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COMMITTEE REPORT

4/13

HOUSE

(7)

FURTHER: FINANCE

3/30/84

Date: 4/9/84

The Committee on COMMUNITY & REGIONAL AFFAIRS has had CSSB 272 (Rules) an Act making special appropriations for payment as grants to the Municipality of Anchorage for the Eklutna Water Project and to the City of Kotzebue for drilling geothermal wells, to municipalities for fire protection, water and sewer projects, to school districts for school construction projects and to the Department of Education for payments as a grant to Yakutat School District; and providing for an effective date "Under consideration and recommends:

- [] do pass [] do not pass
[] do pass with attached amendments(s)
[] replace with CS for CS SB 272 (Rules) [] same title [X] new title
and recommends do pass
[X] AND attaches a "Letter of Intent" [] New Fiscal Note [] Zero Fiscal Note Attached
[] reports it back without recommendation
[] referred to the Committee

MEMBERS SIGNING DO PASS

Joe M. Brien
M.W. Miller

MEMBERS HAVING OTHER RECOMMENDATIONS:

M.W. Miller
CHAIRMAN

Original sponsors: Faiks, V.Fischer,
Bennett and Josephson

<u>Funding Information</u>	
General Fund	\$67,177,000
Other Funds	-0-
	<u>\$67,177,000</u>

1 IN THE SENATE

BY THE COMMUNITY AND
REGIONAL AFFAIRS COMMITTEE

2 HOUSE CS FOR CS FOR SENATE BILL NO. 272 (C&RA)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 THIRTEENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act making special appropriations for payment as
7 grants to the Municipality of Anchorage for the
8 Eklutna Water Project and to the City of Kotzebue for
9 drilling geothermal wells, to municipalities for fire
10 protection, water and sewer projects, to school
11 districts for school construction projects and to the
12 Department of Education for payment as a grant to
13 Yakutat School District; and providing for an effec-
14 tive date."

15 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

16 * Section 1. The sum of \$34,000,000 is appropriated from the general
17 fund for payment as a grant to the Municipality of Anchorage for phase III
18 final design of the Eklutna Water Project, including design of the water
19 treatment plant and lake intake structure; construction of pipeline segment
20 p-2 from Eagle River to Peters Creek and pipeline segment p-3 from Peters
21 Creek to the Eklutna River; and miscellaneous costs of permitting and
22 right-of-way acquisition.

23 * Sec. 2. The sum of \$7,956,000 is appropriated from the general fund
24 for payment as a grant to the City of Kotzebue for drilling exploratory
25 geothermal wells.

26 * Sec. 3. The sum of \$400,000 is appropriated from the general fund for
27 payment as a grant to the City of Akiak for construction of a water and
28 sewer system.

29 * Sec. 4. The sum of \$750,000 is appropriated from the general fund for

B.3 Sam Mellaakalla

1 payment as a grant to the City of Fortuna Ledge for phase II construction
2 of a water and sewer system.

3 * Sec. 5. The sum of \$1,500,000 is appropriated from the general fund
4 for payment as a grant to the City of Fort Yukon for phase II construction
5 of a water and sewer system.

6 * Sec. 6. The sum of \$1,320,000 is appropriated from the general fund
7 for payment as a grant to the City of Craig for completion of phase I water
8 source development.

9 * Sec. 7. The sum of \$150,000 is appropriated from the general fund for
10 payment as a grant to the City of Pelican for completion of fire protection
11 systems.

12 * Sec. 8. The sum of \$1,480,000 is appropriated from the general fund
13 for payment as a grant to the City of Hoonah for phase III of the water
14 improvement project.

15 * Sec. 9. The sum of \$350,000 is appropriated from the general fund for
16 payment as a grant to the City of Thorne Bay for purchase and upgrade of
17 sewer and water treatment plants.

18 * Sec. 10. The sum of \$5,122,000 is appropriated from the general fund
19 for payment as a grant to the City and Borough of Juneau for community wide
20 water system construction and repair.

21 * Sec. 11. The sum of \$1,500,000 is appropriated from the general fund
22 for payment as a grant to the Galena City School District for construction
23 of an elementary addition to Galena School.

24 * Sec. 12. The sum of \$1,450,000 is appropriated from the general fund
25 for payment as a grant to the Iditarod Area School District for construc-
26 tion of an elementary addition to Grayling School.

27 * Sec. 13. The sum of \$2,500,000 is appropriated from the general fund
28 for payment as a grant to the Lower Kuskokwim School District for construc-
29 tion of an elementary addition to Quinhagak School.

1 * Sec. 14. The sum of \$1,000,000 is appropriated from the general fund
2 for payment as a grant to the Yukon Flats School District for construction
3 of a new school in Stevens Village.

4 * Sec. 15. The sum of \$1,000,000 is appropriated from the general fund
5 for payment as a grant to the Yukon/Koyukuk School District for construc-
6 tion of a secondary addition to Manley Hot Springs School.

7 * Sec. 16. The sum of \$2,499,000 is appropriated from the general fund
8 for payment as a grant to the Kodiak Island School District for deficiency
9 repairs.

10 * Sec. 17. The sum of \$2,500,000 is appropriated from the general fund
11 for payment as a grant to the South West Region School District for con-
12 struction of a K-12 school at Clark's Point.

13 * Sec. 18. The sum of \$1,700,000 is appropriated from the general fund
14 to the Department of Education for payment as a grant to the Yakutat School
15 District for elementary school addition and remodeling.

16 * Sec. ~~19~~¹⁹. The appropriations made by this Act shall be disbursed in
17 accordance with AS 37.05.315 - 37.05.325.

18 * Sec. ~~20~~²¹. This Act takes effect immediately in accordance with AS 01.-
19 10.070(c).

20
21 Sec 21
22
23
24
25
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29

STATE OF ALASKA
THE LEGISLATURE

POUCH Y STATE CAPITOL
JUNEAU, ALASKA 99811
907 465 3800

LEGISLATIVE AFFAIRS AGENCY

MEMORANDUM

April 11, 1984

SUBJECT: Title of SB 272

TO: Representative Mike W. Miller
Chairman
House Community and Regional Affairs

FROM: Billy G. Berrier *BGB*
Director
Division of Legal Services

When CSSB 272 (Rls) was before the Senate it was amended to add an appropriation of \$3,300,000 to the Alaska Power Authority for Chester Lake Dam. This appropriation appears as sec. 19 of CSSB 272 (Rls) am. The amendment did not change the funding information or the title.

Section 13 of Article II of the Constitution of the State of Alaska requires that "The subject of each bill shall be reflected in the title." The purpose of the requirement has been held to give general notice of the content of the bill. In this instance the title is very specific and in our opinion the appropriation to the Alaska Power Authority does not fit within the title.

The Uniform Rules of the Alaska State Legislature contain stringent limitations of changes in a bill title in the second house.

The general statement of the limitation is contained in Rule 35 concerning amendments. The relevant part of that Rule provides:

A motion or proposition on a subject that requires a change in the title of the bill as enacted in the house of origin, other than a clerical or technical change, is not in order in the second house.

Specific application of the change is covered in other rules.

Rule 24 relating to committee referral and action provides in subsection (c):

A committee of the second house may not report a committee substitute for a bill or an amendment to a bill that requires a change in the title of the bill, other than a clerical or technical change, as the title was enacted in the house of origin.

