ALASKA LEGISLATURE COMMITTEE FILES 1991-1992 8672
7150 HOUSE RESOURCES

any attempts local governments are making to attract new industry and jobs to our state. We are living in a time of declining state revenues. Often the last money is gone its corporate income tax that's going to be paying state expenses.

Area K Seiners Association
P.O. Box 2399 Kodiak, Alaska 99615
Phone 486-4686 FAX 486-7655

October 22, 1992

Mr. Dave Sturdevant,
Water Quality Management
Department of Environmental Conservation
410 Willoughby Ave., Suite 105
Juneau, AK 99801-1795

Dear Sir:

The proposed Alaska water quality standards are deficient in setting standards that protect Alaska's fresh and salt water habitats. The criteria for determining acceptable risks for aquatic life and humans is based on the least protective values and totally unrealistic low consumption data.

If the intent of enacting standards that are more polluting than National Toxics Rules, and do not meet the Clean Water Act is to promote economic prosperity in Alaska, then this is a misguided and short sighted strategy. By reducing the production costs of a polluting development at the expense of existing and future enterprises that are habitat dependent, is economic displacement at best, with net loss to the habitat and quality of life for all. Responsible development is like being a good neighbor. You don't throw your garbage in your neighbor's yard.

We are requesting you review the technical comments submitted by United Fishermen of Alaska and integrate these in the water quality standards for the state of Alaska. In the event that this administration does not adopt UFA's criteria into the standards, we request that a Clean Water Task Force be established with a dispute resolution format.

Sincerely,

Area K Seiners Board of Directors

Bruce Schactler	Oliver Holm
Chip Treinen	Eric Manzer
Chris Berns	Tony Jones
Tom Dooley	

cc: UFA
EPA
Governor Hickel
Senator Fred Zharoff
Representative Cliff Davidson

October 28, 1992

Stosh Anderson
Box 210
Kodiak, Alaska 99615

Dave Sturdevant, DEC
Water Quality Management
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-1795

Dear Sir,

Alaska's fresh and salt water habitats are not protected adequately by the proposed regulations DEC has been promoting. The standard suggested uses the most liberal discharge criteria in every case with a compounded accumulated effect. The consumption of domestic foods as outlined is not representative of the total Alaska population and certainly not representative of subgroup populations. The error in this single factor increases exposure to the sub-population by 20 to 30 times. The decision to use 10^3 instead of 10^6 or ^{7} as acceptable human affliction rate is arbitrary and not in the public interest.

The administrations directive to factor economic considerations into DEC standards to promote development has proceeded with a short term perspective. It is not in the public's interest to degrade the habitat so habitat dependent industries are less productive. Decreasing human productivity due to medical problems with increased health care costs to the individual and industry does not increase industrial productivity.

I am requesting you review the technical comments submitted by UFA and integrate these into the water quality standards. In the event that this administration does not adopt UFA's criteria into the standards, I request that a Clean Water Task Force be established.

Sincerely,

Stosh Anderson

Stosh Anderson

cc: Davidson
EPA
Hickel
UFA
Zharoff
file DEC92rSA.ltr

28 October, 1992

Stosh Anderson
Box 310
Kodiak, Alaska 99615

Glenn Olds, Commissioner
Department of Natural Resources
400 Willouhby Street
Kodiak, Alaska 99801

Re: Proposed Fee Regulations

Dear Sir,

I was notified this morning that the comment period was extended to 30 October, 92. This notice was to me as an individual and has not addressed the fact that the Division of Water has not notified the public through their standard mailing list. It is my concern that industry and the public, which may have been legally noticed, have not been informed and practical notice has not been accomplished. Further, provisions in HB 596 that provides the framework for the water related fee regulations have more aspects than have been addressed by these regulations. It would be more comprehensive and logical to handle all the water related regulations to implement HB 596 at one time. It is my hope that any further water regulations would be handled in a complete program package. With the philosophy of the Department and the justification of how quantities and fees have been generated.

11 AAC 05.010 (8) ( )

(L) Staff Time:
What does research mean? Under (M) is this the fee that would be charged or is adjudication staff time a different rate?

(M) Inspection Fee:
This is too open ended. There needs to be guideline as to when and under what circumstance this will be implemented.

(N) Variable Fee:
As administrations and political agendas change this provision could be misused to discriminate with increased or decreased adjudication costs depending on use or user. If the nature of use is a factor in adjudication fees, than a schedule and criteria needs to be set out. If the costs of adjudication are so varied that an average cost and related fee is not in the public's interest then a rate schedule needs to be set out. This may be a function of the nature

of use or some other factors.

(O) Conservation Fee Water Right

Does person or related persons include corporations? It is not clear as to what "total amount of water appropriated" includes. Is this the total from one point of appropriation, reach, watershed, all of Alaska or hydrological unit? It is my recommendation that hydrological unit be the accumulative unit. As there is no documentation for these rates in the proposed regulations it is difficult to make a meaningful comment on the quantity of water in each bracket or the related fee.

(O) (i - xi) fee schedule:

It is unclear as to the intent of this schedule. Are the fees graduated or are the fees day one, based on the greatest fee rate. It is my recommendation that the total usage set the fee rate bracket, day one concept.

(O) (xi) variable rate:

This is a substantial amount of water and money. The impacts on the resource and influence of money on the decision process is substantial. If a fixed rate schedule is not appropriate then the method and factors to be considered should be laid out.

(P) Conservation Fee Contract Purchase

I see no need for two rate structures with one giving a considerable reduction in fees. If the justification is that contract sales does not take the ownership out of the public domain this will be compromised by long term contracts. If this is truly a conservation fee and not a revenue generating end run, then the public and the courts would see no justification for a discounted state sales program.

11 AAC 05.10

(C) @ (E) interagency fees

It is not in the publics interest for one agency to charge another agency for services or land use. This is a run on the budget of one agency by another with no benefit to the public with increased accounting costs. Agency budgets need to established in the legislative process not by interagency raids. I am requesting that I be placed on the mailing list or lists for information and regulations DNR is distributing.

Sincerely,

Stosh Anderson

cc: Governor Hickel
Legislators
file DNR90RSA.ltr

Southeast Alaska Conservation Council

SEACC 419 Sixth Street, Suite 328 Juneau, Alaska 99801 (907) 586-6942

Chairman Cliff Davidson
House Resources Committee
3111 C. St.
Anchorage, AK 99501

October 10, 1992.

Dear ~~Representative Davidson,~~ cliff

We greatly appreciated your committee holding an oversight hearing on the Alaska Department of Environmental Conservation's proposed revisions to the state water quality standards.

Clean water and stringent water quality standards are critical to our membership. Clean water supports abundant fish and aquatic life populations and keeps those who live near the water healthy. As fishermen, subsistence users, tourism operators and Alaskans, we believe that these revisions could seriously jeopardize our income, food supply and health.

We hope that you and the committee remain involved with this issue. Once ADEC and EPA meet and come to an agreement on acceptable revisions, we hope that the committee will take another look at the proposals. Also, we believe that mixing zones, in whatever form, are an issue that the Legislature should clearly investigate. A legal lisence to operate in violation of state standards is unacceptable.

Once again, we thank you and your staff for your interest and hard work in making certain that Alaska's water remains among the most pristine in the world.

Sincerely,

Marna Marna Schwartz

Marna Schwartz
Water Quality Project Coordinator

RDC

Your Comments Are Urgently Needed

The Alaska Department of Environmental Conservation is accepting comments on its proposal to revise Alaska's water quality standards. Under the federal Clean Water Act, ADEC must review and revise the state water quality regulations every three years. In July 1992, ADEC published proposed revisions that represent a sincere effort to balance environmental and economic concerns.

Environmental groups have launched a vigorous campaign claiming that ADEC is dumping Alaska's clean water standards down the drain. ADEC denies that its proposed revisions will reduce water quality or lead to reductions in fish populations.

It is critical that ADEC receives a strong public response to counter the environmental campaign. The deadline for public comments is September 30, 1992.

Written comments should be addressed to:
David Sturdevant, Water Quality Management
Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, AK 99801-1795
Fax: 465-5274

Important points to consider using in your comments:

- *The standards should provide adequate environmental protection without unreasonably impairing the domestic, municipal, commercial and industrial use of the waters.*

- *New regulations should be based upon good science that confirms the need for changes and the value of the regulations.*

- *Evolving standards must be achievable and not absolute.*

- *ADEC should take into account the economics of world markets, new technology, other environmental tradeoffs or a company's ability to afford or finance regulatory demands.*

- *The standards should reflect natural water conditions found throughout the state and not be set at limits so restrictive as to exceed native water quality.*

A public hearing will be held in major communities via teleconference on **Friday, September 25, 1992** from 1:00 to 7:00 p.m. Anchorage: 3111 C Street, Suite #150; Juneau: Capitol Bldg., Room 205; Fairbanks: 119 N. Cushman, Room 101; Ketchikan: 352 Front Street; Sitka: 210 Lake Street. A teleconference will be held earlier the same day, from 9-12, in the following communities: Barrow: Court Bldg.; Bethel: 301 Willow Street; Glennallen: Community Library; Homer: 126 W. Pioneer, Room 4; Soldotna: 34824 Kalifonsky Beach Rd; Kodiak: Kodiak Plaza Bldg.; Nome: State Bldg., Front Street; Valdez: Court Building, Room 13

Honorable Cliff Davidson
House Resource Committee
3111 C. St.
Anchorage, AK
99503

Oct 26, 1992

Dear Mr. Davidson

We feel it is urgent to express our concern about proposed changes to the Clean Water Standards of Alaska.

The effects of lower standards would be far reaching & alarming. Most immediate is the danger to the health of the people of Alaska who consume far more seafood than the national average of 51bs per year.

Another detriment would be the loss damage to the fishing industry which would be inevitable as consumers found the Alaskan seafood industry no longer provided a pure product of high quality.

A long term problem would be that the deterioration of the water quality would cause a loss of revenue for the state. Our water will some day be more in demand than our oil. Governor Hickel is already

researching ways to market this resource. If it is not managed to maintain its pristine quality the opportunity will be lost.

So much of Alaska's future depends on the careful management of our water quality; the health + variety of marine life which spurs tourism, the high quality of our seafood products, the health of Alaskans who consume so much seafood + the future economic resource of pure water. We urge you to do all in your power to protect our water quality at or above national EPA standards.

Sincerely,
Sharon M Hunter
Brad L Hunter

PO Box 1603
Petersburg AK
99833

Received Nov 2-, 1992

Dear Mr. Davidson;

I'm writing to protest D.E.C.'s proposed water pollution standards. Lowering the standards to benefit industry over human health seems rather absurd; a return to the dark ages of the industrial revolution.

Increasing the allowable amount of cancer causing compounds dumped into our state waters sounds like something happening in a 3rd. world country. Areas where the health of the people takes a backseat to economics.

I don't believe that we're suffering from such a poor standard of living that the population as a whole has to suffer for the inability of private business to meet nationwide acceptable goals.

Please, I don't want my kids, nor anyone else's kids eaten up by

cancer because they lived too close to a pulp mill or ate one too many fish.

Look to the Great Lakes for a sad story on dioxins, pulp mills + fish.

Please pressure DEC to maintain EPA levels on discharges.

Thank You,

Mike Reitz
Box 1441
Petersburg, Ak
99833

Alaska State Legislature

Please enter into the record my testimony to the House Resources
committee name

committee on Water Quality Regs, dated 10-3-92.
bill/subject

1- I oppose the concept of mixing zones, especially for marine waters

2. I resent imposition of biased approach to establishment of risk factors for dioxin

3. ADEC should withdraw this proposal and go back to the public with better information and full participation of public.

4. Lastly - based on past observations here in Sitka - without support by the administration for support of enforcement the content of regulations makes little difference. Criteria

Signed: Robert J Ellis
Testifier

Representing (Optional)

Box 2966, Sitka
Address

Phone No.

9/86 Legislative Information Office

4- cont. The efforts of the legislature to protect the public is easily thwarted by poor support by commissioners We need public right to sue the commissioners to help enforce these regulations

End

Box 344, Talkeetna, AK 99676

Walter Hickel
Box 110001
Juneau, AK 99811-0001

WALTER HICKEE, YOU HAVE VIOLATED THE PUBLIC TRUST WITH YOUR POSITION ON DIOXIN HEALTH RISK.

IT IS DISGUSTING THAT YOU RISK OUR HEALTH AND TH E HEALTH OF OUR FISH IN ORDER TO INCREASE INDUSTRY PROFIT.

WE DEMAND THE RESIGNATION OF THE DEC COMMISSIONER AND THAT YOU WITHDRAW YOUR DIOXIN DEATH RISK.

My family eat alot of fish; more than the national average and certainly more than the state average that DEC pseudo science states.

We make our living in commercial fishing and have invested heavily in it. Our community's economy is dependent on healthy sport fish populations.

All this is at risk. Your dioxin death wish has threatened our health, our way to make a living, and the multi-million dollar economy of Talkeetna.

IT IS A MORAL OUTRAGE.

Denis Ransey
Denis Ransey

Becky Long
Becky Long

cc: Environmental Protection Agency (Seattle, Washington)
Mat Su state legislative delegation
Rep. Cliff Davidson, Chair of House Resources
Bering Sea Fisherman Association
Yukon River Drainage Fisheries Association.

Cliff Davidson,
Thanks for holding a House Resources hearing on this. I hope you keep on pursuing this. One whiff of scandal in the lower 48 that AK. fish are dioxin contaminated will hurt us badly.

BL

Water Resources Board Presentation 3-20-91

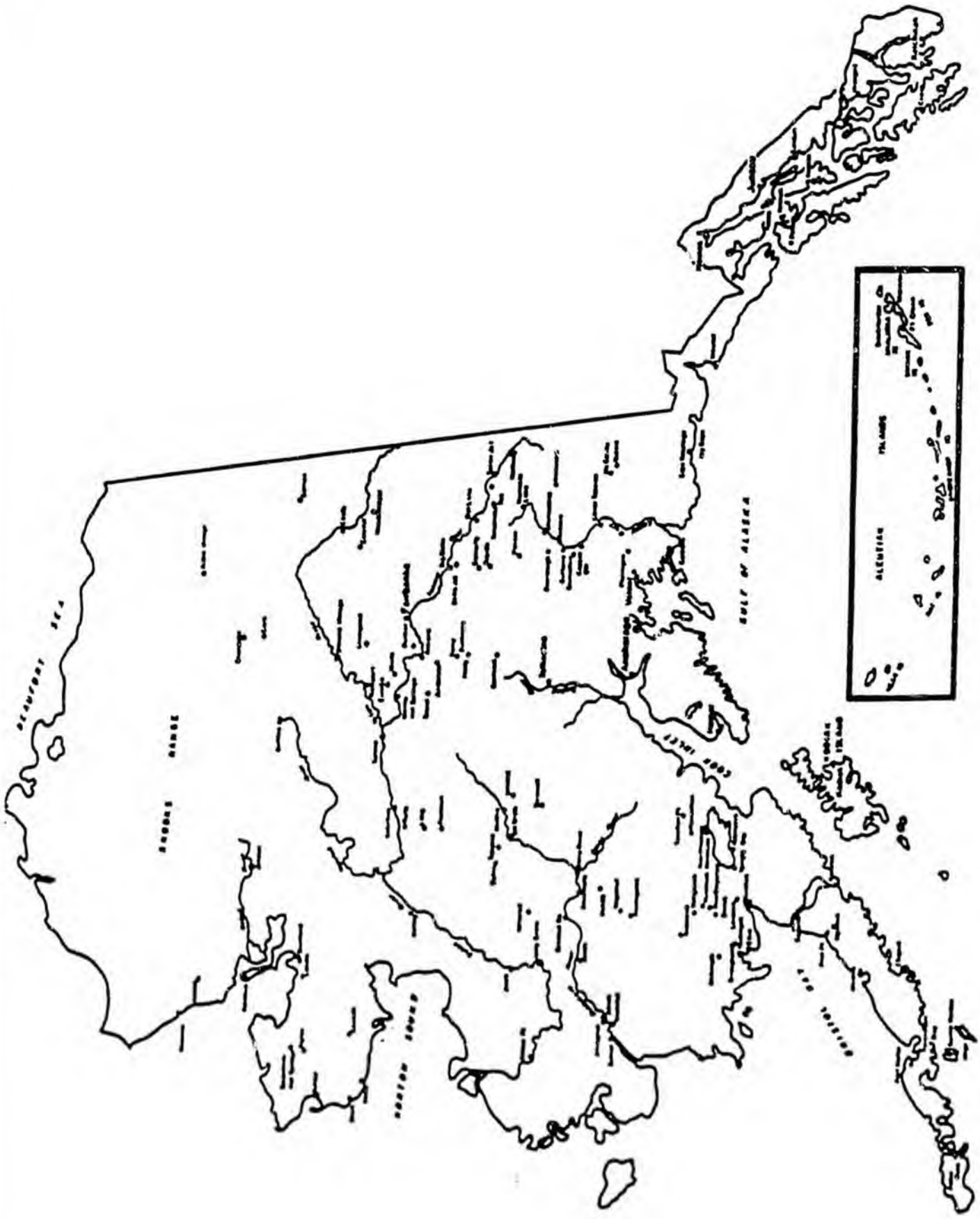
GARY GUSTAFSON

Instream Flow Protection in the West

Edited by Lawrence J. MacDonnell,
Teresa A. Rice, and Steven J. Shupe

Natural Resources Law Center
University of Colorado School of Law

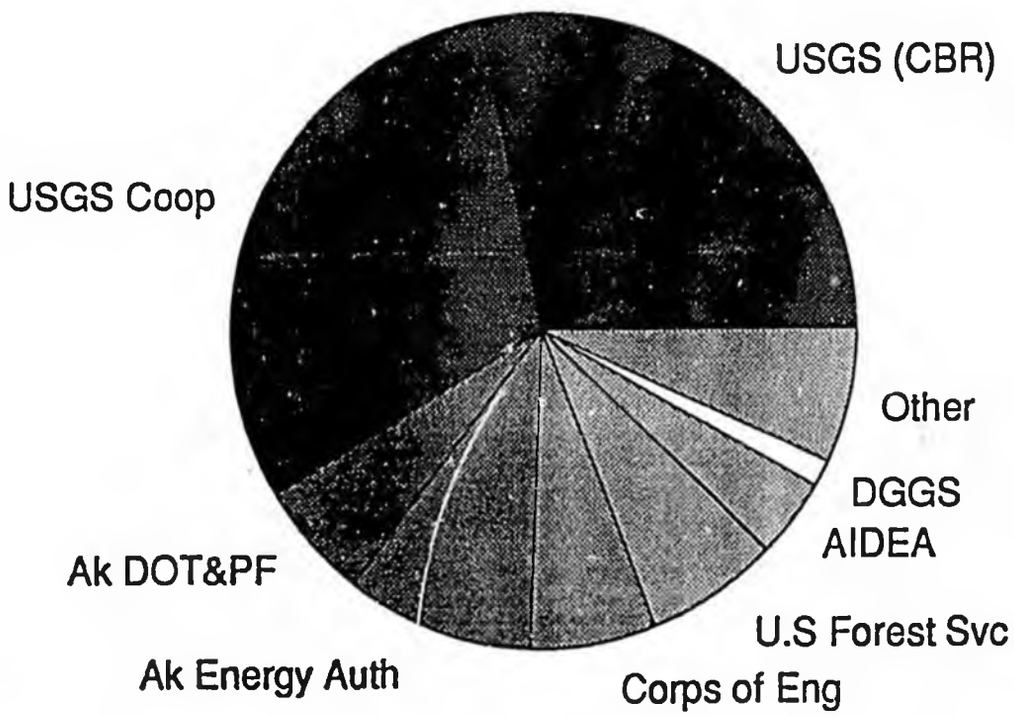
Figure 1. Geographic Map of Alaska.



