, it is even more perplexing. Thousands of engineers are now employed by governments at all levels to "design" solutions; but they are all looking inward, when at least a part of the solution may be outside of their experience or perspective.

### Can Alaska - Just say NO?

Some in Alaska have said that they do not want Alaskan water exported anywhere. There is immediate concern with environmental impacts on fish, wildlife and other public interest values such as recreation. Once audiences become more familiar with Alaska water laws and regulations these concerns become less feverish, however Alaskans do keep close vigil on the state to ensure responsible management decisions are made consistent with law. In addition most Alaskans are unaware that under the US Constitution, as articulated by the US Supreme Court, water is a commodity in interstate commerce and thus falls under the Commerce Clause of the Constitution. This simply means that a state can not deny the export of water. Water that is necessary, under Alaska law, to the needs of Alaska can not be exported. Only water that is determined excess to the hydrologic unit.

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## Conservation and Social Implications

One of the issues raised in discussions of the transport of water from Alaska to southern California, Nevada, and Mexico, is water conservation and the question of local responsibility. Some would argue that it is philosophically wrong to encourage greater growth in the southwest by providing new water; that the availability of water is a "natural" limitation on population and economic growth in the area, and to import water into this region delays local or national public policy decisions that should have been addressed years ago. When these questions are considered only in the context of the market area, which is often the case, this is a fair point for political debate. However, when considered in a broader context, the reality of shortages of water, energy, food, shelter, and space are evident in many parts of the world. Is it humane to tell starving people in regions of the world that it is more responsible to not send them food or the means of creating food because "their" environment may not support them? Is it humane to tell developing nations and struggling communities that they cannot reach for economic independence because "we" believe "their" dreams should be limited by our perception of "their" environment?

For centuries humankind has moved commodities found in large natural supply in one region to areas of the world with high demand and short supply. This is true for energy, food, minerals, construction materials, and water to name a few. History has found that people will live where they want to live based on many factors including economic vitality and employment opportunities, weather, and life style, and will adjust their expectations based on these same considerations. The projections of population increases in the southwest are built on the trends of significant immigration from outside of the United States. Persons immigrating to southwestern states find economic opportunities and lifestyles that are far more attractive than those they left. This perception may not be shared by some in the middle or upper economic classes, but they are real and very attractive to families climbing out of poverty or socio-political oppression.

Conservation of water is greatly affected by price and government restrictions. Some reports claim that Los Angeles County reduced its water consumption by 25% in one year as a result of drought ordinances alone. According to the Metropolitan Water District of Southern California, this conservation success resulted in an increase in the cost per acre foot. Rather than rewarding people and industry for conservation, rates were raised. Many now claim the higher price for conserved water worked as an economic disincentive after their conservation achievement. The economic incentive to further encourage conservation must be price. Studies on price and consumption clearly establish a relationship between greater conservation as a result of higher price. Price is also a much more cost effective tool than regulation. The study conducted by the Bay Area Economic Forum (October 1991) Using Water Better: A Market-Based Approach to California's Water Crisis is one of the most far thinking studies done of the relationship of price to consumption and is critical of continued government subsidies for infrastructure, operation, and maintenance costs that do not encourage conservation.

Alaska is blessed with natural resources, including water, at a scale unknown in many regions of the planet. Alaska believes it is appropriate to offer these resources to the world. As a sister state and a member of nation states, Alaska believes it responsible to offer its excess water for people in need. The sale and export of water from Alaska is a sound economic and environmental decision endorsed by the State Legislature and the Governor.

## Permitting and Land Management

Bulk water exports must to be conducted under existing laws and regulations, and conform to land management guidelines. Concerns of local residents or agencies about potential impacts on fish or other environmental values are addressed through these channels. As mentioned previously Alaska law protects fish, wildlife, recreation, water quality and many other public interest concerns. (see Alaska Water Laws in appendix)

## STRATEGY

The Alaska Department of Natural Resources recently completed a strategic plan calling for the responsible development of our natural resources, including water, while conserving Alaska's wild, scenic, and cultural values. The Division of Water has prepared a tactical plan to implement that strategy. Copies are available upon request.

The division intends to continue to evaluate the market. We understand that the export of water from Alaska by itself will not solve the major water deficit problems of the southwest or northern Mexico. Alaska water can be a part of a broader array of solutions to these problems. Price and security of source are, and will continue to be, the cornerstones of buyer and seller decisions.

Alaska, in cooperation with transport industries, can offer in the marketplace a very competitive price for a higher quality water with greater delivery volume, source security, little or no facility-construction risk to the customer, lower environmental cost, and significant flexibility in volume, delivery points, and schedules.

The target price for delivered water to this market must be less than the current price of desalinization (about \$2,000 per acre foot) if Alaska is to compete with desalinization. To compete with other new sources of water, we need to deliver water for less than \$1500 per acre foot - and we can.

Alaska water imports may not be competitive in some areas of the southwest; however a mixing of Alaska water with local supplies through systems like the California Water Project may ensure a greater confidence of supply in times of drought. By blending Alaska water with existing sources in the market area, the economic impact on end users is significantly reduced. For example, if Alaska water is delivered at \$2000 per acre foot and mixed with a source in the market area priced at \$100 per acre foot, the end "marginal" cost is \$1100 per acre foot. Considering the high reliability of water from Alaska, this cost can be viewed as the price of insurance. In addition, the mixing of pure Alaska water with local sources will enhance the quality of the combined water.

An exciting market opportunity is in Baja California, specifically Rosa Rita Beach, Tijuana, and Ensenada. They have an immediate need that can be satisfied within months by a single tanker. Additional tankers or bags can subsequently be added to meet demand. Deliveries to Baja are not subject to Jones Act limitations, allowing lower (20%) capital and operating cost. The Baja government has stated they will finance and build whatever onshore delivery systems are necessary in Mexico, thus reducing risk to investors and quickening the pace. Delivery to Baja also avoids potential political or permitting problems faced in southern California. With the potential of an instream wheeling agreement between Mexico and Nevada, Baja has become the key area of focus from many angles.

Formal proposals, based on the use of tankers, by such firms as Sun Belt Water, Inc. offer delivered water to market areas from Alaska at between \$1000 and \$2000 per acre foot, depending on variable assumptions, the most important of which are length of contract and distance. Delivery using bags would greatly reduce asking price and/or profit opportunities.

We have raised important questions in the minds of Baja officials about the long-term economic and environmental viability of the desalinization proposals they have received. Continuing discussions indicate that the Baja government is willing to work with the State of Alaska and Sun Belt Water, Inc. to obtain a contract beneficial to Mexico and Alaska.

Another possible market approach is a direct contract or appropriation (water rights) between Alaska and the buyer of the water, other than through a transport company. The buyer, the Baja government for example, would then arrange its own transport. Discussions on this approach have usually been short once the customer realizes the value of what private companies such as Sun Belt Water, Inc. and its subsidiary, Sun Belt Marine, Ltd. have already contributed in knowledge and investment. The Division of Water is willing to enter into negotiations with any qualified party interested in securing water rights or a purchase contract for water.

In discussions with southern Nevada officials, it is now clear that they will require a long-term, secure contract or water rights if they make a commitment to water imports and wheeling agreements. They are also looking at the Virgin River as a potential new water source, however, this would require agreements with other states, significant pretreatment, and desalinization due to high TDS (1,900 to 4,600) when the river is flowing. This source is also dependent on weather, low energy costs, and cost effective resolution of significant waste management and waste disposal problems.

The division also intends to further evaluate and characterize potential sources of water. With water achieving new stature as a valuable bulk commodity, basic information about water resources is essential.

The division intends to identify potential regulatory or land management concerns within state and federal governments in Alaska, and search for ways to resolve them. As an example, the Division of Water is completing negotiations with the US Forest Service and the US Geological Survey on a Memorandum of Agreement on a coordinated inventory and characterization of water export sources in SE Alaska. With appropriate information about the quantity and quality of these export sources and the localized effects of exporting water, these concerns should be resolvable.

An important part of the Division of Water's strategy is to promote public awareness of the possibilities of bulk water exports. The appeal of establishing a sustainable earth-friendly economic enterprise in Alaska, while conserving capital and environmental resources in Nevada, California or Baja should be compelling.

With the delivery of the first shipment transferring water from Alaska to southern California, Nevada, or northern Mexico - the world will change. Those who have objectively examined marine transport (tanker or bag) as a mechanism to bring new water to this market agree that once it is real - once a contract is signed and delivery begins - marine transport will become a dominant force in the market.

## **WATER RIGHTS APPLICATIONS**

### **Alaska Aquaculture, Inc. (Burnett Inlet Hatchery)**

In an effort to pay off outstanding state loans for the development of the fish hatchery at Burnett Inlet and provide some operating capital, Alaska Aquaculture, Inc. applied for and the Division issued a Temporary Water Use Permit to export up to one million gallons a week from the Burnett River system. Using a small tanker, this water is to be sold as potable water for no more than one cent a gallon to RairMaker Resources in Corte Madera, California.

### **Sun Belt Water, Inc. & Sun Belt Marine, Ltd.**

Sun Belt Water, Inc., of California, which was involved for over three years in efforts in British Columbia and Panama, studied water sources in Alaska and contacted the new Division of Water within days of its creation by the Governor. These discussions resulted in two applications for water from two sources in southeast Alaska for a total of 350,000 AFY using marine transport technologies. Sun Belt withdrew one application when it was discovered the source was located in a federal wilderness area and replaced it with another application.

### **City and Borough of Sitka**

Following a presentation by the Division of Water at the SE Conference in Sitka, a group of business and community leaders set up a meeting with the Division to explore local government involvement in water exports. This resulted in two applications from the City and Borough of Sitka for 54,750 acre feet a year from Blue Lake and 56,000 acre feet a year from Green Lake. Both of these sources are already developed for hydro-electric power and/or drinking water.

Although the Division of Water often receives calls and visits from individuals, firms, communities, and groups, these are the only pending applications for water rights with the state for exporting bulk quantities of water. The division does anticipate additional applications from communities in Southeast Alaska such as Ketchikan and Yakutat, a regional native corporation, and private firms such as Sun Belt Water. In the absence of competing applications, the Division of Water is working with these applicants for the export of over 450,000 acre feet per year. The division is working closely with the Alaska Water Management Council, the Division of Governmental Coordination, and the Attorney General's Office to ensure that these applications are processed according to applicable statutes and regulations.

## THE FUTURE

Given the expectations of growth in the southwestern United States and Mexico and a variety of developments impacting existing and potential local sources of water in the market area such as hundreds of new listings of instream dependent species under the Endangered Species Act and the required dedication of water to their recovery, and new directions in Congress for the Bureau of Reclamation that require more local water to be dedicated to fish and game, market demand will continue to grow - even if it rains. Although political leaders and professional water managers in the market area are making every effort to solve their water deficits with local sources, conservation, reclamation, and even desalinization, many have already come to the practical realization that it cannot be done. New sources of water must be found and the importation of water from Alaska can be a part of the solution to this challenge.

As a result of recent developments with out-of-court settlements on hundreds of new listings and other Endangered Species Act (ESA) complications, many experts predict that all of the key 35 rivers that flow to the pacific ocean in the west will be under some ESA limitations further increasing demand for imports.

The greatest market potential is southern California, northern Mexico, southern Nevada, and other southwestern inland states. Although we do not believe the State of California will allow significant economic harm to their agricultural industry by forcing large transfers of water from irrigation to industrial and urban uses, there is the potential under sufficient stress for political change. Some analysts predict this change may be completed at prices that may make imports and/or desal not competitive in the next decade, while other analysts conclude that local prices will have to be much higher before any significant policy change takes place. There is no such potential in southern Nevada with practically no agriculture or northern Mexico where very limited agriculture is based on overdrafted groundwater.

The Division of Water continues to explore all of these key issues. If you have any concerns or suggestions after reading this paper please feel free to contact the Director of Water directly at (907) 762-2294.

*References on information contained in this paper are available upon request of the Director of Water (907) 762-2294.*

# THE NUMBERS

A typical VLCC Class tanker hauls 225 acre feet  
 A ULCC Class tanker can haul up to 300 acre feet

[In each class if ballast tanks are used for fresh water transfers capacity can be increased by 20%]

[Towable Bags may haul more than 300 acre feet]

These numbers are estimates based on discussions with marine transport experts that have investigated the cost of the marine transport of water. The actual costs and profits may be higher or lower than presented.

## Annual Payload per Tanker

<u>Number of Tankers</u>		<u>@225 AF</u>	<u>@300 AF</u>	
1	can deliver	8,212.5	10,950	acre feet a year*
2		16,425.0	21,900	
3		24,637.5	32,850	
4		32,850.0	43,800	
5		41,062.5	54,750	
9		73,912.5	98,550	
10		82,125.0	109,500	
20		164,250.0	219,000	

\* 36.5 trips per tanker per year assuming a 10 day round trip

## Gross Receipts per tanker @ \$1,700 per acre foot

VLCC tanker per trip is \$382,500      per year is \$13,961,250  
 ULCC tanker per trip is \$510,000      per year is \$18,615,000

## Operational Costs (fuel/manpower)

\$ 7,900 crew and \$9,300 fuel = \$17,200 per day

## Capital Amortization over 10 years is \$13,260 per day

Total "Day Cost" for a 10 year contract is \$30,460 with a total cost per round trip of \$304,600

## Net Receipts (gross minus cost) per tanker @ \$1,700 per acre foot

VLCC tanker per trip is \$77,900      per year w/36.5 trips is \$2,843,350  
 ULCC Tanker per trip is \$205,400      per year w/36.5 trips is \$7,497,100

# THE NUMBERS

## BAG/TUG Costs

(Provided by Medusa, Inc.)

[these numbers are under independent review by the Division of Water]

	<u>225 AF Bag</u>	<u>1600 AF Bag</u>
Velocity through water	3.0 knots	2.0 knots
Velocity including California current	3.3	2.3
Velocity, miles per day	92.0 mpd	63.5 mpd
Loaded trip time	21 days	30 days
Return	7 days	10 days
Load and Unload	<u>2 days</u>	<u>4 days</u>
<b>Total Cycle</b>	30 days	44 days
Arrivals per year	12.16	8.3
Annual deliveries per bag	2,738 AF	13,280 AF'
No. of bags to deliver 250,000 AF/Y	91 bags	19 bags
<b>Capital Cost</b>	<b>\$1,270,000</b>	<b>\$6,000,000</b>
Annual charge @ 19.2% p.a. (8% money, 7 year life)	\$244,000	\$1,152,000
Insurance @ 2%	25,000	120,000
Repair @ 2%	<u>25,000</u>	<u>120,000</u>
<b>Annual Cost of Bag</b>	<b>\$294,000</b>	<b>\$1,392,000</b>
Tug size	2,000 Hp	3,000 Hp
Annual cost	<u>\$1,332,000</u>	<u>\$1,698,000</u>
<b>Total Annual Cost</b>	<b>\$1,626,000</b>	<b>\$3,090,000</b>
<b>Per AF Delivered</b>	<b><u>\$594/AF</u></b>	<b><u>\$233/AF</u></b>

Note: This is an example of the optimization process, which should also include the cost of the terminal (less for shallower bags). A complete optimization will certainly find a cost less than the \$233/AF haul cost shown here.

Bag Dimensions and Costs

	<u>225 AF Bag</u>	<u>1600 AF Bag</u>
Length L	1,250 Ft	2,400 Ft
Width (filled w	296	568
Depth (total) d	41.7	80.0
Draft	40.6	78.0
Area of top (filled)	25,939 yd <sup>2</sup>	95,622 yd <sup>2</sup>
Area of top (empty)	32,020	118,022
Total fabric area	69,040	236,044
Calculated volume before expansion due to pressure several percent	275,875 m <sup>3</sup> 223.6 AF	1,951,800 m <sup>3</sup> 1,582 AF
Costs @ \$15/yd <sup>2</sup>	\$ 961,000	N/A
Costs @ \$20/yd <sup>2</sup>	\$1,281,000	\$4,721,000

Note: To these costs must be added engineering costs, interest during construction (if many bags) and contingency. Also tackle, lights, reflectors, balloons, etc.

## Drag Force Calculations

### Friction Drag

$$F_f = 1/2 \rho C_f U^2 A_w$$

$$C_f = .075/(\log_{10} Re - 2)^2 = .00175$$

$$R_e = UL_w/\nu \quad (Re = \text{Reynold's } \#) \quad \nu = \text{viscosity}$$

$A_w$  = wetted area

### Form Drag

$$F_d = 1/2 \rho C_d U^2 A_n \text{ Newtons}$$

$$C_d = .05$$

$$\rho, \text{ density of seawater, } = 1025 \text{ k/m}^3$$

$A_n$  = largest cross section  
normal to flow

$$\text{Total Drag} = \text{Friction Drag} + \text{Form Drag} + \text{Wave Drag}$$

Wave drag, which varies as 3<sup>rd</sup> power of U, is ignored at low speeds, e.g., < 3 knots

$$\text{Total Drag} = 1/2 \rho (C_f A_w + C_d A_n) U^2 \quad \text{Newtons}$$

$$\text{For Medusa bags, } A_w = 7.504V^{2/3}, A_n = .2714V^{2/3}$$

$$\text{Total Drag} = .00154V^{2/3}U^2,$$

V = capacity in cubic meters  
U = velocity thru water, m/s  
1 Newton = .00011242 short tons

### Examples

Velocity, knots	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Total drag 225 AF bag	1.72	6.88	15.48*	27.53**
<u>Short Tons</u> 1,600 AF bag	6.55	25.06	55.02*	95.98**

Tugs

Costs for a U.S. west coast tug of 5,000 Hp, 50 ton Bollard pull, capital cost \$7 million in volume purchase.

\$000's

Crew	660			
Main Finance @ 4%	275			
Insurance @ 2%	140			
Other op. costs @ 2%	140			
Fuel 6000 tpy @ 100%	600			
Lube	<u>50</u>			
Total	1,265			
Service of capital @ 8% pa including depreciation	<u>625</u>			
30 year basis	1,830	+	660	= \$2,490/y or \$7,700/d

Capital costs are roughly linear with bollard pull so estimate is for smaller sizes:

Bollard pull (Tons)	<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>
Tug costs, inc. cap	366	732	1,098	1,464
Crew costs	<u>500</u>	<u>600</u>	<u>600</u>	<u>660</u>
Total \$000's	866	1,332	1,698	2,124
Day rate, 325 d/y	\$2,665	\$4,098	\$5,225	\$6,535

# THE NUMBERS

## MISCELLANEOUS

Removing 225 AF a day from a source would require the appropriation of 82,125 AF a year.

If the annual discharge rate of the source were 500,000 AFY, the removal of this amount of water would be less than 20% of the total discharge.

The Division of Water does not permit the appropriation of water based only on annual discharge rates. Due to seasonal fluctuations, the Division requires monthly appropriation stipulations.

# THE NUMBERS

## State of Alaska

Although initially it was suggested that Alaska could export up to 2 million acre feet a year from southeast Alaska we find this unlikely, in the near term, using tanker or bag/tug technologies. We do believe a more probable target of one million acre feet a year more realistic.

### Revenue to the State

With a "Conservation Fee" at a range from \$5 to \$20 per acre foot, as required by law, the total revenues generated to the state would be about \$20,000,000 per year. The Conservation Fee must be graduated up (higher cost per unit) as more water is removed from a hydrologic unit (see State Laws in appendix).

In considering the long term economic impact of this new source it is important to keep in mind that the price of water will increase in the market area. All experts agree on that. The Conservation Fee will be adjusted accordingly increasing the total revenue to the state. In addition the annual adjustment for inflation will be applied.

Income from other sources of taxation on this new industry may increase this annual revenue.

### Jobs for Alaskans

Although Alaska can not insist that those involved with water exports train and hire Alaskans, we have been very encouraged with the interest of those actively pursuing water exports in training and hiring Alaskans. The phrase often stated is, "It only makes sense if we are doing business in Alaska, to train and hire Alaskans." In small villages and rural communities in southeast Alaska, this is a critical issue.

With the application of bag technology, and concerns with the Jones Act, it is anticipated that the bags would be constructed in Alaska. According to James Cran with the Medusa Corporation, such an enterprise could, he estimates, employ several hundred Alaskans.

### Uses for this new Revenue Stream

Although Alaska does not allow the dedication of revenue, through separate accounting, the legislature may wish to use this revenue stream to resolve many other water related challenges. Yearly appropriations to the Village Safe Water Program and the purchase of single family water distillation systems in many remote areas would be two obvious choices.

### Based on existing applications:

Sun Belt Inc., exporting 350,000 AFY, would generate \$1,750,000 to \$7,600,000 in Conservation Fees Sitka, exporting about 100,000 AFY, would generate \$500,000 to \$2,000,000 in Conservation Fees

Water Sales - Revenue is unknown at this time

## Bottled Water

Alaska has several bottled water and beverage industries with plants located in Anchorage and Juneau. WETCO bottles water under the name Beluga Water with a large share of the shelf space in Anchorage retail outlets. WETCO water products are also delivered to other areas of the state and exported to Japan for perfume manufacturing. Alaska's Best Water of Anchorage supplies drinking water to many office buildings in Anchorage in five-gallon bottles. Alaska Pure Water Products and Alaska Pure Mountain Spring Water of Juneau, also supply drinking water in various size bottles to local markets with limited exports.

The Municipality of Anchorage has a limited contract to supply water to Alaska Glacier from the Eklutna Water Project, that is truck tankered on barges to Washington state for bottling in a test market. This is a back-haul using milk tank trucks from the Seattle area. If this market proves out, the owners will consider opening a bottling company near the municipal Eklutna Water Treatment Plant.

Alaska Aquaculture, Inc. (Burnett Inlet Hatchery), in southeast Alaska, has a permit to export one million gallons of water a week from the Burnett River system to RainMaker, a firm in California. A small tanker will be used for transport, and they anticipate 52 shipments a year for a total export of 52 million gallons or 159.6 acre feet. The hatchery will charge as much as 1 cent a gallon at the point of transfer. This income will pay off the debt (state loan) on the hatchery.

A group of businesses involved in the tourism market in SE Alaska have advanced the concept of bottling local water as a souvenir. This may prove to be a successful enterprise focused initially at a very limited market, however, with development and experienced marketing this approach may open new markets outside of Alaska.

Test-markets by private companies using Alaska bottled water have been very successful. The cost of shelf space and an economically viable delivery system are the greatest challenges to developing markets outside of Alaska. These are the same challenges faced by most in the bottled water industry.

### Glacier Ice

The harvesting and export of glacier ice continues to increase. Currently there about 20 permitted harvesters and a number of pending applications. The market demand for glacier ice continues to be predominately Japan and Hawaii. We have seen a recent increase in the level of interest in glacier ice exporting and in use for domestic tourism markets. The last reported wholesale price for "clean" glacier ice is \$500 per ton.

# Ric Davidge

Appointed Alaska's first Director of Water in June 1991, Ric Davidge is responsible for the management of 40% of our nation's free fresh water resources. He is also responsible for the State Dam Safety Program, Title Navigability determinations, the Alaska Hydrologic Survey, State Water Policy and Management Strategies, Water Resource Management and Development, and represents the Governor on the Western States Water Council. Ric has been a pioneer in the export and sale of water from Alaska and was successful in getting unique legislation passed in 1992 that authorizes state water sales and water conservation fees. With the appointment of Glenn Olds as Commissioner of DNR, Ric was asked to head the Strategic Planning Team for the department and while serving that function completed DNR's first strategic plan and a series of tactical plans.

Ric Davidge came to Alaska in 1973 to attend and teach at the University of Alaska, Fairbanks. He received his BA degree at the Fairbanks campus and his MPA degree from the Juneau campus. While at the University, Ric was elected Student Body President and later appointed to the Board of Regents by Governor Hammond. Ric started the Alaska Student Lobby representing almost 10% of the voting population of Alaska.

In 1978 Ric joined the staff of Alaska's senior US Senator, Ted Stevens, and was involved in the final year of Congressional action on ANILCA. He initiated a number of national policy reviews on federal land management issues resulting in a series of GAO investigations which began a period of national reform. As a result of his work with Sen. Stevens, Ric was hired as the Washington, DC representative of the National Property Owners Association as a recognized authority on federal policies towards private ownership and developed a very successful consulting and representation firm.

During the 1980 campaign for President, Ric was asked to prepare a number of issue papers for the Reagan Campaign which were adopted and became a cornerstone of Dept. of Interior policy following Reagan's election as President. Ric was then appointed to a sub-cabinet position in the Dept. of Interior and selected to Chair the Land Policy Group which oversees land policy issues for the Interior Dept. and the US Forest Service. He was also responsible for developing innovative historic preservation policies and tax reforms that caused a national surge in private historic property restoration. Among many other responsibilities with the administration, Ric served as the Federal Commissioner to the New Jersey Pinelands, a member of the President's Council on Historic Preservation, and Chairman of the Coastal Barriers Task Force that delineated over 900 miles of east and gulf coast shore line which Congress placed into a new conservation system.

In 1983 Ric returned to Alaska to head the Office of the Assistant Secretary for Fish, Wildlife and Parks in Anchorage and begin oversight of the conservation system management planning requirements in ANILCA. Working closely with the Alaska Land Use Council, a joint State/Federal group, he headed a number of initiatives for the Assistant Secretary. With the growing controversy in subsistence and access questions facing the US Fish and Wildlife Service, Ric was appointed as Assistant to the Director of the US Fish and Wildlife Service to head a series of high profile and controversial State/Federal task forces.

Ric left federal employment to join the campaign staff of Walter Hickel who was running for Governor in 1986. As Director of Issues for the campaign Ric wrote most of the campaign issue papers and speeches for Governor Hickel. After the Primary Ric left the campaign to serve as Ex Dir of the Citizens Coalition for Tort Reform and helped organize and set the direction for the organization including preparing a number of major legislative reforms.

In 1987, Ric was hired as the Director of Development Services for the Mat-Su Borough. In this capacity he directed 6 divisions, headed international trade missions to Europe and Asia, articulated economic development strategies in port and industrial park development, forest management and wood fibre production, recreation,

mining and other industries. Ric was appointed as the Acting Borough Manager in the absence of the Manager.

Continuing his economic development efforts Ric was hired by Susitna Industries as Vice President and Assistant General Manager. In this capacity Ric was responsible for the development and financing of projects ranging from \$250 million to \$1.5 billion. While working for Susitna Industries Ric also served as President of his own public policy consulting firm, often heard on national radio talk shows discussing Alaska; he also wrote a number of issue papers for political candidates. Ric also served as Ex Dir of the Alaska Professional Sportsman's Association, a professional trade organization concerned with professional standards, tourism development, marketing and state/federal relations.

With the Exxon tanker accident in Valdez, Ric was hired to immediately staff and set up environmental compliance offices in the Gulf of Alaska for VECO under contract to Exxon. Over the next few months Ric designed and had constructed the second largest and most diverse waste separation, transportation and management system on the spill in Seward. By the end of the summer Ric was asked to accept the position of Director for Planning, Permitting and Government Affairs with a leading environmental consulting firm in Anchorage. In this capacity he was instrumental in bringing together this firm with Soviet/Russian leaders resulting in a very large and successful joint venture for environmentally responsible resource development in a former Soviet Republic. While still working with the firm Ric was asked by Senator Jack Coghill to develop and manage all issues for his campaign for Lt. Governor. Ric was also brought in to prepare candidates for statewide TV debates and with Gov. Hickel joining the campaign Ric again took responsibility for issue papers and special interest group questionnaires.

In February of 1991, Governor Walter Hickel asked if Ric would join his personal staff as Special Assistant for Policy and Legislation. In this capacity Ric served as the Governor's principle assistant on Subsistence and the Governor's liaison with the House Minority. With the creation of the new Division of Water and the end of the legislative session, Ric was appointed Alaska's first Director of Water.