Rule 41 relating to amendments in the other house provides in subsection (b):

(b) An amendment to a bill introduced in the other house is not in order if the amendment requires a change of the bill title other than a clerical or technical change.

Rule 42 relating to conference and free conference committees provides in subsection (e):

(e) A Conference Committee, a Conference Committee with limited powers of free conference, or a Free Conference Committee may not adopt a report that requires a change in the title of a bill other than a clerical or technical change.

All these are identical in substance.

The prohibition is absolute except for the exception made in the rules. There is no provision for waiving this requirement.

The only exception in the second house is for clerical or technical change.

Clerical change is fairly clear. In my opinion, this refers to the type of changes that the enroller is authorized to make under Rule 43 or that the revisor of statutes is authorized to make under AS 01.05.031. Under Rule 43(a)

The enrolling secretary is authorized to correct form and manifest errors which are clerical, typographical, or errors in spelling or errors by way of additions or omissions.

Under AS 01.05.031, the revisor is authorized to edit and revise the laws "without changing the meaning of any law".

Representative M. W. Miller
Page 3
April 11, 1984

The term "technical change" is more difficult to apply. In my opinion this is intended only to allow changes in the title of a bill which are necessary for technical reasons to conform the title to the subject matter in the bill as adopted in the first house without change in the scope of the bill.

In my opinion the title change here is a technical change as that term is used in the Uniform Rules since the only effect of the change is to conform the title to the bill as adopted in the Senate.

We have therefore corrected the title and the funding information.

As a procedural matter since this involves a title change in the second house I would suggest that the committee report on the bill specifically refer to the change and the reason for the change.

BGB:lmb
J6/023

WORK ORDER REQUEST FORM

N13- 2211

KEYWORDS: legislative procedure

ASSIGNED TO Barrier

REQUEST FOR: BILL RESOLUTION RESEARCH OTHER

SUBJECT Title Change for SB 272

REQUESTED FOR H CARA BY Shirley EXT. _____

* DELIVER TO Rep. M.W. Miller TAKEN BY Barrier

INSTRUCTIONS, EXPLANATIONS _____

House resolution waiving title change to SB 272.

OBTAIN

SPECIAL DRAFTING INSTRUCTIONS ATTACHED

AUTHORIZED TO CONFER WITH _____

RETURN _____

TO REQUESTER

APPROVED: BGR Director, Legal Services

REVIEWED _____

IN 4/11/84 DUE _____

TYPED - Draft _____ DATE _____

Final _____ DATE _____

PROOFED _____ DELIVERED _____

SPECIAL INSTRUCTIONS TO TYPIST/PROOFREADER

DRAFT

FINAL

Village Safe Water has identified Akiak as having one of the most serious water problems in the State. Residential wells are producing water which exceeds water quality standards for iron by as much as 27,000%. USPHS began drilling wells for individual homes, and, while early test results showed relatively "good" water during the early stages of the drilling program, recent water analysis has shown many wells are producing unacceptable water.

FORTUNA LEDGE WATER/SEWER SYSTEM - PHASE II

Fortuna Ledge

1,000.0

The City of Fortuna Ledge proposes to construct 10,600 linear feet of water transmission line and 15,100 linear feet of sewer main to serve the 119 lots included in the new residential subdivision area. Water and sewer study plans also provide for a lift station and water works building modifications. The proposed water and sewer extension will utilize an existing system which appears capable of handling the additional load.

Cost estimates for the water and sewer system are based on 1984 dollars and using local labor and equipment.

EXHIBIT A
MARSHAL MASTER PLAN
JUNE 1933
ESTIMATED WATER & SEWER COSTS
119 LOTS
LOCAL LABOR AND EQUIPMENT

WATER

10600 Lin. Ft. 4" Arctic Pipe Installed @ \$50 =	\$530,000
Modifications in Water Works Building	<u>50,000</u>
	580,000
20% Contingencies & Engineering	<u>116,000</u>
	\$696,000

SEWER

15100 Lin. Ft. 6" Arctic Pipe Sewer Installed @ \$70 =	\$1,057,000
Lift Station	<u>45,000</u>
	1,102,000
20% Contingencies & Engineering	<u>220,400</u>
	\$1,322,400
 Total Estimated Installed Cost	 \$2,018,400 =====

CITY OF FORT YUKON

CAPITAL BUDGET

FOR

WATER AND SEWER IMPROVEMENTS PHASE II
(ANGEL POND SUBDIVISION)

WATER SYSTEM:

Main Line 13,500 ft 6" insulated @ \$69.00/lf	931,500
Hydrants 13 @ \$3500	45,500
House Services to 66 lots @ \$4000/lot	264,000
New booster pump and building	100,000

Construction Cost	1,341,000
Engineering	130,000
Administration and Legal	220,000
Contingency	250,000

Water Project Estimated cost	\$ 1,941,000

SEWAGE DISPOSAL:

Subsurface Disposal 66 units @ \$7500 ea	495,000
Engineering and layout	15,000
Administration and Legal	44,000
Contingency	40,000

Sewer Project Estimated Costs	\$594,000

TOTAL REQUEST FOR FORT YUKON WATER AND SEWER PROGRAM PHASE II	\$2,535,000
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Galena Elementary School Program

CONCEPTUAL COST ESTIMATE

A cost estimate has been prepared based upon the information contained in the "Design Criteria" section of this document. This estimate is based upon the premise that the new building will be located as shown on the site plan (2-3), and that construction will begin in 1984.

Listed below is a summary of the construction furnishings and equipment costs for Galena Elementary School. The costs per square foot of the building average \$213.

DIVISION 1	GENERAL CONDITIONS	\$ 536,000
DIVISION 2	SITE WORK	\$ 47,000
DIVISION 3	FOUNDATION WORK	\$ 344,000
DIVISION 5	METALS	\$ 10,000
DIVISION 6	CARPENTRY	\$ 269,000
DIVISION 7	MOISTURE PROTECTION	\$ 221,000
DIVISION 8	DOORS & WINDOWS	\$ 82,000
DIVISION 9	FINISHES	\$ 265,000
DIVISION 10	SPECIALTIES	\$ 36,000
DIVISION 11	EQUIPMENT	\$ 8,000
DIVISION 12	FURNISHINGS	\$ 250,000
DIVISION 15	MECHANICAL	\$ 434,000
DIVISION 16	ELECTRICAL	\$ 278,000
MARKUPS 17	OVERHEAD & PROFIT	\$ 370,000
TOTAL		\$ 3,150,000



Budget

INTRODUCTION

The following is a construction budget which is based on a cost of \$250/square foot. This was determined as follows:

- Average bid at Nikolai in 1983 was \$262/square foot. This school is of similar construction and built for the Iditarod Area School District.
- 8% escalation to summer of 1984 = \$282/square foot
- Reduction due to size of Grayling and accessibility = \$250/square foot

BUDGET

2,000 square feet (remodeled) x \$125/square foot =	\$250,000
12,588 square feet x \$250/square foot =	<u>\$3,147,000</u>
Subtotal	\$3,397,000

Project Overhead and Other Costs

Administration Cost	7.25%	\$246,282
Design Costs	8.00%	\$281,951
Furnishing and Equipment Costs	8.00%	\$271,760
Art	1.00%	<u>\$33,970</u>
Subtotal		\$4,230,963
Project Contingency	5.00%	<u>\$211,548</u>
Project Total		\$4,442,511

This project could be funded by a direct grant from the state. The grant could be supplemented by funds available from the federal government. These funds are available to those school sites being omitted by the Bureau of Indian Affairs education program.