U.S. GEOLOGICAL SURVEY

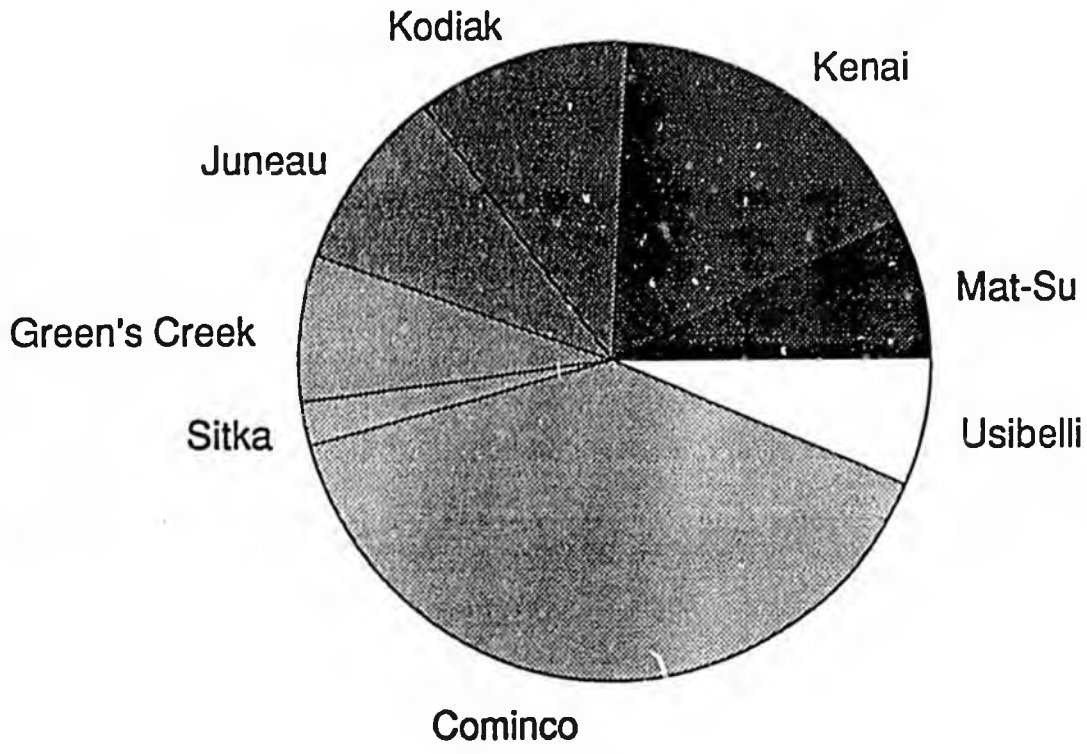
Stream gaging program

$ 2,787,400



(see next page for breakdown of "Other")

"OTHER AGENCIES"



WATER RESOURCES BOARD

Peg Tileston, Chair

Wayne Westberg

Keith Tryck

Mike Neimeyer

Stosh Anderson

Jenifer McBeath

Lauri Adams

Mary Lu Harle, *Staff to Board*
and Water Resources Mgr.
Division of Land and Water

STEVE COWPER, GOVERNOR

DEPARTMENT OF FISH AND GAME

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99518-1599
PHONE: (907) 344-0541

I.700.400 250

July 21, 1987

Ms. Mary Lu Harle
Alaska Department of Natural Resources
Water Management
Pouch 7-005
Anchorage, AK 99510

Dear Ms. ~~Harle~~ Mary Lu:

Re: Interstate Water Transfer

Per the attached article from "U.S. Water News," I am curious whether your agency has been in contact with the Alaska Congressional delegation and/or the Western States Water Council regarding interstate water transfers.

I do not know whether or how "demonstrated instate need" was defined by the U.S. Supreme Court decision in Sporhase v. Nebraska. However, I would suggest that it would be in the interest of the state of Alaska to determine whether federal legislation is required to insure that the definition of "a demonstrated instate need" (for water) encompasses instream flow reservations in addition to out of stream flow appropriations.

Because Alaska contains one third of the nation's freshwater, it is likely that any legislation that passes on this topic will affect us.

Also, please send me a copy of the Sporhase case if you have one.

Thanks.

Sincerely,

Christopher Estes
Statewide Instream Flow Coordinator
Research and Technical Services
Division of Sport Fish
(907) 267-2142

Attachment

... will not cross the border ... amounts of that water would provide

I 700,400,350

Water transfers are inevitable

By Loran Schmit
Nebraska State Senator

Commercial marketing of water represents one of the most emotionally charged resource management issues ever to face the citizens and elected officials of Nebraska. Many are concerned about possible damage to the environment; others fear that farmers and ranchers will be left literally high and dry; others simply claim such tranfers are not economically or physically feasible.

While these concerns are legitimate, they should not combine to intimidate those of us in positions of responsibility from studying the issue in-depth, reviewing our options, and producing a medium- to long-range plan for the management of one of our most valued resources.

LB 146, which I introduced, was passed this year by the Nebraska Legislature to assess the current legal, environmental, and economic framework for water marketing, and to identify the various positions and roles the state of Nebraska could take to this area.

> Individual states are no longer free to prohibit the interstate transfer of water, absent a demonstrated in-state need.

LB 146 faces much opposition, even though it does nothing more than provide for a study of the water marketing issue. Many people in Nebraska simply feel that it is our water, that we can do — or not do — with it as we see fit, and that therefore we should not even discuss the possibility of transferring water to other states. In my opinion, this is a very dangerous position to take, particularly in view of the 1982 United States Supreme Court decision in Sporhase v. Nebraska.

While many facets of the Sporhase decision remain unclear and will have to wait for further judicial elaboration, one message comes across distinctly: Individual states are no longer free to prohibit the interstate transfer of water, absent a demonstrated in-state need. Furthermore, if such a transfer were to take place, there is no provision currently in the law that would require the payment of compensation.

Viewed in this light, the LB 146 process may provide some protection from out-of-state transfers of water, particularly uncompensated transfers if Nebraska diligently assesses and documents its current and anticipated water needs.

Nebraska is fortunate in that it enjoys abundant supplies of high quality groundwater. The lion's share of this water is located in the Sandhills region of the state, which provides rapid recharge of the underlying aquifer but is only marginally suitable for crop production. If surplus water can be transferred to an area of shortage, then I am confident the courts, if not our own sense of equity, will not permit us to do otherwise.

The matter of compensation is secondary, but significant. Nebraska farmers and ranchers many of whom are suffering from severe financial hardships, should at least have the choice of allowing the diversion of a portion of the water located on their land in exchange for monetary compensation so they can continue to use it to grow crops that may already be in surplus and, therefore, contribute even further to the depressed economy.

The LB 146 process will hopefully provide a sound decision-making framework from which sound policy can emanate. And if interstate transfers of water are inevitable, as I feel they are, every effort should be made to ensure such transfers are carried out in a manner that is environmentally sound, economically feasible, and equitable to all parties affected.

Senator Schmit, a Nebraska legislator for 18 years, is chairman of the Legislature's Committee on Natural Resources.

Agricultural water: Saleable commodity, valued future resource — or both?

Water is too valuable for the future to sell today

By Bryce Neidig
President
Nebraska Farm Bureau Federation

In 1949, my family took an extended vacation throughout the western United States. As we prepared to drive across the Mojave Desert, we stopped at a filling station to fill our water bag. We had to pay for that water. As a teenage Nebraska farm boy, I could hardly comprehend why anyone would either charge for or pay for water.

Now in 1987, we in Nebraska have seen legislation introduced to enable us as a state and as individuals to sell our water. Those who advocate this approach have argued this would be one way in which to improve the financial condition of some farmers. But should we be willing to sell our souls for 30 pieces of silver?

Nebraska Farm Bureau Federation has a long-standing policy to develop Nebraska's water resources to the greatest benefit for the citizens of the state. We have great reservations, however, about the concept of selling water, particularly to out-of-state purchasers, because of the possible long-term consequences this concept presents not just to agriculture, but to all Nebraskans.

The idea of selling water has brought to the forefront a number of legal and social questions which need further research and documentation. Numerous factual and mythical perceptions of our water resources need to be resolved before Nebraska considers selling its water.

> Both surface water and groundwater are more valuable to us in the future than any price we could currently receive.

Looming over this entire debate is the traditional perception that there is an excess of water and that, if citizens don't use it, they'll lose it. The concern of our members however, is that, once we lose it or sell it, can we ever get it back if we need it? In other words, what may be considered as "excess" or "surplus" water today may be vital for agriculture and economic development tomorrow. Reaction to the immediate is not always in our long-term best interest.

With the largest portion of the world-famous Ogallala Aquifer underlying the state of Nebraska, perhaps we should recognize that we really do hold this great natural resource in trust, not only for Nebraskans, but for all people.

We are firmly convinced that both surface water and groundwater are more valuable to use in the future than any price we could currently receive, especially for a state such as Nebraska, which needs to diversify its economy. If, as the proponents of the sale of water argue, Nebraska's water is needed elsewhere for industry, we invite industry to come to our state, establish their business here, and share in the growth.

All in all, it just makes good sense to keep and use wisely one of life's most precious resources, rather than to simply turn it into nothing more than a commodity to be bought and sold. To do otherwise is shortsighted, if not downright irresponsible.

Bryce Neidig has been president of Nebraska Farm Bureau Federation for nearly six years.

Freshwater Perspective

Water plans can allow for present and future needs

The agricultural economics of the nation are shifting dramatically and, as the economic base of any industry shifts, so does its political clout. Nebraska has been grappling with this issue ever since realizing that its water supplies were more valuable than $1.30-per-bushel corn and $2-per-bushel wheat. As Nebraska Senator Loran Schmit has said, "... If the water we pour on crops is more valuable than the crop itself, then I believe the time has come to consider the possibility of making some money selling water."

Senator Schmit brings up a significant and sensitive point: How can states benefit from the changing economics of the West? The increasing need for water supplies by Western cities, along with their ability to pay top dollar for these supplies, is fostering the reallocation of water from agriculture to municipalities. Expanding urban areas may become the new bumper crop of the West.

There are, however, many people, particularly those in the agricultural community, who decry "selling Nebraska's future." Concern focuses on ramifications such as groundwater depletion, declining real estate values, reduced property tax income and the decline of many rural communities that could occur if farmers begin to sell their water rights. These are important concerns that must be examined.

Yet Western water law, like Western economics, is changing. The Supreme Court case of Sporhase v. Nebraska states that water is an article of commerce and, as such, cannot be prohibited from being sent across state lines. The El Paso v. Reynolds case pending in district court could further encourage the interstate transfer of water. This case, which involves the right of Texas to drill 326 wells just across the border in New Mexico to provide water for the people of El Paso, states that the need of El Paso's citizens for water takes precedence over New Mexico's ownership — a rather significant statement.

> A thoughtful plan can accommodate both the present and the future, avoiding the need to make rigid 'either-or' decisions.

The caveat in the El Paso ruling is that El Paso's use of New Mexico water cannot threaten the health and welfare of New Mexico's citizens. New Mexico, therefore, is carefully assessing and quantifying its future water requirements in order to protect those resources truly needed by the state.

One of the important by-products of these court cases has been the development of long-range state water plans, which in the end may provide the only real means of protecting local water resources.

As states begin to assess and quantify their future water needs, they can build into these plans the flexibility needed to respond to current economic realities as well as future contingencies. A thoughtful plan can accommodate both the present and the future, avoiding the need to make rigid "either-or" decisions.

The true potential effect of water marketing on agriculture needs to be kept in perspective. Agriculture holds the rights to 85 percent of the water in the West, and a yield of only about 10 percent of that water would provide sufficient additional supplies into the 21st century.

The real question is not whether agriculture will survive, water marketing — it will. Percentage-wise, urban needs are not large enough to threaten the agricultural economy as a whole. The critical question for the future of agriculture is how effectively and efficiently it uses the remaining 75 percent.

Alaska Department of NATURAL RESOURCES

Alaska Water Resources Board

Division of Land & Water Management • October, 1990

The seven-member Water Resources Board advises the Governor on all matters relating to the use and appropriation of water. This includes reviewing bills, statutes and regulations that govern water rights, multi-purpose uses of water, prevention of pollution, protection of fish and game, water resources studies and plans, water resources development, dams, impoundments, and reservoirs. The Alaska Water Resources Board was established by Article 3 of Alaska Statute 46.15, the Water Use Act, which was enacted in 1966.

Membership

The Board is composed of seven citizens appointed by the Governor and confirmed by the Legislature, who have knowledge about the use, conservation and protection of water in Alaska. Board members serve four-year terms of office and represent a geographic diversity and variety of occupations and professions associated with water resources. The Director of Boards and Commissions in the Governor's Office will provide application information to anyone interested in serving on the Board.

In addition to the seven citizen members, the Commissioner of Environmental Conservation is an ex-officio member, and the Commissioner of Natural Resources is the executive secretary and provides staff to the Board.

Board Meetings

The Board is required by AS 46.15.220 to hold at least two meetings a year, with one of the meetings held in Juneau. The Board holds the Juneau meeting each spring when it reviews pending water resources legislation and meets with legislative committees and the Governor. The Board also holds a fall meeting in another part of the state to discuss regional water issues and to allow residents an opportunity to voice their water resources concerns to the Board. Meetings generally last two to three days. On occasion, the Board holds interim meetings which may be by teleconference.

The Board covers a wide range of topics at its meetings. In general, a presentation on a topic is given by an agency, industry, interest group representative or member of the public, followed by a discussion of the topic by the Board. At the conclusion of meetings the Board adopts resolutions recommending a course of action to the Governor. The Board may also send a resolution or letter to a state agency, the legislature, or the Congressional delegation, or informally discuss problems with agency representatives.

Public Participation

All Board meetings are open to the public and the public is invited to attend. An evening is set aside for a public comment session specifically to allow members of the public, industry, interest groups or agencies to discuss water resources matters of concern with the Board.