#### Community Service

Since coming to Alaska in 1973 Ric has been very active in community service. In addition to his leadership in post secondary education, he also served as Chairman of the Commission on Public Transit which developed the first mass transit system in the Fairbanks North Star Borough. He has served on a number of statewide private and public boards and commissions and as a Director in such organizations as the Resource Development Council and The Alaska Support Industry Alliance. Ric has written many articles and participated in writing books such as the Commonwealth North publication, "Going up in Flames". Ric was an original member of the Alaskan Coalition for American Energy Security.

#### Education

Masters in Public Administration, Univ of AK, Juneau  
Bachelor of Arts, Univ of AK, Fairbanks  
Post Graduate work in Economics, Political Science and Management

#### Personal Information

Married with three children all living in Alaska.  
Ordained Elder (Worship) in the Presbyterian Church  
Viet Nam combat Veteran (65-66) Also Korea, Japan (67-69)  
Former Professional Entertainer

# ALASKA

## 40% OF OUR NATION'S FRESH WATER RESOURCES

Superior quality fresh water can be provided by the private sector, on a turn-key basis, with zero capital funding by California water buyers. By using marine transport the buyers of quality Alaskan water allow themselves total flexibility in the location and rate of delivery at minimum cost.

### **THE MARINE TRANSPORT OF SUPERIOR QUALITY WATER FROM SOUTHEAST ALASKA TO SOUTHERN CALIFORNIA IS ECONOMICALLY MORE VIABLE AND ENVIRONMENTALLY MORE RESPONSIBLE THAN MANY OTHER ALTERNATIVES**

#### Major Advantages of Marine Transport Compared to Desalination

Uses approximately 33% less energy, most of which is used outside of California. Reduces future energy dependence and impacts on California air quality.

- \* Significantly less expensive, both in real dollars and environmental costs.
- \* Requires no significant on-shore land use thus minimizing the impact on sensitive coastal areas.
- \* Involves no toxic chemicals or expensive waste-stream management.
- \* Has no waste discharge thereby minimizing impacts on marine environments.

#### Secure Sources

Over 25 large lakes in Southeast, Alaska with watersheds that average annual precipitation between 150 to 400+ inches, many without fish, and are easily accessed by marine transport. Applications now being processed by the State of Alaska for annual deliveries in excess of 400,000 AFY.

#### Cost Estimates

Assuming a minimum of 8,300 AFY for 10 years with delivery to northern Mexico or San Diego, California, less than \$1,500 per acre foot. With bag technology the delivery cost is less than \$1,000 per acre foot. Direct tie-in with existing water delivery and storage systems allows mixing with lower cost sources, greatly reducing per acre foot economic impact at the tap.

#### Mitigation of other Environmental Concerns

Allows exchange (wheeling agreements) with inland states, such as Nevada, for existing water appropriations from Colorado or Sacramento Rivers as well as inland California agriculture with coastal communities.

Allows more inland water to meet growing endangered species demands.

# CALIFORNIA

If we are able to achieve every success, every advantage, in conservation, water reclamation (sewage/water recovery), redistribution, groundwater management, water marketing, new sources, expanded storage, and population control we will still be short 4 to 6 million acre feet a year by 2010 - if it rains. So said Douglas Wheeler, Secretary of Natural Resources for California at the Global Cities Project Water conference in San Francisco (3/20/92).

The southwest is now in its 7th year of drought and their ability to recover is seriously impacted by growing water demand.

## Population Increase

The experts agree that by the year 2008 the population of Southern California will increase by one third.

## The Colorado River

As a result of court decisions the State of Arizona has begun claiming their priority right to water from the Colorado River; efforts by federal agencies to protect threatened or endangered species that depend on this river system; international demands will cause more clean water to be passed to Mexico - each of these facts will significantly reduce the amount of water available to Southern California.

## The Sacramento River

California will become very familiar with the Endangered Species Act over the next decade. Some California groups openly claim to have dozens of species which are instream dependent, ready for "listing". This coupled with seismic, water quality and wetland concerns and the delays and exponential costs of new storage and diversions make more water from this source very problematic.

## Economic Impacts

California newspapers are full of stories of businesses leaving. Some businesses are already spending significant dollars to cleanup the water they receive for manufacturing. Sources are less and less dependable. Importing water from Alaska; it is a simple economic decision if you need dependable, low cost, high quality water.

## Desalination

Although the contract price for desal in Santa Barbara was \$1965 per AF, the current cost is reported to be much greater. After 3 months of operation the \$30 million plant was shut down, but the city is still paying \$1200 per acre foot against 3200 acre feet a year and no water is being produced. Desalination costs will escalate due to dependence on very large quantities of energy. As energy costs increase so will the cost of desal water. Desalination produces a huge waste stream. Existing discharge and waste stream management costs will increase with more restrictive environmental laws. Due to low volume production, dozens of large plants would need to be located along the California coast.

**LARGE VOLUME  
WATER EXPORT POTENTIAL  
FROM  
SOUTHEAST ALASKA**

**By**

**R. Noll, Hydrologist III  
and  
Ric Davidge, Director of Water**

**Department of Natural Resources  
Division of Water**

**April 1992**

**American Water Resources Association  
Alaska Section  
1992 Conference  
Fairbanks, Alaska**

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Davidge - Division of Water, PO Box 107005, Anchorage, AK 99510-7005**

## ABSTRACT

With over 400 inches of rain per year in some areas of Southeast Alaska, water exports to dryer areas of the world is a potential use of this renewable resource. Interest in marine transport of southeast Alaska water has State agencies identifying site requirements, regulations, and needed permits.

Water export sites need to meet the following hydrologic requirements: 1) the site stream, river, or lake should have a large enough drainage area to supply water year round without impacting fish and wildlife resources, 2) the site should have access to provide loading to large tankers, and 3) the site must be on land designated for resource use.

Most project proposals must have an Alaska Coastal Management Program (ACMP) review. The Division of Governmental Coordination (DGC) conducts the ACMP review to ensure the project is consistent with the Alaska Coastal Management Program. Within the ACMP process, regulatory review allows each department to ensure that their statutes are complied with. A pre-application meeting may be convened by DGC allowing the applicant to discuss the project with state and federal agencies. From that meeting the applicant will have an outline of what permits and follow up items are needed and what agencies they need to work with.

The right to use Alaska's water is based on appropriation permitted under the Water Use Act. Currently the state may only assess an application fee from \$50.00 to \$200 depending on the quantity of water involved. Consequently, the administration has introduced legislation to allow the assessment of water management fees, and to allow the state to sell water resources. Along with selling water resources, the state is exploring the concept of progressive water management fees based on the quantity of water being transferred out of a designated hydrologic unit or sub-unit. Declining revenues from North Slope oil will continue over the next eight to ten years. As the use of water resources increases within both Alaska and other western states, the proposed fees would help pay for the cost of managing the resource.

## INTRODUCTION

Southeast Alaska has the potential for exporting vast quantities of high quality water. The area has abundant rainfall throughout the year, is close to shipping lanes, and many of the area's water resources have not been developed. Recently Yakataga received 6.5 inches of rain in a 24 hour period, and at a time when other states have been experiencing a drought, southeast Alaska has had over 15 consecutive months of above average rainfall. Alaska is faced with increasing use of its vast water resources and the possibility of exporting water to other states. At present the state is unable to recover any revenues from the use or export of water. The potential to export water from Alaska ranges from speciality exports, such as bottled water or glacial ice, to large scale exports for municipalities.

Water export from the state has not been addressed in the regulations until now. At present, the Department of Natural Resources has received three water right applications for large volume water export projects. This has required the department to review certain parts of the permitting process, such as where the beneficial use of the water will occur. Along with DNR's authorizations, the size of these projects usually result in numerous permits from other state and federal agencies being required. The large number of agencies involved usually necessitates that an applicant have knowledge of

both the hydrology of the site, and the bureaucratic process. Any planned site selection should be carefully reviewed for land status, fish enhancement projects, natural fish runs, historic and cultural significance, and recreational use.

Allocation of Alaska's water is based on principles of prior appropriation for beneficial use in the public interest. The right to use water is gained through a permit process governed by the Water Use Act and regulations promulgated under it. The present application fee ranges from \$50 for use of up to 5000 gallons per day, to \$200 for all uses over 30,000 gallons per day. This is a one time fee for processing the application, permit and certificate. The administration has introduced legislation to allow the assessment of water management fees based on water use. The objective of the management fees is for the use of water resources to pay for the cost of managing those resources. A progressive fee based on the quantity of water being transferred out of designated hydrologic units would allow the state to gain revenue from appropriation or sale of water resources.

Along with managing the water resource, the state is developing data bases. Information such as who is using water and for what purpose, where water is being used, how much water is used, and what source of water is being used are all part of a water right application. This information is stored in the DNR Land Administration System (LAS), water subsystem. The information can be retrieved for a specific area or site by type of water use, quantity of water, or a combination of data. Ground water information received in the form of well logs is entered by location on a state data base system and is also incorporated into the USGS well log data base.

## SITE SELECTION

Numerous factors determine the feasibility of a site for water export. The amount of water requested and the desired method of transport will be most important in initial site selection. Once a number of sites are identified, the land status must be determined to ensure the project is compatible with the designated use in that area. After a site is identified as being able to supply the water requested and is found compatible with the land use, many other considerations must be factored in. Many streams in southeast have natural salmon runs, hatcheries, or artificial stocking of some type. Other areas have high recreational use, or commercial use such as canneries. Some sites may have existing water rights for use ranging from single family homeowners to municipalities.

Water requests for out of state export to municipalities or water districts require large year round water supplies, and access for large tankers. This limits the number of available sites. Small speciality exports such as bottled water have a larger selection and can be incorporated with other water uses. A hatchery in Burnett Inlet on Etolin Island was issued a permit to export water for bottling. Tanker export of large volumes (over 50,000 acre feet per year) necessitates a site that can supply 100 to 150 cfs to the tanker while maintaining required minimum in-stream flows. Site selection cannot usually be done based on available USGS stream flow records. Another parameter that can be easily determined from standard topographic maps such as drainage basin size must be used. Smaller drainage basins could be considered for selection based on the annual precipitation for the area. An estimate of annual precipitation can be determined from the US Forest Service Region 10 Water Resource Atlas. For large export operations, a lake close to tide water and at an elevation above 100 feet is desired to minimize pumping. The site must have access for tankers that can be up to 1000 feet long. Some sheltered area for support facilities must be located close to the loading site.

Once a site is found that meets the hydrologic and infrastructure requirements, and if the land is managed by the US Forest Service, the Tongass National Forest Land Management Plan must be checked. The plan divides the forest into Land Use Designations (LUD). LUD-I consists of wilderness and related national monument lands. These lands are generally managed to protect objects of ecological, cultural, geological, historical, prehistorical, and scientific interest. No development or water export is generally permitted. LUD-II lands are to be managed in a roadless state to retain their wildland character, but would permit wildlife and fish habitat improvement and primitive recreational facility development. LUD-III lands will be managed for a variety of uses to provide the greatest combination of benefits. These areas have either high use or high amenity values in conjunction with high commodity values. On LUD-IV lands, opportunities will be provided for intensive resource use and development where emphasis is primarily on commodity or market resources. The Tongass Timber Reform Act of 1990 should be checked to ensure a site selection is in the proper LUD.

Selection criteria related to land use, hydrology and access are problems that usually cannot be solved by some type of project design change. The remaining considerations will usually be reflected in different state and federal agencies request to the applicant. Fish and wildlife resources and recreational use are the two most important. The natural fish runs present in a stream can be determined by consulting the Atlas to the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes, 1989 by the Department of Fish and Game, Habitat Division. This document identifies the species and life cycle of any anadromous fish in the selected site. The Alaska department of Fish and Game, US Fish and Wildlife Service, and National Marine Fisheries should be consulted to determine if any fish enhancement projects are being done at the selected site. Some sites will have a high recreation use for camping, hiking or fishing. At sites which may impact the fisheries or recreational use, the applicant will have to find solutions that are compatible with the agencies and consistent with public interest requirements.

### AGENCY REVIEW

Most projects related to water export are expected to be along the coastal areas of southeast (a small bottled water supplier in Juneau uses a spring above Lemon Creek) and will have to comply with the standards of the Alaska Coastal Management Program (ACMP). The ACMP standards were adopted by the Alaska Coastal Policy Council in 1978. The standards provide for a comprehensive, interdisciplinary perspective in decision making; balanced use and protection of coastal lands and waters; and a higher priority for uses that depend on a coastal location.

The ACMP process provides the State of Alaska with a coordinated system for reviewing applications and issuing permits for proposed projects that would affect natural resources in Alaska's coastal zone. In the consistency review process, project proposals are reviewed to ensure that they are consistent with the standards set out by the ACMP before any state or federal permits are granted.

Within some local communities and rural regions called coastal districts, additional standards for coastal development may apply. These district standards provide more specific guidelines for development in the local community.

The Division of Governmental Coordination (DGC) conducts the ACMP review to ensure a project is consistent with the Alaska Coastal Management Program. DGC has a number of functions when coordinating a project. They are responsible for bring the

applicant and all state and federal agencies together in a pre-application meeting to review the project. It is DGC's job to assist applicants in the permit process, to streamline and expedite state reviews and decisions on coastal development, and eliminate repetitive reviews and decisions. DGC will provide adequate opportunity for public and local participation in state decisions. DGC will render a consistency determination for a project within the Alaska Coastal Management Program that is balanced, factually documented, and will consider the cost and benefits of requiring particular stipulations.

After a DGC sponsored pre-application meeting, the applicant will have an outline of what permits and follow up items are needed. The applicant will have a better idea what agencies they need to work with, and the agencies will have a better idea of the project design. The permits needed for a water export project may include any number of the following:

Federal Permits:

Corps of Engineers Section 10  
USFS Special Use Permit

State Permits:

DEC Certificate of Reasonable Assurance  
DFG Fish Habitat Permit (dependent on location)  
DNR Right-of-way (if crossing State land)  
DNR Tideland Lease  
DNR Temporary Water Right  
DNR Water Right  
DNR Dam Safety Permit

Miscellaneous Items

ANILCA 906 (K) Concurrence  
Alaska Energy Authority Information  
Alaska Legislative Action  
Alternatives Analysis  
FERC Report  
NEPA Environmental Analysis  
Public Need Information

## WATER POLICY AND MANAGEMENT FEES

The State of Alaska is considering a water management fee for a number of reasons, not the least being a method for the state to recover the cost of managing Alaska's water resources from the users of that resource. A management fee has other benefits that the Department feels make the overall management fee proposal a complete management package. The management fee concept, in addition to cost recovery, promotes the idea that water is a valuable natural resource that is required by all Alaskans to fulfill their basic needs, such as for drinking and bathing, but is also used for the generation of power (hydroelectric, natural gas and oil), food (agriculture, seafood and other processing), timber, other petroleum products, mining, and many other products and services used on a day to day basis. These same water resources are used in their natural state to protect fish and wildlife and their habitat, recreation, transportation and water quality. A management fee concept will also promote water conservation. Studies clearly show that as the cost of water increases, the use decreases. Management of Alaska's water resource will also benefit the state's water rights program by providing the opportunity to update

many of its water rights files by eliminating those water rights no longer in use or by decreasing those water rights where the total quantity of water is no longer being used. Holders of water rights will advise the Department of Natural Resources when they stopped using water or if they are using less water than what was granted to them when they received their management fee notice each year. Updating of the water rights system will help water managers better understand the water use requirements for specific commercial and industrial water users, sources of water in specific areas, where water is used and what it's used for.

In reality it is not cost effective or feasible to charge all water users a fee. It has been estimated it costs the state \$50.00 to send and receipt a bill, so the lower limit of management fee would have to be \$50.00. If the management is set at \$1.00 per acre foot of water used, no water user using less than 50 acre feet per year would be charged. Fifty acre feet of water is equal to approximately 44,600 gallons per day. The homeowner using an individual water system and most small miners using a suction dredge smaller than six inches would not be subject to a management fee. The larger (greater than 50 acre feet per year) would be subject to the management fee. These could include commercial and industrial businesses, seafood processors, public water supplies, agriculture, mining, pulp mills, oil and gas development, oil and gas processing and others.

#### SUMMARY

Water export from southeast Alaska is a new use of one of Alaska's largest renewable resources. Water is currently being exported for bottling, and applications have been received for large volume export. These new uses of water resources have caused Alaska's water managers to review the process by which the State charges application and management fees.

Water export site selection is very dependent on the volume of water exported. Site evaluation must be done with the method of shipment in mind, quantity and quality of water available, availability of the water supply year round, and other potential uses for the water resource. Each site must be evaluated for access, land use designation, fish resources, and recreational use.

The Division of Governmental Coordination in the office of the Governor will coordinate the ACMP consistency review, assist the applicant, and provide an opportunity for the applicant and state and federal agencies to meet.

The Division of Water does not endorse  
the Medusa Corporation, Inc.  
or its bag technology.

The attached materials are only included to illustrate the bag technology discussed in this paper. In order to use these photographs, we have agreed with Mr. James A. Cran, President of Medusa Corporation, to include the cover page of the business plan from which these photographs are taken.

# MEDUSA

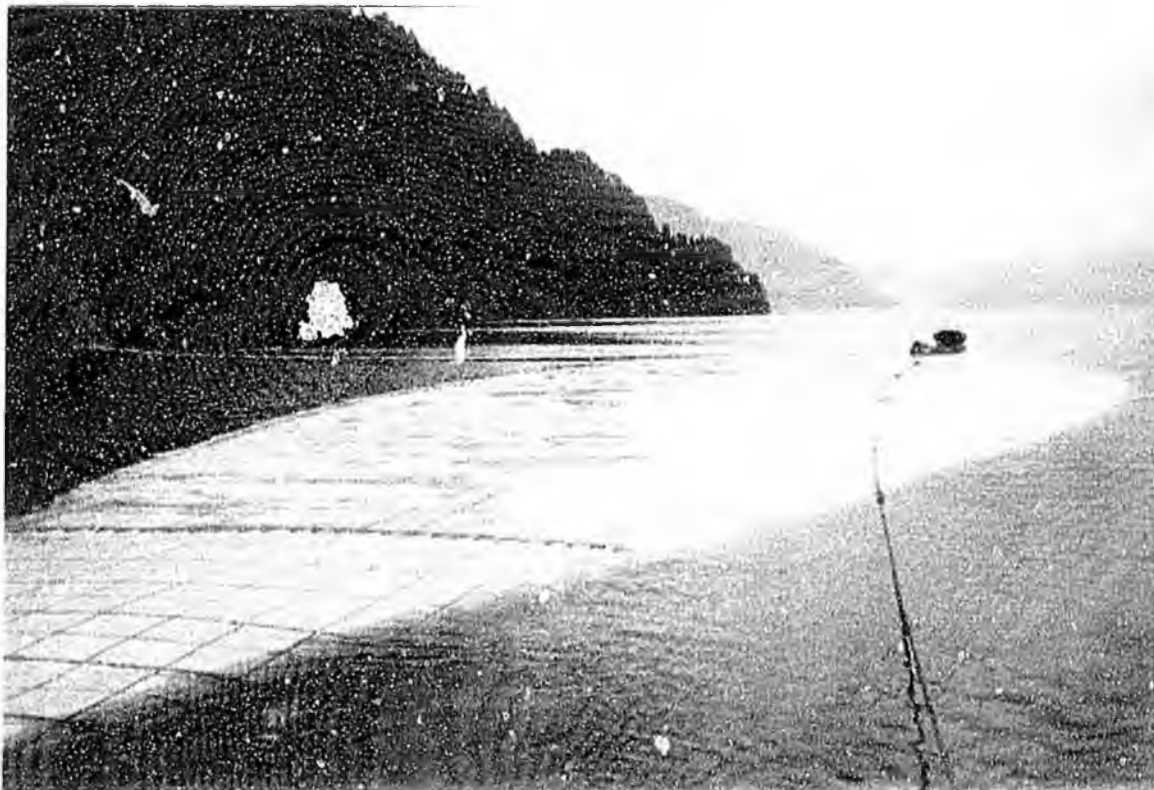
CORPORATION INC.

## BUSINESS PLAN

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The transportation of very large volumes of fresh water or sewage effluent in flexible barges at sea.

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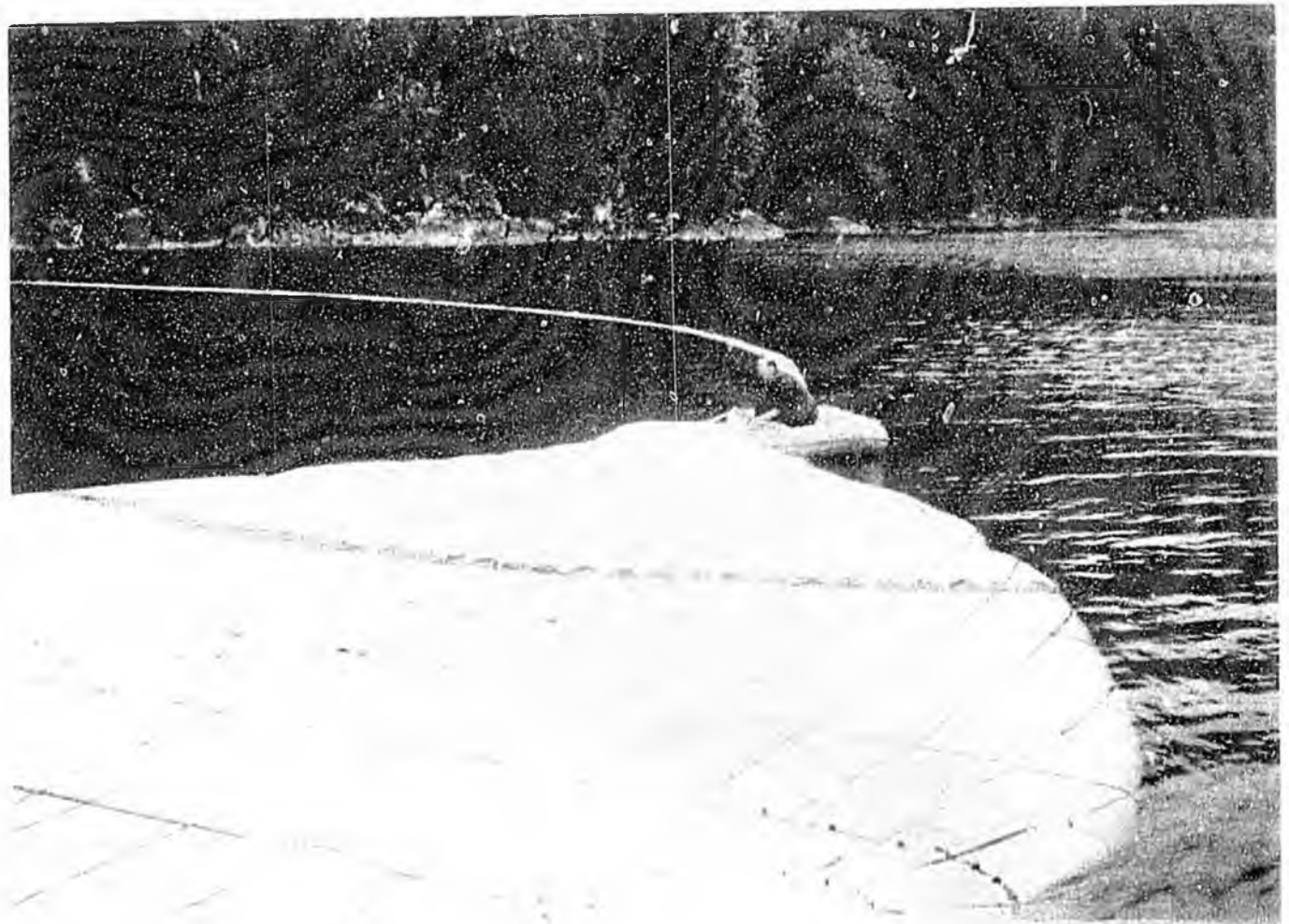
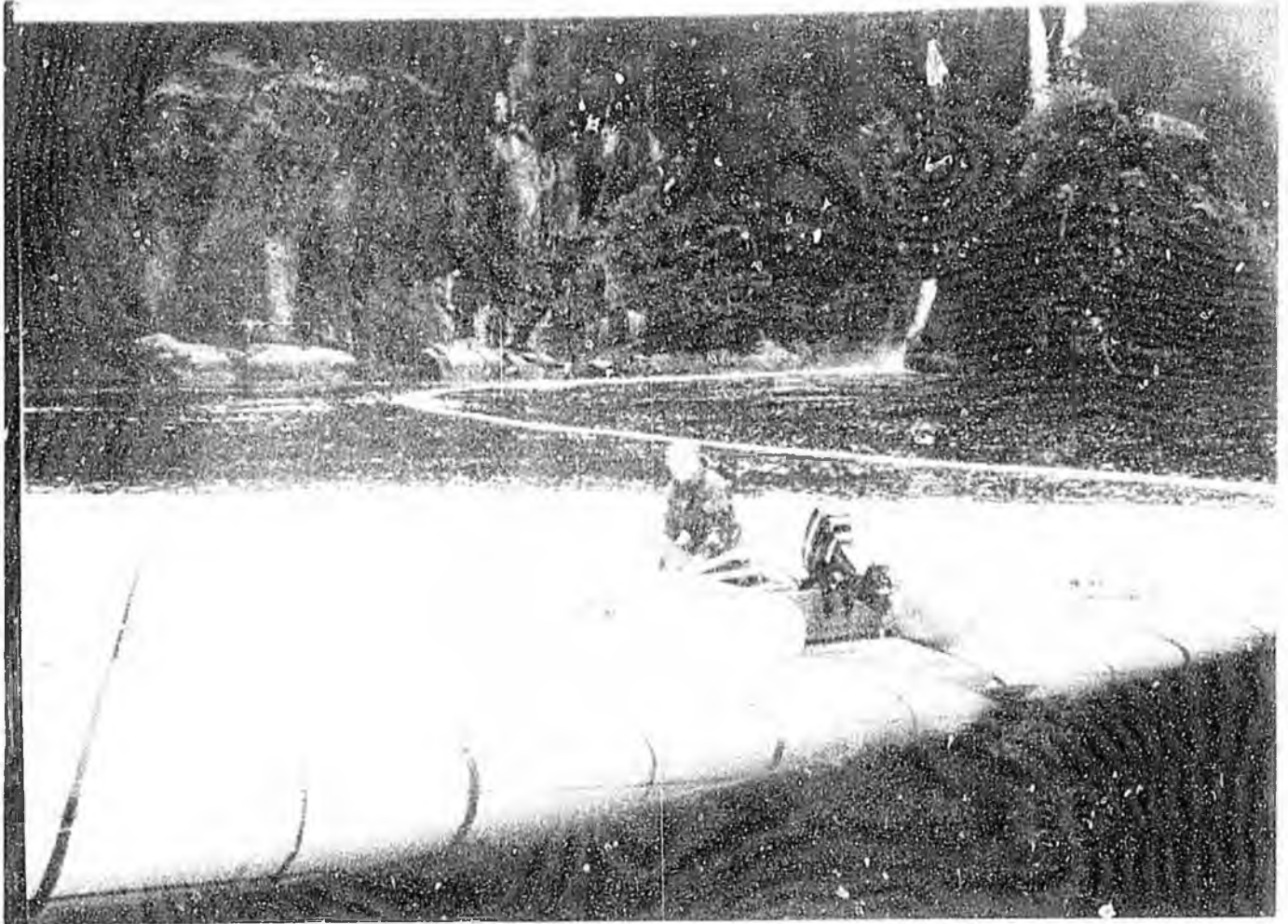
A 5000t engineering prototype medusa bag under test off Vancouver, B.C.