To begin construction in 1984 and finish before June of 1985, which is the date the B.I.A. will curtail its sponsorship of the elementary program, would should begin immediately. This would insure the state of not occupying the B.I.A. school which has never been required to meet local building codes. If the state were to occupy the school additional funding would have to be found to upgrade the existing B.I.A. school to current fire/life safety codes.



QUINHAGAK

Village Profile

Quinhagak is located on the mouth of the Kanektok River. The population is an estimated 340 (1980). Two school sites exist; an elementary school with current K-8 enrollment of 85, and a high school with 9-12 enrollment of 56. Total enrollment 141.

Building Data

Building 203 is a two-classroom school/quarters of wood frame construction consisting of 4,233 square feet built in 1963 and relocated in 1979. Building 204 houses storage and two standby generators in a wood frame structure of 1,332 square feet built in 1963 and relocated in 1979. Building 206 is a two-classroom wood frame structure of 2,844 square feet constructed in 1968 and relocated in 1979. Building 208 is a classroom/quarters wood frame structure of 2,880 square feet constructed in 1979. The school is of one-hour construction containing 9,460 square feet built in 1979.

Summary Diagram

1A

UPGRADE OF EXISTING ELEM SCHOOL (7,877 SQ. FT.) + 20 YEAR LIFE CYCLE

1B

ADDITION OF 7,877 SQ. FT. TO HIGH SCHOOL + 20 YEAR LIFE CYCLE

2A

REMODEL OF EXISTING ELEM SCHOOL (7,877 SQ. FT.) & ADDITION OF 3,423 SQ. FT. + 20 YEAR LIFE CYCLE

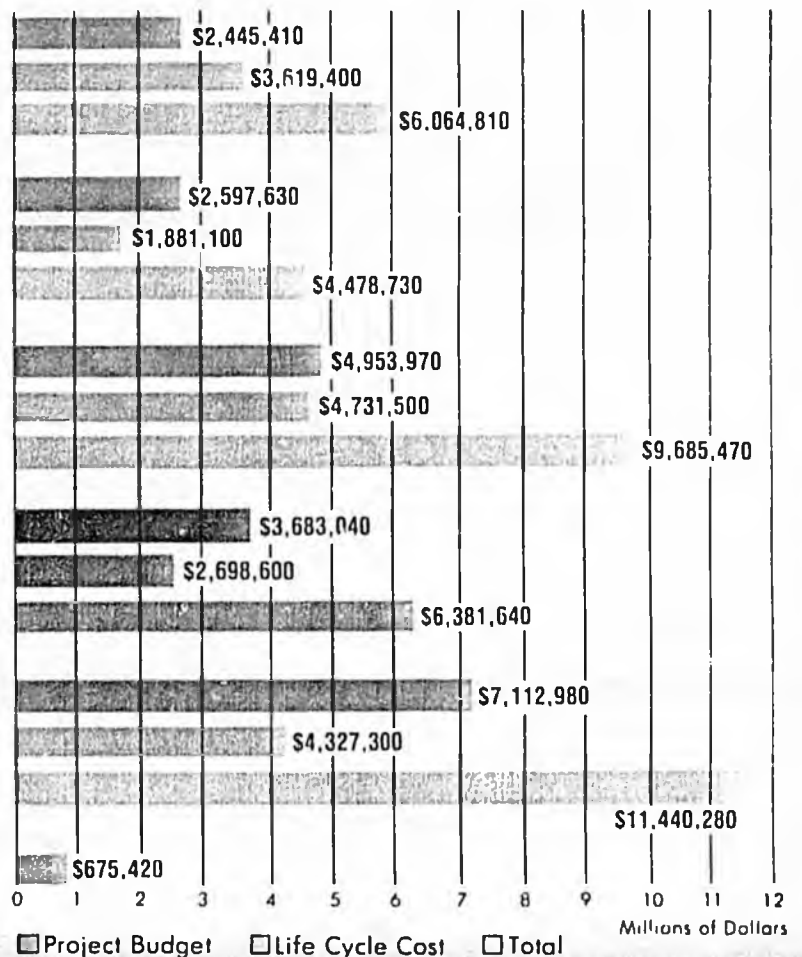
2B (Recommended)

ADDITION OF 11,300 SQ. FT. TO HIGH SCHOOL + 20 YEAR LIFE CYCLE

3

REMODEL OF EXISTING HIGH SCHOOL (9,480 SQ. FT.) & ADDITION OF 18,120 SQ. FT. + 20 YEAR LIFE CYCLE

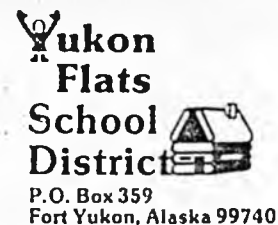
PREVIOUS BIA STUDY



Recommendation

Alternate 2B would provide a new building which addresses the educational goals of the district as well as provides common use of staff and facility without the inherent problems of operating four separate buildings for a 20 year cost 5.5% more than Alternate 1A. Alternate 2B should be pursued.

CAPITAL IMPROVEMENT PROJECT



Priority Rank 2 of 11

Project: Stevens Village, New Elementary/High School

Capital Request: \$2,800,000

PROJECT DESCRIPTION AND PUBLIC BENEFITS

Stevens Village is on the north bank of the Yukon River, 10 miles east of the Elliot Highway crossing and about 50 miles west of Beaver. This is a traditional Native village, settled in the late 1800's. Income here is obtained from construction work, railroad work, river transportation work, and fishing.

There were secondary age students attending Mt. Edgecumbe School. With the closing of that facility, Stevens Village school has been impacted.

Two teachers, a teacher aide, and 16 students, grades K-12, are presently housed in a 800 square foot former BIA school, circa 1960. Conditions are already extremely overcrowded and with the addition of students returning from Mt. Edgecumbe, the situation has become very difficult.

There is no room at the present site to remodel and expand the present building. The project must be relocated and a new site has been selected with the cooperation of the Village Council.

The present school is energy inefficient. There have been waste water and sewage disposal problems at each spring thaw due to the small site and inadequate space for a sewage disposal system large enough to accommodate school needs. Department of Environmental Conservation had intimated possible school closure if sewage continues to contaminate village and school property due to inability of frozen soils to disperse waste water underground.

Finally, the school does not meet minimum space requirements mandated by the Tobeluk ("Hootch") Decree.

We propose a combined K-12 facility to include an elementary classroom, a secondary classroom, a vocational shop, a multipurpose room, kitchen, and mechanical area to total 6,210 square feet.

<u>Costs:</u>	Planning and architectural	\$ 270,000
	Site Development	70,000
	Construction	2,228,000
	Legal	10,000
	Administration	22,000
	Equipment	200,000
	Total Project Cost	\$2,800,000

YUKON/KOYUKUK SCHOOL DISTRICT - MANLEY HOT SPRINGS SCHOOL 1,000.0

This is a direct appropriation to the Yukon/Koyukuk School District through the DOE. Manley Hot Springs currently has a high school consisting of 960 square feet of classroom space and 556 square feet of supplementary space. The school district is requesting an additional 5,700 square feet of secondary space.