More Information

For further information about the Water Resources Board, its meetings or current members, contact:

Department of Natural Resources
Division of Land and Water Management
Water Resources Board Coordinator
P.O. Box 107005
Anchorage, Alaska 99501-7005
(907) 762-2263

Office of the Governor
Director of Boards and Commissions
P.O. Box A
Juneau, Alaska 99811-0101
(907) 465-3500

WATER RESOURCES BOARD RESOLUTIONS
FY 84 - Mid-FY 91

No. 84-1: Funding Dam Safety
Requests adequate funds for DNR's dam safety program

No. 84-2: Oil Spill Contingency Fund
Urges replenishment of the Oil Spill Contingency Fund on an annual basis

No. 84-3: Western States Water Council
Recommends funding of initial membership dues and annual dues

No. 84-4: Dam Safety Authority
Requests DNR and Attorney General's Office review existing law related to dam safety and propose necessary legislation

No. 84-5: Federal Reserved Water Rights-Basin Wide Adjudication
Urges DNR to propose basin wide adjudication legislation and any needed amendments to the Water Use Act

No. 84-6: Potter Marsh Hydrologic Study
Urges the Anchorage Assembly to consider DGGS hydrologic findings in this study

No. 84-7: Fee Schedule Regulations
Urges the Governor and DNR to consider negative impacts of water rights fees and exempt single family domestic applicants

No. 85-1: Stream Classification
Urges passage of legislation to reclassify streams to actual use

No. 85-2: Stream Reclassification
Recommends basin management studies in priority areas be started; stream reclassification procedures be simplified; technical research to improve Best Operation Procedures be increased; legal research of the Clean Water Act; and adjust water quality standards to actual uses of streams

No. 85-3: ADEC Village Safe Water Grant Program
Recommends DNR and DEC develop an MOA to require grant recipients to file for water rights, and the Governor re-issue administrative order 67 regarding this

No. 85-4: Alaska Water Resources Board Funding
Requests its budget be increased to $20,000 and be included in the Governor's Office budget

No. 85-5: Dam Safety
Urges the Governor to request funding for this program

No. 85-6: Participation in the Western States Water Council
Urges the Governor to appoint the commissioners of DNR, DEC, and Law as permanent representatives and urges active participation

No. 85-7: DNR - Municipal Water Planning Coordination
Requests DNR to establish contact with planning and zoning commissions in Alaskan cities

No. 85-8: Fritz Creek Watershed
Recommends DNR designate the Fritz Creek drainage as a wildlife refuge

No. 85-9: EPA National Placer Mining Standards
Urges the Governor to insure all affected agencies review the EPA placer mining standards and respond with a single state response

No. 85-10: Clean Water Act Field Laboratory
Urges federal funding of this project

No. 85-11: Administration of Water Appropriation Permits and Instream Flow Applications
Encourages DNR to develop instream flow regulations and adopt regulations to set duration limits for water rights permits

No. 85-12: Recreational Rivers Bill: HB 93
Supports this bill

No. 85-13: Water Management Staffing
Urges DNR to reduce personnel turnover and retain existing positions

No. 85-14: Dam Safety: SB 95
Urges the Legislature to enact this bill

No. 85-15: Alaska Water Resources Board Funding
Requests its budget be increased to $20,000 and be included in the Governor's Office budget

No. 86-1: EPA National Placer Mining Standards
Urges the Governor to ensure all affected state agencies review the proposed EPA placer mining standards and prepare a coordinated state response

No. 86-2: Re-affirmation of Administrative Order No. 67
Recommends the Governor re-affirm this order

No. 86-3: South Anchorage Groundwater Decline
Recommends DNR evaluate the Anchorage Hillside groundwater decline; establish a critical groundwater management area if

needed; require the Municipality of Anchorage to begin an integrated groundwater management plan; and that the Board chairman discuss these concerns with Municipality officials

No. 86-4: DNR Fees for Water Rights Applications
Recommends the Governor suspend the effective date of DNR fee schedule regulations for domestic water use less than 500 gpd

No. 86-5: Federal Reserved Water Rights Adjudication
Supports legislation of this type

No. 86-6: Advisement of Legislative Action
Requests DNR to provide copies of all pending water resources legislation to the Board for review

No. 86-7: Filing Fee Advertisement
Urges DNR to notify the public that water rights filing is free until Jan. 1, 1986 and where applications can be filed

No. 86-8: Participation of Military Reservations in Water Resources Planning in Anchorage Bowl
Urges the Governor to express the state's concern that military reservations must participate in water planning and management for the Anchorage bowl and encourage base commanding officers to work with DNR on Ship Creek and adjacent groundwater use

No. 86-9: Alaska to Administer Section 402(b) NPDES Permits
Requests DEC to re-evaluate state assumption of the NPDES program and to report its conclusion at the next Board meeting

No. 86-10: Placer Mining Water Quality Regulations
Recommends the Governor achieve cooperation between state and federal agencies to allow continuance of a viable placer mining effort in Alaska

No. 86-11: Resolution of Conflict in Effluent Requirements
Requests DEC to recommend a plan to eliminate the conflict

No. 86-12: Military Cooperation Regarding Federal Reserved Water Rights and Hazardous Waste Management and Disposal
Requests the Governor to communicate to all Alaskan base commanders the need to cooperate with the state on these matters

No. 86-13: Prioritization of Alaska's Water Resources Programs
Requests the commissioners of DNR, DEC, and ADF&G to attend the next Board meeting and explain how water programs and budgets are prioritized

No. 86-14: DNR Water Management Staffing
Requests DNR to retain at least two staff in the central Water

Section

No. 86-15: Coordination of Instream Flow Protection Programs
Recommends ADF&G contract with DGGS to perform data collection needed for instream flow protection

No. 87-1: Best Available Technology (BAT) Standards Should Reflect Alaska's Placer Mining Conditions
Recommends DEC monitor development of BAT standards and influence these to reflect Alaskan conditions

No. 87-2: Water Rights/Water Waste
Urges DNR to account for water waste in adjudicating water rights for municipalities and large water users

No. 87-3: The "Dam Safety Act" SB 95
Urges the Governor to reintroduce this bill

No. 87-4: Participation of Military Reservations in Water Resources Planning in Anchorage Bowl
Requests action on previous Resolution No. 86-8

No. 87-5: Membership in Western States Water Council
Urges the state to investigate all feasible alternatives to continued funding state membership before withdrawing from the WSWC

No. 87-6: Hydrologic Studies Support
Urges the Governor to seek continued funding and staffing at current levels for DGGS Water Resources Section

No. 87-7: Extraterritorial Watershed Designation and Management Plan Development
Requests DNR and the AGO to investigate authority for this issue

No. 87-8: Mariculture Development
Recommends prudent development of this industry

No. 87-9: Water Rights Adjudication Priorities
Requests DNR to place priority on adjudicating applications that are of greatest community concern and for larger water users

No. 87-10: Revolving Loan Fund
Urges legislation to allow the state to participate in EPA's seed grant program for wastewater treatment projects

No. 87-11: Oil and Hazardous Waste Response Fund
Recommends more funds be added to this account to meet clean-

up costs in FY 88

No. 87-12: Reappropriation of Impounded Funds for Completion of Eklutna Water Project
Recommends the Governor request funds to complete this project

No. 87-13: Continued Budgetary Support of Water Data Collection and Analysis Functions of DNR
Urges DNR not to reduce funds and personnel for this work and to request the Legislature to continue existing funding levels

No. 87-14: DNR Water Resources Staffing
Recommends DNR fund at least one water position in the DLW Northern Region; maintain existing water staff in Southcentral and Southeast Regions; and assure that water resources are considered in all department resource decisions

No. 88-1: Military Water Use in Ship Creek Basin
Recommends the Governor and congressional delegation again request Anchorage military base commanders cooperate with DNR to provide Ship Creek water use data

No. 88-2: Correction of National Park Service Regulations
Requests the congressional delegation to inquire of the Interior Department when the water rights in national park regulations will be revised

No. 88-3: Basin Wide Adjudication
Urges the Legislature to appropriate money to DNR to complete a first adjudication

No. 88-4: ANWR Data Collection
Recommends DNR add an increment for DCGS to do this work and that the Legislature support this program

No. 88-5: Mariculture Development
Recommends that this industry develop in a way not to negatively impact state land and water resources

No. 88-6: DEC and Alaska Miners Association Cooperation
Commends these organizations for their cooperative problem solving work together

No. 88-7: DNR and DEC Cooperation
Commends DNR and DEC for working together to complete a report on ground water contamination

No. 88-8: Funding for Water Resources Data Collection
Requests the Governor to seek an appropriation for DGGS to continue water data collection and fully match the USGS stream gaging program

No. 88-9: Remote Maintenance Worker Program
Requests that this program be fully funded

No. 88-10: Water Data Collection Funding
Requests DNR to increase funding for this program to 1985 level

No. 88-11: Brain Drain
Requests DNR to fund DGGS staff at full time status

No. 88-12: HB 480 Regarding Priority of Water Right Applications
Urges the Legislature not to pass this bill

No. 88-13: Supporting Budget Increments for DEC
Commends and supports the Governor's request to increase DEC funding

No. 88-14: HB 93 Regarding Recreation Rivers
Recommends HB 93 be amended to prohibit timber harvest within 1/4 mile of river banks and require that instream flow reservations be completed within five years

No. 88-15: Non-Point Source Pollution
Requests the Governor to contact EPA to get an extension to complete the reports for this program

No. 88-16: Dam Safety
Requests DNR to add a definition to the dam safety regulations

No. 88-17: Indian River Basin Wide Water Adjudication
Urges DNR to adjudication pending water rights applications on a case-by-case basis

No. 88-18: Coordination of Water Quality Analysis of State Agencies
Urges state agencies and UAF to coordinate water quality analysis

No. 88-19: Mariculture
Recommends disposal of state land and water be regulated to avoid conflicts, and that permitting of finfish mariculture be delayed until impacts can be better understood

No. 88-20: Relating to the Application of Water Quality Criteria
Recommends DEC pursue flexibility in regulations for mixing zones

No. 89-1: Support of Forest Practices Act Review
Endorses this review and supports increased Division of Forestry funding

No. 89-2: Funding Forest Practices Act Implementation

Supports increased funding for this program

No. 89-3: Petroleum Storage Tanks
Recommends including above ground storage tanks to the program

No. 89-4: Re-Issuance of Administrative Order No. 83
Urges the Governor to re-issue this order requiring state agencies to ensure that contractors, grantees, and permittees apply for water rights when needed

No. 89-5: ANWR Water Studies
Urges the Governor to support an increment for this work

No. 89-6: State Acquisition of Municipal and Village Watersheds
Recommends the DNR commissioner select municipal or village watershed lands held by the USFS and BLM and negotiate with private landowners to exchange private watershed lands for other state lands

No. 89-7: Rural Drinking Water Testing
Recommends DEC increase efforts to sample drinking water in rural systems and to target basic health contaminants

No. 89-8: Funding for Kenai Hydrologic Study
Requests that DGGS be funded for this work

No. 89-9: Rural Sanitation
Urges the Governor to support DEC efforts to improve sanitary conditions in Alaskan villages

No. 89-10: Village Safe Water
Requests the Governor to establish a multi-agency task force to coordinate water quality and waste disposal in rural Alaskan villages

No. 89-11: Coordination of Information Regarding Private Watersheds
Recommends the DNR commissioner coordinate with state and federal agencies on development plans on their lands

No. 89-12: State Employee Transportation by Private Aircraft
Urges the Governor to re-evaluate the feasibility of state employees using private transportation for field inspections

No. 89-13: Executive Order to Submit Water Data to DGGS
Requests the Governor to issue an executive order requiring state agencies to send all water data to DGGS for storage

No. 89-14: Ground Water Data Storage and Retrieval
Recommends DNR actively pursue a ground water database system

No. 89-15: Hazardous Waste Reduction
Supports an active program and supports HB 106 and HB 107

No. 89-16: Kenai Peninsula Hydrological Survey
Supports this study and funding it

No. 89-17: Authority for Immediate Oil Spill Response by State or Federal Authorities
Urges the Governor to investigate legal constraints on the ability of state and federal government to respond immediately to oil spills

No. 89-18: Multi-Agency Task Force
Urges action on Resolution No. 89-10

No. 89-19: Rural Health and Environment
Supports and urges Legislative support for DEC increment on this project

No. 89-20: DNR Budget
Urges DNR to continue to fund present levels for the DLW water resources program

No. 89-21: DEC Budget
Supports DEC's increments

No. 89-22: Possible Impacts of Fish Farming
Recommends no fin fish farming be allowed until negative impacts are investigated and that the Fin Fish Task Force be funded and convened

No. 89-23: Support for HB 143 and 196
Supports these bills for above and below ground storage tank regulation and urges that facilities be designed, constructed, and inspected by professionals

No. 89-24: Required Onshore Disposal of Marine Wastes
Supports DEC funding for local government planning assistance for this requirement

No. 90-1: Kenai Peninsula Hydrology Study
Recommends convening a task force to develop and accomplish a DGGS-industry funded regional hydrologic study

No. 90-2: Kenai Peninsula Illegal Dump Sites
Urges DEC to establish a hotline to report illegal dump sites and to investigate and ensure clean-up of sites

No. 90-3: Response to Previous Resolutions
Urges the Governor to respond to Resolutions 89-10,17, and 18

No. 90-4: Fish Creek Restoration
Recommends legislative funding for planning and design of this project

No. 90-5: Funding of Stream Gages along Road Systems by DOTPF
Urges the Governor and DOTPF to fund this program

No. 90-6: Ship Creek Watershed Protection, Chugach State Park
Requests DNR to assess the use of horses on water quality and to report its findings

No. 90-7: Indian River Stream Gaging and Coordination of the Stream Gaging Program between DLW and DGGS
Urges DGGS to fund the Indian River stream gage; to coordinate with DLW on future plans to abandon gages; and to annually coordinate with DLW on locations and funding for new gage sites

No. 90-8: Recovery of Departmental Expenses in Processing Unbudgeted Applications and Projects
Recommends DNR adopt regulations to charge for work that is unexpected and not annually budgeted

No. 90-9: Solid and Hazardous Waste Management
Supports HB 478, 479, 480 and 481

No. 90-10: Support for Forest Practices Act, with Amendment
Urges passage of SB 317, if amended to include all non-federal public forest lands

No. 90-11: Kenai Peninsula Hydrologic Study
Urges the state to participate in this study, and supports HCR 13 and SCR 15.

No. 90-12: National Wetlands Policy Development
Requests the resource commissioners to solicit input from non-government wetlands users

No. 90-13: Matching Funds for Stream Gage Programs
Requests DNR, DOTPF, and USGS to provide data to the Board concerning matching funds

No. 90-14: Support for Oil Spill Legislation
Supports SB 502/HB 565, SB 503/HB 567, SB 497/HB 409 and HB 315

No. 90-15: STORET Program
Recommends that DNR complete work to implement the STORET system

No. 91-1: Rural Water Well Log Collection Effort
Recommends that DGGS collect well logs from all agencies that have drilled wells in rural Alaska

No. 91-2: Utility Coordination in Rural Villages

Urges and requests the Dept. of Education and rural school districts to coordinate to operate and maintain utility systems

No. 91-3: Appreciation of Work by Tom Meacham as a Member of the Alaska Water Resources Board
Expresses appreciation, and urges him to remain active in Alaska's water resources issues

No. 91-4: In Appreciation of Service by Larry Dutton
Extends sympathy to his family and urges the State to establish a tribute to him

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Assembly
California Legislature

LUCILLE ROYBAL-ALLARD
ASSEMBLYWOMAN, FIFTY-SIXTH DISTRICT

Committees:

Chair, Ways & Means
Subcommittee No. 1
on Health and Human Services
Rules
Ways and Means
Health
Utilities and Commerce
Select Committee on Sexual Assault
Victims Assistance (Chair

March 7, 1991

Honorable Walter J. Hickel
Governor
State of Alaska
P.O. Box A
Juneau, Alaska 99811-0101

Dear Governor Hickel:

Enclosed for your information is the pre-print text of my California State Assembly Concurrent Resolution No. 31, which would urge California Governor Pete Wilson to direct the immediate start of an initial feasibility study for the construction of an Alaska-California under ocean water pipeline. I will forward a copy of the printed version of the measure as soon as it becomes available.

As indicated in the resolution, the study would include a proposed plan of implementation with estimated costs, and a specific action plan with a time frame for the operational completion of an Alaska-California water pipeline.

The people of the State of California sincerely appreciate your innovative ideas on this issue and your willingness to share Alaska's tremendous surplus of fresh water through the development of an Alaska-California water pipeline. Your progressive approach to solving our state's critical water shortage will make a significant contribution to the future development of our nation into the 21st Century and beyond.

I look forward to working with you, the Alaska State Legislature, and the people of the great State of Alaska on this important and valuable joint enterprise.

Sincerely,

Lucille Roybal-Allard

LUCILLE ROYBAL-ALLARD
Assemblywoman 56th District

Assembly Concurrent Resolution No. 31

Introduced by Assembly Member Roybal-Allard

March 7, 1991

Assembly Concurrent Resolution No. 31—Relative to a freshwater pipeline.

LEGISLATIVE COUNSEL'S DIGEST

ACR 31, as introduced, Roybal-Allard. Freshwater pipeline.

This measure would request the Governor to direct the State Water Resources Control Board, the Department of Water Resources, or any other appropriate state agency to undertake a study on the feasibility of a fresh water pipeline, as prescribed, to be completed by August 1, 1991.

Fiscal committee: yes.

WHEREAS, The shortage of water in the State of California has become an increasingly serious emergency situation for the citizens, businesses, and agricultural interests within the state; and

WHEREAS, Fresh river water from the entire western slope of the North American continent presently is flowing into the Pacific Ocean, thereby wasting a valuable natural source of fresh water; and

WHEREAS, The Governor of the State of Alaska, the Honorable Walter J. Hickel, has publicly announced his interest in sharing that state's immense, renewable surplus of fresh water by making that resource available to western states; and

WHEREAS, It is in the best interests of our growing state population and important industrial and agricultural concerns to divert a portion of that surplus

water supply to areas experiencing severe water shortages; and

WHEREAS, Modern technology and engineering capabilities make it economically feasible to construct a fresh water pipeline with a 50 to 75 foot diameter along the coastal waters extending from Alaska to California; and

WHEREAS, In planning, designing, and constructing a North American water pipeline, consideration should be given to using the demonstrated expertise of federal laboratories and technology transfer programs that are exemplified by the work performed at the National Aeronautics and Space Administration Ames Research Center in Moffitt Field, California; and

WHEREAS, An interstate compact agreement between Alaska and California could be executed to provide for the necessary planning, financing, and construction of large, submerged floating conduit pipes that are either anchored to, or rest on, the Continental Shelf and capable of bringing surplus water to this state; and

WHEREAS, The freshwater pipeline could be constructed to avoid interference with the navigation of commercial and noncommercial vessels and to mitigate the effects of ocean currents; and

WHEREAS, The significant density differences between freshwater to be transported in the pipeline and the surrounding seawater would provide sufficient buoyancy to limit construction support requirements to composite cable anchoring for containment; and

WHEREAS, At selected underwater pumping sites, water flow could be maintained and new water supplies could be added from intake areas drawing upon fresh water from rivers otherwise flowing into the Pacific Ocean; and

WHEREAS, These pumping sites could also direct freshwater flows to designated onshore areas to meet local water needs; and

WHEREAS, The southward flow in the pipeline would be enhanced in its long journey by the coriolis effect of

the earth's rotation, thereby reducing mechanical pumping requirements; and

WHEREAS, A water pipeline route beneath the ocean's surface could effectively eliminate the need to acquire costly rights-of-way, the digging of tunnels, and pumping water over mountain ranges, while at the same time reducing the potential impact of earthquakes and losses of water due to evaporation; and

WHEREAS, The use of prefabricated concrete or reinforced composite pipe section can greatly reduce the costs of the project and ensure long-term reliability, thereby making the construction of the project the most practical and cost effective solution to the state's current and future water needs; now, therefore, be it

Resolved by the Assembly of the State of California, the Senate thereof concurring, That the Governor is hereby requested to direct the State Water Resources Control Board, the Department of Water Resources, or any other appropriate state agency to undertake a study to be completed by August 1, 1991, on the feasibility of an Alaska to California suboceanic freshwater pipeline, including a proposed plan of implementation with estimated costs and a specific action plan with a designated time frame for the completion of the pipeline; and be it further

Resolved, That the Chief Clerk of the Assembly transmit copies of this resolution to the Governor, the Executive Director of the State Water Resources Control Board, and the Director of Water Resources.