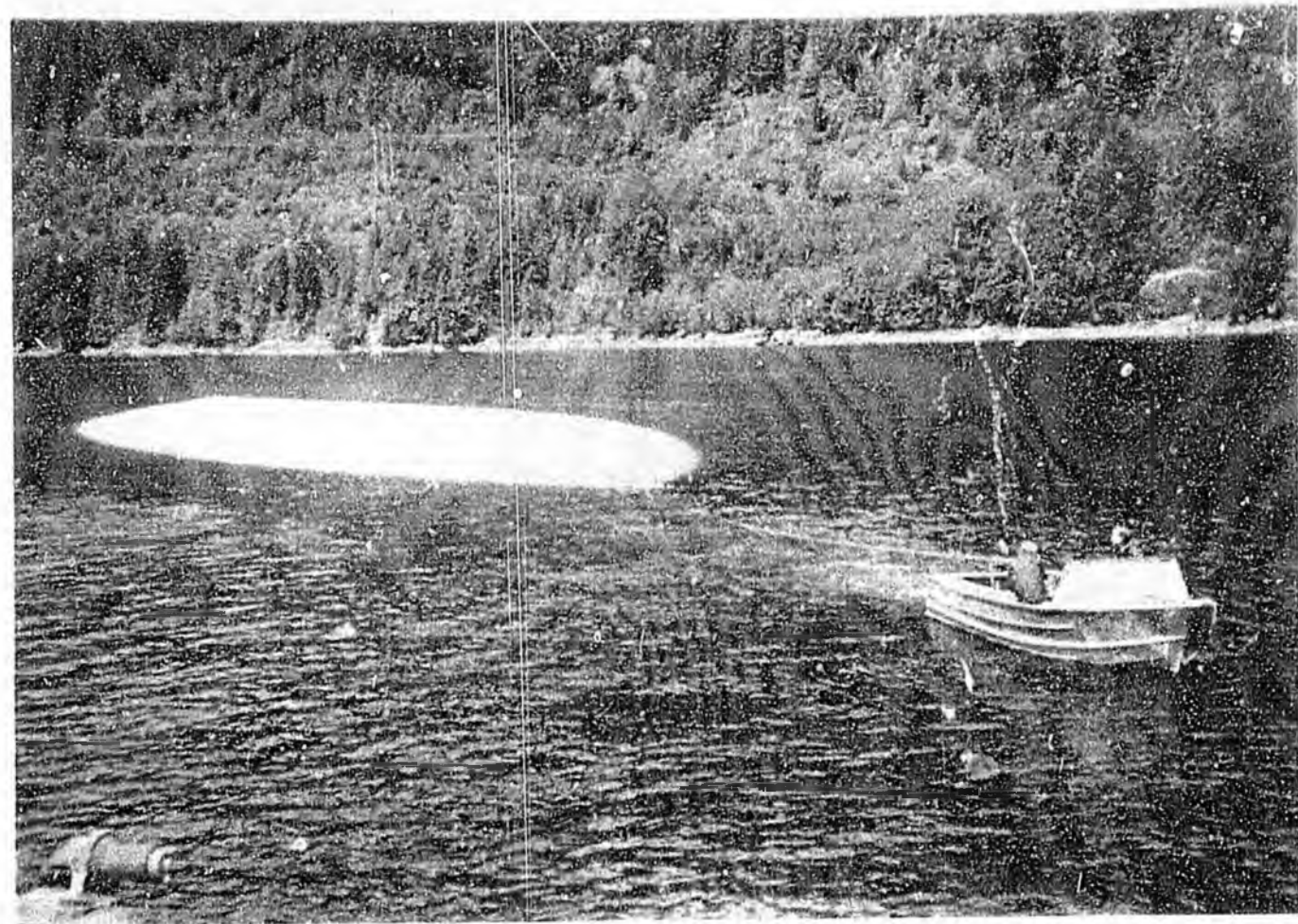
Prepared by:

James A. Cran, President  
C. Gaylord Watkins, Vice-President

March 1990

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# Medusa Bag Strapping Pattern (Provisional)

Scale Approximately 1:2000

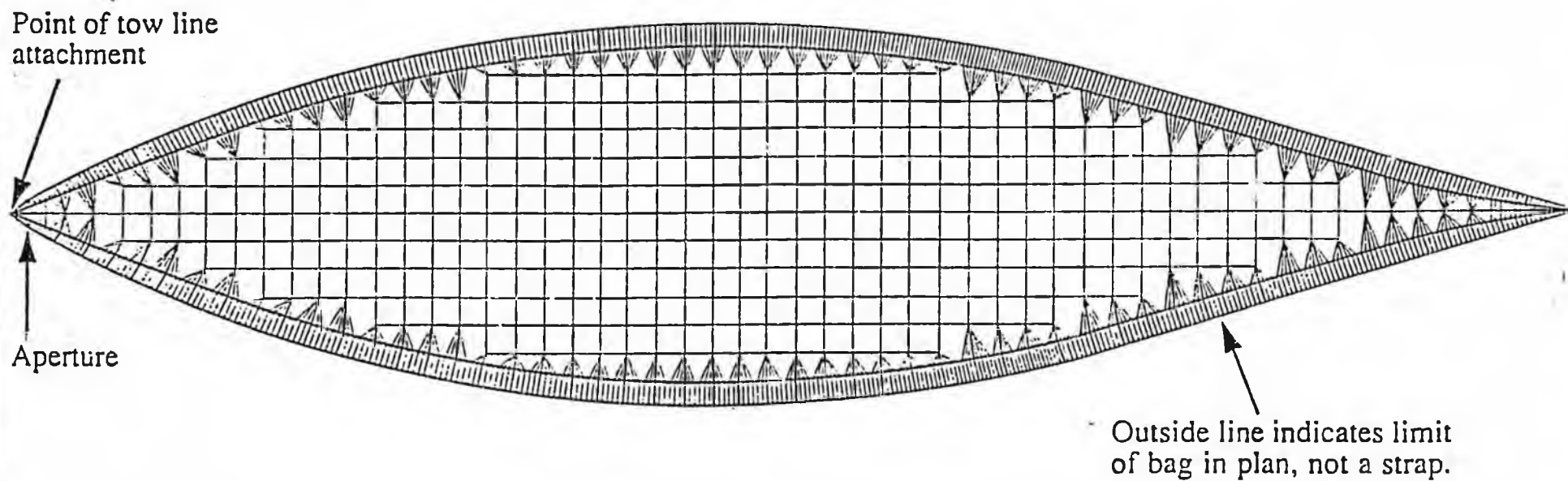


Figure 1

Fig 4.2 WATERBAG EDGE SHAPE

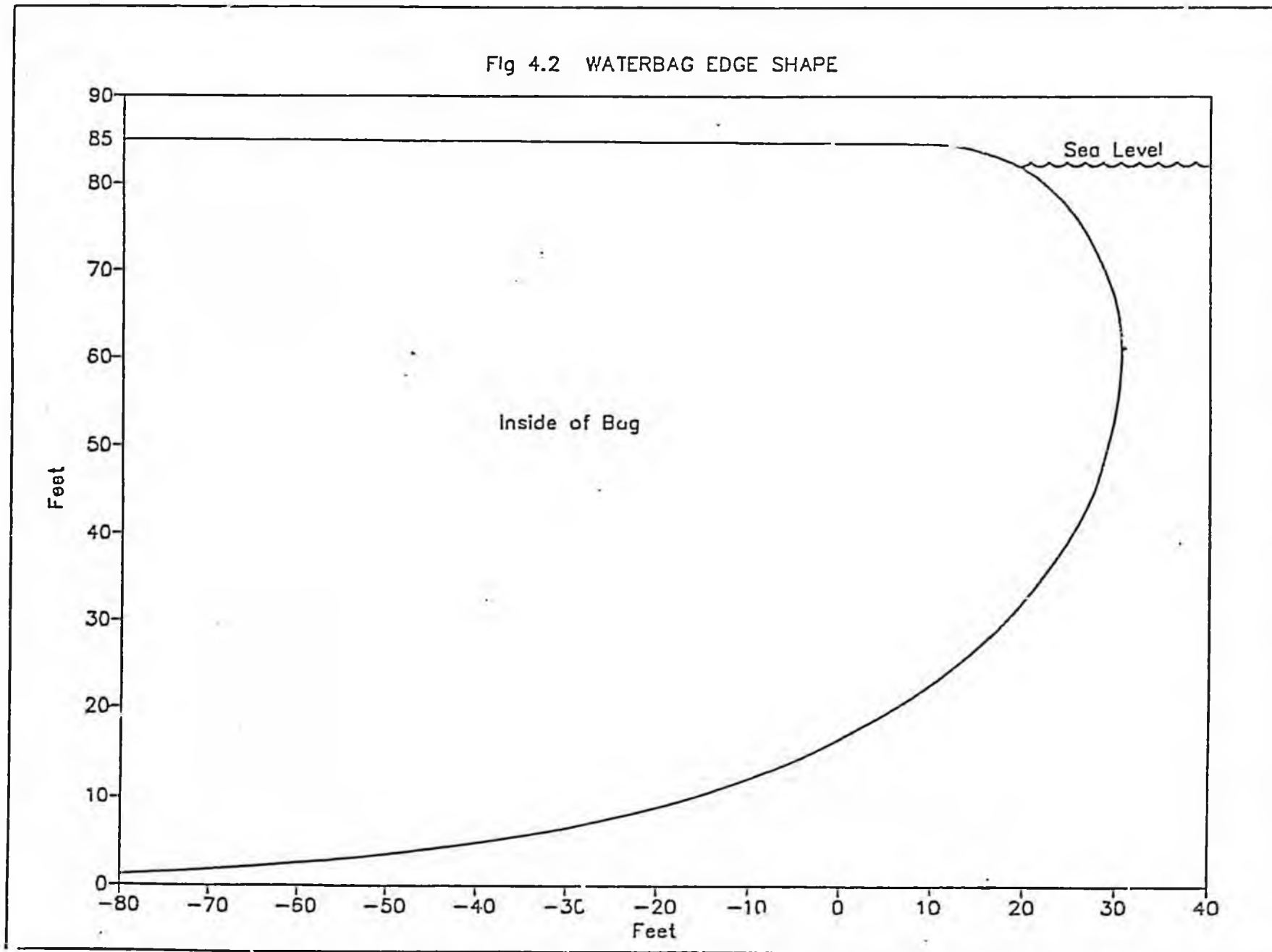
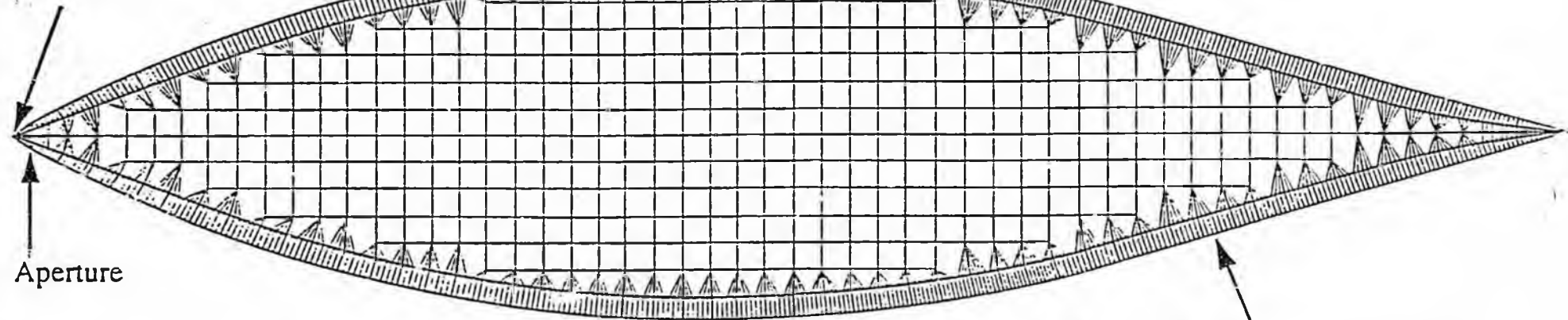


Figure 3

# Medusa Bag Strapping Pattern (Provisional)

Scale Approximately 1: 2000

Point of tow line attachment



Aperture

Outside line indicates limit of bag in plan, not a strap.

Figure 1

MEDUSA NOSE SECTION  
TOP VIEW

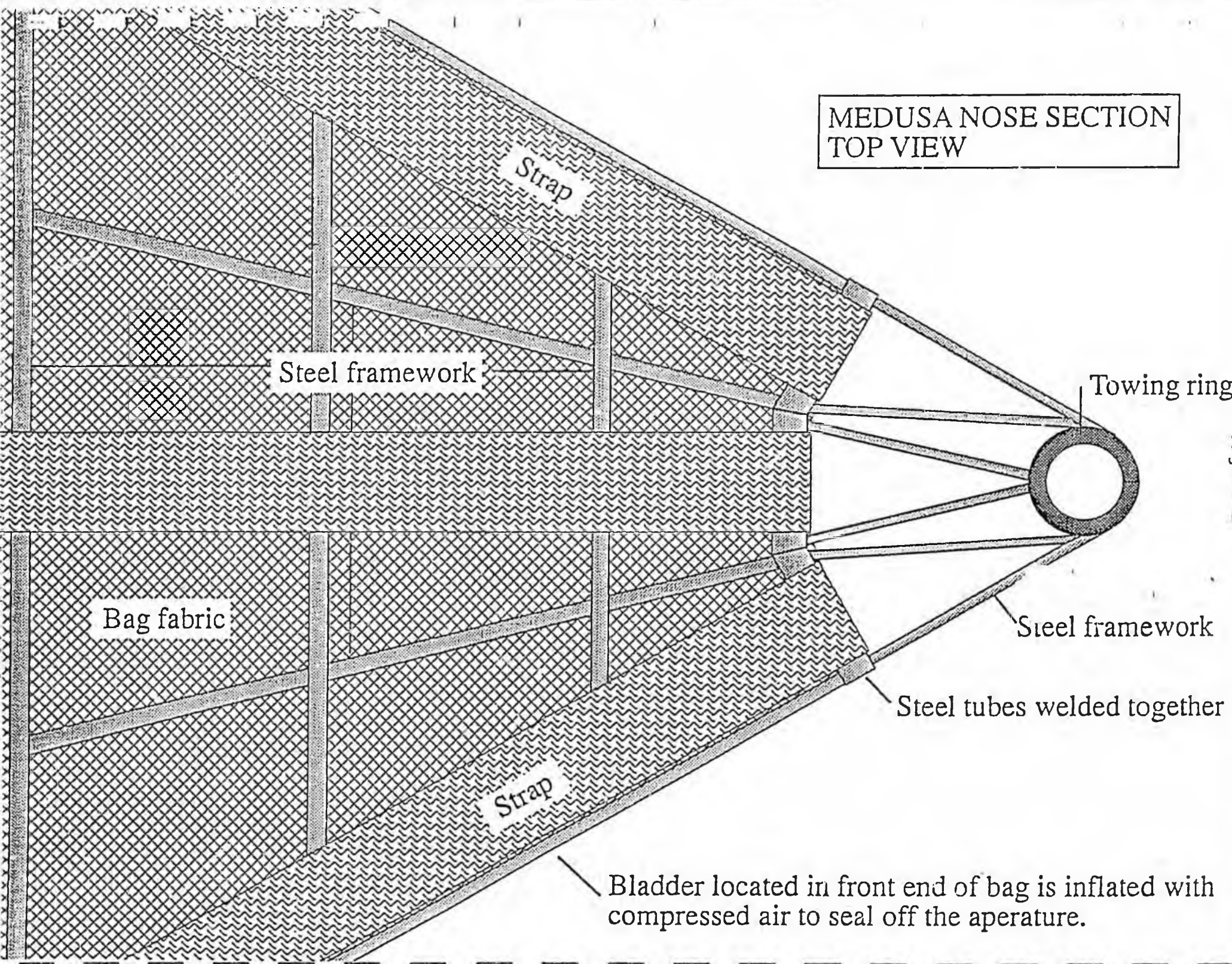


Figure 2

Bladder located in front end of bag is inflated with compressed air to seal off the aperture.

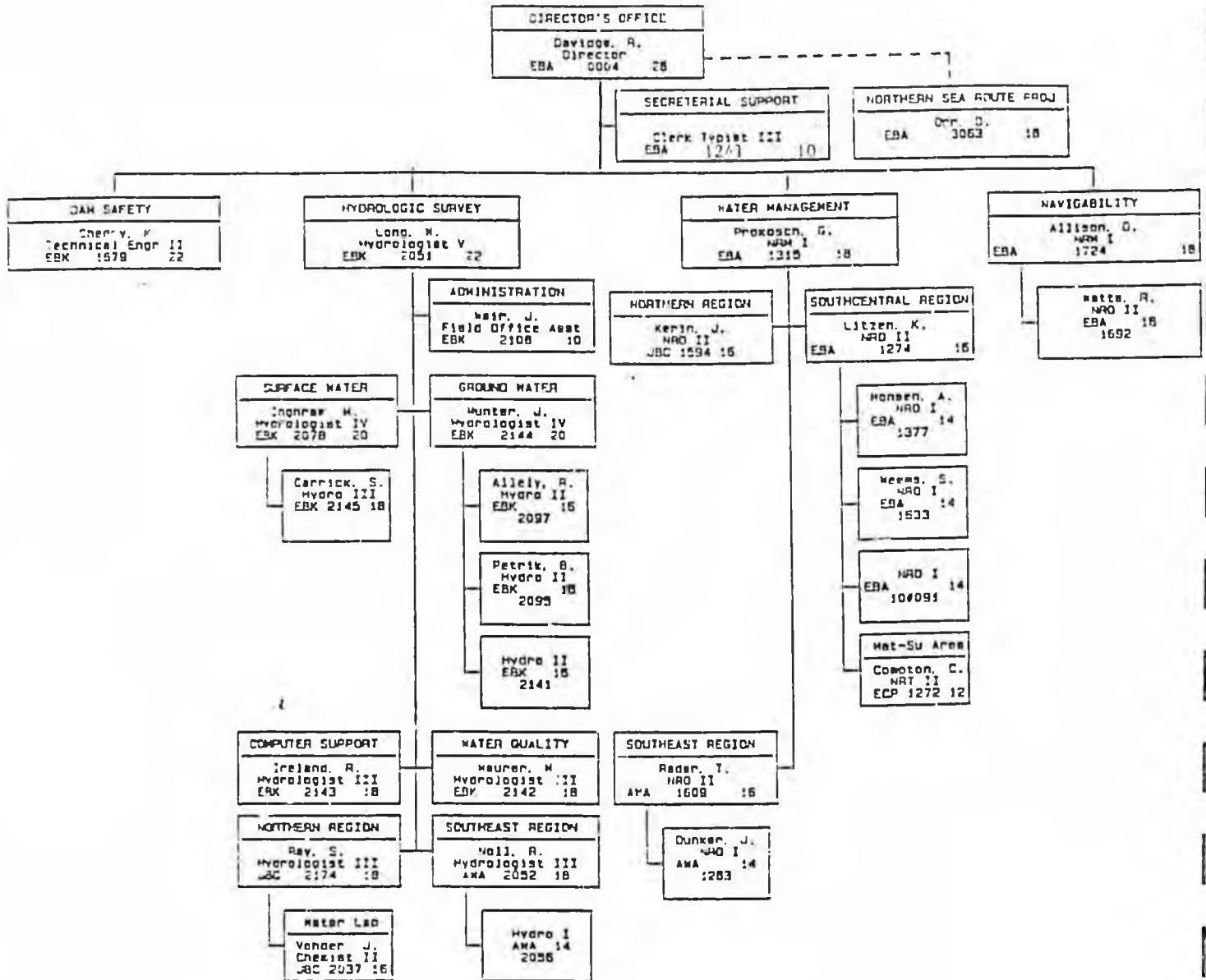


## THE DIVISION OF WATER

The Alaska Division of Water manages an estimated 40% of our Nation's free (not frozen) fresh water resources including over 3 million lakes larger than 50 acres and an estimated 30,000 streams. These responsibilities include the State Water Policy and Water Management Strategy; issuing water rights; administering the dam safety program; rendering and reviewing administrative navigability determinations, asserting ownership and management of submerged lands; surveying, collecting and disseminating water resource data related to the quantity and quality of surface, ground and coastal waters of Alaska; coordinating water related data collection and management activities with other agencies; providing support to the State Water Board; advocating responsible water development including water exports. The Director of the Division represents the Governor at the Western States Water Council consisting of 17 western states.

In addition to the Office of the Director, the Division of Water is comprised of four sections: The Alaska Hydrologic Survey which includes the State Water Lab, Water Management and Development, Dam Safety and Construction, and Navigability. The Division has offices in Anchorage, Fairbanks, Juneau, Eagle River, and Palmer.

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DIVISION OF WATER



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## Anticipating loss of oil revenues

# Alaska moving ahead with its plan to export water via ocean transport

ANCHORAGE, Ak. — The long-awaited boom in the market for potable water — reminiscent of oil prices in the 1970s — might be moving toward detonation in the panhandle of Alaska. Looking toward water marketing as a means offsetting declining oil and gas income, the Alaska Department of Natural Resources is drafting a formal proposal for water exports shipped via ocean tanker or moved in giant nylon bags towed behind tugboats.

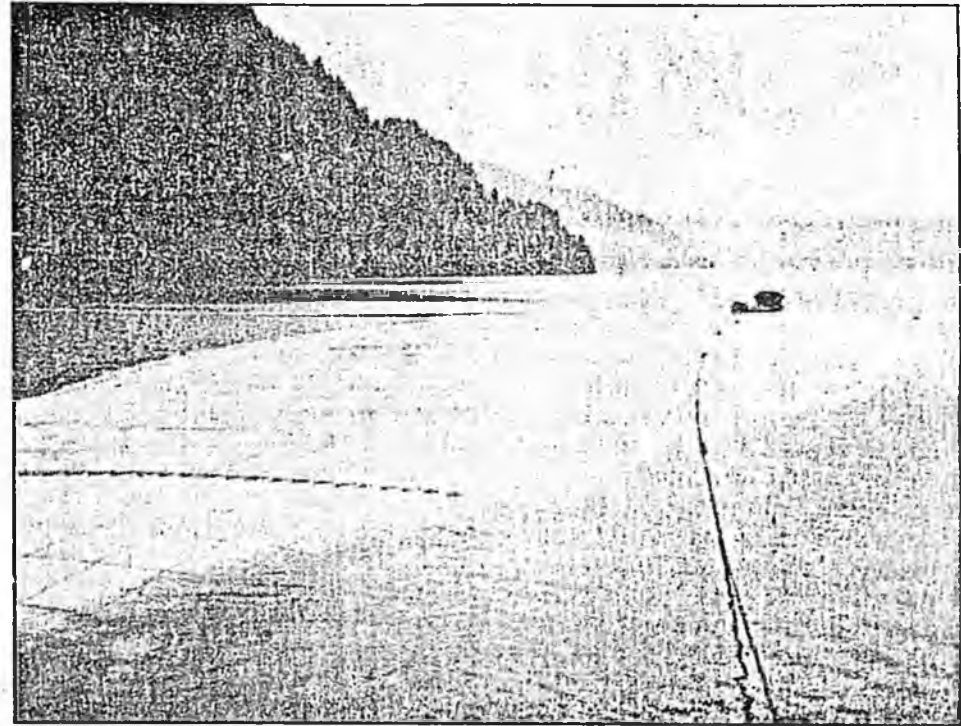
After proposals to deliver water from Alaska to California captured the imagination of the popular press last year, the public generally considers such water imports as an "exotic notion," admitted Ric Davidge, director of water for the State of Alaska. However, noted Davidge, after meeting with various potential buyers such as the Association of California Water Agencies and the Metropolitan Water District of Southern California, "we have found that once the technologies and economics are explained and technical questions are addressed understandably, the audience is receptive to the notion of water imports by tanker or bag."

To maintain this sense of viability, Davidge has written a water export discussion paper. The paper is being made available for review and revision, so that "we can continue to update it as we receive comments and as new or better information is developed," he said. Copies are available by calling the Alaska department's Division of Water at (907) 762-2294.

In essence, the paper describes an exportable supply of freshwater runoff in the Alaska panhandle of approximately 1 million acre feet a year. This sort of supply could be achieved by developing 20 sites, producing an average of 140 acre feet per day at each site. The most attractive water export markets, according to the paper, are southern California, southern Nevada, and the state of Baja California Norte in Mexico. The Alaska Division of Water currently is working with three applicants for the export of 450,000 acre feet of freshwater a year. Pending applications for water rights have been submitted by Alaska Aquaculture, Inc.; Sun Belt Water, Inc.; and the City and Borough of Sitka.

According to the paper, desalination is the principal existing competition to a potential Alaskan water export market. If Alaska is to compete with desalination, it is noted, the target price for delivered water must be under \$2,000 per acre foot.

In initial discussions, the means of delivery for exported Alaska water was ocean tanker. With changes in petroleum tanker regulations requiring double hulls following the Exxon Valdez oil spill, dozens of used single-hull tankers are available for water exports at a cost-effective rate. However, new technology being developed by the Medusa Corporation, Inc. of Vancouver, British Columbia, would use industrial coated nylon fabric bags to transport up to three times as much water per trip as tankers.



A prototype bag holding potable water has been successfully tested by the Medusa Corp. of Vancouver, B.C. Medusa officials say, however, that the bag technology must be successful in transporting up to 800 acre feet at a time before it can be considered feasible for ocean transport.

"Although we continue to explore the numbers on bag/tanker configurations, we believe the application of bag technology for storage and especially for transport will bring the economics of transporting water into competition with reclaimed water as well as desalination and even some conventional land-based delivery systems in the market area," noted Davidge.

James Cran, president of Medusa Corporation, said "there's nothing magic about bags ... they are difficult to engineer and manage, but they are very cheap." Cran pointed out that recent press reports have somewhat misconstrued the realities of the continually evolving bag technology. Medusa is preparing to test a bag that is capable of holding up to 81 acre feet of water, but the Medusa president said "that's still a demonstration."

In order for bags to be effective in importing water, he added, an export contract on the order of 200,000 acre feet of water annually for at least 15 years would be required. On this magnitude, Cran estimated that the cost of delivery would approximate \$500 an acre foot.

# ACWA NEWS

❖ Association of California Water Agencies ❖  
Since 1910

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March 1, 1993

## *Alaska Releases Report on Water Exports, Sales*

THE State of Alaska has now released a discussion paper on water exports and sales prepared by Ric Davidge, State Division of Water Director. Accompanying the paper are draft regulations to implement a new water conservation fee for any water removed from a hydrologic unit within the state.