EKLUTNA STATUS REPORT

March 27, 1984

1982
6.1m
17.5
13.24
22.5

In the 1983 bond election Anchorage voters supported Eklutna Water Project bonding by a 3-to-1 margin. The \$55 million bonding authorization will contribute Anchorage's 25 % share of total Eklutna project cost.

Gov. Sheffield before the Alaska State Chamber of Commerce in Sitka Sept. 29, 1983 said he would work to secure funding for this vitally needed project.

The project is on schedule and within budget. Bids for the P-1 segment (Ship Creek to Eagle River) construction were opened March 15.

The Municipality's \$51 million request for Eklutna will keep the project on schedule. Funding at the \$34 million level will threaten continuity of the project in late 1985/early 1986. Without funding by the 1984 Legislature the project will be delayed.

Significant underfunding of Eklutna in 1984 will result in added costs during construction estimated at \$6 million to \$8 million per year. Delays now mean completion delays. If funding delays completion of the project until 1989, water shortages may occur.

170,400 Alaskans will reside in the Eklutna service area in 1985. By 2024 the number of residents will increase to 449,200. Based on 150 gallons per capita per day (GPCD) usage, water requirements are:

YEAR	AVERAGE	MAXIMUM
1985	26 million	46 million
2025	67 million	117million

Present water supplies (Ship Creek and wells) provide 24 million gallons per day and 22 million gallons per day respectively. Demand will exceed supply in 1988.

FUNDING SUMMARY (in \$ millions)

1982	1983	1984	1985	1986
\$13.6	\$22.5	\$51.0	\$47.0	\$31.0
(approp.)	(approp.)	(request)	(request)	(request)
		\$17.0	\$15.0	\$23.0
		(bonds)	(bonds)	(bonds)



**EKLUTNA
WATER PROJECT**

**Municipality of Anchorage
Water and Wastewater Utility**

**PROJECT
EXECUTIVE
SUMMARY**

JANUARY 1984

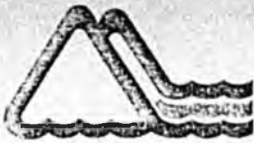
James M. Montgomery, Consulting Engineers, Inc.

In association with

QUADRA Engineering, Inc.

Ott Water Engineers, Inc.

Sverdrup/SPCM



EKLUTNA WATER PROJECT

Phone: (907) 279-2461 • 237 E. Fireweed Lane, Suite 201 • Anchorage, AK 99503

Dear Reader:

If you desire additional information about the Eklutna Water Project, please contact one of the following:

Charley L. Bryant
Project Manager

William H. Blackmer
Program Manager

Sarah Barton
Public Involvement

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INTRODUCTION

This document summarizes the salient information about the Eklutna Water Project, a major water resource development for the future. It has been written so that interested citizens and affected parties can be knowledgeable about the project. The most commonly asked questions are answered in this summary, the project's history is traced, a description of the project is given, recent project activities are described, future activities are given, and project funding is detailed.

Not all information on the project can be contained in a document this size. If unanswered questions arise about any aspect of the project, interested parties should contact the Eklutna Water Project office.

NEED FOR PROJECT

The need for an additional water source was determined based on projections of future service area populations, estimates of per capita water use, and expected capacities of existing and planned water supplies.

Since there is a large variance in the previous population projections for the Municipality that have been made by others, it was decided to utilize the Municipality's Community Planning Department's projections for the purposes of the Eklutna Water Project. Those projections have been made for the Anchorage Bowl and the Northern Communities through the turn of the century. Extrapolating the population projections to the end of the project planning period, the project team has determined that the service area population will be about 449,000 in the year 2025. Of that total, 385,000 are expected to reside in the Anchorage Bowl while the remaining 64,000 are expected to live in the communities of Eagle River, Birchwood, Chugiak, Peters Creek, and Eklutna. These population projections are shown in Table 1 by five-year increments.

TABLE 1
 EKLUTNA WATER PROJECT
 SERVICE AREA POPULATION PROJECTIONS

Year	Anchorage Bowl	Northern Communities	Total EWP Service Area
1985	149,600	20,800	170,400
1990	179,700	26,200	205,900
1995	209,700	31,600	241,300
2000	239,800	37,000	276,800
2005	269,900	42,400	312,300
2010	298,800	47,800	346,600
2015	327,600	53,200	380,800
2020	356,400	58,600	415,000
2025	385,200	64,000	449,200

The area to be served by the Eklutna Water Project is divided into two service areas, that of the Anchorage Bowl, and that of the Northern Communities. The Anchorage Bowl service area includes the region south of the military bases to Turnagain Arm just south of Potter Marsh, excluding some Hillside areas which use on-site supply systems. It has been assumed that the military complexes will continue to supply their own water.

The Northern Communities water service area extends from north and east of Fort Richardson to the village of Eklutna, including the communities of Eagle River, Chugiak, Peters Creek, Birchwood, and Eklutna. It is anticipated that Chugach State Park will not receive water and some rural areas will continue to supply their own water.

Data on historic water demands from 1969 to the present showed an average use of 174 gallons per capita per day (gpcd). However, because of the trend of decreasing consumption and accelerated water conservation efforts by the Municipality, an amount of only 150 gpcd was used for project planning purposes. The ratio of maximum day demand to average day demand of 1.75 has been used for the project based on historical information and risk analyses.

The water utility has instituted several measures for conserving water. Education programs are given in schools, flow restricters are continuing to be distributed, and industrial, commercial and multi-family domestic users are now billed for water consumption based on metered usage. Leak detection and repair of distribution systems is ongoing. This program has resulted in measurable water conservation throughout the system. While these methods of water conservation have been effective in limiting use, they do not have the potential of eliminating the need for expansion of the water supply.

Based on the population projections, per capita water demands, and ratios of maximum day to average day demands described in the preceding paragraphs, future water requirements were determined. These requirements are displayed in Table 2.

To meet these water demands, Anchorage will have a supply of about 46 million gallons per day (mgd). This is based on 24 mgd from the Ship Creek Water Treatment Plant after its expansion in 1985 and 22 mgd from wells. However, demand is expected to exceed supply by 1988. Therefore, a new water source must be obtained.

TABLE 2
MUNICIPALITY OF ANCHORAGE
EKLUTNA WATER PROJECT SERVICE AREA
PROJECTED WATER REQUIREMENTS

Year	Average Annual Water Requirements (mgd)	Maximum Day Water Requirements (mgd)
1985	26	46
1990	31	54
1995	36	68
2000	42	74
2005	47	82
2010	52	91
2015	57	100
2020	62	109
2025	67	117

HISTORY OF THE PROJECT

Many alternative sources of supplemental water for the Anchorage water service area have been examined over the past decade.

A report on Anchorage Water Sources (Tryck, Nyman & Hayes, et. al., 1973) examined at least 25 potential water sources, ranging from artificial recharge of Anchorage Bowl aquifers and Cook Inlet desalinization to tapping streams from Portage to Chickaloon. That study recommended offstream storage of Ship Creek water on Fort Richardson as the most feasible solution to Anchorage's water problems.