O

Outdoors: Seal Rock couple finds success with squid lure/B1

Corvallis
Gazette-Times

CORVALLIS, ORE. 100TH YEAR NO. 72 THURSDAY, MARCH 14, 1991 2 SECTIONS 20 PAGES 35 CENTS

5-15 mph. Details/back page

The report said cleanup costs

said it had only nine groupings"

Redmond.

Pipeline plan would send Alaska water south

By Tom Philp
Knight-Ridder News Service

How's this for a drought-buster: a pipeline sitting on the ocean floor from Alaska to California, piping a billion gallons of fresh water south every day. Or maybe a 51-dam, Yukon-to-Mexico hydroelectric extravaganza that essentially would turn the Canadian Rockies into a 500-mile spigot, producing enough water to quench the entire nation's thirst.

No, this isn't talk radio, but real ideas backed in all seriousness by a real governor and the kinds of influential Westerners who tend to get things done. And at a time when some Californians' daily water ration isn't enough to fill the bathtub, people may be willing to listen.

"It is doable, it is necessary, it is economical," said Alaska Gov. Walter Hickel, author of the pipeline plan.

Former California Lt. Gov., Robert Finch agrees, but with one caveat: That 1,500-mile pipeline is just a "short-term solution." Instead, his Rocky Mountain plan is the "several-decade-long monumental project" that's the real answer.

The ideas obviously face untold numbers of political, financial and environmental obstacles. Environmentalists, for instance, are aghast at the very thought.

"Ridiculous," said Luna Leopold, emeritus hydrology professor at the University of California, Berkeley. Among the projects' horrors: reversing river flows for miles, decimating fish, drowning meadows and even entire towns.

"The environmental damage we're already doing with these trans-mountain diversions is really something that people don't understand," Leopold said.

But mega-project proponents reflect an emerging faction of thinking in the West's battle between this desert and the growing numbers of people who want to live here. It may not be this drought, or even this decade. But somewhere down the line, say proponents, man must tilt the continent's vast supplies of fresh water from the barren, moist north to the bustling, arid south.

There are plenty of ideas: chipping off icebergs and towing them south, trapping dew as it drips from California's countless suburban roofs. Some that once were considered absurd — building desalination plants, shipping water in supertankers, drinking recycled wastewater — are now actually happening or in the planning stages.

"It's hard to say when it's going to come about," said Nathan Snyder, technical director of the Ralph M. Parsons Co., a giant Southern California engineering firm of the notion to ship Alaska's water to Califor-

See 'Water'/back page

One fire-fighting technique in-

time we finish, we'll be pretty good at it."

• Water: for drought

Continued from front page

nia, "but it will have to come about."

Hickel said he has mulled his water idea for years. Basically, it would work like this: build a catch basin at the base of one of Alaska's many rivers, draw off half the fresh water as it empties into the ocean and ship it through pipe — 100-foot plastic sections, 20 feet in diameter — laid along the continental shelf.

"There's no environmental problem," said Hickel, "if it leaked a little bit."

The cost? Unknown. "When you're talking about something of this size and its potential, cost isn't the biggest item," Hickel said.

His water pipeline idea shocks some Alaskans, but others aren't blinking.

It's best to get out a map of North America if you want to understand Finch's plan to solve the drought. That's the only way to grasp all the dams, canals, trenches and power plants needed by Finch's Citizens for Water & Power in North America Inc. (WAPNA), which is based in Los Angeles.

Rivers that would be sucked, altered, dammed or jammed with extra water include the Yukon, Susitna, Tanana, Fraser, Peace, Parsnip, Columbia, Kootenay, Clarke, Snake, Clearwater, Nearby, Bitterroot, Big Hole, Jefferson, Salmon, Little Colorado, Escalante, Rio Grande, Pecos, Minnesota, Missouri, Mississippi, Illinois and Colorado.

Starting in the heart of Alaska and Canada's Yukon Territory, dams would trap the headwaters of three rivers. The water would fill a massive valley in the Canadian Rockies, forever flooding hundreds of miles of meadows, communities and wildlife habitat — from British Columbia through Alberta to Montana.

Behind this series of dams would be enough water stored at any one time to supply all the 48 mainland states for three years, an estimated 130,340,000,000,000 gallons.

One canal starting in British Columbia would divert water throughout the Midwest. The bulk would head through 12 dams in Idaho. From Utah, an aqueduct would send water to Southern California and Las Vegas. Another canal would head south to Arizona and Mexico.

Northern California wouldn't get a drop. "By having the water (in Southern California)," Snyder explained, "Northern California water doesn't have to be brought south."

FRAN DURNER / Anchorage Daily News

s from a program in Tyler, Texas, that declared her a similar plan here using voluntary drug testing.

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ume discount in anticipation of more business from other SADD chapters.

Hollowell refers to the tests as "confidential" because the urine samples will be identified only by Social Security numbers when they go to the lab.

Under the group's current plan, the results would be released to the group's faculty adviser, Hollowell said, and students who test positive for drugs will be asked to take a second test. If that one shows drug use, too, the student will be required to receive counseling, she said.

Before tests are given, Hollowell said, her group would have students and parents sign release forms consenting to counseling in the event of two positive tests. But parents agree on the release form that they don't have to be informed of the results.

Please see Page B-3, DRUG-FREE

Water pipeline finds a backer in Washington

Anchorage Daily News 3/14/91

By BRIGID SCHULTE
States News Service

WASHINGTON — It's being called the Mother of All Water Hoses.

Whatever the nomenclature, and despite the rolled eyes and snickers, Alaska Gov. Wally Hickel's massive vision of a freshwater pipeline running along the ocean floor from Alaska to California has just got its first foothold in Congress.

Rep. Edward Roybal, a California Democrat from drought-ridden Los Angeles, last week introduced a little-noticed resolution calling for a feasibility study for a 2,000-mile-long North American Water Transfer Engineering Facility. If adopted, the study would be completed by September.

The resolution noted that the southward flow of water in the pipeline would be "enhanced in its long journey by the Earth's rotation," which would lessen the need for mechanical pump stations. It also left open the possibility of tapping fresh water resources along the way, in the fiercely protected Columbia River basin.

This week, Roybal, a 14-term lawmaker who met here with Hickel recently, is expected to attach the study in the form of an amendment to the emergency California drought bill the House will debate.

Rep. Jim McDermott: Critical of plan

Roybal said that the "innovative" pipeline, to be planned, financed and operated by an interstate public pipeline authority, would permanently solve California's water supply problems.

Although Hickel has mentioned building such a pipeline along the continental shelf for more than 20 years, the idea is still new enough — and outlandish-sounding enough — to cause most con-

Please see Page B-3, WATER

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rested or claims he is subject to arrest. Fabe has not yet ruled on the dismissal motion.

The pot law was stiffened by voters in an initiative last November that effectively undid a 15-year-old state Supreme Court ruling. In that 1975 opinion, the high court said the Alaska Constitution's broad privacy right protects people who possess marijuana for personal consumption.

Backers of the initiative claimed the liberal pot law sent the wrong message

Please see Page B-3, MARIJUANA

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daughter called my attention to a large moose sauntering down our street. I mean, I knew property values were still depressed, but what's a moose doing living in my neighborhood?

"This is what used to be, and still is in some places, a real good wintering area," said state wildlife biologist Mike McDonald. "They've got good feed with some of the willow and birch and the ornamentals that people put in their yard."

Uh-huh. That explains what happened

biologist lecture about leaving the moose alone and not feeding him. As if I was going to rush right out and buy a big bag of moose chow. Hey, I know how hard it is to get rid of something once you start feeding it; I've got teen-age kids. And as for leaving the moose alone, as long as he doesn't have any noisy parties he won't get any grief from me.

In return, I don't expect any trouble from the giant ungulate, which has been living

Continued from Page B-1

gressional aides to answer questions with stunned silence.

But some staunch water-transfer critics from Pacific Northwest delegations say pumping water south from Alaska will only feed California's wasteful water habit and ultimately sap the Pacific Northwest.

"To go from Alaska to California, you have to pass through the Pacific Northwest," said Rep. Larry LaRocco, D-Idaho. "California has coveted the water in the Northwest for a long time. But the Columbia and the Snake are working rivers, used for hydroelectric power, shipping, navigation and for crops. . . . We're strapped as it is."

Rep. Jim McDermott, D-Wash., agreed, saying California should seek to solve its water-use problems internally before reaching north for additional stores.

Both lawmakers say building an Alaska-California pipeline would open the door to siphoning off Columbia River water — which Northwest lawmakers for 40 years have fought. Since 1986, federal agencies have been permanently barred from even studying Columbia River water transfers to California.

A spokesman for Rep. Pete DeFazio, D-Ore., said the lawmaker would only "shake his head and smile" at the pipeline project.

"Many water diversion proposals strike many Northwesterners as fundamentally screwball," said DeFazio spokesman Bob Hennessey. "But sending Northwest water to people who choose to live in a California coastal desert so they can keep their lawns green and hot tubs full . . . doesn't seem to be a very efficient use of what's becoming a scarce resource."

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

WALTER J. HICKEL, GOVERNOR

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PHONE: (907) 465-2520

February 15, 1991

Representative Cliff Davidson
Attn. Heather Bradner
House of Representatives
Interdepartmental Mail Stop 3100
Capitol Building Room 108
P.O. Box V
Juneau, AK 99811

Dear Representative Davidson:

Recently you requested a listing of currently operating stream gages in Alaska. The exact number is somewhat elusive, in that a number of different agencies operate gages, and each year some sites are discontinued, and others added. Perhaps the best way to answer your question is to refer you to the attached 5 Year Plan, Alaska Water Resources Evaluation (AWARE).

The copy attached is now a year old, but still represents a good overview of the coordinated water data collection program in Alaska. The U.S. Geological Survey (USGS) is the single largest collector of water data. A listing of the 80 sites the USGS currently maintains with continuous stream flow records is listed on pages 38-39. Of these 6 sites (Mendenhall River, near Auke Bay; Indian River near Sitka; Kenai River at Cooper Landing; Willow Creek near Willow; Susitna River at Susitna Station; & Nuyakuk River near Dillingham) are funded jointly by the USGS and DGGS. DGGS represents the largest state funded water data collection program. Page 73 of the AWARE plan lists 29 sites. Most of these are operated seasonally.

enclosed

(enclosed)

Other resource agencies also maintain their own gage sites. These agencies include the US Forest Service, US Fish & Wildlife Service, National Weather Service, and others. Much of these data are difficult to access because they are usually collected with regard to fulfilling a particular need or project. Additionally, most of these data are short term, meaning less than 5 years of data exist.

The existence of stations with 5 or more years of record is the crux of the problem with the available water data in Alaska. For pragmatic reasons most of the data sites with 5 or more years of record are clustered around population centers and transportation corridors. There are large regions of bush Alaska with little to no data available. In order for accurate flow estimates to be made for the bush areas it is imperative to have sufficient local data. At its peak, DGGS was jointly funding 25 stations around the state. That number has dropped to 6 this year due to severe budgetary cutbacks.

Hopefully, this letter and copy of the AWARE program will shed some light on what is being done for water data collection, and its importance to the state. Please feel free to contact me with any additional questions.

Sincerely yours,

William E. Long

William E. Long
Chief, Water Resources Section

Enclosure

cc: Tom Smith, Acting Director

TABLE 7.--*Seasonal stream gauging stations operated by Alaska DNR-DGGS*[1/]

Station	Requesting agency
1. Humpy Creek nr Cordova	Cordova & AEA
2. Power Creek nr Cordova	Eyak Corporation
3. Frances Creek	Usibelli Mine
4. Popovich Creek	"
5. Lignite Creek	"
6. Sanderson Creek	"
7. Lignite Creek (surface mining)	"
8. Two Bull Creek	"
9. Russian R. nr Cooper Landing	USFWS[2/]
10. Funny R. nr Sterling	"
11. Upper Swanson R. nr Sterling	"
12. Lower Swanson R. nr Nikiski	"
13. Nikolai Creek nr Kasilof	"
14. Moose R. nr Sterling	"
15. Birch Creek at Steese Hwy. bridge	DNR (placer mining)
16. Birch Creek above Crooked Creek confl.	"
17. Crooked Creek nr Birch Creek	"
18. Ketchem Creek at Circle Hot Springs Rd.	"
19. Deadwood Creek at Circle Hot Springs Rd.	"
20. Crooked Creek at Steese Hwy. bridge	"
21. Bedrock Creek below BLM campground	"
22. Mammoth Creek at Steese Hwy. bridge	"
23. Porcupine Creek above Bonanaza Creek	"
24. Porcupine Creek below Great Amer. Min.	"
25. Eagle Creek at GHD Mining	"
26. Tolovana R. above Wilber Creek	"
27. Fishhook Creek-Hatcher Pass	DNR, Div. of Land & Water Management (DLWM)
28. Government Creek-Hatcher Pass	"
29. Upper Granite Creek nr Delta Junction	SCS

1/ Operated by DGGS hydrologists for cooperating agencies. Data are digitally recorded and stored in DNR computer programs.
2/ U.S. Fish and Wildlife Service.

TABLE 8.--*Snow survey stations operated by Alaska DNR-DGGS*

Station	Requesting agency
1. Hatcher Pass I	DNR-DLWM
2. Two Trees	"
3. Wishbone Lake	"

TABLE 1.--*Hydrologic data stations operated by the U.S. Geological Survey, 1989*

Station No.	Station name	Drainage area (mi^2)	Period of record	Mean annual flow (ft^3/s)
	DAILY DISCHARGE STATIONS			
	SOUTHEAST ALASKA			
15022000	Harding River near Wrangell	67.4	1951-	730
15024800	Stikine River near Wrangell	19,920	1976-	54,620
15028300	Farragut River near Petersburg	151	1977-	1,578
15030900	Dorothy Lake outlet near Juneau	11	1986-	---
15041200	Taku River near Juneau	6,580	1987-	---
15049900	Gold Creek near Juneau	8.41	1984-	---
15051008	Salmon Creek above canyon mouth near Juneau	9.77	1982-	---
15052500	Mendenhall River near Auke Bay	85.1	1985-	1,100
15056560	Klehini River near Klukwan	245	1981-	1,481
15067900	Upper Mahoney Lake Outlet near Ketchikan	2.03	1977-	43.2
15070000	Swan Lake (Falls Creek) near Ketchikan	36.5	1916-26, 1927-33, 1948-59, 1984-	460
15072000	Fish Creek near Ketchikan	32.1	1915-36, 1938-	420
15081580	Black Bear Lake outlet near Klawock	1.82	1980-	28.4
15083500	Perkins Creek near Metlakatla	3.38	1976-	35.2
15085100	Old Tom Creek near Kasaan	5.90	1949-	39.3
15087520	Hamilton Creek near Kake	65.0	1972-73, 1975-86	351
15087680	Indian River near Sitka	10.1	1980-	101
15101500	Greens Creek near Juneau	22.8	1978-	100
15108920	Kadashan River above Hook Creek near Tenakee	10.2	1988-78, 1980-	64.4
15129500	Situk River near Yakutat	36	1988-	---
	SOUTH-CENTRAL ALASKA			
15200280	Gulkana River near Sourdough	1,170	1973-78, 1982, 1988-	---
15212000	Copper River near Chitina	20,600	1950, 1952, 1955-	37,450
15214000	Copper River at Million Dollar Bridge near Cordova	24,200	1988-	---
15216000	Power Creek near Cordova	20.5	1913, 1947-	250
15226000	Solomon Gulch near Valdez	19.7	1948, 1949-56, 1986-	144
15237360	San Juan River near Seward	12.4	1986-	---
15238648	Upper Nuka River near Homer	~3	1984-	---
15238820	Barbara Creek near Seldovia	20.7	1972-	105
15238990	Upper Bradley River near Homer	10	1979-	106
15239000	Bradley River near Homer	54	1955, 1957-	436
15239050	Bradley River tributary near Homer	9.25	1979-	50.1
15239070	Bradley River near tidewater near Homer	82	1983-	---
15239500	Fritz Creek near Homer	10.4	1963-85, 1985-	---
15258000	Kenai River at Cooper Landing	634	1947-	2,819
15266300	Kenai River at Soldotna	2,010	1965-	5,847
15271000	Sixmile Creek near Hope	234	1979-	919
15274550	Little Campbell Creek at Nathan Drive at Anchorage	15	1981, 1986-	---
15274600	Campbell Creek near Spenard	13.4	1966-	65.2
15275100	Chester Creek at Arctic Boulevard at Anchorage	27.2	1966-86, 1987-	17.9
15276000	Ship Creek near Anchorage	80.5	1946-	162
15290000	Little Susitna River near Palmer	61.9	1948-	211
15292000	Susitna River at Gold Creek	6,160	1948-	9,715
15292700	Talkeetna River near Talkeetna	2,006	1964-	4,048
15294005	Willow Creek near Willow	166	1978-	402
15294350	Susitna River at Susitna Station	19,400	1974-	49,490
15294900	Paint River near Kamishak	205	1983-85	---
15295700	Terror River at mouth near Kodiak	45.7	1964-68, 1981-	293
15297485	Kizhuyak River near Port Lions	27.5	1980-	---

TABLE 1.--*Hydrologic data stations operated by the U.S. Geological Survey, 1989*--Continued

Station No.	Station name	Drainage area (mi^2)	Period of record	Mean annual flow (ft^3/s)
	SOUTHWEST ALASKA			
15302000	Nuyakuk River near Dillingham	1,490	1953-	8,180
15302500	Nushagak River at Ekwok	9,850	1977-	22,930
15303010	Silver Salmon Creek near Aleknegik	4.46	1965-67, 1969-83 1984-86, 1987-	---
15303700	Tatalina River near Takotna	76.9	1987-	---
15304000	Kuskokwim River at Crooked Creek	31,100	1951-	40,900
15304393	Browns Creek near Bethel	4.79	1988-	---
	YUKON ALASKA			
15344000	King Creek near Dome Creek	5.99	1975-82, 1983-	---
15356000	Yukon River at Eagle	113,500	1911-13, 1950-	82,950
15388950	Porcupine River at Old Crow, Yukon Territory	21,400	1961-68, 1969-	11,440
15453500	Yukon River near Stevens Village	196,300	1976-	119,900
15478000	Tanana River near Tanacross	8,550	1953-	7,974
15484000	Salcha River near Salchakat	2,170	1909-10, 1948-	1,652
15485500	Tanana River at Fairbanks	---	1973-	19,430
15493000	Chena River near Two Rivers	941	1967-	684
15493700	Chena River below Moose Creek Dam	1,430	1979-	942
15511000	Little Chena River near Fairbanks	372	1966-	210
15514000	Chena River at Fairbanks	1,980	1947-48, 1948-	1,387
15515500	Tanana River at Nenana	25,600	1962-	23,800
15518080	Lignite (Hoseanna) Creek near Healy	48.1	1985-	---
15565447	Yukon River at Pilot Station	321,000	1975-	223,700
	NORTHWEST ALASKA			
15621000	Snake River near Nome	85.7	1965-81, 1982-	185
15637000	Gold Run Creek near Teller	24.2	1985-86, 1987-	---
15743850	Dahl Creek near Kobuk	11.0	1986-	---
15744500	Kobuk River near Kiana	9,520	1976-	14,850
15747000	Wulik River below Tutok Creek near Kivalina	705	1984-	---
	ARCTIC SLOPE ALASKA			
15798700	Nunavak Creek near Barrow	2.79	1971-	0.91
15896000	Kuparuk River near Deadhorse	3,130	1971-	1,328
15906000	Sagavanirktok Tributary near Pump Station 3	28.4	1979-	---
15908000	Sagavanirktok River near Pump Station 3	1,860	1982-	1,267
	FLOOD WARNING STATIONS			
15237900	Salmon Creek near Seward	---	1988-	---
15239800	Anchor River near Anchor Point	137	1964-73, 1974, 1978-86, 1988-	207
15290100	Little Susitna River near Houston	168	1980-81, 1984-	---

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
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ALASKA WATER RESOURCES EVALUATION (AWARE)

FIVE-YEAR PLAN

1990-1994

Prepared by

U. S. Army Corps of Engineers
Alaska District

for

Division of Geological and Geophysical Surveys,
Department of Natural Resources, State of Alaska

and

Water Resources Division, U. S. Geological Survey
Department of the Interior

January 1990

The river belongs to the Nation,

The levee, they say, to the State:

The Government runs navigation,

The Commonwealth, though, pays the freight.