The discussion paper asserts that: (1) marine transport of water to Mexico or California is possible before 1995; (2) the economic benefits of such transfers could be significant; and (3) cooperative work between interested parties could make water exports a reality. Concepts evaluated include the market for water, water sources, delivery systems, resource development economics, transportation and marketing, environmental and social impacts, other limitations, and strategies for development. For copies, call (907) 762-2294. (*Western States Water, the weekly newsletter of the Western States Water Council*)

# ALASKA

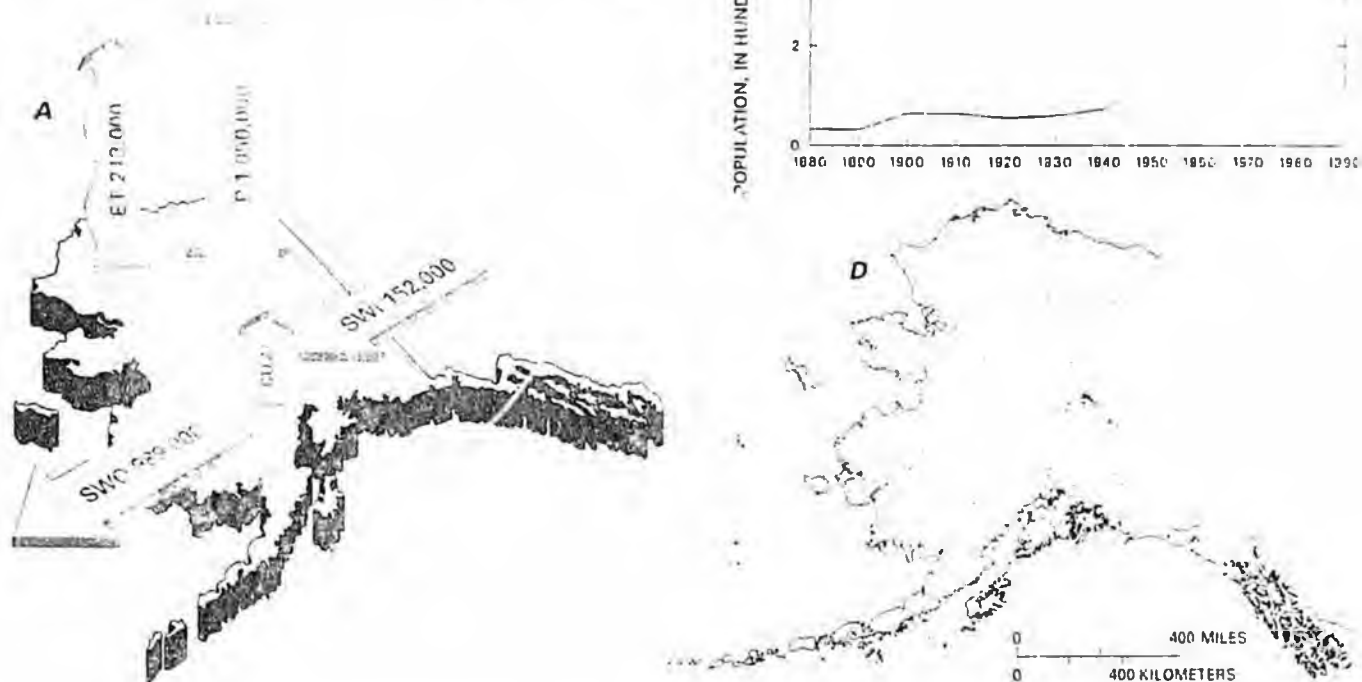
## Water Supply and Use

Alaska's water supplies might appear to be unlimited because of the large quantities of precipitation received in the State (fig. 1A). Statewide average annual precipitation is about 1,050,000 Mgal/d (million gallons per day), and average annual runoff is about 989,000 Mgal/d. Alaska contains more than 40 percent of the Nation's surface-water resources. Three rivers (the Yukon, the Kuskokwim, and the Copper) are among the 10 largest in the United States. More than 3 million lakes range in area from pond size to about 1,000 mi<sup>2</sup> (square miles). Also, large amounts of water are stored within two principal aquifers. Environmental conditions, legal restrictions, and technological problems, however, limit the usability of these abundant supplies.

Alaska encompasses a land area of about 586,000 mi<sup>2</sup>, or about one-fifth of the area of the conterminous United States. Climates range from frozen desert in the Arctic Slope basin to maritime rain forest in the Southeast Alaska basin. Average annual precipitation and temperatures range from about 5 inches and 10° F (degrees Fahrenheit) in the Arctic Slope basin to about 300 inches and 45° F in the Southeast Alaska basin. Much precipitation occurs as snow. Glaciers and icefields cover 28,500 mi<sup>2</sup>, or nearly 5 percent of the land (Post and Mayo, 1971) and affect the timing and the quantity of runoff. Many of the rivers are silt laden, are affected by mid-winter overflow icing or ice-jam flooding at spring breakup, or are ice covered much of the year. The occurrence and the availability of ground water are limited by permafrost. The extent and thickness of the permafrost decrease southward from a continuous layer as much as several hundred feet thick in the Arctic Slope basin to areas

that are generally free of permafrost in the South Central Alaska and the Southeast Alaska basins. Because of these conditions, there is no certainty that either surface or ground water will be available at a given time and location.

Several water issues in Alaska result from this variability in the availability and occurrence of the water resource. Additionally, the legal precedents for obtaining water rights cause conflicts. Com-



**Figure 1. Water supply and population in Alaska.** A, Water budget, in million gallons per day. B, Cumulative normal storage of reservoirs with at least 5,000 acre-feet capacity, 1880 to 1985. C, Population trend, 1880 to 1985. D, Population distribution, 1985, each dot on the map represents 1,000 people within a census tract. Abbreviations: CU, consumptive use; ET, evapotranspiration; P, precipitation; SWI, surface-water inflow; SWO, surface-water outflow (Sources: A, R.D. Lamke (U.S. Geological Survey, written commun., 1985). B, U.S. Army Corps of Engineers, 1981. C, D, Compiled by U.S. Geological Survey from U.S. Bureau of the Census data.)

petition for limited surface-water resources exists among industry, fish hatcheries, recreation, and fish and wildlife habitat demands. Ground-water-rights issues primarily involve public supply in basins where surface water is scarce. Currently (1987), the Arctic Slope, the South Central Alaska, and the Southeast Alaska basins are the focus of these issues.

## HISTORY OF WATER DEVELOPMENT

In 1914, the first large reservoir was constructed to provide power for the mining and the timber industries in the Southeast Alaska basin. Since then, 19 additional reservoirs that have storage capacities greater than 5,000 acre-ft (acre-feet) have been built for electric power generation and public supplies. Of these 20 reservoirs, 13 are in the Southeast Alaska basin, 6 are in the South Central Alaska basin, and 1 is in the Yukon basin. These reservoirs contain a cumulative capacity of about 1.78 million acre-ft (fig. 1B).

The first significant increase of Alaska's population occurred during the gold rushes of the late 1800's (fig. 1C). Postwar migration and homesteading increased the population during the late 1940's and 1950's. Population growth during the 1960's and 1970's can be attributed to the development of oil fields in Cook Inlet and at Prudhoe Bay and the related pipeline-construction activities. The continued rapid population growth of the early 1980's can be attributed to the general economic well-being that oil production brought to the State. The population reached 558,000 in 1985; 77 percent of the inhabitants live within 5 of the 28 census districts, or county equivalents (fig. 1D). Anchorage contained 44 percent of the State's population; the next largest concentrations of population were in Fairbanks (13 percent), Kenai (8 percent), Matanuska-Susitna (7 percent), and Juneau (5 percent).

Interest in Alaska's water supplies began during the gold rushes of the late 1800's; miners washed the placer deposits to extract the gold. The population growth and the corresponding urban development, especially after 1940, placed increasing emphasis on water supply. Increasing needs for water supplies for power in the Southeast Alaska and the South Central Alaska basins, for the pulp and paper industry in the Southeast Alaska basin, and for the canneries in the Southeast Alaska and Southwest Alaska basins created demands for water-resource information. Intensive development of other natural resources began during the 1960's and continued through the 1970's. Water was critical to support the oil fields in the Arctic Slope basin and the petrochemical, the seafood, and the timber production industries in the South Central Alaska and the Southeast Alaska basins. Continued population growth, especially in the South Central Alaska basin, increased the demand for public supplies; ground water became a major source of supply. Maintaining instream flows became an issue during the late 1970's, and that concern has increased during the 1980's. Instream flow for hydroelectric power generation and fish hatcheries is an additional water issue today.

## WATER USE

The State's water budget is shown diagrammatically in figure 1A. Several natural conditions limit the quantity of freshwater that can be recovered efficiently from Alaska's hydrologic environment; for example, the availability of surface water may be affected by the timing of winter freezeup and spring breakup and by the quantity and the timing of runoff derived from melting snow and glacier ice. The availability of ground water is limited by thick lenses and layers of relatively impermeable sediments and by the limited extent of coarse-grained permeable sediments. In permafrost zones, even coarse-grained sediments may be frozen. Thus, although a substantial quantity of water may be present within the State, the water may not be available when and where it is needed.

Hydroelectric powerplants used 1,480 Mgal/d to generate 18 percent, or 746 GWh (gigawatt-hours), of the electricity used statewide. About 90 percent of this power was generated in the Southeast Alaska basin. The water was used instream, and no water was considered for consumptive use.

Surface-water withdrawals supplied 82.2 percent of the water needed for offstream uses; ground water provided the remaining 17.8 percent. These values were determined by using the results of a cooperative survey conducted by the Alaska Department of Natural Resources and the U.S. Geological Survey in 1985, in which communities and industries estimated their water use. Where quantities of water use were not available, such data were estimated on the basis of similarities between communities and uses. The statewide distribution of total, surface-water and ground-water withdrawals is aggregated by county in figures 2A, 2B, and 2C, respectively. Surface-water withdrawals by principal drainage basin and ground-water withdrawals by principal aquifer are shown in figures 3A and 3B, respectively. Aquifers have been grouped informally into unconsolidated alluvium and glacial outwash aquifers and bedrock aquifers (U.S. Geological Survey, 1985, p. 129-131). Major ground-water withdrawals were from the unconsolidated aquifers.

Most withdrawals occur in three of the principal river basins—Southeast Alaska, South Central Alaska, and Yukon (fig. 3A). Withdrawals in the Southeast Alaska basin were 55 percent (221 Mgal/d) of total water use in Alaska. About 99 percent of these withdrawals was surface water. Industry and fish hatcheries were the primary users of this water. In contrast, the South Central Alaska basin accounted for about 27 percent (110 Mgal/d) of the total withdrawals during 1985. This basin withdrew about 64 percent (64 Mgal/d) of the total ground water during 1985. The large withdrawals for public supply and self-supplied domestic uses provide water to the comparatively large population of the area. Public supply, self-supplied domestic, and industry were the major water users. The Yukon basin accounted for 15 percent (41 Mgal/d) of the total withdrawals. Water used for mining and fossil-fueled powerplants was 74 percent of the 61 Mgal/d withdrawn in the Yukon basin. Surface water was used for nearly two-thirds of this quantity.

The remaining basins, the Arctic Slope, the Southwest Alaska, and the Northwest Alaska, included 8 percent of the population and used 3 percent of the total water. Public supply and self-supplied domestic and commercial uses accounted for 61.9 percent of the ground-water withdrawals within the Yukon basin.

The source, use, and disposition of Alaska's water resources are shown diagrammatically in figure 4. The quantities of water given in this figure and elsewhere in this report may not add to the totals indicated because of independent rounding. The source data indicate that total freshwater withdrawals were 406 Mgal/d, of which 334 Mgal/d was surface water and 72 Mgal/d was ground water. The use data indicate that, of total freshwater use, industry and mining accounted for 34.7 percent and agriculture accounted for 38.6 percent. The disposition data indicate that most water (93.3 percent) was returned to natural sources and was available for reuse. Estimated consumptive use was 6.7 percent (27 Mgal/d).

Alaska's water is generally of sufficient quantity and acceptable quality for most uses. However, population increases during the last decade, especially in urban areas, have strained water-distribution systems and generated concern about water availability. In Anchorage, a measurable decline in ground-water levels has been attributed to increased withdrawals. Saltwater intrusion has halted further ground-water development in Auke Bay, near Juneau. In Kenai and in the Arctic Slope basin, water supply is a concern to communities near petrochemical industry activities.

Surface- and ground-water quality problems have been caused either by natural processes or by human activities. Natural processes include suspended sediment caused by glaciers, salinity, and undesirable concentrations of iron or arsenic produced by geo-

chemical processes. Human activities include petrochemical contamination, the addition of nitrates through septic-tank systems, and the encroachment of saltwater in response to intensive ground-water withdrawal. Nevertheless, even in areas of water-supply difficulties, Alaska's water is generally satisfactory for most uses, although locally it may not be readily obtainable from the nearest or most economical source.

#### PUBLIC SUPPLY

Public-supply systems withdraw, treat, and distribute water to users. The total withdrawals for public-supply in Alaska were an estimated 76 Mgal/d (fig. 4), which was 18.7 percent of total withdrawals in 1985. Surface water provided 46.2 percent (35

Mgal/d) of public-supply withdrawals, and ground water provided 53.8 percent (41 Mgal/d). Of total withdrawals for public supply, 40.3 percent was delivered for commercial use, and 39.0 percent was delivered for domestic use. About 60 percent (45 Mgal/d) of public-supplied water was delivered in the South Central Alaska basin.

About 62 percent of Alaska's population was served by public water suppliers in 1985. The Municipality of Anchorage supplied water to one-half of the population served by public-supply systems. The per capita use by all public-supply customers ranged from 10 to 380 gal/d (gallons per day) in 1985. Public-supplied domestic use ranged from 6 to 170 gal/d per capita. These values reflect the different types of water-distribution systems; for example, a public-supply system in the Arctic Slope basin may consist of a water-

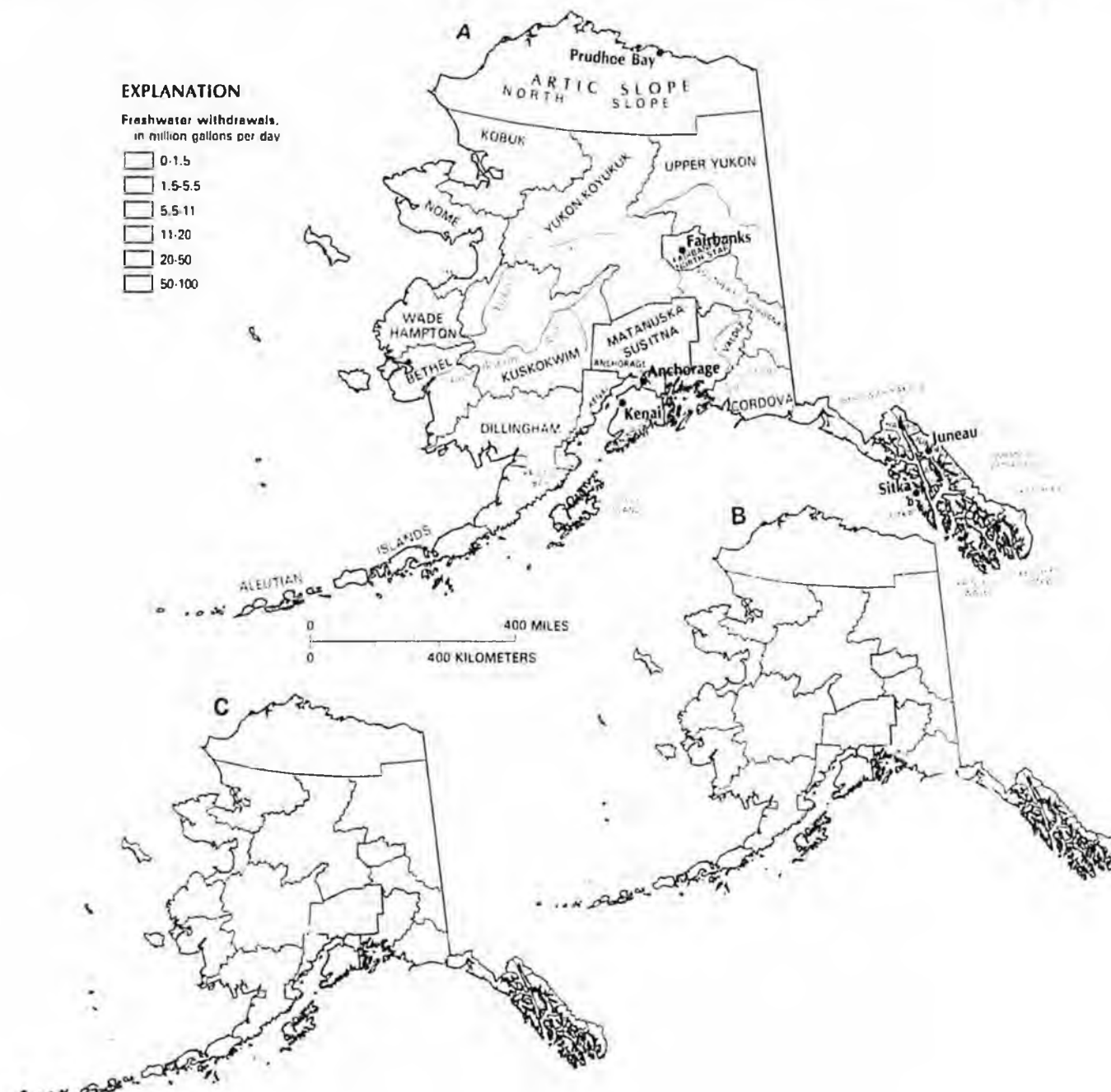
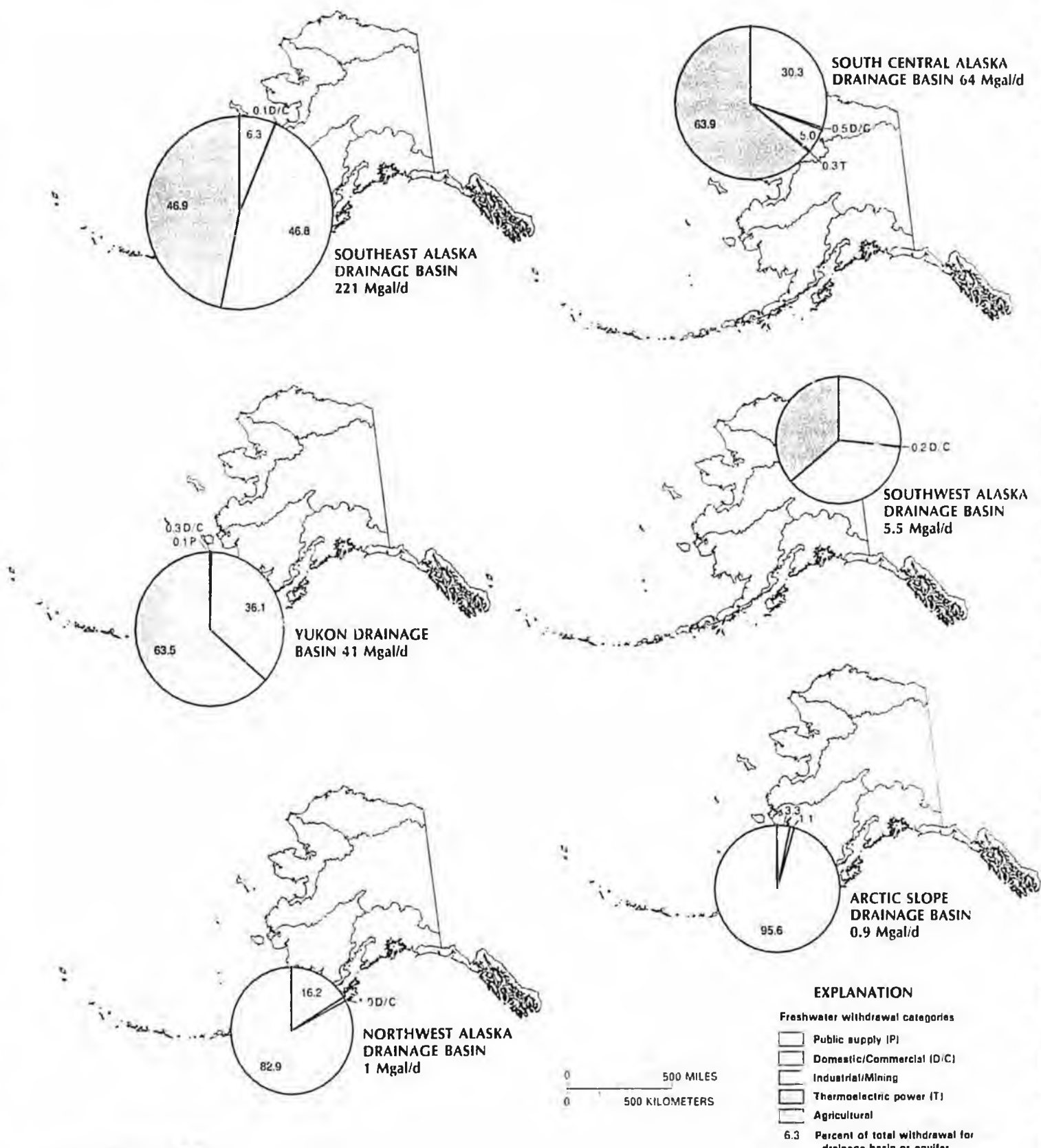


Figure 2. Freshwater withdrawals by county in Alaska, 1985. A, Total withdrawals B, Surface-water withdrawals C, Ground-water withdrawals. (Source: Data from U.S. Geological Survey National Water Data Storage and Retrieval System)



**A. SURFACE WATER**

**Figure 3.** Freshwater withdrawals by category of use and hydrologic unit in Alaska, 1985. A, Surface-water withdrawals by principal drainage basin B, Ground-water withdrawals by principal aquifer. Abbreviation: Mgal/d is million gallons per day. (Sources: A, Drainage basins from Seaber and others, 1987; data from U.S. Geological Survey National Water Data Storage and Retrieval System. B, Data from U.S. Geological Survey files.)

delivery truck or a common well, and the primary use is domestic. In contrast, water in the Southeast Alaska basin is abundant, and distribution systems commonly are leaky; residents, commonly leave their faucets running to prevent the pipes from freezing. In addition, water-intensive industries in the Southeast Alaska basin are served by public supply.

#### DOMESTIC AND COMMERCIAL

Total domestic and commercial water use, including conveyance losses and consumptive use, from public-supplied and self-supplied sources was 78 Mgal/d (fig. 4). Domestic use was about 39 Mgal/d, of which 29 Mgal/d was delivered by public-supply systems and 10 Mgal/d was self-supplied. Commercial withdrawals were about 31 Mgal/d, virtually all from public-supply sources. Conveyance losses were 7.6 Mgal/d.

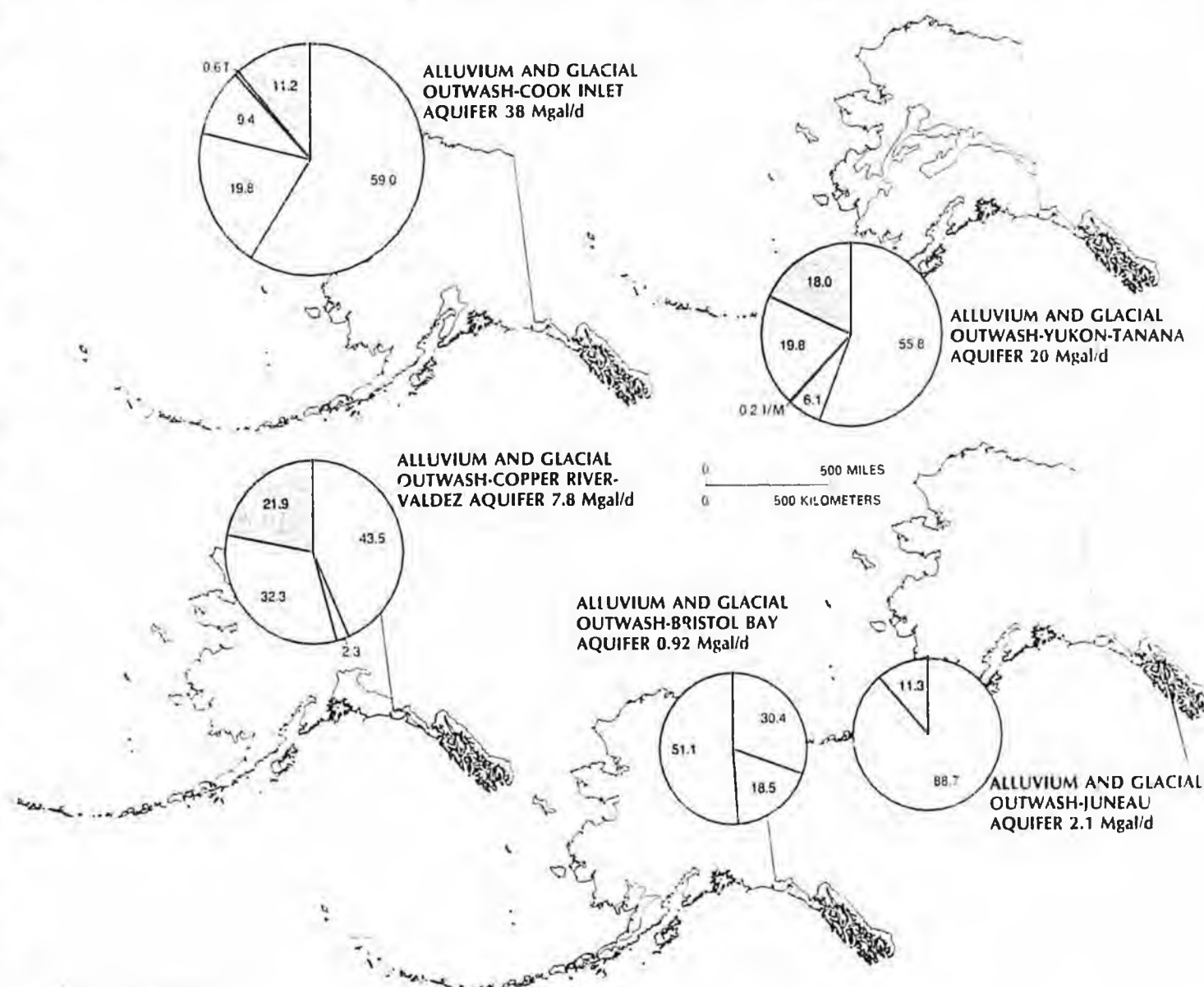
The average per capita domestic use for the population served by public supply was about twice that for the population that was self-supplied. This difference can be explained, in part, by conditions under which water is delivered to homes that use these two

types of supply. Public-supply systems typically serve a household that has standard plumbing. In contrast, many self-supplied households haul water from a lake, spring, river, or well and may have no plumbing.

#### INDUSTRIAL AND MINING

The estimated industrial and mining use was 141 Mgal/d in 1985. This represents 34.7 percent of total offstream water use (fig. 4). Industry used about 122 Mgal/d, of which 87 percent was self-supplied from surface-water sources. About 89 percent of the industrial water use was in the Southeast Alaska basin. Wood-pulp mills and seafood-processing industries in this basin used more than 100 Mgal/d in 1985. The petroleum industry was a major water user in the South Central basin.

Mining accounted for about 19 Mgal/d of water use. The Yukon basin had the largest area of mining activity and accounted for 76 percent of this water use. Adequate water supplies to support the exploration, development, and production in the Arctic Slope



#### B. GROUND WATER

Figure 3. Freshwater withdrawals by category of use and hydrologic unit in Alaska, 1985—Continued.

basin are commonly difficult to locate. Surface water is used primarily by placer-mining operations for washing sediments.

**THERMOELECTRIC POWER**

The fossil-fueled powerplants included in the survey used an estimated 31 Mgal/d (fig. 4) to produce 3,430 GWh of electricity during 1985. About 97 percent of the water was used by two plants in the Yukon basin, whereas 80 percent of the power produced by fossil fuel was produced by six plants in the South Central Alaska basin. These differences reflect the availability of water, the age of the powerplants, and perhaps different reporting methods. The water was used mainly for cooling purposes, and most was returned to surface-water sources.

**AGRICULTURAL**

Agricultural use during 1985 was an estimated 157 Mgal/d (fig. 4). Fish hatcheries dominated this category by using about 156 Mgal/d, of which 60 percent was used in the Southeast Alaska basin. Although the hatcheries in the Southeast Alaska basin exclusively use surface water, facilities elsewhere use ground water, which has a more consistent temperature and quality.

Agricultural water use for purposes other than fish hatcheries or irrigation totaled 0.21 Mgal/d, 48 percent of which was on Kodiak Island. Only 0.03 Mgal/d was used for irrigation; all of the reported irrigated farm acreage is in the Matanuska Valley, which is 40 miles north of Anchorage.