Military opposition to Tryck, Nyman & Hayes' proposal eventually led to studies performed as part of the U.S. Army Corps of Engineers' Metropolitan Anchorage Urban Study (MAUS) in 1979. The MAUS study reexamined several of the alternatives studied previously, including a different offstream storage site at Ship Creek, groundwater alternatives, and other Ship Creek, Eagle River, Eklutna Lake, and Campbell Creek alternatives. Final MAUS recommendations included development of an Eklutna diversion or an Eagle River dam and reservoir. The Ship Creek storage basin option was eventually eliminated based on military opposition, MAUS findings, and other considerations.

Between the programs mentioned above, and other studies, at least 28 alternative water sources have been considered for an Anchorage area water supply. These are listed below with summarized reasons for rejection or acceptance.

The following streams were rejected as sources primarily because of lack of a suitable storage site, inadequate discharge, high sediment loads, or long or difficult water transmission line requirements: Little Susitna River, Matanuska River, Knik River, Peters Creek, South Fork Eagle River, Campbell Creek, Chester Creek, Rabbit/Indian/McHugh Creeks, Bird Creek, Twenty-Mile River, Portage Lake, Placer River, Six-Mile Creek, Resurrection Creek, and Chickaloon River. Pt. MacKenzie surface and groundwater sources were found to be inadequate, as were Eagle River, Matanuska-Knik and Portage area groundwater sources. Desalinization of Cook Inlet would not be economically feasible, reuse of present sources would be too costly, and additional conservation measures would not be adequate.

Seven other, more apparent, potential sources were gradually narrowed down to one most feasible alternative: tapping the Eklutna drainage. Use of Anchorage Bowl groundwater resources, with or without artificial recharge of the aquifers, was rejected mainly because of already near-capacity development of that source, energy requirements, unknown impacts on present groundwater supplies, and because it offers only a short-term solution.

Use of a dam on Ship Creek, or offstream storage there, was rejected because of high capital costs, adverse environmental impacts, inadequate long-term supply and complex water and land rights problems.

Tests of Eagle River area groundwater supplies indicated that very little water is available. A dam on Eagle River was rejected because of extreme adverse environmental impacts, great capital costs, technical complexity and difficulty of land acquisition.

These latter two sources, as well as the Eklutna drainage, were examined in detail by CH₂M Hill in their 1981-82 Eagle River Water Resource Study.

Eklutna Lake was determined to be the best solution to Anchorage's long-term water supply problems. The lake would be able to supply up to 200 mgd, more than enough to meet Anchorage's anticipated needs in planning year 2025. Potential adverse environmental impacts of this project would be minimal. No geotechnical problems have been identified which would prevent or significantly complicate construction of the project, nor have other difficulties been encountered which would delay completion of the project beyond the time additional water is needed for Anchorage. Although tapping the Eklutna water source would have a high capital cost, its unit cost over the life of the project is the lowest of any alternative examined. The main disadvantages included the high capital cost, water treatment requirements, and the deprivation of power-generating water to the Eklutna powerhouse.

As recommended during CH₂M Hill's study, the potential for Eklutna water was further studied and refined. CH₂M Hill proposed three different alternatives: one tapped the Eklutna Power Plant tunnel upstream of the power plant; one tapped the tailrace after water was used for power generation; and the third proposed pumping

water from Eklutna Lake into Eklutna River, and then taking the water from the river near the lower end of the valley. The CH₂M Hill studies recommended the alternative which would take water from the tailrace because of its relative technical simplicity, and because it would not impact power plant generation.

In continuing efforts to develop a new water supply, the Anchorage Water and Wastewater Utility (AWWU) contracted with the Eklutna Water Project team in November, 1982, to act as the Program Management Consultant. The project team examined an additional means of using Eklutna water as a water source. This is known as Alternative IV and involves diversion of water directly from Eklutna Lake, or the power plant tunnel near the lake, and transmission of the water from there to Anchorage by pipeline. This alternative was found to be superior when environmental, permitting, right-of-way, geotechnical, energy, and cost aspects were considered. This is the alternative finally selected and now being developed as the Eklutna Water Project (EWP).

DESCRIPTION OF THE PROJECT

The Eklutna Water Project will divert water from Alaska Power Administration's (APA) existing tunnel connecting Eklutna Lake with the Eklutna Power Plant (EPP). From there, water will flow by gravity through another tunnel and a buried pipeline down the Eklutna River Valley to a water treatment plant located on a bench above the river. After treatment, the water will flow by gravity through a 23-mile-long buried pipeline through the communities of Eklutna, Peters Creek, Chugiak, Birchwood, and Eagle River, to the distribution system near the expanded Ship Creek Water Treatment Plant (SCWTP). Energy will be recovered from the flowing water at each treatment plant location. This system will supply water to the Anchorage service area, from Eklutna Village to Potter Marsh in South Anchorage. The selected alignment and location of facilities are depicted on Figure 1.

The maximum day design flow in the year 2025 is 70 mgd and the average flow during that year is 41 mgd. Until EWP facilities are completed, an interim booster pump station near the SCWTP will be used to supply Ship Creek water to the Eagle River area.