Now, here is the problem that's heavy --

Please, which is the right or the wrong --

When the water runs over the levee,

To whom does the river belong?

-- *Uncle Sam's River*, Douglas Malloch

ALASKA WATER RESOURCES EVALUATION
(AWARE)
FIVE-YEAR PLAN
1990-1994

1. INTRODUCTION

1.1 Purpose

The Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys (DNR-DGGS), and the U. S. Geological Survey, Water Resources Division (USGS-WRD) developed a statewide program for water-data collection and hydrologic studies called AWARE (Alaska Water Resources Evaluation). This document is a summary of the current and proposed plan (through 1994) for basic hydrologic data collection and study activities in Alaska by these and other agencies. It will help develop and update the Statewide Natural Resources Plan. The U. S. Army Corps of Engineers, through its Planning Assistance to States Program, has assisted in collecting information to update the 1984-1989 plan and produce this document. New in the plan, as a result of the Corps involvement, are sections on various authorities and responsibilities that the Federal, State, and municipal agencies have available.

This document is a plan. Accomplishment of its goals and objectives will depend on the continued support and participation, in terms of funding and available personnel, of all agencies involved. These factors are obviously subject to change because of economic conditions, priorities, and policy decisions at all levels of government.

1.2 Background

Water is required for human consumption, sanitation, and production of industrial goods, food, and fiber. It furnishes an important mode of transportation and has significant recreational values throughout the world. This valuable resource can also be a problem. Too much water in the wrong place at the wrong time, or flooding, causes substantial damages and loss of life around the world. However, the lack of water, or drought, can have effects just as detrimental. Water resource activities are the concern of economists, political scientists, geologists, civil engineers, chemists, biologists, and other specialists in the natural and social sciences. To evaluate water resource problems effectively, one must understand the magnitude, duration, and frequency of occurrence of the water resource as well as its intended use. The basis for that understanding is an adequate supply of water resources data.

The rivers, lakes, snowfields, glaciers, permafrost, muskeg, and wet tundra play a major role in the economy and lifestyles of Alaskan people. Water resources data are required to effectively plan and manage water usage for private, municipal, commercial, and industrial water supply; recreational activities; hydroelectric power generation; irrigation;

placer mining; and numerous other activities. Water data are analyzed to develop criteria for protection of aquatic environments that support commercial and recreational fishing. Data are required to predict the probable occurrence and severity of hydrologic hazards such as floods, erosion, and droughts. Measurements and observations of hydrologic features unique to arctic and subarctic environments, such as glaciers, aufeis (icings), permafrost, and ice-jam and glacier outburst flooding, are critical to the effective use of the State's water resources.

The U.S. Geological Survey (USGS) started systematic collection of hydrologic data in Alaska Territory in the late 1940's, and its Water Resources Division still dominates Alaska water data collection today. After statehood, the Division of Geological and Geophysical Surveys (DGGS) of the Alaska Department of Natural Resources (DNR) became the Alaska equivalent of the USGS. The DGGS is the designated State agency responsible for water resources data collection.

Agencies at all levels of government, universities and their associated institutes, many private enterprises, and individuals must have adequate information about water resources to conduct their activities. A primary user of water data is the Division of Land and Water Management of DNR, the agency responsible for adjudication of water rights and management of water use in Alaska. Coordination of water-data collection and management has become a major concern. This plan is a response to that concern.

2. ALASKA'S WATER RESOURCES

Glaciers and permanent snowfields cover approximately 5 percent of the State of Alaska, or about 30,000 square miles. Seasonal snow, however, covers most of the State during 6 to 9 months of the year, and the freeze-thaw cycle affects water throughout the State.

2.1 Surface Water

Surface waters in Alaska include many large rivers. The Yukon River ranks fifth in size in the United States, and seven Alaskan rivers (Yukon, Copper, Stikine, Susitna, Kuskokwim, Tanana, and Nushagak) are among the 30 largest U.S. rivers. The presence of glaciers on many Alaskan rivers adds an important dimension to surface water behavior. Sediment loads in excess of the rivers' carrying capacities create broad alluvial flood plains. Developed areas along these rivers are often threatened due to floods and erosion. Glaciers can also influence runoff timing to the extent that empirically derived runoff relationships are invalid.

Alaskan lakes are so numerous that they are essentially uncounted. Lake Iliamna, Alaska's largest, has a surface area of 1,000 square miles. Springs occur throughout the State as innumerable small seeps and as warm mineral waters that support recreational centers. On the North Slope, flow from large springs produces widespread icings (aufeis) in the winter.

2.2 Ground Water

Ground water used to be virtually an untested resource in most of Alaska, but because of a more environmentally aware public, it is slowly being recognized as a valuable resource. Ground water conditions are highly variable. Major aquifers are present in the alluvium of large river valleys such as the Yukon, Tanana, Kuskokwim, and Susitna; in the glacial outwash deposits under coastal basins such as Cook Inlet; in the Seward and Juneau valleys; and in carbonate bedrock of the Brooks Range. Aquifers of lesser potential exist in poorly permeable consolidated rocks and fine-grained material of glacial and glacial-lake deposits. Because permafrost plays a major role in aquifer recharge, discharge, and movement, studies to determine the availability and quality of ground water become limited in reliability without the appropriate resources to collect and evaluate the data.

2.3 Water Quality

The quality of Alaskan water is generally acceptable for most uses. However, available data do indicate naturally occurring problems such as suspended sediments in glacier-fed streams, salt-water intrusions, and undesirable concentrations of iron or arsenic in ground water at various locations. A few instances of local, man-caused water pollution have been identified.

3. THE FIVE-YEAR PLAN

The AWARE 5-year plan complements and defines the DNR Statewide Natural Resources Plan, which sets water resources inventory and water management goals and objectives. A Memorandum of Agreement between USGS-WRD and DNR-DGGS states the need for a comprehensive program to provide for coordination of water-data collection and water resources study activities in Alaska. The memorandum specifies that a 5-year plan for such a program be prepared, reviewed, and updated annually.

This plan has been prepared by the U. S. Army Corps of Engineers (COE) for the DNR and USGS under the Planning Assistance to States program, using information collected from other Federal, State and local agencies and private enterprises. The progress, status, and future needs for data collection and hydrologic studies in Alaska are primary considerations. This revised plan states how programs can be initiated and identifies the agencies from whom assistance may be available. State and Federal agencies and municipalities involved in water-related activities, using water data, or needing such data have been contacted for information. Responses from those agencies, along with the results of the joint USGS-DGGS review of the AWARE program, have been incorporated into this revised 5-year plan.

3.1 Long-Range Goal

The goal of this plan is to provide water resources information needed by State, Federal, and municipal agencies, as well as by industry and the general public, in order to use and manage Alaska's water resources for the benefit of the people of Alaska.

3.2 Objectives

The objectives of the plan are as follows:

- To collect, analyze, and distribute data on the quantity and quality of Alaska's surface, subsurface, and coastal waters; and

- To coordinate water data acquisition among State, Federal, and local agencies.

3.3 Approach

Alaskan water resources projects and studies are grouped by governmental level - Federal, State, or municipal - with authorities and responsibilities of the various agencies at each level discussed first. Projects and studies at each level are then listed by geographical region: northern, southcentral, southeastern, or statewide. Land and water management regions established by the DNR's Division of Land and Water Management are used. These regions are shown in figure 1.

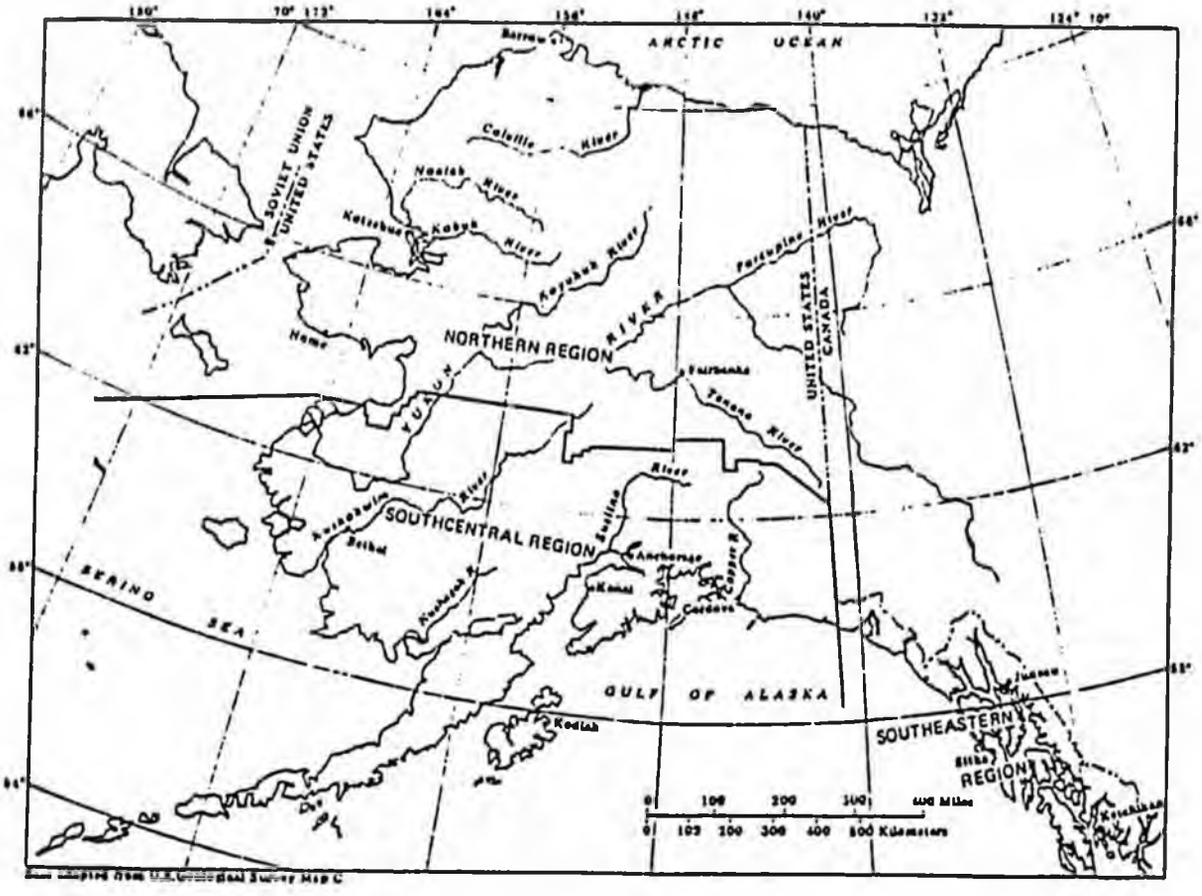

FIGURE 1.--Index to land and water management regions.

3.4 Plan Revision

The AWARE program, to be successful, must include input from all groups or individuals who need or use water data. Participation in the continuing formulation of this plan is welcome. Suggestions for additions or other changes should be brought to the attention of:

Chief, Water Resources Section
DNR/DGGS
P.O. Box 77-2116
Eagle River, Alaska 99577

(907) 696-0700

District Chief
USGS/WRD
4230 University Drive,
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Anchorage, Alaska 99508-4664
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4. ALASKA WATER ISSUES

Alaska has abundant water resources, most of which are undeveloped. Certain natural phenomena hinder development. Glacial silt and seasonal freezing affect the availability of surface water, and permafrost affects the availability of ground water. Climatic zones range from arctic through continental to maritime. Precipitation ranges from about 10 inches on the Arctic Slope to about 300 inches in parts of southeastern Alaska. Alaska's population nearly doubled from 1970 to 1985. The concentration of this population in the Anchorage-Kenai Peninsula, Fairbanks, and Juneau areas has resulted in increased demands on their water supply facilities. Continued development of Alaska's abundant metallic and nonmetallic mineral and energy resources (oil, gas, and coal) will affect water needs. The preservation and protection of fish habitat is essential for the State's anadromous fish industry. Major water issues are summarized by category below.

4.1 Water Availability Issues

4.1.1 Surface Water. Existing water supply facilities for Juneau do not have sufficient capacity to meet projected demand in the next few years. Juneau is meeting demands with surface water but is investigating the possibility of using ground water from the Mendenhall Valley.

4.1.2 Ground Water. In most of the State, permafrost decreases the quantity of ground water that would otherwise be available. Ground water below the permafrost usually is saline. In the Copper River Basin, a number of the small unincorporated communities along the State highway have potential water-supply shortages because of frozen ground, shallow or small aquifers, saline ground water, or malfunctioning distribution systems. Many small coastal communities are located on bars, spits, small benches, or alluvial fans. Only small quantities of ground water are available and surface water is not a dependable source. In addition, underdeveloped or poorly developed supply systems make it difficult to meet current demands. In some coastal communities where pipes are insufficiently insulated to prevent freezing, faucets are left running to keep pipes open, which results in excessive water use during the winter months.

4.2 Water Quality Issues

4.2.1 Surface Water - Point and Nonpoint Sources of Pollution. Streams draining commercial and densely populated residential areas of Anchorage contain slightly greater concentrations of dissolved solids and suspended sediments than do streams draining only undeveloped lands. Similar water quality effects might be expected, but so far have not been documented, in parts of Fairbanks and Juneau. There is concern that effluent from sewage treatment plants and possibly leachate from waste disposal sites in areas around Anchorage, Fairbanks, and Juneau may adversely affect the quality of local water resources.

4.2.2 Ground Water - Landfills and Septic Systems. Leachate from some landfills and effluent from septic systems may pose a threat to the quality of local ground water because of the combination of permafrost, intense springtime recharge, proximity of surface water bodies, and permeable surficial material. Leachates from landfills are of particular concern in the Anchorage and Fairbanks areas. In the Big Lake and Wasilla areas, a shallow aquifer underlain by relatively impermeable material also makes ground-water pollution from shallow septic systems a concern.

4.2.3 Ground Water - Chemical Constituents. Many residential wells in the bedrock hills near Fairbanks produce water containing large concentrations of iron, arsenic, and/or nitrate. The iron and arsenic may be of natural origins, although the exact sources are unknown. Some of the nitrate may be from septic-system effluent. Large iron concentrations are a common problem in ground water throughout Alaska.

4.2.4 Eutrophication. Eutrophication of lakes in the Palmer-Wasilla area is the result of recreational use and the concentration of nutrients in runoff from adjacent developing areas.

4.2.5 Acidic Precipitation. This may be a problem on the Arctic Slope. A recent survey found that water from snow samples at 15 sites on the Arctic Slope had pH values of less than 4.9. Many arctic lakes are susceptible to acidification because the waters have little capacity to neutralize acid.

4.3 Hydrologic Hazards and Land Use Issues

4.3.1 Volcanoes. Flooding, mudflows, and ash falls could result from volcanic activity at any of Alaska's 40 active volcanoes. Mount Spurr, 70 miles west of Anchorage, poses a threat to water supply sources, power transmission lines, electricity-generating plants, and oil production facilities. Flooding and mudflows could result from thermal activity at Mount Wrangell in the Copper River Basin.

4.3.2 Ice Jam Flooding. Streams in Interior Alaska, particularly the Yukon and Kuskokwim Rivers and their tributaries, are subject to ice jam floods during the spring. Many villages in Alaska have been damaged extensively by such floods. Peak flood stage may persist for several days or more until the ice jam dissipates.

4.3.3 Glacial Outburst Flooding. Nearly 750 glacier-dammed lakes exist in Alaska. Although many of these lakes are in remote areas, continued development of roads, mines, and power grids will increase the chances for loss of life and property damage from glacial outburst flooding. Development is occurring on the flood plain of the Knik River, which has been inundated periodically by floods caused by spring melting of the glacier damming Lake George. This flooding occurred annually prior to 1966 but has not occurred since then.