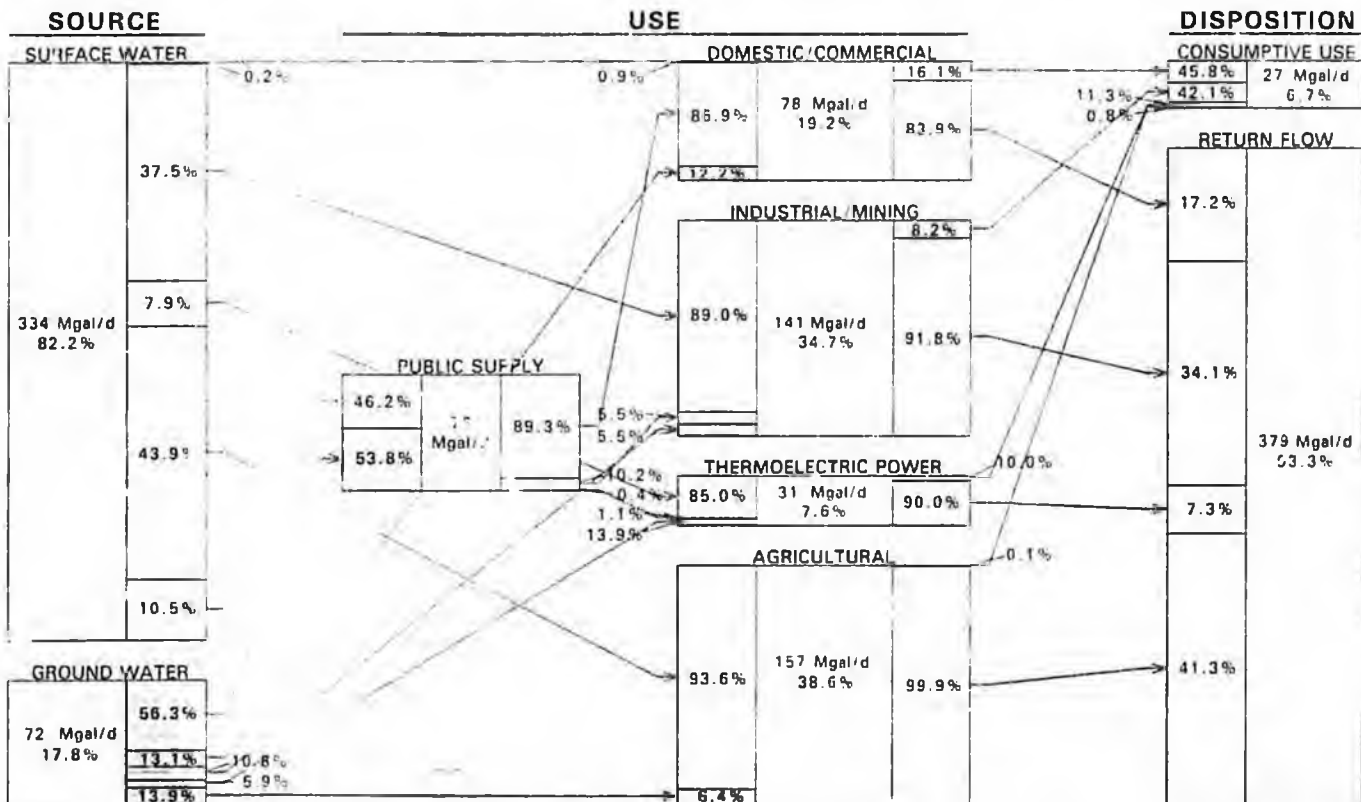
**WATER MANAGEMENT**

The Alaska Water Use Act (AS 46.15.010-270), which was enacted in 1966, established procedures to appropriate State water.

The Act defines the doctrine of prior appropriation ("first in time, first in right") authorized by the State Constitution and delegates administration of the Act to the Alaska Department of Natural Resources (ADNR). The Act established procedures for maintaining existing water rights and for obtaining new water rights to all surface and ground water in Alaska. Water appropriations are limited to the specific use for which an individual applies. Additionally, the ADNR issues permits authorizing development and beneficial use of water. Issuance of a certificate of appropriation by the ADNR to the applicant is the final step in the water-rights process.

The original regulations implementing the Water Use Act were amended extensively on December 29, 1979, and incorporated as 11 AAC 93, Water Management. Recent amendments to the Water Use Act relate to geothermal development, reservation of water for instream uses, and administrative and judicial basinwide water-rights adjudication.

To manage the State's water resources effectively, the ADNR's Division of Land and Water Management (DLWM) requires technical descriptions and analyses and interpretations of various hydrologic conditions. The Department's Division of Geological and Geophysical Surveys (DGGs), Water Resources Section, provides the necessary data, analyses, and interpretations. Many long-term data are collected and interpreted by the U.S. Geological Survey, in cooperation with other Federal, State, and municipal agencies. Water managers of the DLWM use this information for water appropriation and water management decisions. Additionally, the DGGs, in cooperation with the U.S. Geological Survey and other State and Federal agencies, has developed and implemented the Alaska Water Resources Evaluation Plan to coordinate water-data collection and water-resource investigations in the State (Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys, and U.S. Geological Survey, 1985).



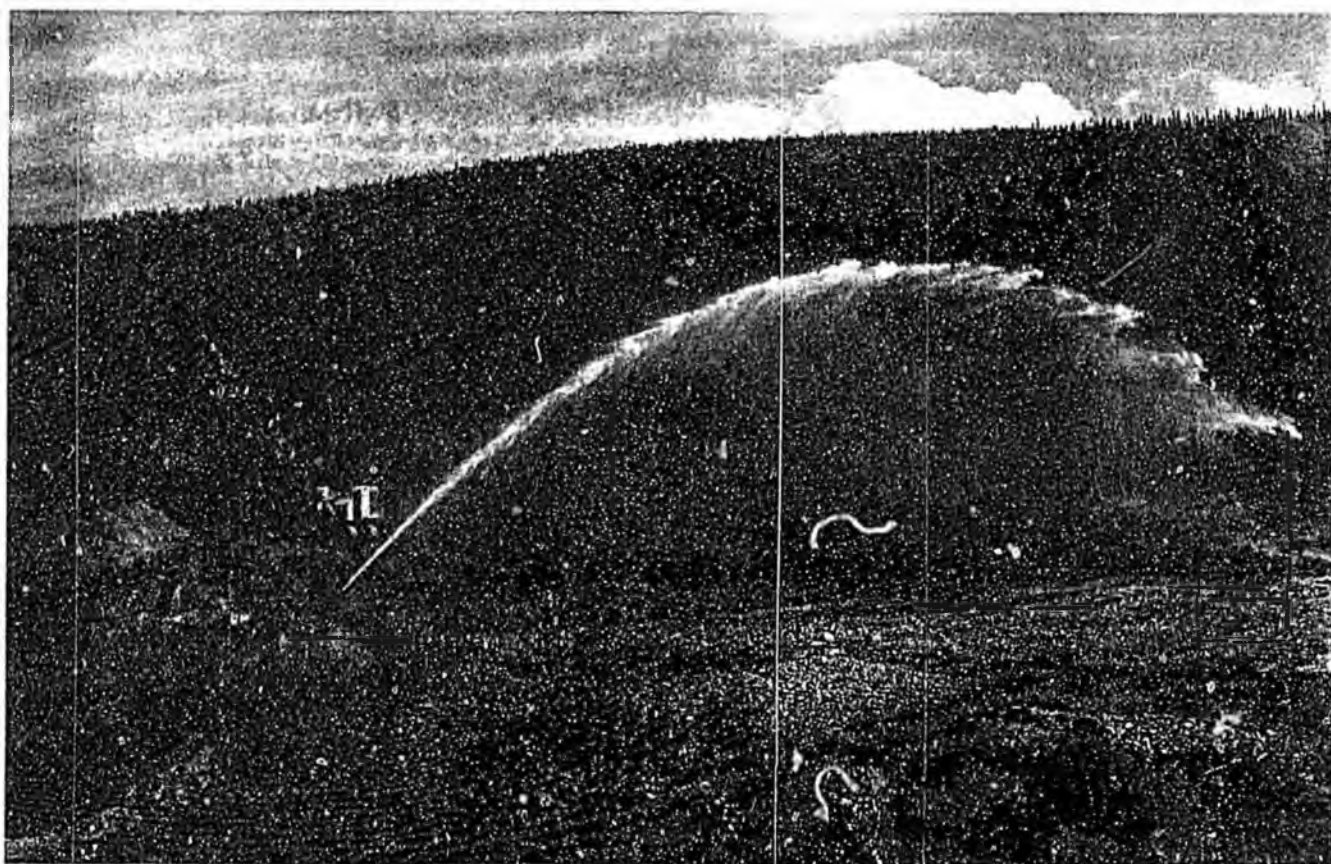
**Figure 4.** Source, use, and disposition of an estimated 406 Mgal/d (million gallons per day) of freshwater in Alaska, 1985. Conveyance losses in public-supply distribution systems and some public water uses, such as fire fighting, are included in the total shown for domestic and commercial use; losses in irrigation distribution systems are included in the total shown for agricultural return flow. All numbers have been rounded and values may not add to totals. Percentages are rounded to the nearest one-tenth of 1 percent (0.1%) between 0.1 and 99.9 percent. (Source: Data from U.S. Geological Survey National Water Data Storage and Retrieval System)

Although few streams in Alaska are overappropriated, potential water-use problems exist. In the event of water shortages or drought, Ship Creek at Anchorage and Indian River at Sitka could possibly be examples in which the amount of legally obtainable water may exceed the water available for use. Water issues in Alaska also include hydroelectric projects, placer mining, oil development, salmon aquaculture, and proposed mining developments in the Southeast Alaska basin.

Most ground-water shortages in Alaska currently involve water for public supply and domestic use. Some areas within the Municipality of Anchorage are experiencing great ground-water demand for public and single-family domestic water supplies. As water levels declined, domestic wells become dry. The ADNR and Municipality of Anchorage are working cooperatively to solve several water-supply and distribution problems. Another area experiencing declining ground-water levels and saltwater intrusion is the Auke Bay area near Juneau (Dearborn, 1985), where the ADNR established Alaska's first "Critical Groundwater Management Area" to restrict further water-well drilling and development of ground water.

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Hydraulic "giant" used to remove overburden and expose gold-bearing gravel north of Fairbanks, Alaska. (Photograph by Gary Prokosch, Alaska Department of Natural Resources.)

*Prepared by* Leslie D. Patrick and Elisabeth F. Snyder, U.S. Geological Survey, and Mary Lu Harle, Alaska Department of Natural Resources

FOR ADDITIONAL INFORMATION: District Chief, U.S. Geological Survey, 4230 University Drive, Anchorage, AK 99508-4664

## Fact sheet:



Alaska Department of  
**NATURAL  
RESOURCES**

# WATER RIGHTS IN ALASKA

Division of Water • September, 1992

## *What Are Water Rights?*

A water right is a legal right to use surface or ground water under the Alaska Water Use Act (Alaska Statute 46.15). A water right allows a specific amount of water from a specific water source to be diverted, impounded or withdrawn for a specific use. When a water right is granted, it becomes attached to the land where the water is being used for as long as the water is used. If the land is sold, the water right transfers with the land to the new owner, unless the Department of Natural Resources approves its separation from the land. In Alaska, land owners do not have automatic rights to ground water or surface water. For example, if a farmer has a creek running through his property, he will need a water right to protect his use. Using water without a permit or certificate does not give the user a legal right to use the water.

## *How Do I Obtain Water Rights?*

To obtain water rights in Alaska, you should submit an application for water rights to the Division of Water regional office in the area of the proposed water use. After your application is processed, you will be issued a permit to drill a well or divert the water. Once you have established the full amount of water that you use beneficially and have complied with all of the permit conditions, a Certificate of Appropriation will be issued. This is the legal document that establishes water rights.

## *What Costs Are Involved?*

An application for water rights must be accompanied by the filing fee: \$50 for the use of 5,000 gallons per day (gpd) or less; \$100 for the use of more than 5,000 gpd but less than 30,000 gpd; \$200 for the use of 30,000 gpd or more but less than 100,000 gpd; \$300 for the use of 100,000 gpd or more but less than 500,000 gpd; \$500 for the use of 500,000 gpd or more but less than 1,000,000 gpd; \$1,000 for the use of 1,000,000 gpd or more except \$1,500 for the use of 1,000,000 gpd or more outside of the hydrologic unit from which it was removed (hydrologic units are based on the most current U.S.G.S. Hydrologic Unit Map of Alaska). To insure that the public is

notified of proposed water uses, you are required to pay the cost of a legal advertisement in at least one issue of a local newspaper in the area of the proposed water use. Public notice is required if the appropriation is over 5,000 gallons per day, if it comes from an anadromous fish stream, or if the water source has a high level of competition among water users.

## *Why Should I Apply For Water Rights?*

1. If you have water rights, you have legal standing to assert those rights against conflicting water users who do not have water rights.
2. A person with water rights has priority to use water over persons who later file for water rights from the same source.
3. Anyone who diverts, impounds, or withdraws water, or uses a significant amount of water without a permit or certificate is guilty of a misdemeanor (AS 46.15.180). A significant amount of water is defined by 11 AAC 93.970(14) as:
  - ▶ the use of more than 5,000 gallons of water in a single day from a single water source; or,
  - ▶ the regular daily or recurring seasonal use of more than 500 gallons of water per day for 10 days or more per year from a single water source; or,
  - ▶ the non-consumptive use of more than 50,000 gallons of water per day (0.05 cubic feet per second) from a single water source; or,
  - ▶ any use of water from a water source listed in the Department of Fish and Game "Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes"; or,
  - ▶ any water use that might adversely affect the water rights of other appropriators or the public interest.

4. By filing for water rights, you provide valuable information about water use and water availability in Alaska. This information allows state water managers to estimate present uses of water, determine how much water is available from streams and aquifers in the state, protect established water rights holders, prevent over-appropriation of water sources, and manage the state's water resources.

### ***What Other Water Resources Authorizations Are Available From the Department of Natural Resources?***

**Dam Safety:** If your water use requires you to construct a dam that impounds 50 acre-feet of water and is at least 10 feet high, or is at least 20 feet high, or poses a threat to life and property, a certificate of approval is needed. A separate application form and the fee prescribed by 11 AAC 05 should be filed with the Division of Water.

**Instream Reservation:** If you do not want to remove water from its source, but want to make sure that enough water is available for a particular use, you should apply for an instream reservation to maintain a specific flow in a stream or water level in a lake. An instream flow reservation application can be made to protect fish and wildlife habitat, migration, and propagation; recreation and park purposes; navigation and transportation purposes; and sanitary and water quality purposes.

### ***How Do I Obtain Authorization for Short-Term Water Use? (Temporary Water Use Permit)***

A temporary water use permit may be needed if the amount of water to be used is a significant amount, the use continues for less than five consecutive years, and the water to be used is not already appropriated. This permit does not establish a water right but will avoid conflicts with fisheries and existing water right holders. The application fee for a temporary water use permit is the same as for a water right.

### ***Where can I get more information?***

More information about water rights is available in the Department of Natural Resources' "Water User's Handbook", and from fact sheets on Glacier Ice Harvesting, Instream Water Reservations, Dam Safety, Federal Reserved Water Rights and the Water Resources Board. Copies of this information and application forms are available at the offices listed below. Applications should be submitted to the regional office located in the area of the proposed water use.

### ***Department of Natural Resources***

***Public Information Center***  
3601 C Street, Suite 200  
P.O. Box 107005  
Anchorage, AK 99510-7005  
(907) 762-2261  
FAX: 762-2236

***Division of Water***  
***Southcentral Region***  
3601 C Street, Suite 822  
P.O. Box 107005  
Anchorage, Ak 99510-7005  
(907) 762-2575  
FAX: 562-1384

***Southeast Region***  
400 Willoughby Avenue, 4th Floor  
Juneau, AK 99801  
(907) 465-3400  
FAX: 586-2954

***Northern Region***  
3700 Airport Way  
Fairbanks, AK 99706-2703  
(907) 451-2700  
FAX: 451-2751

***Mat-su/Copper Basin Area***  
1800 Glenn Hwy., Suite 12  
Palmer, AK 99645  
(907) 745-7200  
FAX: 745-7112

# Fact sheet:

## FEDERAL RESERVED WATER RIGHTS



Alaska Department of  
**NATURAL  
RESOURCES**

Division of Water • September, 1992

### *What Are Federal Reserved Water Rights?*

Federal reserved water rights are created when federal lands are withdrawn from the public domain (i.e. for National Parks, Wildlife Refuges, or Forests).

Federal reserved water rights are different from state appropriated water rights. They:

- \* *may apply to both instream and out-of-stream water uses*
- \* *may be created without actual diversion or beneficial use*
- \* *are not lost by non-use*
- \* *have priority dates established as the date the land was withdrawn*
- \* *are for the minimum amount of water reasonably necessary to satisfy both existing and reasonably foreseeable future uses of water for the primary purposes for which the land is withdrawn.*

Water rights for other federal purposes must be obtained under state law, AS 46.15.

### *How Are Federal Reserved Water Rights Adjudicated?*

Federal reserved water rights are a judicial creation. The United States Supreme Court first recognized federal reserved water rights in Winters v. United States, 207 U.S. 564 (1908), an Indian reservation case. Since that time, court cases have extended the Winters Doctrine to other types of federal land withdrawals such as national parks, forests, and wildlife refuges.

Federal law, the McCarran Amendment (43 U.S.C. 666), allows judicial adjudication of federal reserved water rights in state court. However, the adjudication must include all water rights in a basin, including all claimed federal reserved water rights and all state administered water rights.

In 1986, the Alaska Legislature amended the Alaska Water Use Act to establish procedures for state court basin-wide adjudication of federal reserved water rights. The amendments also establish procedures for the Department of Natural Resources to conduct administrative basin-wide adjudications, including federal reserved water rights if the federal government consents to have its federal reserved water rights administratively adjudicated by DNR.

### *How Much Land in Alaska Has Federal Reserved Water Rights?*

Of the 367.7 million acres in Alaska, almost 49 percent, or more than 178 million acres, are reserved federal lands which may have federal reserved water rights. These federal lands are made up of:

Military land - 2.5 million acres  
National Forests - 23.2 million acres  
BLM lands - 26.1 million acres  
National Parks - 51 million acres  
Fish and Wildlife Refuges - 76 million acres

### *Why Are Federal Reserved Water Rights Important to You?*

Federal Reserved water rights may take priority over the water rights of individuals whose application dates are established later than the date of the federal withdrawal - even if the individuals are using the water at the time of the withdrawal. If you use water in an area where there are or may be federal land withdrawals, it is especially important that you file for water rights to protect your water use. If a basin-wide adjudication is started for your area, you can then be assured of being included in the adjudication.

## ***Why is the Department of Natural Resources Concerned About Federal Reserved Water Rights?***

Because most federal reserved water rights are unquantified, the Department of Natural Resources does not know how much water is needed or used for the primary purposes of federal land withdrawals in Alaska. Water resources cannot be efficiently managed or allocated if the Department of Natural Resources does not know how much unappropriated water is available from water sources.

For the Department of Natural Resources to efficiently manage and allocate the state's water and to adjudicate water rights, it is necessary to have federal reserved water rights in Alaska inventoried and quantified by the federal land management agencies in cooperation with the State of Alaska. The state can then integrate the federal reserved water rights with state administratively adjudicated water rights and manage water sources with greater certainty.

## ***How Can I Get More Information?***

More information about water rights is available in the Department of Natural Resources' "Water User's Handbook", and from fact sheets on Water Rights, Glacier Ice Harvesting, Instream Water Reservations, Dam Safety, and the Water Resources Board. Copies of this information and application forms are available at the offices listed below.

## ***Department of Natural Resources***

### ***Public Information Center***

***3601 C Street, Suite 200  
P.O. Box 107005  
Anchorage, AK 99510-7005  
(907) 762-2261  
FAX: 762-2236***

### ***Division of Water Southcentral Region***

***3601 C Street, Suite 822  
P.O. Box 107005  
Anchorage, Ak 99510-7005  
(907) 762-2575  
FAX: 562-1384***

### ***Southeast Region***

***400 Willoughby Avenue, 4th Floor  
Juneau, AK 99801  
(907) 465-3400  
FAX: 586-2954***

### ***Northern Region***

***3700 Airport Way  
Fairbanks, AK 99706-2703  
(907) 451-2700  
FAX: 451-2751***

### ***Mai-su/Copper Basin Area***

***1800 Glenn Hwy., Suite 12  
Palmer, AK 99645  
(907) 745-7200  
FAX: 745-7112***

## Fact sheet:



# RESERVING WATER FOR INSTREAM USE

Division of Water • September, 1992

A reservation of water for instream use is a water right that protects specific in-stream water uses, such as fish spawning or recreation. It sets aside the water necessary for these activities and keeps later water users from appropriating water that may affect the instream activity. This is an optional water right, not a required permit.

Water can be reserved for one or more permissible uses on a particular part of a stream or lake during a certain period of time. Under Alaska Statute 46.15.145, permissible instream uses include:

- ▶ protection of fish and wildlife habitat, migration, and propagation
- ▶ recreation and parks
- ▶ navigation and transportation
- ▶ sanitation and water quality

A reservation of water for one use may also allow that same water to be used or reserved for another purpose. For example, a reservation for recreation may also benefit fish spawning.

Like an out-of-stream water right, an instream reservation of water is similar to a property right. However, it cannot be abandoned, transferred, assigned, or converted to another use without approval of the Department of Natural Resources.

### *Who Can Apply for a Reservation of Water?*

Private individuals, organizations, and government agencies may apply for a reservation of water for instream use.

### *Why Should I Apply for a Reservation of Water?*

You should apply if you want to ensure that a lake level or stream flow will be available when and where you need it for specific instream uses, and the water will not be appropriated or diverted for another use.

If you have an instream water right, you have priority use of that water over people who file later for water rights. You also have legal standing in case of conflicting uses of water by people without water rights.

### *How Can I Apply for a Reservation of Water?*

You can get an Application for Reservation of Water at any Department of Natural Resources, Division of Water regional office. Your application must be submitted to the regional office in the area where the proposed reservation of water is to occur.

Before submitting an application, you should talk with the regional office staff about the information needed in your application, including the estimation of the amount of instream water use. If your application is accepted, you will have up to three years to complete the data collection and analysis needed to justify the requested instream reservation.

When your application is complete, it will be reviewed to determine the need for the reservation of water, its impacts on other water right holders, and the public interest. An assessment will be made to determine if water is available for the reservation and if the information in the application is accurate and adequate. Public notice of the application must be given.

After this process, a Certificate of Reservation may be issued to you. A Certificate of Reservation must be reviewed by the Division of Water every ten years, but may be reviewed in less than ten years, if necessary.

### ***What Costs Are Involved?***

An Application for Reservation of Water must be accompanied by a filing fee of \$500. You will also be required to pay the cost of a legal advertisement to notify the public of the proposed reservation of water. If a certificate is issued, you may be required to install and maintain stream gages, weirs, or staff gages, and to monitor and report on the reserved instream flow or level of water. You may also be responsible for additional data collection or analysis during the certificate's review.

### ***What Other Water Resources Authorizations Are Available From the Department of Natural Resources?***

Water Appropriation: A permit or certificate of appropriation is required for diverting, impounding, or withdrawing water (including glacier ice) for use from a surface or ground water source for out-of-stream use.

Dam Safety: A certificate of approval is required if you want to construct or modify a dam that impounds 50 acre-feet of water and is at least 10 feet high, or is at least 20 feet high, or poses a threat to life and property. A separate application form and the fee listed in 11 AAC 05 should be filed with the Division of Water.

### ***How Can I Get More Information?***

Further information and application forms may be obtained from the offices listed below. Fact sheets on Water Rights, Glacier Ice Harvesting, Instream Water Reservations, Dam Safety, Federal Reserved Water Rights and the Water Resources Board are also available at these offices. Applications should be submitted to the regional office located in the area of the proposed reservation of water.

#### ***Department of Natural Resources***

***Public Information Center***  
3601 C Street, Suite 200  
P.O. Box 107005  
Anchorage, AK 99510-7005  
(907) 762-2261  
FAX: 752-2236

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(907) 465-3400  
FAX: 586-2954

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3700 Airport Way  
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(907) 451-2700  
FAX: 451-2751

***Mat-su/Copper Basin Area***  
1800 Glenn Hwy., Suite 12  
Palmer, AK 99645  
(907) 745-7200  
FAX: 745-7112

# Title 11

## Chapter 93

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# Water Management and Dam Safety

### CHAPTER 93. WATER MANAGEMENT

**Article**

- 2. Appropriation of Water (11 AAC 93.040 — 11 AAC 93.147)
- 3. Dam Safety (11 AAC 93.150 — 11 AAC 93.190, 11 AAC 93.201)
- 4. Temporary Water Use (11 AAC 93.210 — 11 AAC 93.220)
- 5. Preferred Use (11 AAC 93.240 — 11 AAC 93.260)
- 6. Enforcement (11 AAC 93.270 — 11 AAC 93.290)
- 7. Appeals (11 AAC 93.300)
- 8. Administrative Basin-wide Adjudication (11 AAC 93.400 — 11 AAC 93.440)
- 9. Critical Water Management Areas (11 AAC 93.500 — 11 AAC 93.540)
- 10. General Provisions (11 AAC 93.910 — 11 AAC 93.970)

#### Article 2. Appropriation of Water

**Section**

- 40. Application for a water right
- 50. Incomplete applications
- 60. Water rights on state-leased land
- 65. Water rights on private leased land
- 70. Departmental investigations
- 80. Notice
- 90. Objections
- 100. Exemptions to notice
- 110. Hearings
- 115. Closure of an application for a water right
- 120. Issuance of a permit to appropriate water

**Section**

- 125. Cancellation of permits
- 130. Issuance of a certificate of appropriation of water
- 140. Water well data
- 141. Application for a reservation of water
- 142. Content of application
- 143. Incomplete applications
- 144. Departmental investigations
- 145. Adjudication of applications
- 146. Issuance of a certificate of reservation of water
- 147. Review of reservation of water

**11 AAC 93.040. APPLICATION FOR A WATER RIGHT. (a)**  
Unless exempted by 11 AAC 93.920, no person may lawfully appropriate water of the state without first obtaining a permit under the provisions of 11 AAC 93.

11 AAC 93.040 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.040

(b) Application for a water right must be made on a form provided by the commissioner. The form must be completed in accordance with the instructions furnished to the applicant.

(c) Each application must include the following items:

(1) the application fee prescribed by 11 AAC 05.010;

(2) proof that the applicant has a present possessory interest in the property where the water is to be beneficially used; proof may be in the form of a copy of the deed or patent transferring title, leasehold agreement, or other instrument;

(3) a map identifying the section, township, range, and meridian, and showing the property boundary, for the point of water withdrawal, impoundment, or diversion; the route of water transmission; the point of water use; and, if water is to be returned to a stream or water body, the point of discharge;

(4) evidence that the applicant has obtained or is in the process of obtaining a right of access to the property where water is to be withdrawn, impounded, or diverted, and over which water is to be transported both to the point of use and to the point of discharge;

(5) proof that the owner or lessor of the property at the point of use approves of the application, if the applicant is a lessee or permittee;

(6) a legal description of the point of withdrawal, diversion, or impoundment; the point of water use; and, if water is to be returned to a stream or water body, the point of discharge; the legal description must include meridian, township, range, section, and aliquot parts, or the lot, block, and subdivision, or survey number, as appropriate;

(7) a description of the source as being either surface or ground water; the description must identify the name of the surface water source or the supply well log or well data for ground water, if available;

(8) a description of any impoundment structures, including dimensions, construction materials, plans and specifications, and operation plans, or an application to construct or modify a dam, as defined in AS 46.17.900, if 11 AAC 93.171 requires such an application;

(9) a description of the nature of the water use and times of the year during which water is to be used;

(10) a statement of the dates water use is expected to begin and when the maximum amount will be beneficially used;

(11) a statement of beneficial use, signed before a notary or postmaster, if water is already in use at the time of application;

(12) an application for a right-of-way, filed in accordance with AS 38.05.850, if access to or across state land is needed;

(13) a statement of the quantity of water requested, with documentation and calculations justifying the request if either the use or quantity is different from those listed in (d) of this section;

(14) for a water use of 100,000 gpd (0.15 cfs) or greater from a stream, a description of the mean annual flow, or mean monthly flow if available, using the best available data, or, if data are not available, an estimate of mean annual flow using acceptable hydrologic methods; and

(15) a completed coastal project questionnaire, required by 6 AAC 50, unless the water use is exempt from consistency review under 6 AAC 50.050 or the water source is not located in the coastal zone.