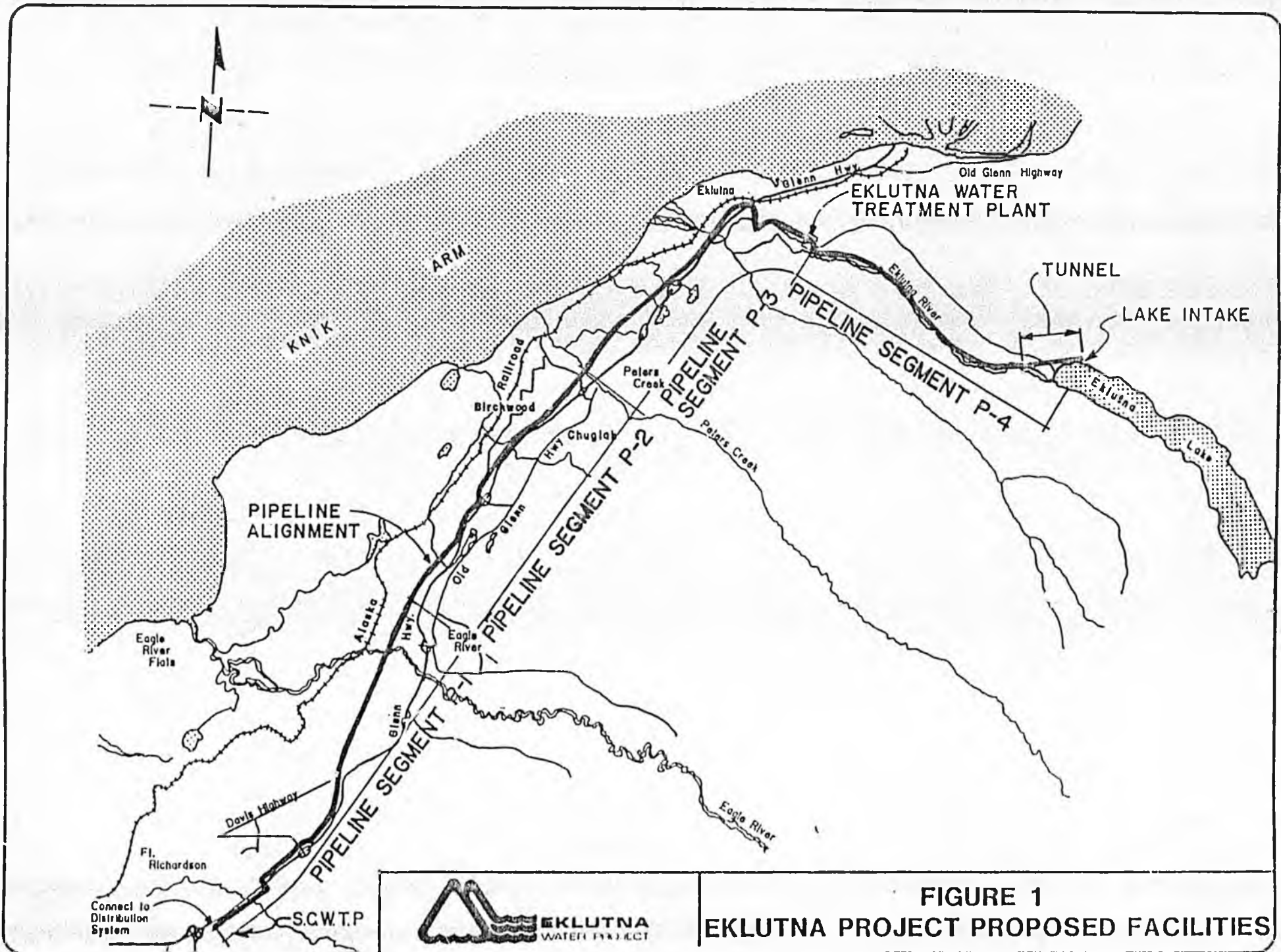


FIGURE 1
EKLUTNA PROJECT PROPOSED FACILITIES



Diversion of Eklutna Lake water involves tapping the 9-foot diameter tunnel to the Eklutna Power Plant. The new 7-foot diameter tunnel will connect this existing tunnel with a new pipeline located in the Eklutna River bed below the dam at the downstream end of Eklutna Lake. The new tunnel will be over one mile in length. Connection to the existing tunnel will be precisely planned and carefully executed so as to minimize disturbance to EPP. A gate house will be constructed near the connection of the two tunnels. The top of the gate house will be the only visible evidence of a diversion for the EWP. Downstream of the diversion tunnel, water will be conveyed in a buried 54-inch pipeline which will be constructed along the Eklutna River bed (pipeline segment P-4) to an energy recovery station at the Eklutna Water Treatment Plant (EWTP) which will be located above the river bed at about 620 feet elevation. Generating capacity of this station will be approximately 1.0 MW. It is estimated that in the year 2025, this energy recovery station will produce over eight million KWH per year with water diverted from Eklutna Lake.

The Eklutna Water Treatment Plant will be designed to use either conventional treatment or direct filtration to achieve the desired water quality. Conventional treatment entails rapid mixing, flocculation, sedimentation, and filtration. During most of the year direct filtration, which bypasses the sedimentation basins, is feasible. It is also preferable because it requires a lower coagulant dosage and reduces the amount of sludge.

Pilot water treatment plant studies have been conducted in three phases using water from Eklutna Lake during all the seasons. The first phase, which investigated treatability of Eklutna Lake water during winter, determined that good quality water could be produced using conventional treatment or direct filtration. Phase 2 examined treatability of lake water during spring transition/early summer conditions, using direct filtration. The third phase of the pilot plant studies examined treatability of lake water during the expected period of highest turbidity in the fall. The findings of the whole program are that Eklutna Lake water, with its sometimes high concentrations of glacial flour, is treatable and that direct filtration will be possible most of the year, with conventional treatment being utilized during periods of high turbidity.

A treated water reservoir will be constructed at about elevation 600 feet, just downstream of the EWTP. The purpose of the reservoir is to absorb normal diurnal

fluctuations in water demand while maintaining a relatively constant flow through the EWTP. This reservoir will have an initial capacity of 10 to 15 million gallons.

Pipeline segments P-3 and P-2 extend from the treated water reservoir to Eagle River. P-3 begins at the reservoir, running down the slope to a crossing of Glenn Highway near the community of Eklutna. From there it crosses the river, and parallels Glenn Highway a short distance on the northwest side. It then follows the APA powerline easement and residential streets to its end in Peters Creek. The P-2 segment begins at that point, crosses Peters Creek, parallels the APA powerline easement and local streets, then parallels the Glenn Highway to Chugiak High School. It skirts the high school, crosses through the Lake Ridge Terrace Subdivision along residential streets, then parallels the APA powerline easement again to Artillery Road.

This 54-inch buried pipeline will have seven turnouts for delivery of water to northern communities along the route of pipeline segments P-2 and P-3.

Construction and permanent easements must be acquired along the pipeline alignment. Most of the property along P-2 and P-3 is owned by Eklutna, Inc. Other property owners include: Alaska Division of Parks, Fort Richardson Military Reservation, Alaska Department of Transportation and Public Facilities, Federal Highway Administration, Alaska Railroad, various utilities, native corporations, and approximately 50 private property owners. Permits and/or easements will be obtained from these owners before construction takes place.

A geotechnical study concluded that no major construction problems will be encountered along P-2 and P-3. Crossings of wetlands and streams, however, are specific environmental concerns. Construction schedules and procedures have been designed to minimize disturbance of existing biological and hydrologic regimes of wetlands. Special water management, trench, and backfill techniques will also be employed. The proposed alignment was moved in several cases to avoid designated wetlands. Impacts caused by stream crossings will be mitigated by construction practices such as timing, temporary diversions and bank stabilization. Crossing plans and mitigation means will be approved by the Alaska Department of Fish and Game.

Pipeline segment P-1, the first to be constructed, will extend generally parallel to the Glenn Highway from the vicinity of the SCWTP to a powerline easement, then roughly parallel with and adjacent to that easement as far as Artillery Road near Eagle River. The pipeline will vary between 54 and 48 inches in diameter, decreasing closer to the SCWTP. A 24-inch pipeline will also be constructed along Artillery Road to connect with the existing Eagle River water supply system.

Property owners or agencies with jurisdiction in the P-1 segment include: The U.S. Army Corps of Engineers and the Bureau of Land Management, the Alaska Department of Fish and Game, the Alaska Department of Transportation and Public Facilities, the Municipality of Anchorage, and several utilities. Permits, approvals, and/or letters of non-objection must be obtained from each of these agencies for their respective areas of jurisdiction. This permitting and approval process is almost complete for pipeline segment P-1.

A booster pump station/energy recovery station will be constructed upstream of the SCWTP. Until the entire pipeline is completed and supplying water from Eklutna Lake, this station will pump as much as 4.5 mgd from the SCWTP to Eagle River. Only the booster pump portion will be constructed as part of the P-1 phase, but the facility will be designed so it can be expanded and modified easily for energy recovery. After the entire project is complete, conversion to an energy recovery station will take place. The capacity of this generating station will be about 500 kw.

Lake level and storage records are available from 1946 to the present. Annual inflow over the past 30 years has averaged 210 mgd, varying between 150 and 290 mgd. Approximately one-half of this inflow comes from glacial melt, the other half coming from runoff. Lake level is generally lowest in late spring and highest in early fall. The EWP will not impact lake levels, because all water used by EWP will be diverted from that which normally flows to the Eklutna Power Plant.