4.3.4 Erosion and Sedimentation. Streambank erosion is prevalent in Alaska and causes property damage to structures and villages near the

rivers. Accelerated erosion of the Kenai River may be partly caused by man's activities. Erosion adjacent to roadsides, culverts, and bridges is common along the Dalton Highway (pipeline haul road).

4.3.5 Resource Development - Hydroelectric Power. The effects of hydroelectric power development are of concern to the State. Changes in the flow, sediment, and thermal regimes of streams may adversely affect fisheries.

4.3.6 Resource Development - Mineral Extraction. Improper disposal of wastes and waste water associated with development of the State's mineral resources can adversely affect water quality. In northern Alaska, permafrost retards the movement of pollutants through the ground; thus, waste water at or near the land surface has the potential to enter nearby lakes and streams. Placer mining, in particular, causes large increases in sediment and dissolved-solids concentration in streams. Changes in the sediment regime of streams may adversely affect the migration and spawning of anadromous fish.

4.4 Institutional and Management Issues

4.4.1 Water Laws. A concern to the State is the claim by some Native groups that the State has no claim to ground water under Native lands.

4.4.2 Water Allocation. At present one of the more important issues in Alaska is the implementation of the Alaska National Interest Lands Conservation Act of 1980 (Public Law 96-487). Clarification of land ownership will result in new resource development and associated water allocation issues. Also of importance are issues concerning instream use, such as navigability.

5. FEDERAL PROGRAMS

Federal agencies in Alaska require a substantial amount of water resources data to perform their respective functions. Several agencies are specifically funded to collect, analyze, and report findings, while other agencies depend on the work of others to provide them with the information they need. The USGS and the National Weather Service (NWS) are probably the two Federal agencies most involved in collection of precipitation, streamflow, and ground water data throughout the State. Agencies such as the Environmental Protection Agency (EPA), Soil Conservation Service (SCS), and the Corps of Engineers are also major users of water resources data. NWS uses the data for its primary hydrologic responsibility of flood forecasting and warning.

5.1 Authorities and Responsibilities

5.1.1 U.S. Geological Survey, Water Resources Division. The mission of the Water Resources Division, which supports the overall mission of the U. S. Department of the Interior and the USGS, is to provide the hydrologic information and understanding needed for the best use and management of the Nation's water resources for the benefit of the people of the United States.

To accomplish its mission, the WRD, in cooperation with State and local governments and other Federal agencies, performs the following tasks:

- Systematically collects data needed for the continuing determination and evaluation of the quantity, quality and use of the Nation's water resources.

- Conducts analytical and interpretive water resources appraisals to describe the occurrence, availability, and physical, chemical, and biological characteristics of surface and ground water and their interrelationship.

- Conducts supportive basic and problem-oriented research in hydraulics, hydrology, and related fields of science and engineering to improve the basis for field investigations and measurement techniques and to understand hydrologic systems sufficiently well to predict quantitatively their response to stress, either natural or manmade.

- Disseminates water data and the results of investigations and research through reports, maps, computerized information services, and other forms of public releases.

- Coordinates the activities of all Federal agencies in the acquisition of certain water data.

- Provides scientific and technical assistance in hydrologic fields to State, local, and other Federal agencies, to licensees of the Federal

Energy Regulatory Commission, and, on the behalf of the U.S. Department of State, to international agencies.

- Acquires, develops, and disseminates information on water-related natural hazards such as droughts, floods, landslides, land subsidence, mudflows, and volcanoes.

- Administers the provisions of the Water Resources Research Act of 1984, which include the State Water Resources Research Institutes and Research Grants and Contracts Programs.

- Supports the provisions of the National Environmental Policy Act of 1969 and manages USGS conduct of natural resources surveys in response to the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund Act) of 1980, and the Superfund Amendment and Reauthorization Act of 1986.

Authority for carrying out this mission is derived from legislation of 1879, which created the USGS, and legislation of 1888 and 1894, which provided for gauging of streams and determining the Nation's water supply. Congressional appropriations have been made annually since 1894 for gauging streams and performing other functions relating to water resources. (Locations of Alaska gauging stations are listed in tables 1-4 at the end of subsection 5.5). In 1964, the USGS mission was broadened to include the role of lead agency in the coordination of the activities of all Federal agencies in the acquisition of certain water data. This responsibility was assigned to the Department of the Interior by Office of Management and Budget (OMB) Circular A-67.

Funding for USGS-WRD programs may come from several sources. The Federal-State Cooperative Program is a partnership for water resources investigations between the U.S. Geological Survey and State, regional, and local agencies. The cooperating agency contributes at least half the funds, while the USGS contributes the balance of needed funds and performs most of the work. These cooperative efforts generate much of the hydrologic information needed for planning, developing, and managing the water resources of the Nation.

Direct, congressionally appropriated Federal funds support long-term and/or baseline hydrologic data networks, such as the National Stream-Quality Accounting Network (NASQAN), the National Hydrologic Bench-Mark Network, and the WRD's research program. Other Federal agencies may transfer funds to the USGS as reimbursement for work performed at the request of the other agency.

Further information on programs in the Water Resources Division can be obtained by contacting: U. S. Department of the Interior, Geological Survey, Water Resources Division, 4230 University Drive - Suite 201, Anchorage, Alaska 99508-4664.

5.1.2 U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service. The National Weather Service

(NWS) is responsible for collecting and analyzing climatological and streamflow data for the purposes of issuing statements and warnings on forthcoming meteorological and hydrological events. In Alaska, as in other portions of the United States, the NWS maintains a river information, forecast, and flood warning program. A network of 56 river gauge sites (table 5 at end of subsection 5.5) is located along major rivers in or near flood-prone locations. Gauge types include slope, staff, wire-weight, stilling well, and manometer. Data are transmitted daily, or more frequently if necessary, to the River Forecast Center of the NWS in Anchorage. Approximately 37 of the 56 gauges are owned by the NWS and supplement the USGS gauging network. Forecast information is available via a computer network system, and historical data are available from the River Forecast Center.

The NWS operates approximately 10 river and lake ice observation sites around the state. Observations, consisting of drilling a hole in the ice and measuring ice thickness, are made twice per month. The data are used for estimating the potential for ice jam flooding during spring breakup.

In the precipitation data monitoring and archives program, data are collected to use in various streamflow forecasting models for the NWS warning program. These models, developed for various types of watersheds, are designed to forecast potential flooding downstream in time for residents to be warned.

5.1.3 U. S. Army Corps of Engineers. The COE has a water resource planning program that has evolved in response to the Nation's changing needs, priorities, and values. Numerous competing interests have been involved in this evolution, lobbying Congress for favorable actions.

The process for planning, designing, and eventually constructing Corps projects is rather complex and often poorly understood. Generally, water resource projects require a two-stage feasibility study process, with review by higher level offices at the completion of each phase. After approval of the final study phase by various boards and councils, and eventually by the Secretary of the Army, Congress must authorize the project for construction and provide funding for General Design Memorandums and Plans and Specifications. Upon completion and approval of these documents, Congress must then fund the construction. Recently, Congress has imposed a local cost-sharing program aimed at reducing Federal costs and providing for construction of the most wanted and needed projects. Cost sharing usually begins at the second study phase and continues throughout the remainder of the project, including construction.

Under the Corps' Continuing Authority Program, Congress has provided authority to the Secretary of the Army, acting through the Chief of Engineers, to plan, design, and construct certain types of water resource improvements without obtaining individual congressional authorization. These are small projects that have funding limits. They are designed to satisfy the immediate critical needs of local interests, as opposed to the longer survey investigations which study the need for projects with

broader impact. The following paragraphs contain brief summaries of each of the specific continuing authorities.

- Snagging and Clearing for Flood Control (Section 208, Flood Control Act of 1954, as amended). This involves removing accumulated snags and other debris, and clearing and straightening the channel in navigable streams and tributaries for flood control.

- Snagging and Clearing for Navigation (Section 3, River and Harbor Act of 1945, as amended). This program is the same as that used for flood control except that the work is in the interest of navigation.

- Emergency Streambank and Shoreline Protection of Public Works and Nonprofit Public Services (Section 14, Flood Control Act of 1946, as amended). This program covers the prevention of flood-caused bank erosion and shore erosion which endanger highways, highway bridge approaches, or important and essential public facilities that serve the general public and are owned by the Federal, State, or local government. It also includes nonpublic facilities that provide nonprofit public services, such as churches, hospitals, and schools.

- Small Flood Control Project Authority (Section 205, Flood Control Act of 1948, as amended). This program involves the construction of small projects for flood control and related purposes.

- Small Navigation Project Authority (Section 107, River and Harbor Act of 1960, as amended). This program provides for construction of small river and harbor navigation improvement projects.

- Small Beach Erosion and Shore Protection Project Authority (Section 103, River and Harbor Act of 1962, as amended). This program involves the construction of small shore and beach restoration and protection projects.

- Mitigation of Shore Damage Attributable to Federal Navigation Projects (Section 111, River and Harbor Act of 1968). This legislation authorizes the Secretary of the Army to investigate, study, and construct projects to prevent or mitigate shoreline damages caused by existing navigation works constructed by the Federal Government.

Other programs available through the COE include the following:

- Reimbursable Work. The COE can do work on a reimbursable basis for other Federal agencies (Section 601, Economy Act of 1942; Section 219, Flood Control Act of 1965, Public Law 89-298; and Presidential letters of 17 March 1942).

- Cooperation With States. Section 22 of Public Law 93-251 authorizes cooperation with States in preparing comprehensive plans for the development, utilization, and conservation of the water and related resources of drainage basins in the State.

- Flood Plain Management Services Program. Section 206 of the 1960 Flood Control Act provides for development and dissemination of information on floods and flood plains through the Flood Plain Management Services program. The purpose of the program is to assist in promoting wise use of flood plains, thereby reducing the rate of growth of flood damages in these areas. Technical planning assistance and guidance to governmental agencies and private interests under this program are funded from annual General Investigation appropriations to the COE.

Detailed information on any of the aforementioned programs can be obtained from the U.S. Army Corps of Engineers, Alaska District, Planning Branch, P. O. Box 898, Anchorage, Alaska 99506-0898.

The COE also has a permit program to regulate the development and protection of waters and wetlands so they will be used in the best interests of the public. Congress has delegated this responsibility to the COE to ensure the continued wise use, survival and health of these waters through the public interest review process. The COE has jurisdiction over placing dredged or fill material in wetlands and waterways, construction of any structure in or over navigable and tidally influenced waters, excavation of material from these waters, or any obstruction or alteration in such waters.

Section 10 of the River and Harbor Act of 1899 requires COE permits for any construction or activity that alters the navigability of the waterways (including oceans, rivers, streams, lakes, and adjacent waterways). Section 404 of the Clean Water Act of 1977 requires COE permits for placing dredged or fill material in all waters, including wetlands. These laws apply to all projects affecting these waters, from the smallest recreational dock to the largest commercial undertaking, including site development and road fills, artificial islands, bank protection, and utility line crossings.

Structures requiring permits include bulkheads with backfill, piers, pilings, ramps, breakwaters, jetties, groins, stone revetments, boathouses, and buoys or mooring devices. Other work requiring permits includes dredging and fill associated with utility lines, pads to support structures, dikes and dams, stream crossings, stream channelization, and riprap for shoreline protection.

Any individual, company, corporation, or government body planning construction or fill in waters of the United States, including wetlands, must obtain a permit from the COE before starting the work. These permits are required on private land as well as on public land. To determine whether a permit is required, contact the COE. This service is provided by the COE Regulatory Branch at no charge. If the proposed project requires a permit, a formal application must be submitted. A public notice is issued and the application is reviewed by other Federal, State, and local agencies and by the public. If the project is controversial, a public hearing may be held. COE specialists analyze the impacts of the proposed activity, considering several important factors including economics, environmental concerns, water quality, navigation, flood storage, cultural resources, esthetics, recreation, water supply, energy

needs, safety, food production, and the needs and welfare of the applicant. As a result of this review, an applicant may be required to modify potentially detrimental aspects of the proposed project to comply with the intent of the laws. Permits are issued by the Corps' district engineer when the project is found to be in the public interest. An applicant must obtain other Federal, State, and local permits for the project in addition to the COE permit.

Considerable time and expense may be saved by contacting the COE for a permit before beginning work in waterways or wetlands. Penalties for noncompliance with the laws are high. Violators are subject to fines up to $25,000 per day, or imprisonment for up to 1 year, or both. For permit application information and jurisdictional determinations, contact U.S. Army Corps of Engineers, Alaska District, Regulatory Branch, P.O. Box 898, Anchorage, Alaska 99506-0898. You may also telephone (907) 753-2712 or toll-free (800) 478-2712.

5.1.4 U. S. Department of Agriculture, Agricultural Stabilization and Conservation Service. The Agricultural Stabilization and Conservation Service (ASCS) has an agricultural conservation program whereby water resources information is both required and/or indirectly obtained. The Agricultural Conservation Program (ACP) is a joint effort by agricultural producers, Federal and State agencies, and other groups to restore and protect the Nation's land and water resources and preserve the environment.

The ACP provides cost-sharing with farmers and ranchers in carrying out conservation and environmental protection practices on agricultural land that result in long-term public benefits. The ACP is designed to help prevent soil erosion and water pollution; protect and improve productive farm and ranch land; conserve water used in agriculture; preserve and develop wildlife habitat; and encourage energy conservation measures. Practices that are primarily production-oriented or that result in significant economic benefits to the farmer or rancher are not eligible for ACP cost-sharing.

The ACP is national in scope and is available for participation by all farmers and ranchers who establish the need for cost-share assistance in solving resource conservation and agricultural pollution problems. The practices approved for cost-sharing must result in long-term and community-wide benefits, and must be practices that the farmer or rancher would not, or could not, be expected to undertake without financial and technical assistance. Annual, short-term, and long-term contracting arrangements are available.

The ACP is authorized in Sections 7 to 15, 16(a), and 17 of the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended and supplemented by Title X of the Agriculture and Consumer Protection Act of 1973. The program's goals and authorities were updated by the Food and Agriculture Act of 1977, and were further modified under the Agriculture, Rural Development, and Related Agencies Appropriations Act for fiscal year 1979 and Section 259 of the Energy Security Act of

1980. Funds for the program are provided annually through the regular appropriation process.

The ACP is administered by Agricultural Stabilization and Conservation (ASC) State and county committees, working under the general direction of the ASCS. ASCS State and county offices are focal points for the administration of ACP. Although Alaska does not have counties, the State has county ASCS offices located in Delta Junction, Fairbanks, Homer, and Palmer. The Soil Conservation Service, the Forest Service, and State forestry agencies are responsible for providing technical program guidance to ASC committees as well as technical assistance to farmers in carrying out conservation practices. The county Cooperative Extension Service provides educational support.

To assure that the program provides effective solutions to local conservation problems, county ASC committees periodically meet with county program development groups to identify the problems and develop conservation practices designed to solve them. These practices are included by ASC county committees in the county agricultural conservation programs. County ASC committees work with farmers and ranchers to encourage their adoption of the most needed practices and assign priorities to designated practices. State ASC committees review and approve county programs, which must also be approved by the Secretary of Agriculture before they are implemented.

ACP funds are authorized annually by Congress. The Secretary of Agriculture determines how much each State receives based on the State's soil and water conservation needs. The funds are distributed through State committees to county committees, which allocate funds to farmers and ranchers.

Cost sharing is available under annual agreements or long-term agreements. Requests for long-term agreements can be accepted for complete farms for a period of 3 to 10 years, or for a portion of a farm for a period of 3 to 5 years. The maximum cost-share limitation for the annual program is $3,500 per person. (A person is defined as an individual, group partnership, corporation, or other legal entity owning or operating a farm or ranch.) However, lump sum payments in excess of $3,500 are authorized for a component if a long-term agreement is completed in 1 year.

The Federal Government may pay up to 75 percent of the cost to install practices under annual agreements (or a higher rate if authorized by the Secretary of Agriculture). The Federal share of the cost depends on the public benefits resulting from the conservation or pollution abatement practice.

Producers must agree to maintain practices for a specified number of years. Producers who fail to do so are required to refund all or part of the Federal funds provided for installation of the practice.

Farmers or ranchers may enter into pooling agreements to jointly solve mutual conservation problems.

To participate, a farmer files a request with the ASC county committee (the ASCS county office) for ACP cost sharing. An ACP practice must be approved before the practice is started.

The county committee notifies the applicant by letter that the request for cost sharing has been approved subject to a determination by SCS, on certain practices, that the practice is feasible. For long-term agreements, a conservation plan must be developed by a representative of SCS and approved by the Soil and Water Conservation District before final approval by the county ASC committee can be obtained.

After the practice is completed, the farmer certifies to the county office that all installation specifications, technical standards, and any State or local applicable regulations have been met. The farmer pays the total cost of establishing the approved practices and is then reimbursed for the Government's share of the cost.

Among practices eligible for cost-sharing assistance under ACP are establishment or improvement of permanent vegetative cover, contour or strip-cropping systems, and terrace systems; development of springs, seeps, and wells; installation of pipelines, storage facilities, and other measures intended to provide erosion control on range or pasture land; installation of water impoundment reservoirs for erosion control, conservation, and environmental and wildlife enhancement; planting trees and shrubs and improving timber stands for protection against wind and water erosion and to protect trees for timber production; and development of new or rehabilitation of existing shallow-water areas to support food, habitat, and cover for wildlife.

For other practices that are or may be available for ACP cost-sharing assistance, agricultural land owners and operators should contact their local ASCS county office. Office supervisors, addresses, and telephone numbers of the four county ASCS offices in Alaska are as follows:

Delta County ASCS Office
P.O. Box 585
Delta Junction, Alaska 99737
Denise Coakley, Program Assistant
in Charge
(907) 895-4242

Homer County ASCS Office
P.O. Box 1015
Homer, Alaska 99603
Bruce Warner, Program Assistant
in Charge
(907) 235-8176

Fairbanks County ASCS Office
1760 Westwood Way
Fairbanks, Alaska 99701
Yvonne McKee, Program Assistant
in Charge
(907) 479-6767

Palmer County ASCS Office
268 East Fireweed, Suite 3
Palmer, Alaska 99645
Nancy Heins, Program Assistant
in Charge
(907) 745-4271

Stream Gaging for Alaska

Advantages of the U.S. Geological Survey Program

- The U.S. Geological Survey (USGS) has developed, published and uses standard methods for collection, analysis and dissemination of data and information. These standards have been accepted and recognized by the National and International hydrologic communities and ensure the compatibility of widely used analytical techniques.