(d) Standard water use quantities are

- (1) single-family home, fully plumbed: 500 gpd;
- (2) single-family home, partially plumbed: 250 gpd;
- (3) single-family home, unplumbed: 75 gpd;
- (4) duplex or triplex: 1,000 gpd;
- (5) four-plex and larger housing: 250 gpd per unit;
- (6) mobile home park: 250 gpd per trailer;
- (7) motel or resort: 150 gpd per room;
- (8) cattle, other than dairy cows: 12 gpd per animal;
- (9) dairy cows: 35 gpd per animal;
- (10) horses: 15 gpd per animal;
- (11) sheep: 2 gpd per animal;
- (12) goats: 3 gpd per animal;
- (13) hogs: 4 gpd per animal;
- (14) poultry or rabbits: 0.5 gpd per animal;
- (15) dog (kennels): 1.0 gpd per animal; and
- (16) commercial irrigation: 0.5 acre feet per year per acre. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 1/1/86, Register 96; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.040

**11 AAC 93.050. INCOMPLETE APPLICATIONS.** (a) An application that does not substantially comply with the requirements of 11 AAC 93.040 will not be accepted for filing.

(b) The commissioner will, in his or her discretion, require an applicant whose application complies with the requirements of 11 AAC 93.040, and has been accepted for filing, to provide additional information if, during the adjudication process, it is determined that the application fails to clearly present and document all aspects of the proposed project. The commissioner will identify deficiencies in the application and the applicant will be given 30 days in which to submit supplemental information, unless a longer period of time is allowed by the commissioner. The applicant's failure to submit that supplemental infor-

11 AAC 93.060 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.065

mation within the required time is grounds for rejecting the application without further notice; a request from the commissioner for additional information will contain a warning to that effect. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.040

**11 AAC 93.060. WATER RIGHTS ON STATE-LEASED LAND.** When a lessee of state land applies for a water right, water required for the use and enjoyment of the leasehold may be appropriated for the lessee's use. The lessee shall comply with the provisions of 11 AAC 93.040 — 11 AAC 93.140 in securing the appropriation. If the commissioner approves the appropriation, the appropriation will be granted to the lessee and will be for the benefit of the leased land. Upon an assignment of the lease, the water right remains for the benefit of the leased land. Upon termination of the lease or upon the expiration of the permit issued under 11 AAC 93.120, the water right is considered intentionally abandoned, unless the lessee exercises a preference right to purchase the land, or unless the commissioner grants an extension of the water right beyond the lease term for good cause shown or assigns the water right to a state agency. The water right thus granted must be consistent with the provisions of the lease itself, this chapter, and AS 46.15. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.040

**11 AAC 93.065. WATER RIGHTS ON PRIVATE LEASED LAND.** If a lessee of privately owned land applies for a water right, water required for the use and enjoyment of the leasehold may be appropriated for the lessee's use. The lessee shall comply with the provisions of 11 AAC 93.040 — 11 AAC 93.140 in securing the appropriation. The commissioner will give notice by certified mail to the lessor that a water right has been applied for on the lessor's land. The appropriation, if granted, will be issued to the lessee and will be for the benefit of the leased land. Upon termination of the lease and nonuse of water by the lessor or subsequent lessee for five years, or upon the expiration of the permit issued under 11 AAC 93.120, the water right is considered intentionally abandoned. The water right thus granted must be consistent with the provisions of the lease itself, this chapter, and AS 46.15. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.040

**11 AAC 93.070. DEPARTMENTAL INVESTIGATIONS.** (a) Upon receipt of an application, the commissioner will, in his or her discretion, investigate or inspect the proposed diversion, withdrawal, or impoundment structures, the source of the water, meter records, gage data, well logs, and other competing uses for water within the area, to determine whether there is a possibility that existing water rights of other persons or the public interest will be adversely affected or impaired by the proposed appropriation. Failure of the applicant to cooperate in the investigation will result in rejection of the application.

(b) The commissioner will, in his or her discretion, require the applicant to

- (1) submit water well information, including well depth, pump setting, and current static water level;
- (2) drill test wells and observation wells;
- (3) conduct pump and aquifer tests;
- (4) provide test results or other hydrologic data and information necessary to better determine the effects of proposed appropriation on prior appropriators and the public interest;
- (5) provide any other information necessary to make a finding under AS 46.15.080. (E.F. 12/29/79, Register 72; am 11/7/90, Register 116)

**Authority:** AS 46.15.020  
AS 46.15.080  
AS 46.15.256

**11 AAC 93.080. NOTICE.** The commissioner will provide notice of a new water right application as follows:

(1) The applicant will be provided with a prepared request for publication that must be submitted to a newspaper of general circulation in the vicinity in which the water is to be appropriated. The applicant shall pay the newspaper for the cost of publication.

(2) If there is no newspaper of general circulation in the vicinity, the commissioner will post notice for a period of 15 days in a public place near the site of the proposed appropriation.

(3) The commissioner will serve individual notice by certified mail on prior appropriators who might be taking water from the same source.

(4) An affidavit of publication or other proof of notice must appear in the applicant's case file.

(5) Written notice will also be provided to any known person who owns land where the water is to be withdrawn or used, or over which the water is to be transported, or whose request to receive notice is on file with the department.

11 AAC 93.090 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.110

(6) The public comment period set by AS 46.15.133(c) begins the first day the newspaper publication appears, or the first day of posting, or upon receipt of the notice as evidenced by the certified mail receipt, date stamp, or other evidence of actual service.

(7) The commissioner will, in his or her discretion, extend the notice and public comment period. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.133

**11 AAC 93.090. OBJECTIONS.** (a) If no written objection is received from any person during the public comment period, the commissioner will proceed with adjudication of the application.

(b) All timely objections will be considered by the commissioner and each will receive a written response after the close of the public comment period.

(c) In adjudication of the application, the commissioner will, in his or her discretion, consider objections that are received by the commissioner after the close of the public comment period. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.133

**11 AAC 93.100. EXEMPTIONS TO NOTICE.** An application to appropriate 5,000 gallons of water per day (gpd) or less is exempt from the notice provisions of 11 AAC 93.080 and AS 46.15.133, except that the Department of Fish and Game will be notified of an application for a water right from an anadromous fish stream listed in the Alaska Department of Fish and Game Catalog of Water Important for Spawning, Rearing, or Migration of Anadromous Fishes or a stream identified as supporting fish in the ADF&G Habitat Regional Guides. However, in an area where the total amount of water available appears to the department to be limited with respect to the number of potential users of the same source, or upon the request of another state or federal agency or a municipality as defined by AS 29, or to protect the public interest, the commissioner will, in his or her discretion, require public notice as provided by 11 AAC 93.080. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.133

**11 AAC 93.110. HEARINGS.** (a) If objections are received during the public comment period, the commissioner will, in his or her discretion, hold a hearing on the objections.

(b) The commissioner will, in his or her discretion, hold a hearing to acquire additional information on an application if the commissioner determines that the water rights of prior appropriators or the public interest might be adversely affected or if the commissioner determines that additional information is required to rule on the application.

(c) The hearing will be public and a record will be kept. (Eff. 12/29/79, Register 72; am 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.133

**11 AAC 93.115. CLOSURE OF AN APPLICATION FOR A WATER RIGHT.** A pending water right application and the department's application file will, in the commissioner's discretion, be closed if

(1) the applicant informs the commissioner, in writing, or by filing a notice of relinquishment, that the applicant has abandoned plans to develop the water source or use, in which case the application will, in his or her discretion, be closed by the commissioner without further correspondence with the applicant;

(2) the applicant informs the commissioner orally that the applicant has abandoned plans to develop the water source and use, in which case the applicant will be notified in writing that the application is closed as a consequence of the oral notice;

(3) the commissioner is unable to locate the applicant by certified mail at the address on file in order to adjudicate the application, in which case the application will, in the commissioner's discretion, be closed without further correspondence by the commissioner with the applicant; or

(4) the applicant fails to provide information requested under 11 AAC 93.070 or fails to complete the newspaper notice of the proposed appropriation, in which case the applicant will be notified by certified mail that the application has been closed, noting the reason for the closure, the effective date of the closure, and any appeal process. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.133

**11 AAC 93.120. ISSUANCE OF A PERMIT TO APPROPRIATE WATER.** (a) The commissioner will issue a permit to appropriate water if he or she finds that the appropriation meets the requirements of AS 46.15.080.

(b) The permit will be issued for a period of time that the commissioner considers to be consistent with the public interest and adequate to finish construction and establish the full use of water. The follow-

11 AAC 93.120 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.120

ing time periods are the maximum time periods for which a permit will be issued unless the applicant proves to the satisfaction of the commissioner, or unless the commissioner independently determines, that a longer time period is required to establish the full use of water:

- (1) domestic water use: two years;
- (2) commercial irrigation: five years;
- (3) public water supply
  - (i) use of 250,000 gpd or less: five years;
  - (ii) use of over 250,000 gpd: 10 years;
- (4) industrial and commercial water use: five years;
- (5) mining water use: 10 years;
- (6) small-scale hydroelectric facilities that generate 100 kilowatts or less: five years;
- (7) large-scale hydroelectric facilities that generate over 100 kilowatts: 10 years.

(c) The permit time period begins on the date the permit is issued by the department, except that for a permit issued for water use exempted under 11 AAC 93.920 the time period begins on the date the application is accepted by the department for filing.

(d) The permit will, in the commissioner's discretion, authorize development and beneficial water use during all or part of the year and vary the quantities of water use, depending on need and water availability during any given month or season of the year.

(e) The commissioner will, in his or her discretion, issue a permit subject to conditions considered necessary to protect the public interest. The conditions

(1) will include

(A) the condition that no certificate will be issued until proof is presented to the commissioner of the acquisition of adequate easements or other means necessary for completion of the appropriation including the condition that the applicant obtain right of access to the property where water is to be withdrawn, impounded, or diverted and over which water is to be transported;

(B) conditions that require the permittee to meter the water use and report water use information to the division:

(i) for any use of 30,000 gpd of water or more, except that water use for mining purposes and for hydroelectric power generation of less than 50 kilowatts will, in the commissioner's discretion, be exempt from this condition;

(ii) for any use of water for irrigation of 40 acres or more of land;

(2) might include

(A) conditions to maintain a specific quantity of water at a given point on a stream or body of water, or in a specified stretch of stream, throughout the year or for specified times of the year, to achieve any of the following purposes:

- (i) protection of fish and wildlife habitat;
- (ii) recreational purposes;
- (iii) navigation;
- (iv) sanitation and water quality;
- (v) protection of prior appropriators;
- (vi) any other purpose the commissioner determines, in his or her discretion, is in the public interest and should be taken into account under AS 46.15;

(B) conditions that ensure that the proposed means of impoundment, withdrawal, diversion, or construction are adequate, including the specification of engineering and design standards, requirements for maintaining, enlarging, modifying, abandoning, or removing impoundment structures, approved location of points of withdrawal or diversion, or approved location of points of return flow;

(C) conditions that require the permittee to meter the water use and report water use information to the division if the commissioner considers it necessary in order to protect the water rights of prior appropriators and the public interest;

(D) a condition that if a mineral location, claim, or lease to which the water right is appurtenant ceases to be in good standing, is abandoned, is found invalid, or is otherwise terminated and not legally re-established, then the water right will be considered intentionally abandoned.

(f) Upon the commissioner's receipt of a written request from the permittee showing diligent effort toward completing the appropriation, the permit will, in the commissioner's discretion, be extended for a period of time not to exceed the relevant maximum time period listed in (b) of this section. The request for a permit extension must be accompanied by the fee prescribed by 11 AAC 05.010.

(g) A permit extension granted under (f) of this section will, in the commissioner's discretion, be subject to additional conditions that the commissioner considers necessary to protect prior appropriators and the public interest.

(h) Nothing in this section constitutes a waiver of the responsibility of the applicant to secure the appropriate additional state, federal, or local regulatory permits or licenses. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.010                      AS 46.15.100  
                   AS 46.15.020                      AS 46.15.140  
                   AS 46.15.080

**11 AAC 93.125. CANCELLATION OF PERMITS.** A permit will, in the commissioner's discretion, be cancelled, and the case file closed, if the permittee (1) does not develop and make use of the appro-

11 AAC 93.130 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.130

priation within the permit time period, or (2) as provided in AS 46.15.175, violates a term or condition of the permit. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.110  
AS 46.15.175

**11 AAC 93.130. ISSUANCE OF A CERTIFICATE OF APPROPRIATION OF WATER.** (a) The commissioner will issue a certificate of appropriation to the permit holder for the quantity of water beneficially used, which might be equal to or less than that granted under the permit, if

(1) the permit holder submits a statement of beneficial use stating that the means necessary for the taking of water have been developed and the permit holder is beneficially using the quantity of water to be certificated; and

(2) the permit holder has substantially complied with all permit conditions.

(b) Before issuing a certificate of appropriation, the commissioner will, in his or her discretion, conduct field inspections or inspect books, records, meter records, gages, well logs, diversion, impoundment, withdrawal, or control structures, and other relevant information, to verify that the appropriation has been developed and water is being used in accordance with the terms and conditions of the permit.

(c) The commissioner will, in his or her discretion, issue a certificate subject to conditions considered necessary to protect the public interest. The conditions will, in the commissioner's discretion, include

(1) conditions to maintain a specific quantity of water at a given point on a stream or water body, or in a specified stretch of stream, throughout the year or for specified times of the year, to achieve any of the following purposes:

(A) protection of fish and wildlife habitat.

(B) protection of recreation.

(C) protection of navigation.

(D) protection of sanitation and water quality.

(E) protection of prior appropriators, or

(F) any other purpose the commissioner determines is in the public interest;

(2) a condition that requires the certificate holder to meter water use and report water use information to the division;

(3) conditions to ensure that the means for impounding, withdrawing, or diverting water are adequate, which might include requirements for maintaining, enlarging, modifying, abandoning, or removing impoundment structures. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020

AS 46.15.120  
AS 46.15.256

**11 AAC 93.140. WATER WELL DATA.** (a) For each drilled, driven, jetted, or augered well constructed, the water well contractor or a person who constructs the well shall file a report within 45 days after completion with both the property owner and the commissioner. The report must contain the following information as applicable: the method of construction, type of fluids used for drilling, location of the well, an accurate log of the soil and rock formations encountered and the depths at which the formations occur, the depth of the casing, height of the casing above ground, the depth and type of grouting, the depth of any screens, casing diameter, casing material, depth of perforation or opening in the casing, well development method, the total depth of the well, the depth of the static water level, anticipated use of the well, the maximum well yield, and the results of any well yield, aquifer, or drawdown test that was conducted. If the water well contractor or person who constructs the well installs a pump at the time of construction, the report must also include the depth of the pump intake and the rated pump capacity at that depth.

(b) When the drill rig is removed from the well site, the well must be sealed with a sanitary seal and a readily accessible means provided to allow for monitoring of the static water level in the well.

(c) A hand-dug well that is permanently abandoned must be filled to a point 12 inches above the existing ground level with well-compacted impermeable material.

(d) All wells, other than hand-dug wells, that are permanently abandoned must be cut off at or below existing ground level and sealed with concrete, bentonite grout, or other watertight material to a point above the static water level. The well must be sealed at or below ground level by means of welding a 0.25 inch thick steel plate to the top of the casing or by sealing the well at the surface with a concrete plug.

(e) If the commissioner believes that an encounter of oil, gas, or other hazardous substance is likely to result from well drilling, the commissioner will notify the Alaska Oil and Gas Conservation Commission, and the provisions of AS 31.05.030(g) might apply.

(f) The commissioner will notify the Department of Environmental Conservation of any permanently abandoned well that might contaminate water of the state under the provisions of 18 AAC 80.

(g) Information required by (a) of this section is required for any water well that has been deepened, modified, or abandoned, and for any water supply well or water well that is used for monitoring, observation, or aquifer testing, including a dry or low-yield water well that is not used. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

11 AAC 93.141 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.142

Authority: AS 38.05.020  
AS 38.05.035  
AS 46.15.020

**11 AAC 93.141. APPLICATION FOR A RESERVATION OF WATER.** As provided in AS 46.15.145(a), the state, an agency or political subdivision of the state, an agency of the United States, or a person may apply for a reservation of water for

(1) "protection of fish and wildlife habitat, migration and propagation," which means the quantity or level of water necessary to maintain suitable habitat conditions for the various life stages of fish, other aquatic organisms, and wildlife, including waterfowl and mammals, and their habitat, including water quality, depth, velocity and temperature, substrate, or streamside vegetation;

(2) "recreation and park purposes," which means the quantity or level of water necessary to maintain suitable conditions for contact and secondary recreation, including wading, swimming, fishing, boating, or hunting, or for park purposes, including scenic, natural, historic, or cultural values;

(3) "navigation and transportation purposes," which means the quantity or level of water necessary to maintain sufficient width and depth to allow vehicles, including boats or float planes, or tracked or wheeled vehicles during the winter, to travel on or through a stream or water body; and

(4) "sanitary and water quality purposes," which means the quantity or level of water necessary to attain and maintain water quality standards under 18 AAC 70 or, if applicable, drinking water standards under 18 AAC 80, or to maintain the naturally occurring water quality conditions. (Eff. 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.145

**11 AAC 93.142. CONTENT OF APPLICATION.** (a) An application for a reservation of water must be made to the department on a form provided by the department. The form must be completed in accordance with the instructions furnished by the department to the applicant.

(b) Each application must

(1) identify the purposes of the proposed reservation;

(2) identify the name of the stream or water body in which water is proposed to be reserved, and locate the proposed reservation on the most detailed United States Geological Survey map for the area, identified by section, township, range, meridian, and river mile index if available, showing either the point on a water body at

which, or two points on a stream between which, the proposed reservation is being requested;

(3) explain what need exists for the proposed reservation, including reasons why the reservation is being requested;

(4) specify the time period required to fully quantify the proposed reservation, which may be no longer than three years after the date the application is accepted by the department for filing;

(5) specify the times of the year and purposes for which the reservation is proposed;

(6) identify and explain the methodology to be used to quantify the proposed reservation, including

(A) existing data to be used, if available;

(B) the method of any new data collection;

(C) the type of new data to be collected; and

(D) a description of how the data will be analyzed;

(7) state the estimated quantity of water, stage, or elevation proposed to be reserved, measured in cubic feet per second for an instream flow rate or measured in cubic feet, acre feet, or an elevation relative to a permanent bench mark for a surface elevation, with documentation and calculations justifying the request;

(8) identify physical, biological, water chemistry, and socio-economic data substantiating the need for and the quantity of water requested for the proposed reservation;

(9) be accompanied by the application fee prescribed by 11 AAC 05.010.

(c) At the applicant's request, the department will provide assistance in filling out the application.

(d) At the applicant's written request, submitted at least 30 days before the end of the time period specified under (b)(4) of this section, the commissioner will, in his or her discretion, grant an extension of the time period of up to two years for good cause shown.

(e) When the applicant completes the quantification of the proposed reservation of water, the applicant shall notify the commissioner in writing and shall submit any information that changes, adds, or deletes information presented in the original application. (Eff. 9/11/83, Register 87; am 1/1/86, Register 96; am 11/7/90, Register 110)

Authority: AS 46.15.020  
AS 46.15.040

AS 46.15.080  
AS 46.15.145

**11 AAC 93.143. INCOMPLETE APPLICATIONS.** (a) An application that does not substantially comply with the requirements of 11 AAC 93.142 will not be accepted by the department for filing.

(b) The commissioner will, in his or her discretion, require an applicant whose application complies with the requirements of 11 AAC 93.142 and has been accepted for filing to provide additional informa-

11 AAC 93.144 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.145

tion if, during the adjudication process under 11 AAC 93.145, the commissioner determines that the application fails to clearly present and document all aspects of the proposed reservation. The commissioner will identify the areas of deficiency, and the applicant will be given 60 days in which to submit supplemental information, unless a longer period of time is agreed upon by the applicant and the commissioner. An applicant's failure to submit the additional information within the time required is grounds for rejecting the application without further notice; a request for additional information will contain a warning to that effect. (Eff. 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.040  
AS 46.15.145

**11 AAC 93.144. DEPARTMENTAL INVESTIGATIONS.** (a) Upon receipt of an application for a reservation of water, the commissioner will, in his or her discretion, investigate any aspect of the application, including the source of the water and other uses or demands for water within the area, to determine whether there is a possibility that the rights of prior appropriators or the public interest will be adversely affected by the proposed reservation.

(b) Failure of the applicant to cooperate in the investigation will result in the rejection of the application. (Eff. 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.145  
AS 46.15.256

**11 AAC 93.145. ADJUDICATION OF APPLICATIONS.** (a) Notice of an application for a reservation of water will be provided in accordance with AS 46.15.133 and 11 AAC 93.080. In addition, the commissioner will provide notice to the Alaska Departments of Fish and Game and Environmental Conservation, to any federal or state agency responsible for managing land in the vicinity, and to any local government in whose jurisdiction the proposed reservation of water would occur, as well as to any other interested party who has filed a request with the department to receive notice.

(b) Timely objections received following notice of an application for a reservation of water will be considered in accordance with 11 AAC 93.090.

(c) Hearings regarding an application for a reservation of water will be held in accordance with AS 46.15.133 and 11 AAC 93.110.

(d) The commissioner's decision to grant, conditionally grant, or deny an application for a reservation of water will be summarized by

written findings of fact and conclusions of law, including justification of any special conditions to which the reservation is subject. In determining whether the proposed appropriation is in the public interest, the commissioner will consider the criteria set out in AS 46.15.080(b). (Eff. 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.080

AS 46.15.133  
AS 46.15.145

**11 AAC 93.146. ISSUANCE OF A CERTIFICATE OF RESERVATION OF WATER.** (a) The commissioner will issue a certificate of reservation of water if the commissioner finds that the reservation meets the requirements of AS 46.15.145.

(b) The certificate of reservation will be issued to the applicant. The applicant is responsible for compliance with the conditions of the certificate of reservation.

(c) A certificate of reservation will contain the following conditions:

(1) the certificate of reservation may not be voluntarily abandoned, conveyed, transferred, assigned, or converted to another use, in whole or in part, unless required as a result of review under 11 AAC 93.147; and

(2) the certificate of reservation does not authorize the certificate holder or any other person to prevent access to, on, or through the water reserved by the certificate, or to prohibit the use of the reserved water for other compatible purposes set out in AS 46.15.145(a).

(d) The certificate of reservation will state any additional terms or conditions the commissioner considers necessary to protect the prior valid rights of other appropriators and the public interest. The conditions will, in the commissioner's discretion, include the following:

(1) measuring devices of a type and at a location approved by the commissioner must be installed and maintained to monitor and report on the reserved instream flow or level of water; and

(2) the reservation will be reviewed by the commissioner within a specified period of time, if sooner than the 10-year review under 11 AAC 93.147.

(e) The priority of a reservation of water is the date the application was accepted by the department for filing.

(f) Nothing in this section constitutes a waiver of the responsibility of the applicant to secure any appropriate state, federal, or local regulatory permits or licenses with regard to the stream or water body affected. (Eff. 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020  
AS 46.15.080

AS 46.15.120  
AS 46.15.145

**11 AAC 93.147. REVIEW OF RESERVATION OF WATER.**

(a) The commissioner will review a reservation of water at least once each 10 years after the date of issuance of the certificate of reservation. The commissioner will, in his or her discretion, review a reservation of water in fewer than 10 years if circumstances warrant a review. These circumstances might include

(1) a condition on the certificate of reservation requiring an earlier review, under 11 AAC 93.146(d)(2);

(2) a significant change affecting the water resource;

(3) a subsequent applicant's protest of the justification for the reservation of water if water might be unavailable to both maintain the reservation of water and to grant the applicant's request; or

(4) a written request by the certificate holder to the department, seeking authority to abandon, convey, transfer, assign, or convert the certificate of reservation to another use.

(b) Upon review of a reservation of water, the commissioner will determine

(1) if the purpose for the reservation still applies;

(2) if the need for the reservation still exists;

(3) the effects of the reservation on prior appropriators;

(4) the effects of the reservation on the public interest;

(5) repealed 11/7/90;

(6) if additional physical, biological, water chemistry, and socio-economic data or reports concerning the reservation are available;

(7) if the quantity or level of water reserved is adequate for the purposes of the reservation;

(8) if the daily duration and months of the year of the reservation still apply;

(9) if additional research, data collection, and analysis should be conducted and what methodologies employed for reviewing the reservation.

(c) The commissioner will, in his or her discretion, require that additional research, data collection, and analysis be conducted or different methods used for reviewing the reservation of water. Costs of conducting additional research, data collection, and analysis, and of using a different methodology will be borne by the protestant if a protest regarding the reservation has been filed with the department. In other cases, these costs will be borne by the state. If the certificate holder desires expedited review, the commissioner will, in his or her discretion, require the certificate holder to bear the costs.

(d) The commissioner will provide written notice, as provided in 11 AAC 93.145(a), of a review of a reservation of water in order to solicit information that might be pertinent to the review. The commissioner will, in his or her discretion, hold a hearing on the review of a reservation of water.

(e) In accordance with the procedural requirements of 11 AAC 93.940, the commissioner will determine whether the purpose for the reservation of water, and his or her original findings of fact in granting the reservation, have been significantly altered by subsequent events. If the purpose of the reservation or all or part of the findings in granting the reservation no longer apply to the reservation, the commissioner will, in his or her discretion, amend the certificate of reservation or revoke all or part of it in accordance with AS 46.15.145(f) and 11 AAC 93.940. The commissioner's final decision to amend or revoke all or part of a certificate of reservation will be summarized by written findings of fact and conclusions of law. The commissioner will record any amended certificate of reservation in the appropriate recorder's office. (Eff. 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.140  
AS 46.15.145

### Article 3. Dam Safety

Section	Section
150. (Repealed)	170. (Repealed)
151. Applicability	171. Dam construction, modification, removal, or abandonment
153. Barrier measurement	173. Terms and conditions in certificate of approval
157. Hazard classification	174. Transfer of certificate of approval
159. Owner's periodic safety inspections; commissioner's orders	175. Records
160. (Repealed)	180. (Repealed)
161. State inspections	190. (Repealed)
163. Emergency action	201. Definitions
165. (Repealed)	
167. Certification of existing dams	

11 AAC 93.150. DAM SAFETY. Repealed 8/16/89.

11 AAC 93.151. APPLICABILITY. The provisions of 11 AAC 93.151 — 11 AAC 93.201 apply to all dams located in Alaska, except dams owned or operated by the federal government or regulated by the Federal Energy Regulatory Commission. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010  
AS 46.17.030  
AS 46.17.100

11 AAC 93.153. BARRIER MEASUREMENT. For the purpose of determining whether a barrier is a dam under AS 46.17.900, the height of the barrier will be measured as either

(1) the maximum vertical distance from the natural bed of the watercourse at the upstream or downstream toe of the barrier,

11 AAC 93.157 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.159

whichever yields the greater measurement, to the top of the barrier,  
or

(2) if the barrier is not across a watercourse, the maximum vertical distance from the lowest elevation of the outside limit of the barrier to the top of the barrier. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010  
AS 46.17.030  
AS 46.17.900

**11 AAC 93.157. HAZARD CLASSIFICATION.** In order to determine the frequency with which a dam must be inspected under 11 AAC 93.151 — 11 AAC 93.201, and to determine design, operating, and maintenance criteria for the dam, the commissioner will periodically review and classify each dam as to the potential hazard it might pose to life or property, according to one of the following classifications:

(1) Class I for a dam whose failure would, in the opinion of the commissioner, result in probable loss of life, serious hazard to public health, or serious damage to homes, high-value industrial or commercial properties, or major public utilities;

(2) Class II for a dam whose failure would, in the opinion of the commissioner, result in a possible health hazard, probable loss of high-value property, probable damage to major highways, railroads, or other public utilities, or probable damage to or loss of important salmon spawning habitat as identified by the commissioner of the Department of Fish and Game, but not result in loss of human life;  
or

(3) Class III for a dam whose failure would, in the opinion of the commissioner, result in property losses restricted mainly to rural land and buildings and local roads, and would not result in loss of human life or hazard to health. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010                      AS 46.17.050  
AS 46.17.030                              AS 46.17.070

**11 AAC 93.159. OWNER'S PERIODIC SAFETY INSPECTIONS; COMMISSIONER'S ORDERS.** (a) The owner of a Class I or Class II dam shall provide for a safety inspection of the dam at least once every three years. The owner of a Class III dam shall provide for a safety inspection of the dam at least once every five years. The commissioner will, in his or her discretion, order a dam owner to provide for a periodic safety inspection more often than otherwise required by this subsection if the commissioner determines that the dam might be unsafe. All inspections required by this section are at the owner's sole expense, and must meet the guidelines for inspections that the commissioner periodically establishes.