The Eklutna Power Plant currently withdraws all the inflow except for infrequent spills. When the EWP comes on line, water diversions for domestic uses will reduce the EPP supply approximately 6 to 8 percent; by the year 2025 that will increase to 21 percent. The water project will decrease the amount of energy generated by the EPP, by that same 6 to 21 percent during the period from 1988 to 2025. However, the 1.5

MW energy recovery facilities constructed as part of the EWP will recover about 45 percent of the EPP deprived energy.

The Municipality of Anchorage Water and Wastewater Utility has reached an agreement with the Alaska Power Administration for an equitable method of replacing energy taken from the EPP by the EWP.

PROJECT SCHEDULE

All Eklutna Water Project facilities should be completed by mid-1988 pending availability of sufficient funding. Dates of completion of each pipeline segment and of the other facilities are shown in Figure 2.

Bids will be received for the first pipeline segment (P-1) in March, 1984, and construction is expected to start in June. That pipeline segment will be completed in the summer of 1985.

STATUS OF THE PROJECT

Many studies and other activities have been performed by the Eklutna Water Project team in the past year. These activities, are separated by task and listed below.

- o A Management Plan for Design and Construction was completed in June 1983. (Task 2)
- o The Preliminary Water Supply Master Plan Update report was completed in April, 1983. (Task 3)
- o The Alternative IV Evaluation (tapping the lake directly) was completed in April, 1983. (Task 4)
- o A Regional Geotechnical Report was completed in September, 1983. (Task 5)

- o Pilot Plant Summary Reports have been completed for all three phases of the study. A summary and conclusion report for the entire study will be completed within the next few weeks. (Task 7)
- o Several reports have been produced as part of the Public Involvement task. These speak to alternative sources of supply, project funding, and the project as a whole. This Executive Summary is also part of the Public Involvement program. (Task 9)
- o The Environmental Information Document was completed in June, 1983. This document was the basis of permit support. (Task 10)
- o Several reports have been completed under the First Technical Advisory Committee/Value Engineering task, which reviewed the pipeline segment P-1 alignment and lake diversion alternatives. (Task 11)
- o The Predesign Report - Pipeline Segment P-1 was drafted in April, 1983, and for segments P-2, P-3 in October, 1983. Work is underway on the predesign report for P-4. (Task 12)
- o Two preliminary studies for the lake diversion were completed in 1983. The draft of the predesign report for the lake diversion will be completed in January, 1984. (Task 13)
- o The Second Technical Advisory Committee/Value Engineering task is partially completed. In October, 1983, the first session of this task reviewed the tunnel, P-4 alignment, and pipeline in general. The second session, to be held in March, 1984, will review the water treatment plant and look at the tunnel again. The following document has been produced: Value Engineering Study - 2nd Session. (Task 16)
- o The Initial Design Report Pipeline Segment P-1 was completed in July, 1983. The draft of a similar report for pipeline segment P-2 will be completed in February, 1984. (Task 13)

- o Water rights are currently in the process of being secured through negotiations with the APA. Legislation will be introduced in Congress in February to secure water rights. (Task 23)
- o A document on Eagle River Water Supply and Energy Recovery was produced in July, 1983. (Task 24)
- o Bids were received in November, 1983, for the prepurchase of valves for pipeline segment P-1. Plans and specifications for the construction of P-1 were 95% complete in 1983. This contract will be advertised in January, 1984. (Task 52)
- o Ground surveys for final design of the pipeline segment P-2 were made in 1983. (Task 53)
- o Ground surveys for final design of pipeline segment P-3 were completed in 1983. (Task 54)

In addition to the numerous studies made and documents produced, several permitting and environmental activities have been performed and completed. The U.S. Army Corps of Engineers Section 404 Permit which will allow crossing of wetlands was acquired in November, 1983, for the entire pipeline. The Alaska Department of Environmental Conservation Certificate of Reasonable Assurance (protecting water quality) was obtained. The Alaska Coastal Management Plan Consistency Determination was also accomplished. The Alaska Department of Fish and Game Title 16 Anadromous Fish Protection Permit was granted for the four stream crossings made in segments P-1 through P-3. The Municipality of Anchorage Urban Beautification Commission and the Planning and Zoning Commission have approved plans for the Ship Creek Interim Booster Pump Station.

A right-of-way grant must be obtained from the Bureau of Land Management (BLM) for the entire project. The BLM has joint jurisdiction (with the U.S. Army Corps of Engineers) over the Fort Richardson land, and also serves as the lead/coordinating agency for other landholders and utilities along the alignment. The required letters of non-objection have been received from affected parties, and the right-of-way grant for the entire pipeline is expected to be received early in March, 1984.

ACTIVITIES DURING 1984

Many activities key to the progress of the project will take place during 1984. For the P-1 segment, the contract for supply of the large valves was awarded on January 3. Advertisement for bid of construction contracts will take place on January 31, and bids will be received on March 15. Construction of this segment will begin in June. The P-1 segment will be further divided into four schedules to maximize opportunities for bidding by local contractors.

Final design of P-2 is expected to be complete in July and the construction contracts for that segment will be awarded in the fall of 1984. Final design of P-3 will be complete in October, and will be advertised for bids in November. Easements for both segments will be acquired during spring and summer of 1984.

Pipeline segment P-4 will continue through the predesign and initial design phases during 1984. The predesign report will be completed in October. Initial design will be finished in December. The consultant for final design will be selected during the summer.

Initial design of the lake diversion will be completed during the summer of 1984. The final design consultant also will be selected during the summer, and final design will commence in the fall.

The predesign report for the Eklutna Water Treatment Plant will be completed in April, 1984. Initial design will be finished in September. The final design consultant will be selected during the summer, with final design beginning in the fall.

Water rights to Eklutna Lake water will be acquired in 1984. Application for these rights will be filed with DNR, Land and Water Management, in January. A bill amending the APA's enabling legislation will be introduced before the U.S. Congress in February.

PROJECT FUNDING

Construction of the Eklutna Water Project will require a total expenditure of \$220 million. This figure was estimated in late 1982 and, after a year of planning and

Design, still represents a viable estimate for completion of the project in 1988. Funding must be obtained in a timely manner in order to maintain costs at the \$220 million level.

Initial appropriations for the project have been received from the State Legislature, and continued support from that source will be required through the years 1984 to 1986. In 1982, \$13.7 million was appropriated and \$22.5 million was appropriated in 1983.

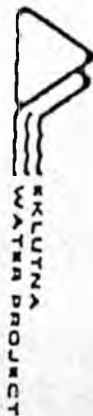
OCTOBER
In ~~November~~ of 1983, public approval was received with over 75% favorable vote for sale of \$55 million in bonds to help fund the project. These bonds will be sold on an as-needed basis. As a result of these bond sales, usage charges will increase by approximately 40 percent over present rates, or by about \$5.40 per household per month. This increased rate will not be charged until water is actually supplied. No increase in charges will result from the portion of the project funded by legislative appropriations.

Three quarters of the total funds will be requested from the State Legislature, and one quarter of the funds will be obtained from the Municipality through bond sales. In order for the project to proceed on schedule, the following additional funding will be required. In October, 1984, \$68 million will be required, \$51 million of which will be requested from the Legislature. In 1985, a total of \$62 million is needed, including \$47 million from the Legislature. In 1986, the funding required for completion of the project will be \$54 million, which will necessarily include a legislative appropriation of \$30.8 million.