- The USGS has developed and used a nationwide quality control and quality assurance program to quantify the accuracy of data collected, stored, and published.

- The USGS, a non-regulatory and non-management agency, has a strong reputation for the collection of unbiased data. This data has historically stood up in court after close technical scrutiny.

- Data collected by the USGS in Alaska are published for use by all parties including other Federal agencies, State agencies, local Boroughs, cities, private Alaskan business, and the general public.

- Data collected by the USGS are stored in a local and a national computer data base. These data bases allow easy access to all current and historic USGS data.

- The data base allows timely retrieval of data. Existing software allows for efficient tabling, graphics, data reduction and statistical evaluation of Alaskan data.

- No other comprehensive data base exists in Alaska that allows easy access by not only all Alaskans but all interested parties nation-wide. The USGS data are also available commercially on CD-ROM (laser disks) for ease of use in desk-top applications.

- The USGS data base will be maintained indefinitely.

- The USGS cooperative program provides up to 50% of the costs in joint water-resource programs with State and local government agencies in Alaska.

- The USGS has a local staff of trained hydrologists and hydrologic technicians familiar with all aspects of hydrology in Alaska.

- The USGS has local field offices in Anchorage, Juneau and Fairbanks. Locating field offices in three different areas of the state allows our staff to be aware of local hydrology and associated local problems and needs.

- The USGS has a nationally recognized training program that insures our personnel use the best techniques available to collect water-resource data. This training program is available to cooperators.

- The USGS has the necessary equipment to collect all types of water-resource data.

- The USGS has an ongoing program of research and development of new methods and new instrumentation in the field of hydrology.

- The USGS in Alaska has access to a highly skilled research staff and leading experts in the field of hydrology nationwide capable of addressing the most difficult hydrologic problems. This pool of expertise is unparalleled worldwide.

- The USGS actively seeks out local governmental agencies to share resources and knowledge and cooperate with on water-resource data collection and water-resource studies.

- The USGS collects data from all areas of Alaska.

- The USGS works jointly with Canada to share data and information concerning water-resources common to both countries.

- The USGS works cooperatively with local universities to provide expertise when needed and learn from new ideas generated by the universities.

- The USGS hires local university students in our "Student Coop Program" to help train future Alaskan scientists and inject new ideas in our day-to-day programs.

- The USGS hires local high school students to aid career development and job skills.

- The USGS collects data in the most cost effective manner consistent with the quality assurance guidelines.

- USGS programs and presence in Alaska feed monies directly into the Alaskan business community.

- USGS data are often the first stepping stone in detailed studies of hydrology.

U.S. GEOLOGICAL SURVEY

STATE OF ALASKA

Water Resources Cooperative Program

BRIEFING DOCUMENT

February 22,1991

U.S. GEOLOGICAL SURVEY

STATE OF ALASKA

Water Resources Cooperative Program

BRIEFING DOCUMENT

Long Long term / short-term info coop

February 22,1991

CONTACTS

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Kendall Thompson	Asst. District Chief	(907) 786-7115

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Anchorage, Alaska 99508-4664
(907) 786-7100

U.S. GEOLOGICAL SURVEY - ALASKA

Perspective

The U.S. Geological Survey (USGS) is a natural resources assessment Bureau of the Department of the Interior and is the Nation's largest earth-science resource agency. It is a non-regulatory, non management agency whose mission is:

> "to provide hydrologic, geologic, and topographic information that contributes to the wise management of the Nation's natural resources and that promotes the safety and well-being of the public".

The USGS was created in 1879, and water-resources investigations have been a part of it's program since inception. The general objective of the Water Resources Division, USGS, is to provide the hydrologic information and understanding needed for optimum utilization and management of the Nation's water resources. This is accomplished through data collection, interpretive appraisals, basic and applied research in hydraulics and hydrology, and providing scientific and technical assistance to other agencies.

The Water Resources Division of the USGS accomplishes these missions through cooperatively funded programs (50-50) with State and local agencies, full funding by other Federal Agencies, and some direct appropriations. Our goal at the District (state) level is to maintain communication and cooperation with the principal state water agencies so that the state is properly represented in the national context. The desired result is a broad, progressive, and flexible cooperative water-resources program in Alaska that meets both state and national needs.

The Water Resources Division program in Alaska consists of hydrologic monitoring activities and in-depth scientific investigations of hydrology.

Hydrologic Monitoring for Alaska

Collection of stream flow data by the Geological Survey in the Territory of Alaska began during the summer of 1906 in connection with placer mining for gold near Nome on the Seward Peninsula. Data collection expanded in 1907 on the Seward Peninsula and into the Yukon and Tanana River basins. In 1913, efforts shifted to a general reconnaissance of the water-power potential of many sites in the lower Copper River basin and in southeast Alaska. In 1921, data collection in Alaska by the U.S. Geological Survey halted but was restarted in 1946. By 1950, there were 47 active stream-gaging stations operated by the U.S. Geological Survey. A bar graph showing a history of the number of continuous-recording stream gages operated in Alaska since 1946 is attached.

Streamflow data have been collected continuously by the U.S. Geological Survey at about 230 sites for 5 or more years and about 160 sites for 10 or more years. Most of those records have been collected in Southeast Alaska, developed areas of South Central Alaska, and within the Tanana River basin. In the "lower 48" the density of stream-gaging stations is about 1 gage per 400 square miles. By comparison, Alaska contains more than 40 percent of the nation's surface-water resources, however the density of stream-gaging stations is only about 1 gage per 6,000 square miles.

The maximum number of stream-gaging stations operated during one water year was 130 stations in 1972. During the 1989 water year, we collected data from 85 stream-gaging stations, which is about 35 percent fewer stations. One of the principal reasons for this reduction in stream-gaging activity, especially during the 1980's has been the reduction of cooperative funding from State, local and other agencies who experienced budget cuts in their programs. (See attached figure and table showing funding sources for the current stream gaging program).

Data for about 2,560 surface-water sites, including data for 96 Canadian stations, are stored in the USGS National Water Information System (NWIS) data base for Alaska. Among these surface-water sites are about 1,880 streams, 630 lakes, 33 meterological sites and 11 estuaries.

Information for about 17,000 ground-water sites is stored in the data base. The aerial distribution of the data is about 6,400 sites in the Municipality of Anchorage, 2,610 sites in the Kenai Peninsula Borough and 1,630 sites in the Fairbanks North Star Borough. The remaining sites are in towns, villages and remote areas scattered across the State. Some of the earliest ground-water data were collected in 1903 from wells near Cordova. The deepest well in Alaska contained in our data base was drilled by SOCAL in 1962 to a depth of 16,428 feet in the Beluga gas field, on the west side of Cook Inlet. Logs of most wells drilled in Alaska, however, have not been entered into the data base.

In our water-quality data base, we have water-quality information at about 4,130 sites in Alaska. Surface-water sites comprise about 1,550 of these sites and ground-water about 2,100 of these sites. The majority of the remaining sites are lakes and estuaries.

Hydrologic Investigations for Alaska

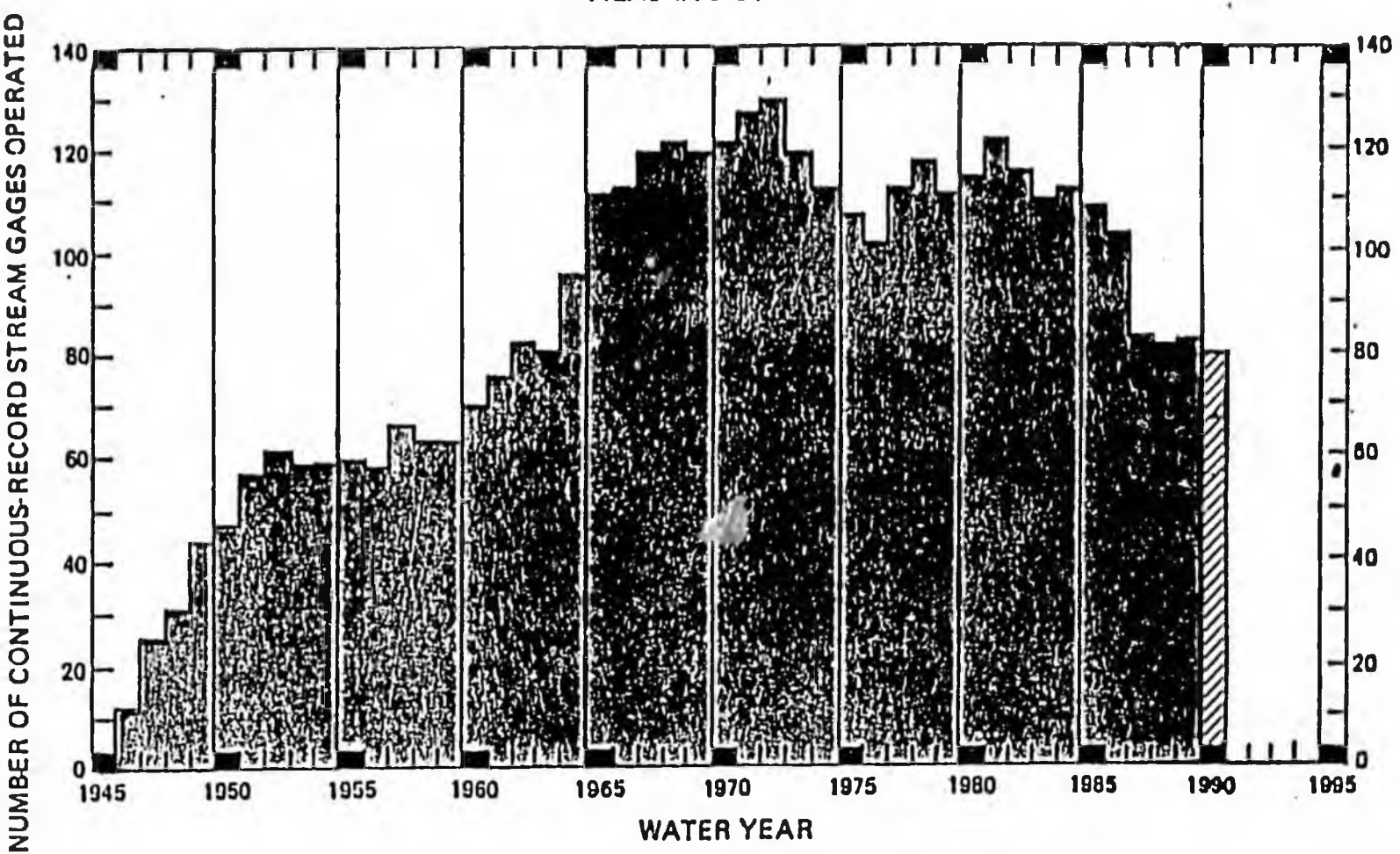
The Geological Survey conducted the first water-resources assessments in Alaska shortly after the gold miners arrived near the turn of the century. Prior to Alaska Statehood, these studies were federally funded and were conducted in response to Federal information needs. By the 1960's, however, the Geological Survey's "Cooperative Program", in which State or local government agencies paid half of the costs, became a principal component of the water-resources studies in the State. Initially, the State lacked revenues to support a significant long-term program and much of the Survey's efforts were in cooperation with the Boroughs, notably the Greater Anchorage Area Borough. Almost from the beginning of the Cooperative Program, however, a study with the Alaska Department of Transportation has maintained a network of gages on small streams. It is this network that provides the flood data required to evaluate flood risks and calibrate equations for estimating regional flood hazards.

When State revenues increased dramatically following completion of the Alyeska Pipeline, the Alaska Division of Geological and Geophysical Surveys (DGGS) assumed responsibility for investigations previously conducted by other State agencies and became a major cooperator of the Geological Survey. the USGS and DGGS formalized this large program of hydrologic studies during the early 1980's as the AWaRE Program (an acronym for Alaska Water Resources Evaluation). The AWaRE Program has been the only long-range planning document for hydrologic studies in Alaska. Unfortunately, its utility has been severely limited by lack of funding to implement long-term plans. Most hydrologic studies in Alaska are therefore in response to short-term information needs.

The Geological Survey, in cooperation with many Federal, State, and local agencies, has published more that 200 reports on the hydrology of Alaska and maintains the largest data base of water-resources information in the State. Much of that data base would not exist without the support of State and local agencies. In particular, the long-term support of DGGS is largely responsible for the quality of Alaska's ground water data base, which is among the best in the Nation.

Although there are new many agencies and firms conducting hydrologic studies in Alaska, the background information cited in virtually every water-resources report in the State includes the pioneering work by the U.S. Geological Survey. In addition, the Geological Survey is the only agency that maintains a long-term commitment to maintenance of a water-resources data base that is accessible to all users.

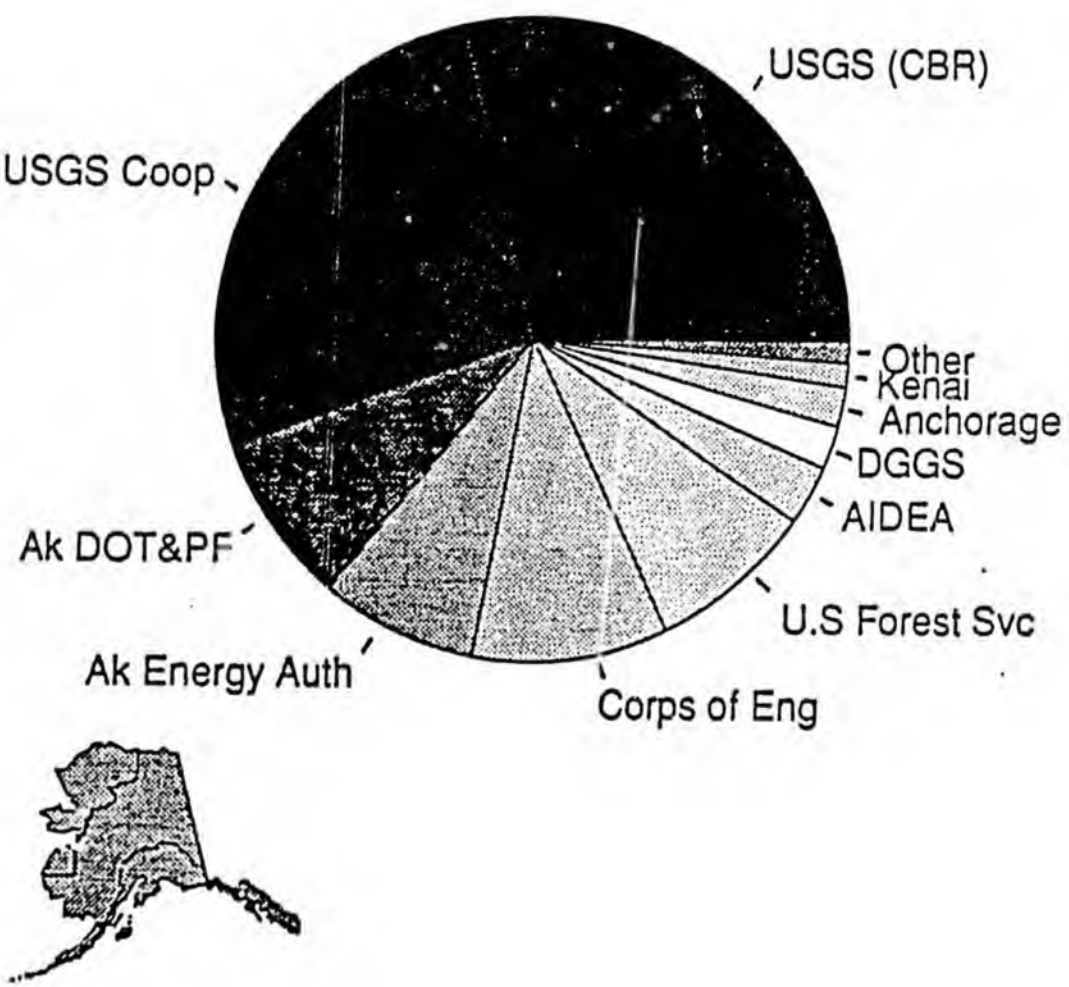
U.S. GEOLOGICAL SURVEY
ALASKA DISTRICT



U.S. GEOLOGICAL SURVEY

Stream gaging program

$ 2,187,800



FY90 or Projected FY91 Program Costs
Surface Water Stream Gaging Sites

Cooperator	No. of Gaging Stations	CGS	Funding Coop	USGS	OFA	Total
CBR (1)	28	--	--	$657,500	--	$657,500
DOT	--	70	$200,000	$200,000	--	$400,000
AEA (1)(2)	9	--	$183,000	$ 91,980	--	$274,980
Corps	15	6	--	$ 61,000	$171,000	$232,000
Forest Service (1)	12	--	--	--	$194,700	$194,700
DGGS	7	--	$ 48,700	$ 48,700	--	$ 97,400
AIDEA (1)(2)	2	--	$ 69,300	$ 20,800		$ 90,100
Anchorage (1)	6	--	$ 45,000	$ 45,000	--	$ 90,000
Kenai	3	2	$ 27,800	$ 27,800	--	$ 55,600
Other	2	--	$ 25,100	$ 25,100	--	$ 50,200
Juneau (1)	2	--	$ 18,700	$ 18,700	--	$ 37,400
Sitka	1	--	$ 4.000	$ 4.000	--	$ 8.000
	91					
	Subtotals		$621,600	$1,200,580	$ 365,700	
					TOTAL	$2,187,880

(1) Includes water-quality work
(2) Includes construction costs

Wacer Issues in Alaska - 1991

- DURING THE 1990 LEGISLATIVE SESSION, HOUSE BILL 210 was introduced. This bill, which would reserve year-around flow in streams to protect fish habitat, is expected to be re-introduced during the present legislative session. In many streams in the State, flow has not been defined, and new regional hydrologic studies would be required to support adjudication of water rights.