(b) The periodic safety inspections required by this section must be performed by an engineer with sufficient experience in dam design, construction, and safety appropriate for the type of dam inspected. Before an inspection, the owner shall submit to the commissioner the written qualifications of the engineer, for the commissioner's review and approval. The commissioner will supply to the approved engineer written guidelines under which the inspection must be accomplished.

(c) Upon completion of a periodic safety inspection required by this section, the dam owner is responsible for submission of the safety inspection report to the commissioner on a form provided by the commissioner, with as many copies as the commissioner requires. The engineer must, in the report, certify to the commissioner that the commissioner's guidelines have been followed in making the inspection.

(d) In response to a safety inspection report, the commissioner will, in his or her discretion, issue an order, including an order requiring the owner to perform additional inspections, studies, or analyses or to submit further data that the commissioner determines is necessary to adequately assess the safety of the dam. The commissioner will, in his or her discretion, also issue a construction, repair, maintenance, or shutdown order that the commissioner considers necessary to protect against dam failure.

(e) If the owner fails or refuses to perform a periodic safety inspection required under this section, then the commissioner will, in his or her discretion, perform the inspection, after giving the owner the notice required by AS 46.17.060. The owner shall reimburse the state for its costs incurred in making the inspection. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010            AS 46.17.060  
          AS 46.17.030            AS 46.17.070  
          AS 46.17.050

**11 AAC 93.160. GENERAL REQUIREMENTS.** Repealed 8/16/89.

**11 AAC 93.161. STATE INSPECTIONS.** If the commissioner determines that a condition might exist that might affect the safety of a dam, or determines that an owner inspection required by 11 AAC 93.159 is inadequate, the commissioner will, in his or her discretion, inspect the dam after giving the notice required by AS 46.17.060. If, because of the potential danger to life and property posed by the condition of a dam, there is insufficient time, in the commissioner's opinion, to give the two-week notice required by AS 46.17.060, then the commissioner will give the owner as much notice as is reasonable under the circumstances. The owner shall reimburse the state for its costs incurred in making the inspection. (Eff. 8/16/89, Register 111)

11 AAC 93.163 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.167

Authority: AS 46.17.010            AS 46.17.050  
              AS 46.17.030            AS 46.17.060

**11 AAC 93.163. EMERGENCY ACTION.** (a) If (1) in the opinion of the commissioner the condition of a dam is sufficiently dangerous so as not to allow adequate time for the issuance of an order to the owner under 11 AAC 93.159(d) relative to the maintenance or operation of the dam, (2) actual or potential flooding threatens the condition of the dam, or (3) the owner will not voluntarily comply with an order or does not have the present means to comply with an order, then the commissioner will, in the commissioner's discretion, take remedial action that the commissioner determines is necessary to protect life and property from the risks posed by the dam's operation or potential failure.

(b) In taking remedial action under this section, the commissioner will, in the commissioner's discretion, take supervisory control of the dam from the owner, over the owner's objection if necessary, until the emergency passes. During such supervision, the owner, agents, and employees of the owner shall comply with all of the commissioner's orders.

(c) The owner shall reimburse the state for the costs of any reasonably necessary remedial action taken under this section. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010            AS 46.17.060  
              AS 46.17.030            AS 46.17.070  
              AS 46.17.050

**11 AAC 93.165. DAM MEASUREMENT.** Repealed 8/16/89.

**11 AAC 93.167. CERTIFICATION OF EXISTING DAMS.** (a) Not later than December 31, 1989, the owner of a dam that was constructed before May 31, 1987, shall file a complete application, on a form provided by the commissioner, for a certificate of approval to operate the dam, along with the applicable fee under 11 AAC 05.010. Unless the owner has filed an application under this section, no dam existing before May 31, 1987, may be operated after December 31, 1989.

(b) An application for a certificate of approval under this section must include

- (1) as-built plans for the dam, prepared by a qualified engineer;
- (2) a detailed maintenance plan;
- (3) a detailed operation plan;
- (4) for Class I and Class II dams, a detailed emergency action plan; and
- (5) a plan for routine safety inspections of the dam in addition to the periodic safety inspections required by 11 AAC 93.159.

(c) Within 90 days after its submission, the commissioner will review, and either approve or disapprove, an application filed under this section. If the application is approved, the commissioner will issue a certificate of approval to the owner allowing the owner to operate the dam under the conditions imposed by the certificate.

(d) Nothing in this section relieves the owner of a dam of the responsibility to secure the appropriate additional state, federal, or local regulatory permits or licenses. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010  
AS 46.17.030

AS 46.17.040  
AS 46.17.050

**11 AAC 93.170. CONSTRUCTION OF LARGE DAMS.** Repealed 8/16/89.

**11 AAC 93.171. DAM CONSTRUCTION, MODIFICATION, REMOVAL, OR ABANDONMENT.** (a) No person or entity may (1) operate a dam constructed after May 30, 1987, but before 8/16/89, or (2) abandon a dam, remove a dam, begin the construction, or modification of a dam, without first applying for the commissioner's permission on a form provided by the commissioner, paying the applicable fees under 11 AAC 05.010, and receiving a certificate of approval from the commissioner for the proposed action. The commissioner will require the following information, if applicable, to be provided with the application:

(1) proof that the applicant has applied for any water use permit required under AS 46.15, or otherwise has any permit or water use certificate required under AS 46.15;

(2) complete plans, specifications, and engineering reports for the proposed action, that must be prepared by or under the direction of an engineer with appropriate experience in the design, construction, and safety of dams, and that must include

(A) a topographic map of the dam site showing the location of the dam, the reservoir area at normal and maximum water storage levels, and the location of the spillways, outlet works, borings, test pits, and material sites;

(B) a profile along the dam axis showing the elevation of the crest of the dam, location and elevation of spillways and outlet works, and geological investigation information; and

(C) cross-sections, including the maximum cross-section of the dam, indicating elevation and width of the crest, location and elevation of spillways and outlet works, the slopes of upstream and downstream faces, the thickness of erosion control structures, and the location of cutoff and bonding trenches.

(b) Engineering reports required under (a)(2) of this section must contain sufficient information to justify the design assumptions and

11 AAC 93.171 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.171

criteria used, and must contain the information necessary for the commissioner to make a safety determination when reviewed in conjunction with the plans and specifications. Information supplied in engineering reports must contain all the analyses and data necessary for the size, type, and proposed hazard classification of dam involved.

(c) In addition to the information required under (a) and (b) of this section, the commissioner will, in his or her discretion, require additional information that the commissioner considers necessary, including

(1) formulas and assumptions used in the design criteria and test results;

(2) hydrologic data used in the development of the project design flood hydrograph for the dam;

(3) physical analyses and permeability analyses of the materials used in the dam;

(4) an evaluation of the stability of the dam and foundation, including a seismic stability analysis of the dam and foundation using the appropriate seismic zone criteria from the U.S. Army Corps of Engineers' publication ER 1110-2-1806, dated May 16, 1983, or other criteria acceptable to the commissioner;

(5) a complete seepage analysis for the dam and foundation;

(6) design criteria, calculations, and rating curves for the spillways and outlet works;

(7) a geological investigation of the dam site, reservoir area, spillways, outlet works, appurtenant works, and material sites that must include geological maps, locations and logs of borings and test pits, geological cross-sections, material analyses, and other necessary site-specific information;

(8) a storage-versus-depth curve and a storage-versus-area curve for the reservoir;

(9) a construction schedule for the dam construction, which must be revised and presented to the commissioner for approval if the construction is not pursued according to the approved schedule;

(10) a water diversion plan for the construction, including cofferdam plans and specifications, cofferdam stability analysis under normal and appropriate probable flood conditions, hydrologic data, hydraulic analyses, and stability analyses for conduits or spillways used for diversion during construction; plans for controlling seepage and pumping of seepage; and plans for removal of cofferdams, conduits, spillways, and other temporary structures used for water diversion during construction;

(11) an erosion control plan documenting measures to be used during construction to limit erosion during construction, both within the construction site and in the stream channel; and

(12) for the removal or abandonment of a dam:

(A) a description of the method of dewatering the reservoir, including a description of the equipment to be used;

(B) a description of the method of breaching the dam, including a description of the equipment to be used;

(C) a description of the means to be used to control erosion at the site during and after the breach or removal;

(D) a description of the means of controlling sediment transport from the reservoir;

(E) a description of the means of restoring the reservoir bed and channel through the reservoir;

(F) a description of the means to maintain the breach area, upstream and downstream channel, and reservoir bed after the breach;

(G) a time schedule for the operation;

(H) a description of the steps that have been taken with regard to abandoning any water rights issued under AS 46.15.

(d) Upon the issuance of a certificate of approval for the construction, modification, removal, or abandonment of a dam, the proposed action with respect to the dam may begin. During the action, and until it is completed,

(1) the owner may not deviate from the terms of the certificate or from approved plans and specifications without the commissioner's prior written approval;

(2) an engineer with appropriate experience in the construction, modification, removal, or abandonment of dams shall supervise compliance with the approved plans and specifications; and

(3) upon 24 hours' notice to the owner, the commissioner will, in the commissioner's discretion, inspect the dam.

(e) Upon completion of the construction, modification, removal, or abandonment of a dam, the owner of the dam shall provide the commissioner with a completion report, prepared by the supervising engineer described in (d)(2) of this section, that must include

(1) a description of how the plans and specifications were followed or deviated from;

(2) a description of unexpected conditions encountered;

(3) inspection reports, test analyses, compaction tests, pressure tests, and all other tests undertaken;

(4) photographs documenting construction or demolition progress;

(5) as-built drawings for removed, modified, or newly constructed dams;

(6) a post-construction operations and maintenance plan; and

(7) for Class I or Class II dams to be operated, an emergency action plan including inundation maps, consistent with guidelines established by the commissioner, and a routine safety inspection plan.

11 AAC 93.173 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.174

(f) Once all necessary and complete reports are filed, the commissioner will, in the commissioner's discretion, issue a certificate of approval to operate a newly constructed or modified dam.

(g) A certificate of approval issued under (f) of this section is valid only for the period of time specified in the certificate. No action allowed under the certificate may continue beyond the certificate's expiration date without the issuance of a new certificate of approval. No water may be impounded behind a newly constructed dam, or additional water impounded behind a modified dam, until a certificate of approval is issued under (f) of this section.

(h) Nothing in this section relieves the owner of the responsibility to secure the appropriate additional state, federal, or local regulatory permits or licenses. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010            AS 46.17.050  
          AS 46.17.030            AS 46.17.060  
          AS 46.17.040            AS 46.17.070

Editor's notes. — Copies of the U.S. Land and Water Management. Dam  
Army Corps of Engineers' publication ER Safety Office, P.O. Box 107005, Anchorage, AK 99510-7005, or from any regional  
1110-2-1806, adopted by reference in 11 office of that division.  
AAC 93.171(c), are available from the  
Dept. of Natural Resources, Division of

**11 AAC 93.173. TERMS AND CONDITIONS IN CERTIFICATE OF APPROVAL.** A certificate of approval for a dam that was built before May 31, 1987, or that is constructed, modified, removed, or abandoned after that date, will, in the commissioner's discretion, contain terms and conditions that the commissioner determines are necessary for public safety, including

(1) maximum or minimum filling rates and other conditions to ensure proper loading of the dam during the initial filling of the reservoir;

(2) normal maximum reservoir water elevation;

(3) dates for routine and periodic safety inspections;

(4) specified operation procedures;

(5) specified maintenance procedures; and

(6) any other terms and conditions necessary, in the commissioner's judgment, to ensure the safe operation and maintenance of the dam. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010            AS 46.17.050  
          AS 46.17.030            AS 46.17.060  
          AS 46.17.040            AS 46.17.070

**11 AAC 93.174. TRANSFER OF CERTIFICATE OF APPROVAL.** An owner may not assign or otherwise transfer a certificate of approval issued under 11 AAC 93.167 or 11 AAC 93.171 with-

out obtaining the written permission of the commissioner and paying the applicable fees under 11 AAC 05.010. The commissioner will, in his or her discretion, impose terms and conditions on the transfer that the commissioner determines are necessary to ensure that the dam is operated and maintained in a safe manner. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010  
AS 46.17.030  
AS 46.17.040

**11 AAC 93.175. RECORDS.** (a) The owner of a dam shall maintain on file, either at the location of the dam or at the owner's regular place of business in the state, all records pertaining to the safety of the dam, including:

- (1) construction plans and specifications;
- (2) engineering reports;
- (3) as-built plans;
- (4) all completion reports;
- (5) construction inspection reports;
- (6) material test analyses;
- (7) reports of routine safety inspections performed under 11 AAC 93.167(b)(5) or 11 AAC 93.171(e)(7);
- (8) periodic safety inspection reports required under 11 AAC 93.159; and
- (9) all other information and documents that might contain data relevant to the safety of the dam.

(b) All records that the owner is required to retain under this section must be open to the commissioner's inspection and copying during the owner's regular business hours, or, in the event of an emergency, at any time the commissioner considers necessary.

(c) The commissioner will, in his or her discretion, seek an administrative subpoena requiring the owner, or the owner's agents, contractors, or employees, to produce, within seven days, records that the owner is required to retain under this section. If the party refuses to comply with the subpoena, the commissioner will, in his or her discretion, seek to enforce the subpoena by filing an appropriate action in superior court. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010           AS 46.17.050  
AS 46.17.030           AS 46.17.060  
AS 46.17.040           AS 46.17.080

**11 AAC 93.180. CONSTRUCTION OF MEDIUM-SIZED DAMS.** Repealed 8/16/89.

**11 AAC 93.190. CONSTRUCTION OF SMALL DAMS.** Repealed 8/16/89.

11 AAC 93.201 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.201

11 AAC 93.201. DEFINITIONS. In 11 AAC 93.151 — 11 AAC 93.201.

(1) "as-built plans" means plans that show the final configuration of a dam, including its reservoir and other appurtenant works;

(2) "commissioner" includes an authorized representative of the commissioner;

(3) "dam" means the same as in AS 46.17.900;

(4) "emergency action plan" means a plan that details what measures will be taken to protect public safety when a condition at a dam, including its reservoir and other appurtenant works, is a threat to public safety;

(5) "engineer" means a civil engineer currently licensed to practice in the state under AS 08.48;

(6) "inundation map" means a topographic map that indicates the extent of flooding below a dam after failure under both the normal operating level and the project design flood;

(7) "maintenance plan" means a plan that details what measures will be taken to maintain a dam, including its reservoir and other appurtenant works;

(8) "modification" includes enlargement, alteration, and repair;

(9) "operation plan" means a plan that details how a dam, including its reservoir and other appurtenant works, will be operated;

(10) "periodic safety inspection" means a dam safety inspection performed on a regular basis as required by 11 AAC 93.159, or as specified by the commissioner under 11 AAC 93.159;

(11) "project design flood" means the maximum design inflow of water to a dam based on the dam's hazard classification and size;

(12) "repair" is as defined in AS 46.17.900, but does not include routine maintenance;

(13) "routine maintenance" means any work performed on a dam, including its appurtenant works and reservoir, that is generally of a housekeeping nature and that does not affect or have the potential to affect the safety of the dam or reservoir; and

(14) "routine safety inspection" means a dam safety inspection performed on a regular basis as part of maintenance and operation of a dam, at intervals determined by the commissioner based on the type, size, hazard classification, and condition of the dam. (Eff. 8/16/89, Register 111)

Authority: AS 46.17.010  
AS 46.17.030  
AS 46.17.900

**Article 4. Temporary Water Use****Section**

210. Temporary water use

220. Simplified procedure for temporary  
water use

**11 AAC 93.210. TEMPORARY WATER USE.** (a) Simplified procedures to authorize the temporary use of water, as provided in 11 AAC 93.220, will be followed if the amount of water is not a significant amount as defined by 11 AAC 93.970(14), the use continues for less than five consecutive years, and the water applied for is not otherwise appropriated.

(b) No water right or priority is established by a temporary water use permit issued under 11 AAC 93.220. Water so used is subject to appropriation by others. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116)

**Authority:** AS 46.15.020  
AS 46.15.040  
AS 46.15.133

**11 AAC 93.220. SIMPLIFIED PROCEDURE FOR TEMPORARY WATER USE.** (a) Application for a temporary water use permit must be made in writing to the commissioner.

(b) An application must include

- (1) the application fee prescribed by 11 AAC 05.010;
- (2) a map identifying the section, township, range, and meridian, and indicating the location, of the property, the point of withdrawal, diversion, or impoundment, and the point of use;
- (3) the quantity of water to be used, with documentation and calculations justifying the request;
- (4) the nature of the water use;
- (5) the time period during which water is to be used; and
- (6) the type and size of equipment used to withdraw the water.

(c) The commissioner will notify the Alaska Departments of Fish and Game and Environmental Conservation of a proposed temporary water use and will, in his or her discretion, provide notice to any federal or state agency responsible for managing land in the vicinity, and to any local government in whose jurisdiction the proposed withdrawal or diversion for temporary water use would occur. At the applicant's expense, the commissioner will, in his or her discretion, give additional notice by posting or by publication in the local newspaper if the proposed water use is likely to affect the water rights of other persons or the public interest.

(d) The commissioner will, in his or her discretion, consider any other pertinent information in deciding whether to issue or deny a temporary water use permit. The reason for the decision will be fur-

11 AAC 93.240 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.250

nished to any person who is denied a temporary water use permit and to any person who has filed an objection.

(e) A temporary water use permit will include

- (1) the quantity of water to be used;
- (2) the legal description of the point of water withdrawal or diversion;
- (3) a project description;
- (4) an expiration date;
- (5) the daily duration and months of use; and
- (6) the point or area of water use, if applicable.

(f) The commissioner will, in his or her discretion, issue a temporary water use permit subject to conditions including suspension or termination, considered necessary to protect the water rights of other persons or the public interest.

(g) Denial of an application under this section does not preclude the applicant from applying for a permit under 11 AAC 93.040. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020            AS 46.15.100  
                  AS 46.15.040            AS 46.15.133

**Article 5. Preferred Use**

Section	Section
240. Application for preferred use status	260. Issuance of a permit to appropriate
250. Commissioner's decision on preferred use status	for preferred use

**11 AAC 93.240. APPLICATION FOR PREFERRED USE STATUS.** An applicant for preferred use status shall submit the fee prescribed by 11 AAC 05.010 and provide the commissioner written evidence that establishes, to the satisfaction of the commissioner, that

- (1) the use of water is for a public water utility that serves the general public as defined by AS 42.05.720(3) and AS 42.05.720(4);
- (2) the available water supply is or will be inadequate in quantity to satisfy the needs of the applicant; and
- (3) water conservation measures are or will be employed to minimize damages to prior appropriators as a result of preferred use status. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
                  AS 46.15.150

**11 AAC 93.250. COMMISSIONER'S DECISION ON PREFERRED USE STATUS.** (a) If the commissioner determines that additional information is required to rule on an application, the com-

missioner will, in his or her discretion, require the submission of additional evidence, hold hearings, or require investigative studies.

(b) Denial of an application for preferred use status does not preclude the applicant from applying for other water rights under 11 AAC 93.040 — 11 AAC 93.140. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020                      AS 46.15.065  
                   AS 46.15.040                      AS 46.15.090  
                   AS 46.15.060                      AS 46.15.150

**11 AAC 93.260. ISSUANCE OF A PERMIT TO APPROPRIATE FOR PREFERRED USE.** (a) If the commissioner grants an applicant preferred use status under 11 AAC 93.250, the commissioner will issue a permit to appropriate for preferred use when

(1) notice has been given under 11 AAC 93.080; and

(2) the applicant has submitted to the commissioner either certified copies of any compensation agreements or any court orders directing the payment of compensation.

(b) If there are no compensation agreements or orders and if limited water availability has resulted in the need for immediate action, the commissioner will:

(1) order the applicant to post a bond or certificate of deposit, in the name of the department and the applicant, in an amount the commissioner considers necessary to compensate prior lawful appropriators of record for damages sustained as the result of the reallocation; and

(2) order reallocation of available water among all users by established priority.

(c) An order issued under (b) of this section continues in effect until an agreement on compensation is arrived at as provided in (a) of this section or until the limited water condition is over. (Eff. 2/78/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
                   AS 46.15.150

#### Article 6. Enforcement

##### Section

270. Enforcement

280. Emergency actions

##### Section

290. Commissioner's orders

**11 AAC 93.270. ENFORCEMENT.** A violation of a provision of this chapter, a lawful order of the commissioner issued under this chapter or AS 46.15, or a term or condition of a permit or certificate issued under this chapter is subject to corrective action under 11 AAC

11 AAC 93.280 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.290

93.280 — 11 AAC 93.290. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020            AS 46.15.180  
                 AS 46.15.100        AS 46.15.255

**11 AAC 93.280. EMERGENCY ACTIONS.** (a) If the commissioner finds that a person is causing, engaging in, or maintaining a condition or activity that involves the use of a water resource and that presents an imminent or present danger to the health, safety, or welfare of the people of the state or the right of a prior appropriator, or, with the exception of changes in water quality, to the resource itself, the commissioner will, in his or her discretion

(1) order the person immediately to discontinue, abate, or alleviate the condition or activity; or

(2) take any other action considered necessary to alleviate the emergency.

(b) The owner of the property or the operator of the improvement or other condition that causes the emergency may be held liable for the costs associated with remedial action taken under this section, including the cost of any work done to make safe a water use structure or its appurtenances. If the person fails to make payment within 90 days, costs may be recovered by the state from the person in an action in superior court. (Eff. 12/29/79, Register 72; am 11/07/90, Register 116)

Authority: AS 46.15.020            AS 46.15.180  
                 AS 46.15.080        AS 46.15.255

**11 AAC 93.290. COMMISSIONER'S ORDERS.** (a) In order to protect the public interest the commissioner will, in his or her discretion, issue any of the following orders:

(1) an order prescribing construction and other engineering modifications of impoundment, withdrawal, or diversion structures but not waiving the responsibility of the applicant to apply for and receive appropriate state or federal regulatory permits or licenses;

(2) a stop order to any person who, by means including free-flowing wells or drainage into lower strata underground, wastes water without putting it to a beneficial use;

(3) a stop order to any person substantially interfering with the appropriation of water to which a right was granted under the provisions of this chapter;

(4) a stop order to any person appropriating water without a permit, including uses exempted by 11 AAC 93.920;

(5) an order requiring the submittal of books, records, meters, gauges, well logs, and other hydrologic information relevant to an adjudication or action; or

(6) an order to remove or abate unpermitted works of appropriation.

(b) If the commissioner considers it necessary to prevent or rectify a violation of this chapter, the commissioner will, in his or her discretion,

(1) give notice and hold a hearing in order to gather additional information, evidence, or testimony; or

(2) obtain a search warrant or court order authorizing the commissioner to enter onto the property, seize, or remove structures or works of appropriation, or directing the violator to take other action required to protect against damage to persons and property. (Eff. 12/29/79, Register 72; am 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020  
AS 46.15.180

AS 46.15.255  
AS 46.15.256

### Article 7. Appeals

Section  
300. Appeals

**11 AAC 93.300. APPEALS.** A person adversely affected by a decision issued under this chapter may appeal that decision in accordance with 11 AAC 02. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.070(e)

AS 46.15.135  
AS 46.15.180

### Article 8. Administrative Basin-wide Adjudication

Section	Section
400. Boundaries of the adjudication area	420. Notice procedures
410. Initiating an administrative basin-wide adjudication	430. Federal reserved water rights claims
	440. Commissioner's orders

**11 AAC 93.400. BOUNDARIES OF THE ADJUDICATION AREA.** (a) Before initiating an adjudication under AS 46.15.165, the commissioner will identify in writing the geographic and hydrologic boundaries and the hydrologic resources of the adjudication area. The written identification will

(1) describe the interaction and hydrologic communication between the surface water drainage systems and the ground water flow systems;

(2) identify the surface water topographic drainage divide and the boundaries of ground water aquifer systems on the most detailed United States Geological Survey map available for the basin;

11 AAC 93.410 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.410

(3) describe the geographic and hydrologic boundary and the area in square miles;

(4) describe how the boundary and area size were determined;

(5) collect and summarize available stream discharge and ground water data and determine, where possible, mean monthly and annual stream discharge, high and low flows, duration curves, current water use, and the aquifer's yield; and

(6) summarize ongoing and planned hydrologic or hydrogeologic investigations in the area.

(b) The commissioner will, in his or her discretion, alter the boundaries identified in (a) of this section as needed after an adjudication is initiated under 11 AAC 93.410. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.165

**11 AAC 93.410. INITIATING AN ADMINISTRATIVE BASIN-WIDE ADJUDICATION.** The commissioner will, in his or her discretion, initiate an administrative basin-wide adjudication by issuing an order that will, in the commissioner's discretion, contain some or all of the following information:

(1) a written consent by the federal government to participate in the administrative adjudication and to have its claim to federal reserved water rights adjudicated in the process;

(2) a reference to the authorizing statute, AS 46.15.165, and statement of intent to adjudicate all water rights claims, including federal reserved water rights, pending, permitted, or certified in the area;

(3) a description of the purpose of the basin-wide adjudication;

(4) a description of the geographic and hydrologic area under adjudication;

(5) a description of the surface water bodies and ground water aquifer systems, including names if possible;

(6) a legal description of the adjudication area, including meridian, township, range, section, and aliquot parts;

(7) a notice that public and private water utilities will represent water users purchasing water from the utilities;

(8) a description of the time period during which the federal government or any other person may file a claim to have federal reserved water rights adjudicated;

(9) a notice that new water rights applications in the adjudication area will be accepted and included in the adjudication if filed within a stated period of time after the close of the newspaper publication period;

(10) a notice that the adjudication will not preclude the filing of future applications for water rights under AS 46.15, but that such

rights will be junior in priority to those adjudicated under these proceedings; and

(11) the address and office location to obtain further information. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.165

**11 AAC 93.420. NOTICE PROCEDURES.** (a) Notice of the adjudication will be served on those persons listed in AS 46.15.165(c) and in the manner described in AS 46.15.165(e).