A bar chart depicting funding needs and activity periods is included as Figure 3.

PROGRAM MANAGEMENT STRUCTURE

The Municipality of Anchorage Water and Wastewater Utility executed a contract in November, 1982, with James M. Montgomery, Consulting Engineers, Inc. (JMM), which placed that company in the principal role of Program Management Consultant for the Eklutna Water Project. JMM has overall responsibility for planning and design of the project, as well as supervision of construction. In addition to overall responsibility,



BAR CHART OF ACTIVITIES

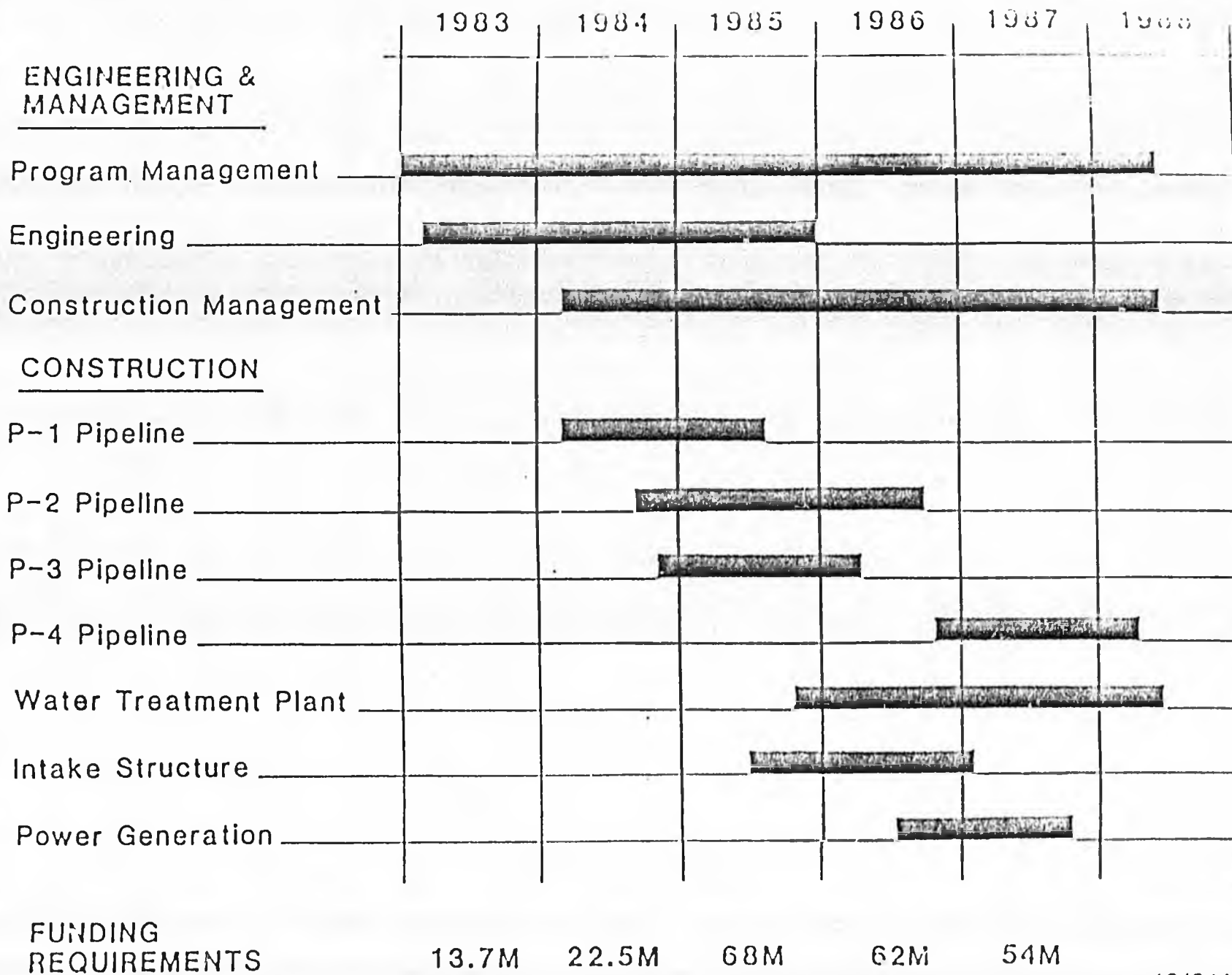


FIGURE 3

MM has primary responsibility for designing the project facilities. Three associate firms are in charge of other key aspects of the project and numerous other local firms are involved with the project.

QUADRA Engineering, Inc. is responsible for Geotechnical, Surveying, and Engineering Support for the project. QUADRA is assisted in that role by Woodward-Clyde Consultants, Inc., which is performing seismic studies.

Ott Water Engineers, Inc. is conducting the Environmental, Permitting, and Public Involvement programs, which includes obtaining necessary permits, rights-of-way and easements. Assisting with securing of Eklutna Lake water rights is the legal firm of Burr, Pease, and Kurtz. R. W. Beck and Associates, Inc. is a special consultant relating to energy replacement matters.

Sverdrup/SPCM, Inc. is responsible for Planning and Control tasks of the project, and Construction Management. In the latter responsibility, they are assisted by Triad Engineering, Inc. with consultation regarding construction practices. Sverdrup is also performing engineering for the lake diversion and tunnel.

Coffman Engineers, Inc. is conducting corrosion studies and is performing final design of the corrosion control system.

Three additional local firms have been retained for final design of segments of the pipeline. Tryck, Nyman and Hayes, Inc. is performing final design for segment P-1; DOWL Engineers, Inc. for segment P-2; and URS Engineers, Inc. for segment P-3. Other local firms will be added to perform final designs of the following facilities as the project progresses: Eklutna Water Treatment Plant, lake diversion, pipeline segment P-4, treated water reservoir, and energy recovery stations at Eklutna and Ship Creek.

The Anchorage Water and Wastewater Utility (AWWU) is the overall project administrator for the Eklutna Water Project. In that capacity, AWWU provides general direction to the consultants and makes detailed reviews of their work. AWWU has placed a full time project manager in the Eklutna Water Project office to more easily manage the large amount of work being performed on the project.

This management team has kept the project on schedule and within budget.

COST ESTIMATE

GEOHERMAL WELL-KOTZEBUE, ALASKA

Medium Depth Well 6,000 to 8,000

Pre Stand by	100,000
Moving & Rig up & Down	210,000
Day Work	675,000
Overhead	100,000
Camp & Catering	195,000
Post Standby	100,000
Extra Labor Rental	103,000

SUBTOTAL 1,483,000

Other Drill Costs

1. Raw Materials	600,000
2. Service Contractors	
a. Drill Consultant	50,000
b. Wellsite Geologist	20,250
c. Mud Logging	55,200
d. Wire Surveys	180,000
e. Cont. Service	200,000
f. Carting	29,300
g. Shooting & Perforating	70,000
h. Csg Inspection	18,000

3. Other Direct Cost (fuel, water, ect) 500,000

SUBTOTAL 1,722,750

4. Build Location Permafrost Bed 750,000

5. By/Air Rig Transport in & out 4,000,000

TOTAL 7,955,750