- THE ARCTIC NATIONAL WILDLIFE REFUGE (ANWR) is a focus of the Department of the Interior and the State of Alaska. If and when asked, the Geological Survey is prepared to assist in any way possible to meet the information needs of the State and the Administration. We do not, however, expect any major new studies prior to Fiscal Year 1993, which begins in October 1992. The Geological Survey has identified information deficiencies in geologic, hydrologic, and cartographic data, and these needs are being conveyed to the Secretary.

- SELECTION OF LANDS UNDER THE STATEHOOD ACT AND THE ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT: The Geological Survey is willing to cooperate with the state in any natural-resources surveys that may be required to assist in the selection process. We recognize that the State's commitment to select its remaining entitlements within the next few years will require a very rapid evaluation of available lands to select those of greatest value. Paucity of geologic and hydrologic data will be impediments to the selection process. If the State selects a Geographic Information System as a tool to aid in the selection process, lack of digital cartographic information will also be a major stumbling block.

- ERUPTION OF REDOUBT VOLCANO poses several hydrologic hazards to the oil terminal facility located on the alluvial fan of the Drift River. Since completion of the new dikes, the principal hydrologic concern is channel scour and the risk to pipeline crossings under Drift River and Montana Bill Creek. The Geological Survey is coordinating with State agencies relative to hazards threatening the terminal. The Water Resources Division continues to assess the magnitude of flood and debris flow events, the snow and ice volumes lost and remaining on the volcano, and the movement of the Drift Glacier. Research also continues on surveying cross sections of the Drift River and areas near the terminal facilities and on testing an experimental acoustic flow detection system.

- GROUND-WATER CONTAMINATION is becoming a topic of increasing concern, particularly on the Kenai Peninsula where governmental agencies and local home owners are questioning the effects of past waste-disposal practices by the oil and oil-service industries. The recent investigation of a large petroleum spill at the Tesoro Refinery has led to the discovery of other spills and improper disposal sites in the Nikiski area. Under the guidance of the Alaska State Geologist, an industry and government task force has been formed to look at the problems. Funding is being provided through the Alaska Oil and Gas Association, the State and the Geological Survey. The Geological Survey is conducting a major study of the aquifer systems of the Kenai Peninsula, and much of the existing information on aquifers in the Kenai Peninsula is a result of previous Geological Survey studies.

- THE SPECTACULAR FORMATION AND BREAKOUT OF GLACIER-DAMMED RUSSELL FIORD near Yakutat, is still an issue, but of significantly less prominence than it was a few years ago. Hubbard Glacier continues to advance, and damming of the fiord is expected within the next few years. The glacier dam may form and break several times before a long-term dam forms. Eventually, however, Russell Lake will form and a new outlet river will form in the valley of the present Situk River near Yakutat. The Situk River will then be transformed into a large glacier river, thus altering its present unique habitat (it is one of the world's premier steelhead trout streams).

- GLACIER-BALANCE STUDIES ARE SIGNIFICANT TO AN UNDERSTANDING OF GLOBAL CLIMATE CHANGES. Studies of global change are a major focus of research by many segments of academia and by governmental agencies. The earliest and most dramatic effects of climate warming are expected to be felt in high-latitude areas, and the Arctic contains about 25 percent of the world's terrestrial carbon. An understanding of carbon budgets is essential to an understanding of greenhouse gases. Major research efforts are being conducted by the University of Alaska, all agencies of the Department of the Interior, NASA, Department of Energy, Department of Agriculture, Department of Defense, and the National Science Foundation. Many millions of dollars are being spent and will continue to be spent over the next decade on these studies, yet the Alaska Department of Natural Resources seems to have little involvement in these studies.

  The Geological Survey, in cooperation with the University of Alaska Geophysical Institute, has an active program to study Alaska glaciers. On a global scale, Alaska has about one-half of the world's glacier ice outside of Greenland and Antarctica. These "small" glaciers are both a product of and sensitive indicator of climate with much shorter climatic response times than the larger ice bodies. The shorter climatic response time means that the glaciers of Alaska will reflect climate changes more quickly and exert their influence on sea level sooner than the larger ice bodies. Additional climate studies by the Geological Survey are expected to begin in October 1992.

- THE "WINDY CRAGGY MINE," a new copper mine proposed to be operated in Canada by a Canadian mining company will result in shipping of ore concentrate to tidewater at Haines, Alaska. The environmental effects of moving the ore through Alaska to Haines are being debated. The owners have proposed two alternatives for moving the concentrate. The first is a slurry pipeline that will result in discharge of waste water into U.S. waters at Haines. The second is large-capacity trucks that will haul more than 200 loads per day on an around-the-clock basis through the community of Haines and through a State Wildlife Refuge that contains North America's greatest concentration of bald eagles. Concerns have also been expressed that discharge from the mine may degrade water quality in a wilderness area along the Alsek River. The Survey is establishing a new gaging station along the Alsek River and will be collecting water-quality information.

- THE RETREAT OF COLUMBIA GLACIER AND THE RELEASE OF ICE BERGS INTO PRINCE WILLIAM SOUND continues to be a concern to the National Transportation Safety Board, the State of Alaska, and the petroleum industry. It was generally thought that large bergs were not able to cross the morainal shoal at the mouth of the bay and thus could not present a hazard to shipping. It is now apparent that some large bergs, which generally result from re-freezing of smaller bergs and brash ice, are large in area but shallow in draft. These are able to clear the morainal shoal and enter shipping lanes. There is also concern that the shoal is being eroded, thereby allowing more massive large-draft bergs to cross into the shipping lanes.

  The Survey continues to monitor the retreat of the glacier, but does not have a program to evaluate either the release of ice bergs or the erosion of the shoal.

- THE COPPER RIVER HIGHWAY TO CORDOVA, an identified priority of Governor Hickel, presents challenging design and construction problems. Multiple river crossings, unstable channels, and very large floods caused by outbreak of a lake dammed by Van Cleve Glacier create the potential for costly damage to the road and hydraulic structures. If the road must cross ice-cored moraines, additional damage may be caused as long-term melting continues over decades. The Geological Survey is assisting Alaska DOT&PF to obtain hydraulic data needed for design.

- LACK OF BASIC HYDROLOGIC DATA is a continuing problem that results in increased cost to government and private entities. Construction costs of roads and hydraulic structures such as bridges and culverts are increased because of inadequate data needed for proper design. Lack of data also negatively impacts many aspects of land-use planning. Aquifers and the availability of ground water have not been defined for much of the state.

Stream Gaging for Alaska

Advantages of the U.S. Geological Survey Program

- The U.S. Geological Survey (USGS) has developed, published and uses standard methods for collection, analysis and dissemination of data and information. These standards have been accepted and recognized by the National and International hydrologic communities and ensure the compatibility of widely used analytical techniques.

- The USGS has developed and used a nationwide quality control and quality assurance program to quantify the accuracy of data collected, stored, and published.

- The USGS, a non-regulatory and non-management agency, has a strong reputation for the collection of unbiased data. This data has historically stood up in court after close technical scrutiny.

- Data collected by the USGS in Alaska are published for use by all parties including other Federal agencies, State agencies, local Boroughs, cities, private Alaskan business, and the general public.

- Data collected by the USGS are stored in a local and a national computer data base. These data bases allow easy access to all current and historic USGS data.

- The data base allows timely retrieval of data. Existing software allows for efficient tabling, graphics, data reduction and statistical evaluation of Alaskan data.

- No other comprehensive data base exists in Alaska that allows easy access by not only all Alaskans but all interested parties nation-wide. The USGS data are also available commercially on CD-ROM (laser disks) for ease of use in desk-top applications.

- The USGS data base will be maintained indefinitely.

- The USGS cooperative program provides up to 50% of the costs in joint water-resource programs with State and local government agencies in Alaska.

- The USGS has a local staff of trained hydrologists and hydrologic technicians familiar with all aspects of hydrology in Alaska.

- The USGS has local field offices in Anchorage, Juneau and Fairbanks. Locating field offices in three different areas of the state allows our staff to be aware of local hydrology and associated local problems and needs.

- The USGS has a nationally recognized training program that insures our personnel use the best techniques available to collect water-resource data. This training program is available to cooperators.

- The USGS has the necessary equipment to collect all types of water-resource data.

- The USGS has an ongoing program of research and development of new methods and new instrumentation in the field of hydrology.

- The USGS in Alaska has access to a highly skilled research staff and leading experts in the field of hydrology nationwide capable of addressing the most difficult hydrologic problems. This pool of expertise is unparalleled worldwide.

- The USGS actively seeks out local governmental agencies to share resources and knowledge and cooperate with on water-resource data collection and water-resource studies.

- The USGS collects data from all areas of Alaska.

- The USGS works jointly with Canada to share data and information concerning water-resources common to both countries.

- The USGS works cooperatively with local universities to provide expertise when needed and learn from new ideas generated by the universities.

- The USGS hires local university students in our "Student Coop Program" to help train future Alaskan scientists and inject new ideas in our day-to-day programs.

- The USGS hires local high school students to aid career development and job skills.

- The USGS collects data in the most cost effective manner consistent with the quality assurance guidelines.

- USGS programs and presence in Alaska feed monies directly into the Alaskan business community.

- USGS data are often the first stepping stone in detailed studies of hydrology.

Suggested USGS-State of Alaska Cooperative Program Process

The Alaska District, USGS, desires to coordinate it's activities with a State agency principally responsible for identifying the States water resources priorities. We look to that agency for guidance in program development and coordination of studies with other State and local agencies. Additionally, that agency could provide a stable funding base to the cooperative program in Alaska. From the State's perspective, a strong cooperative program insures that study results will be used by all management and regulatory agencies. Acceptance of our cooperative program at the Survey's Regional and National headquarters level depends on the State's success in this area.

Following are some of the advantages of the cooperative program to the State of Alaska as viewed by the Geological Survey;

- Water resources investigations are conducted by an unbiased agency which has no management or regulatory function. The results of these investigations can be used by the State with confidence that they will stand up to close technical scrutiny by all users and the Courts without the apparent conflict of interest suggested if the State were to do the same investigations.

- The cost of water resources investigations for the State can be shared equally by the Geological Survey. This enables the State to obtain the benefits of a large staff without incurring a comparable large cost.

- The water resources investigations will be conducted by the Geological Survey with minimum personnel commitments by the State. This will free the State for technical and administrative oversight of the investigations and for other Agency work.

- State personnel have the opportunity to work first hand with Geological Survey in project proposal formulation and conduct.

- State personnel are offered the opportunity for technical training at the Survey's training center in Denver, at its Regional office in Menlo Park, California, and in the District offices in Anchorage. Several have participated in this training.

We believe that for the cooperative program to meet its objectives in the State of Alaska, strong leadership by the State and USGS is required. General program direction should be provided at least yearly through a formal meeting between the Commissioner, Department of Natural Resources and/or State Geologist (or equivalent) and the District Chief, USGS. The meeting should be focused on general program direction, not specific projects. Topics to be covered would include:

- A discussion of the short- and long-term water-resources issues of the State as viewed by both agencies.

- A review of the National priority programs of the USGS to determine their short-term relevance to the State water-resources issues and to provide the the USGS with information for the setting of long-term future programs.

- A review of the State institutional and administrative plans to address priority State water-resources issues.

- A review of the technical, financial, and logistical capabilities of the USGS to enter into cooperative programs with the State and/or local agencies in order to assist them in their water-resources regulatory and management efforts. This would include a review of USGS goals and objectives for water-resources investigations in the State, of USGS technical qualifications, personnel, and of anticipated timely response.

- A discussion of problems or barriers to future cooperative program development.

- A discussion of multi-agency funded cooperative programs; for example one quarter funding by a local agency, one quarter by the State, and one half by the USGS.

- A discussion on how to maximize the use of technical personnel, data bases and software, and physical facilities of both agencies in support of the cooperative program.

Products of the meeting should include:

- A prioritized listing of short- and long-term cooperative program objectives.

- A joint statement by both agencies describing their intentions relative to the extent and program content of the cooperative program, both for the upcoming fiscal year and beyond.

- A joint statement by both agencies describing their intent and giving direction to maximize the use of personnel, software, and facilities of each agency in support of the cooperative program.

Development of projects within the cooperative program should be the responsibility of the State program managers, operation managers, and the USGS Assistant Chiefs. They should meet periodically to discuss mutual water resources concerns, to develop cooperative project proposals, and to implement the general directive of their respective supervisors and higher headquarters. Project chiefs and other technical personnel of both agencies should be encouraged to meet periodically to exchange water resources information and data, and to propose new projects in support of the objectives of the cooperative program.

APPENDIX

Observations on Streamflow Information for Alaska

Water resources planners, managers, and regulators rely on several types of water data all of which has associated errors (or accuracy). The most basis data is stream stage and discharge; a higher level of information would be that taken from a regression analysis.

- Discharge Measurements. A discharge measurement consists of a water surface elevation and a flow measurement at a single point on a stream and at a single time. The accuracy of the water surface elevation depends on the stability of the sensor and the ability of the hydrographer to read. The USGS anchors the sensor such that it is stable at all stages and pipes the water to a stilling well for ease of reading. If a stilling well is not used the stage is transmitted to a recorder in a shelter on the bank. The accuracy of a discharge measurement depends on the equipment and procedures used by the hydrographer; we use equipment and methods prescribed by the Bureau of Standards. Discharge measurements made by the USGS are accurate to the 95% level unless otherwise noted. One cannot compute stream flow statistics at a site from a discharge measurements(s) alone; such statistics may be computed from correlations with sites having continuous record with the error of estimate dependent on the correlation coefficient.

- Continuous record of discharge. A continuous record of discharge at a point on a stream is developed from a rating of discharge measurements plotted against the water surface elevation at the time of the measurement. Daily discharges are computed from a continuous record of stage and the rating adjusted for shifts in the channel conditions. Accuracy of the computed daily discharges depends on the accuracy and number of discharge measurements, the field observation of channel conditions by the hydrographer, and the ability and experience of the person performing the analysis. The USGS makes 6-8 measurements per year (including ice periods) and all data analyses are performed or checked by senior engineers. An accuracy statement is estimated for each record (such as 95% accurate 95%of the time) and all daily discharges are entered and stored in a National Data Base. Streamflow statistics can be computed from a continuous record of discharge with the accuracy increasing with the number of years of record. For instance the mean annual discharge at a gaging station in Alaska can be computed from 10 years of record with an error of estimate of 20%; 10 years or more of record are required for computation of other statistics with larger errors of estimate - figure 1. (Note this is site data only.) Figures 2 and 3 show the year to year variability at two Alaska gaging stations and the error possible using 5 years of data.

- Discharge information from correlation techniques. As noted above discharge measurements made at a site can be correlated with concurrent daily discharges at a continuous gaging station . The accuracy of the correlation depends on the number of observations and the similarity of basin, climatic, and channel parameters, as well as, the accuracy of the discharge measurements and computed daily discharges. Correlations on the same stream often work well, whereas, correlations between streams do not. If the correlation coefficient is .8 or greater it is possible to estimate streamflow statistics from the relationship. In Alaska, such correlations should be limited to within at least 6 similar physiographic provincos. (Note this is site data only)

- Discharge information from multiple regression techniques. Records of continuous discharge at several or many gaging stations can be combined using multiple regression techniques. Streamflow statistics at continuous gaging stations are regressed against basin, climatic, and channel parameters. An error of estimate is computed by comparing the station data to that obtained from the regression; the station error is included. In, Alaska, the error associated with computation of the mean annual discharge in 6 physiographic provinces ranges from 20 to 35%; the error for other statistics is greater, with those for flood and low flows being much greater. The value of this technique is that discharge information for any point on any stream can be estimated. This technique can be misused, however, when it is extended to areas or drainage area sizes outside of those used in the investigation.

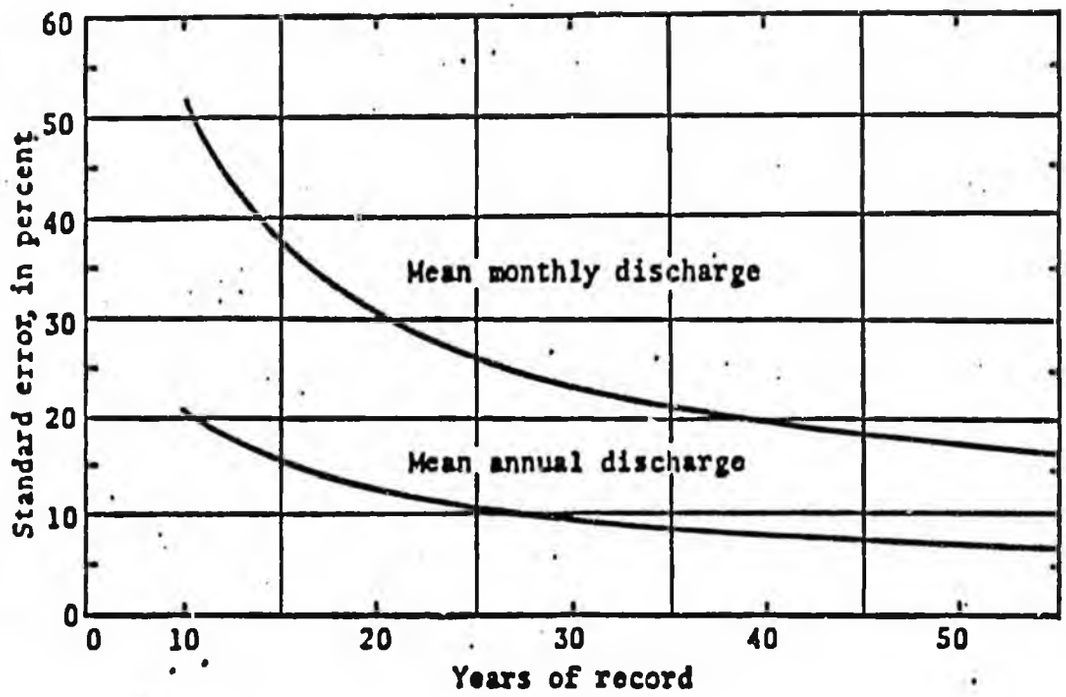


Figure 1.--Curve showing relation of standard error to length of record.

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