(b) Notice to the agencies of the federal government having management or trust responsibility over lands within the adjudication area will be served on

- (1) the chief officer of the federal agency's Alaska regional office;
- (2) the manager of the specific federal land reservation, if any;
- (3) the U.S. Attorney General; and
- (4) the U.S. Attorney for the District of Alaska.

(c) Notice will be given to the Alaska Departments of Fish and Game and Environmental Conservation, the division of governmental coordination within the Governor's Office, and an affected coastal resource district with an approved program.

(d) Newspaper notice will be published once a week for four consecutive weeks in a newspaper of general circulation in the area to be adjudicated. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.165

**11 AAC 93.430. FEDERAL RESERVED WATER RIGHTS CLAIMS.** (a) A claim by the federal government or other person claiming federal reserved water rights within the adjudication area must be filed in writing with the commissioner.

(b) A claim to federal reserved water rights must contain the following information:

- (1) the name of the agency, person, or agent representing the person making the claim, and the representative's phone number and address;
- (2) the claimed priority date;
- (3) the claimed primary purpose of the federal reserved water right;
- (4) a list of statutes, proclamations, orders, or other documents establishing the federal withdrawal or reservation of land;
- (5) the amount of water claimed and data supporting the quantification of the claim;
- (6) the daily duration and months of the year during which water is claimed;

11 AAC 93.440 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.500

(7) the water source, including name if possible;

(8) the most detailed USGS topographic map available for the area showing the location and the legal descriptions for the points of water withdrawal, diversion, or impoundment and water use, or river reach for instream use, including meridian, township, range, section, and aliquot parts;

(9) all documents that establish each land withdrawal or reservation and support the claimed priority date, claimed primary purpose, and quantities;

(10) well logs, aquifer test data, and well construction data for diversions from ground water sources; and

(11) any available water use data. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.165  
AS 46.15.169

**11 AAC 93.440. COMMISSIONER'S ORDERS.** In performing the adjudication under this chapter, the commissioner will, in his or her discretion, issue further orders as necessary, including

(1) designating an impartial qualified person as a master to preside over the adjudication;

(2) establishing hearing times and places;

(3) establishing appropriate rules of evidence and procedures for use in connection with a hearing. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.165

**Article 9. Critical Water Management Areas**

Section	Section
500. Initiating designation proceedings	530. Effect of the order
510. Public notice and hearing	540. Appeals
520. Department order	

**11 AAC 93.500. INITIATING DESIGNATION PROCEEDINGS.** The commissioner will, in his or her discretion, initiate proceedings to designate a particular geographic or hydrologic area, including surface and ground water, as a critical water management area if

(1) the commissioner determines that there is or might be an imminent water shortage in the area, for all or part of the year, affecting a substantial number of permittees or certificate holders of record so that their ability to reasonably acquire water has been or will be affected by existing or potential overappropriation, drought, saltwater intrusion, or a chemical or toxic contamination rendering the water source unusable;

(2) an agency or political subdivision of the state, or an agency of the United States, petitions for the designation of the area as a critical water management area and demonstrates that a condition in (1) of this section exists; or

(3) 25 percent or more of the permittees and certificate holders of record in a geographic or hydrologic area petition for the designation of a critical water management area and demonstrate that at least one condition in (1) of this section exists. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020

**11 AAC 93.510. PUBLIC NOTICE AND HEARING.** Before the commissioner designates a geographic or hydrologic area as a critical water management area, or revokes or amends a designation, the department will

(1) publish a notice of the proposed designation, revocation, or amendment in a newspaper of general circulation in the area affected once a week for four consecutive weeks, soliciting public comment and announcing the date, time, and place of a public hearing;

(2) solicit comments on the proposed designation, revocation, or amendment by certified mail, return receipt requested, from appropriators and property owners of record within the area; affected federal, state, and local agencies, including the Departments of Fish and Game and Environmental Conservation; and any affected regional or village corporation; and

(3) hold a public hearing in the affected area to take written and oral comments on the proposed designation, revocation, or amendment; the department will accept additional written comments submitted up to 30 days after the hearing date. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020

**11 AAC 93.520. DEPARTMENT ORDER.** The decision to designate a geographic or hydrologic area as a critical water management area, or revoke or amend a designation, will be in writing, and will, as appropriate,

(1) state the reasons for the designation, revocation, or amendment;

(2) define the boundaries of the area or amendment;

(3) predict the likelihood of an imminent or continued water shortage or contamination problem;

11 AAC 93.530 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.540

(4) state how additional appropriations would affect the rights of permittees or certificate holders of record, or the public interest under AS 46.15.080; and

(5) state whether, after a specific date, applications for water rights will be accepted or adjudicated. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020

**11 AAC 93.530. EFFECT OF THE ORDER.** (a) Within 30 days after signing a department order to designate a geographic or hydrologic area as a critical water management area, or revoke or amend a designation, the commissioner will announce the decision by publishing the order in a newspaper of general circulation in the affected area once a week for four consecutive weeks. The order will also be mailed to permittees or certificate holders of record and property owners of record in the area; affected federal, state, and local agencies, and affected regional and village corporations.

(b) After that, the commissioner will, in his or her discretion, take the following actions:

(1) restricting or denying the acceptance of applications for new water appropriations or applications for additional quantities for existing appropriators of record, until the order is amended or revoked;

(2) seeking voluntary agreement among permittees and certificate holders to limit the quantity of their water use on an equitably apportioned basis during all or part of the year;

(3) fixing a time limit for accepting new applications for water rights for existing water uses;

(4) designating all water uses as significant and eliminating the exemptions under 11 AAC 93.920;

(5) requiring notice of all applications;

(6) requiring conservation measures;

(7) taking any other actions necessary to fully inform the public of the order; or

(8) enforcing actions under 11 AAC 93.280, 11 AAC 93.290, AS 46.15.255, and AS 46.15.256. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.010            AS 46.15.250  
AS 46.15.020            AS 46.15.255  
AS 46.15.180            AS 46.15.256

**11 AAC 93.540. APPEALS.** A person adversely affected by a decision under 11 AAC 93.520 — 11 AAC 93.530 may appeal as provided in 11 AAC 02. (Eff. 11/7/90, Register 116)

Authority: AS 46.15.010

AS 46.15.020  
AS 46.15.185

### Article 10. General Provisions

Section	Section
910. Change of address	950. Recording of instruments
920. Exemptions	960. Disclaimer of liability
930. Procedure for the transfer and change of appropriations	970. Definitions
940. Procedure on abandonment and for- feiture	

**11 AAC 93.910. CHANGE OF ADDRESS.** (a) All water right applicants, permit holders, and certificate holders shall promptly notify the commissioner of any change of ownership or mailing address. Failure by an applicant or permit holder to comply with this requirement is sufficient cause for discontinuance of the water appropriation procedure under 11 AAC 93.040 — 11 AAC 93.260 and closure of the case file.

(b) Correspondence and notification sent under provisions of this chapter will be sent to the last address on file with the commissioner. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020

**11 AAC 93.920. EXEMPTIONS.** (a) Any person using less than a significant amount of water, as defined in 11 AAC 93.970, is not guilty of a misdemeanor for appropriating water without a permit. However, any person using less than a significant amount of water acquires no water right or priority unless an application is filed and a permit or certificate is issued in accordance with 11 AAC 93.040 — 11 AAC 93.140. Water used without a permit or certificate is subject to appropriation by others and the use of water without a water right is subject to curtailment in order to supply water to lawful appropriators of record.

(b) Any use of seawater, as defined in 11 AAC 93.970, or the emergency use of water for protection of life or property, is exempt from the provisions of this chapter unless the commissioner determines, in his or her discretion, that the use should be regulated in the public interest. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020  
AS 46.15.180

**11 AAC 93.930. PROCEDURE FOR THE TRANSFER AND CHANGE OF APPROPRIATIONS.** (a) A person with a water right

11 AAC 93.940 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.940

permit or certificate who desires to change the location of the point of water withdrawal, diversion, or impoundment, depth of taking, nature of use, or place of use, or add points of withdrawal, diversion, or impoundment, shall apply in writing for permission to make the change and include the fee prescribed by 11 AAC 05.010.

(b) In determining whether a proposed change will be approved, the commissioner will consider its effect on the water rights of other persons and the public interest. The commissioner will, in his or her discretion, provide for notice, receive written comments, and hold a hearing as provided in 11 AAC 93.080 — 11 AAC 93.110.

(c) If the commissioner determines that the proposed change will not adversely affect the water rights of other persons or the public interest, a permit will be issued for a period of one year. A permit will not be issued if it is proven to the satisfaction of the commissioner that the change will adversely affect the water rights of permit holders and certificate holders of record, or if the commissioner finds that the proposed change might adversely affect or impair the public interest or that the appropriation proposed to be changed has been abandoned or forfeited. A change will, in the commissioner's discretion, be granted in whole or in part, and is subject to conditions that the commissioner considers necessary in order to avoid injury to the water rights of other persons or to the public interest.

(d) If a person files a written objection during the one-year permit period in (c) of this section, claiming to be injured by the change, the commissioner will, in his or her discretion, if it appears necessary to protect the water rights of other persons or the public interest, temporarily suspend the permit. After notice and hearing, the commissioner will confirm, modify, or rescind the decision allowing the change.

(e) If no objection is filed within the one-year permit period in (c) of this section, the change becomes permanent and the commissioner will issue an amended permit or certificate to represent the water right as changed. The commissioner will record any amended certificate in the appropriate recorder's office. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.020  
AS 46.15.160

**11 AAC 93.940. PROCEDURE ON ABANDONMENT AND FORFEITURE.** (a) Except as provided in (f) of this section, if the commissioner has reason to believe that all or part of an appropriation has been abandoned or forfeited, the certificate holder will be notified that the commissioner intends to revoke the certificate for nonuse, to the extent of the nonuse. The revocation notice will be sent by certified mail, return receipt requested, to the last known address on record with the department.

(b) If the certificate holder desires to retain the appropriation, the certificate holder must file an objection within 30 days after receipt of the revocation notice. The certificate holder has 60 days after the date the objection is filed to submit proof that the appropriation has been neither abandoned nor forfeited. The proof must be in writing, and may include statements or affidavits, sworn testimony of witnesses, documents, and other relevant evidence. The commissioner will, in his or her discretion, hold a hearing in order to gather additional information, evidence, or testimony on the proposed revocation.

(c) If the proof substantiates that the appropriation has not been abandoned or forfeited, the commissioner will rescind the revocation notice. The holder will be notified of the decision by certified mail.

(d) If the proof does not substantiate that the appropriation has been neither abandoned nor forfeited, the commissioner will declare the appropriation abandoned or forfeited and revoke the certificate in whole or in part depending on the extent of nonuse. The commissioner will record the decision, and any amended certificate, in the appropriate recording office. In addition, the commissioner will, in his discretion, secure a court order for the removal of the works of appropriation.

(e) If necessary, the commissioner will, in his or her discretion, require a record of use to be submitted on a specified regular basis.

(f) If a certificate holder voluntarily relinquishes his or her water right by submitting a notice of relinquishment or a signed, notarized letter stating that all or part of the water right is being relinquished and stating the amount being relinquished, the notice requirement under (a) does not apply and the water right will be considered abandoned. The certificate will be revoked in whole or in part, and a copy of the revocation decision will be sent to the certificate holder. Any amended certificate will be recorded by the commissioner in the appropriate recorder's office. (Eff. 12/29/79, Register 72; am 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020            AS 46.15.145  
                 AS 46.15.140            AS 46.15.160

**11 AAC 93.950. RECORDING OF INSTRUMENTS.** The holder of a certificate issued under this chapter shall record the certificate in the appropriate recorder's office. (Eff. 12/29/79, Register 72; am 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020  
                 AS 46.15.160  
                 AS 46.15.170

**11 AAC 93.960. DISCLAIMER OF LIABILITY.** The State of Alaska and the department, its agents, and employees are not liable

11 AAC 93.970 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 93.970

for any claims arising out of activities conducted under a permit or certificate issued under this chapter, brought by the holder or owner of it or any third party. Neither this chapter nor any permit or certificate issued under it is intended as a waiver of sovereign immunity or of the state's immunity under the 11th amendment to the United States Constitution. (Eff. 12/29/79, Register 72; am 11/7/90, Register 116)

Authority: AS 46.15.010  
AS 46.15.020

**11 AAC 93.970. DEFINITIONS.** Unless the context indicates otherwise, in this chapter

(1) "adjudication" means the administrative determination of the validity and amount of a water right and includes the settlement of conflicting claims among competing appropriators of record;

(2) "certificate of appropriation" means an instrument granting the owner the right to appropriate water, subject to the terms and conditions contained in it;

(3) deleted 11/7/90;

(4) "commissioner" means the commissioner of the Department of Natural Resources or his or her delegate;

(5), (6) deleted 11/7/90;

(7) "declaration of appropriation" or "grandfather right" means a formal claim to a water right acquired under law or custom before July 1, 1966, in existence on that date, and filed with the department within the designated filing period;

(8) "department" means the Department of Natural Resources;

(9) "division" means the division of land and water management within the Department of Natural Resources;

(10) "ground water" is any water, except capillary moisture, beneath the land surface or beneath the bed of a stream, lake, reservoir, or other body of surface water within the boundaries of the state, whatever may be the geologic formation or structure in which the water stands, flows, percolates, or otherwise moves;

(11) "permit to appropriate water" means an instrument granting the holder the right, limited to a definite period of time and subject to the terms and conditions contained in it, to construct works necessary to the appropriation of water and to establish a beneficial use;

(12) "priority" as between lawful appropriators means that first in time is first in right;

(13) "public interest" means public interest as determined by the criteria set out in AS 46.15.080;

(14) "significant amount of water" means any use of more than 5,000 gallons of water in a single day from a single source, or the

regular daily or recurring seasonal use of more than 500 gallons of water per day for 10 days or more per year from a single source, or the non-consumptive use of more than 30,000 gallons of water per day (0.05 cfs) from a single source, or any use of water from a source or sources listed in the Alaska Department of Fish and Game "Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes," or any water use that might adversely affect the water rights of other appropriators or the public interest;

(15), (16) deleted 11/7/90;

(17) "well" means an artificial opening or artificially altered natural opening by which ground water is sought or through which ground water flows under natural pressure or is artificially withdrawn, but does not include a hole or shaft drilled or dug for the purpose of exploration or production of oil, gas, or valuable minerals unless the hole or shaft is actually used for the production of water;

(18) "certificate of reservation" means an instrument granting a reservation of water subject to the terms and conditions contained in it;

(19) "instream flow" means the amount of water flowing past a given point during one second;

(20) "reservation of water" means to appropriate water for maintaining a specified instream flow or level of water at a specified point on a stream or water body or in a specified part of a stream or water body for specified periods of time and for one or more permissible purposes;

(21) "methodology" means the scientific or technical procedures used to quantify water;

(22) "water body" means surface water in a depression of land, including intragravel water or sloughs, that is supplied from drainage, upwellings, springs, or groundwater;

(23) "stream" means any body of flowing water, including a river, creek, or tributary;

(24) "afy" means acre feet per year;

(25) "appropriators of record" means applicants for, and permittees and certificate holders of, water rights;

(26) "appurtenant" means that a permit or certificate to appropriate is legally attached to the land or place where the water is beneficially used, unless the water right is severed under AS 46.15.160;

(27) "aquifer" means any geologic formation that will yield water to a well in sufficient quantity for beneficial use;

(28) "aquifer system" means a heterogeneous body of interlayered permeable and poorly permeable material that functions regionally as a water-yielding hydraulic unit and comprises two or more permeable beds (aquifers) separated at least locally by acuitards (confining units) that impede ground water movement but do not greatly affect the regional hydraulic continuity of the system;

11 AAC 95.060 ADMINISTRATIVE CODE SUPPLEMENT 11 AAC 95.060

(29) "cfs" means cubic feet per second;

(30) "drainage basin" means a natural, distinct, and independent hydrologic area; surface or subsurface or both; confined or unconfined;

(31) "gpd" means gallons of water per day;

(32) "gpm" means gallons of water per minute;

(33) "non-consumptive water use" means the instream use of water, or the diversion of water where the quantity of water diverted is not diminished except by evaporation or transpiration and the water is returned to its original source at the original point of diversion immediately after its use;

(34) "reasonably acquire" means that a permittee or certificate holder can acquire adequate water to fulfill the purposes of the appropriation from the source of water for which the water right is permitted or certificated, even though changes in the condition of water occurrence have taken place as a result of the withdrawal of water by later appropriators;

(35) "seawater" means water, taken from the sea or ocean, with a salinity of 35 parts per thousand or greater;

(36) "statement of beneficial use" means a notarized statement of the actual quantity of water being used from a permitted source of water for a specific purpose;

(37) "water source" means a water body, lake, stream, aquifer, or ice. (Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 9/11/83, Register 87; am 11/7/90, Register 116)

Authority: AS 46.15.020            AS 46.15.080  
                 AS 46.15.040            AS 46.15.133  
                 AS 46.15.050            AS 46.15.145

SENATE CS FOR CS FOR HOUSE BILL NO. 596 (FINANCE) am S  
IN THE LEGISLATURE OF THE STATE OF ALASKA  
SEVENTEENTH LEGISLATURE - FIRST SPECIAL SESSION

BY THE SENATE FINANCE COMMITTEE

Amended: 5/15/92  
Offered: 5/15/92

Sponsor(s): HOUSE FINANCE COMMITTEE BY REQUEST

A BILL

FOR AN ACT ENTITLED

"An Act relating to the powers, duties, and operations of certain state agencies, including those of the Alaska Science and Technology Foundation, fees and charges collected by agencies, the disposal or leasing of state land or interests in state land, the management of public recreational land and the management of state parks and recreation areas, vehicle registration, state procurements, the employment assistance and training program fund, contracts relating to prisoner, and the recording of public document; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*(Although this bill contained many sections addressing a wide spectrum of issues this section has been excerpted to reduce duplication costs)*

\* Sec. 30. AS 46.15.020(b) is amended to read:

(b) The commissioner shall

(1) adopt procedural and substantive regulations to carry out the provisions of this chapter, taking into consideration the responsibilities of the Department of

HB0596e

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New Text Underlined (DELETED TEXT BRACKETED)

Environmental Conservation under AS 46.03 and the Department of Fish and Game under AS 16;

(2) keep a public record of all applications for permits and certificates and other documents filed in the commissioner's office; and shall record all permits and certificates and amendments and orders affecting them and shall index them in accordance with the source of the water and name of the applicant or appropriator;

(3) cooperate with, assist, advise, and coordinate plans with the federal, state, and local agencies in matters relating to the appropriation, use, conservation, quality, disposal, or control of waters and activities related thereto;

(4) prescribe fees or service charges for any public service rendered:

(5) before February 1 of each year, submit a report to the legislature describing the activities of the commissioner under AS 46.15.035 and 46.15.037; the report must include

(A) information on the number of applications and appropriations for the removal of water from one hydrological unit to another that were requested and that were granted and on the amount of water involved;

(B) information on the number and location of sales of water conducted by the commissioner and on the volume of water sold;

(C) recommendations of the commissioner for changes in state water law; and

(D) a description of state revenue and expenses related to activities under AS 46.15.035 and 46.15.037.

\* **Sec. 31.** AS 46.15 is amended by adding new sections to read:

Sec. 46.15.035. APPROPRIATION OR REMOVAL OF WATER OUT OF HYDROLOGIC UNITS TO OTHER HYDROLOGIC UNITS; WATER CONSERVATION FEE; RESERVATION OF WATER FOR FISH. (a) Water may not be removed from the hydrologic unit from which it was appropriated to another hydrologic unit, inside or outside the state, without being returned to the hydrologic unit from which it was appropriated nor may water be appropriated for removal from the hydrologic unit from which the appropriation is sought to another hydrologic unit, inside or outside the state, without the water being returned to the hydrologic unit from which it is to be appropriated, unless the commissioner

(1) finds that the water to be removed or appropriated for removal is surplus to needs within the hydrologic unit from which the water is to be removed or appropriated for removal, including fishing, mining, timber, oil and gas, agriculture, domestic water supply, and other needs as determined by the commissioner;

(2) finds that the application for removal or appropriation for removal meets the requirements of AS 46.15.080; and

(3) assesses a water conservation fee under (b) of this section.

(b) The commissioner shall establish, by regulation, a water conservation fee for a use of water in which the water is removed from the hydrologic unit from which it was appropriated to another hydrologic unit inside or outside the state, without the water being returned to the hydrologic unit from which it was appropriated. The fee established under this subsection shall be graduated to encourage the conservation of water.

(c) Except as provided in AS 46.15.090, and in addition to the requirements of (a) of

this section, the commissioner may approve an application for removal or permit an appropriation for removal under (a) of this section of water from a lake, river, or stream that is used by fish for spawning, incubation, rearing, or migration, or ground water that significantly influences the volume of water in a lake, river, or stream that is used by fish for spawning, incubation, rearing, or migration, only if the commissioner reserves a volume of water in the lake or an instream flow in the river or stream for the use of fish and to maintain habitat for fish. The commissioner may adjust the volume of water reserved under this subsection if the commissioner, after public notice and opportunity to comment and with the concurrence of the commissioner of fish and game, finds that the best interests of the state are served by the adjustment. A reservation under this subsection

(1) of a volume of water or an instream flow for the use of fish and to maintain habitat for fish that is reserved under this section is withdrawn from appropriation;

(2) for fish from a lake, river, or stream, identified under AS 16.05.0870 or identified in a Department of Fish and Game regional guide as being used by fish for spawning, incubation, rearing, or migration on or before the effective date of this section, has a priority date as of the effective date of this section;

(3) of water does not apply to an application for removal or appropriation for removal under AS 46.15.040 for nonconsumptive uses of water or for single family domestic use;

(4) is not subject to AS 46.15.145;

(5) of water does not apply to appropriations of ground water of 5,000 gallons or less a day unless the commissioner, in consultation with the Department of Fish and

Game, determines that the appropriation may adversely affect fish habitat in a lake, river, or stream; the commissioner shall consider multiple appropriations of water for a single related use as a single appropriation for the purposes of this subsection.

(d) With respect to rivers and streams described in (c) of this section, the instream flow reservation shall be limited to the portion of the stream, including tributaries to the stream, at and downstream of the point of diversion or withdrawal. With respect to lakes described in (c) of this section, the reservation shall be limited to the lake from which the diversion or withdrawal is made, and the outlet and tributaries to the outlet flowing downstream.

(e) In this section,

(1) "fish" means a species of anadromous or freshwater fish that may be taken under regulations of the Board of Fisheries;

(2) "hydrologic unit" has the meaning given in AS 46.15.035(e).

(f) The commissioner may not provide for the sale of salt water under this section.

Sec. 46.15.037. SALE OF WATER BY THE STATE. (a) The commissioner may provide for the sale of water by the state if

(1) the water has first been appropriated to the state in accordance with the requirements of this chapter; and

(2) the commissioner determines that

(A) the water is surplus to needs within the hydrologic unit from which it was appropriated, including fishing, mining, timber, oil and gas, agriculture, domestic water supply, and other needs as determined by the commissioner;

(B) the proposed sale of water meets the requirements of AS 46.15.080;

and

(C) the sale price of the water is based upon the fair market value of the water.

(b) A purchaser of water from the state under this section shall acquire only those contractual rights to the water set out in sale documents prepared by the commissioner except that a sale of water by the state does not constitute an appropriation of water under this chapter to the purchaser.

(c) If water to be sold by the state under (a) of this section, is to be removed from the hydrologic unit from which it was appropriated to another hydrologic unit, inside or outside the state, without being returned to the hydrologic unit from which it was appropriated, the commissioner may not sell the water unless the sale meets the requirements of (a)(2) of this section, a water conservation fee is assessed under AS 46.15.035, and, if the water to be sold is from a lake, river, or stream that is used by fish for spawning, incubation, rearing, or migration, or groundwater that significantly influences the volume of water in a lake, river, or stream that is used by fish for spawning, incubation, rearing, or migration, the commissioner reserves a volume of water in the lake or an instream flow in the river or stream for the use of fish and to maintain habitat for fish. The commissioner may adjust the volume of water reserved under this subsection if the commissioner, after public notice and opportunity to comment and with the concurrence of the commissioner of fish and game, finds that the best interests of the state are served by the adjustment. A reservation under this subsection

(1) of a volume of water or an instream flow for the use of fish and to maintain

habitat for fish that is reserved under this section is withdrawn from appropriation;

(2) for fish from a lake, river, or stream identified under AK 16.05.870 or identified in a Department of Fish and Game regional guide as being used by fish for spawning, incubation, rearing, or migration on or before the effective date of this section, has a priority date as of the effective date of this section;

(3) is not subject to AS 46.15.145;

(4) of water does not apply to appropriations under this section of ground water of 5,000 gallons or less a day unless the commissioner, in consultation with the department of Fish and Game, determines that the appropriation may adversely affect fish habitat in a lake, river, or stream; the commissioner shall consider multiple appropriations of water for a single related use as a single appropriation for the purposes of this subsection.

(d) With respect to rivers and streams described in (c) of this section, the instream flow reservation shall be limited to the portion of the stream, including tributaries to the stream, at and downstream of the point of diversion or withdrawal. With respect to lake described in (c) of this section, the reservation shall be limited to the lake from which the diversion or withdrawal is made, and the outlet and tributaries to the outlet flowing downstream.

(e) In this section,

(1) "fish" means a species of anadromous or freshwater fish may be taken under regulations of the Board of Fisheries;

(2) "hydrologic unit" has the meaning given in AS 46.15.035(e).

(f) The commissioner may not provide for the sale of salt water under this section.

\* **Sec. 32.** AS 46.15.133 is amended to read:

Sec. 46.15.133 NOTICES; OBJECTIONS. (a) If the commissioner proposes a sale of water or receives [UPON RECEIPT OF] an application for appropriation or removal, the commissioner shall prepare notice containing the location and extent of the proposed sale, appropriation, or removal, the name and address of the applicant, if applicable and other information the commissioner considers pertinent. The notice shall state that within 15 days of publication or service of notice, persons may file with the director written objections, stating the name and address of the objector, and any facts tending to show that rights of the objector or the public interest would be adversely affected by the proposed sale, appropriation, or removal.

(b) The commissioner shall publish the notice [AT THE APPLICANTS EXPENSE] in one issue of a newspaper of general distribution in the area of the state in which the water is to be appropriated, removed, or sold. The commissioner shall also have notice served personally or by certified mail upon an appropriator of water or applicant for or holder of a permit who, according to the records of the division of lands, may be affected by the proposed sale, appropriation, or removal and may serve notice upon any governmental agency, political subdivision, or person; notice shall also be served upon the Department of Fish and Game and the Department of Environmental Conservation. An applicant for an appropriation or removal shall pay the commissioner's costs in providing publication and notice under this subsection. The commissioner may require as a condition of a sale of water under AS 46.15.037, that a purchaser of water reimburse the department for the costs associated with providing notice of the proposed sale.

(c) Within 15 days of publication or service of notice, an interested person may file an

objection. The commissioner may hold hearings upon giving due notice and shall grant, deny, or condition the proposed sale or application for appropriation or removal in whole or in part within 30 days of receipt of the last objection, or if the commissioner elects to hold hearings, within 180 days of receipt of the last objection. Notice of the order or decision shall be served personally or mailed to any person who has filed an objection.

(d) If no objection is filed, the commissioner may proceed to make a determination upon the application for appropriation or removal or the proposal for sale.

(e) A person aggrieved by the action of the commissioner or by the failure of the commissioner to grant, deny, or condition a proposed sale or an application for appropriation or removal in accordance with (c) of this section may appeal to the superior court.

(f) The commissioner may, by regulation, designate types of appropriations that are exempt from this section and provide simplified procedures for ruling on the applications, The commissioner may not exempt under this subsection appropriations for removal under AS 46.15.035, appropriations by the state for sale or sales by the state under AS 46.15.037, or removals of water under AS 46.15.035 and 46.15.037.