

AGRICULTURE

LAKE

FERTILIZATION

MEMORANDUM

TO: Co-chairmen

Gardiner

Zharoff

FROM: John Sund Counsel House Resources Committee

DATE: March 19, 1981

RE: Lake Fertilization oversight hearings

The testimony before the committee on lake fertilization as a salmon enhancement technique will be given by Dr. John Stockner Director of the Canadian Lake Fertilization Program in British Columbia, Dr. Jeff Koenings for the Department of Fish and Game and Walt Lerrick for the Southern Southeast Regional Aquaculture Association.

THE TESTIMONY

Dr. Stockner will describe the Canadian experience with the lake fertilization technique: what they have done; why; the results of some of the projects; what they are planning to do; and some of the considerations that they have taken into account. Dr. Stockner is an employee of the Canadian Federal Department of Fisheries and is not authorized to comment on any Alaska state projects or U.S. federal projects. He is here only to tell the Canadian story. His presentation should take about one hour and he is available for questions regarding the Canadian program.

Dr. Koenings will describe what is being done in Alaska and what the state is planning to do. He is a recognized expert in the area of lake fertilization as an enhancement technique and is available for

indepth questions regarding comparison of the States plans to the Canadian program.

Walt Lerrick of SSRAA is available to the committee as a resource person in the lake fertilization technique. The only lake fertilization project being done in the state at this time is a cooperative venture between the Department of Fish and Game and SSRAA at Hugh Smith Lake near Ketchikan. Walt has done a great deal of the work on the Hugh Smith project and the planning for other projects in Southeast Alaska.

COMMITTEE ACTION

The decision for the committee regarding the lake fertilization issue is to recommend a policy direction for the state to follow. There are no statutory changes or additions necessary. It is a budgetary matter. The committee could introduce and pass a resolution regarding the recommended course of action or adopt a letter of recommendation to the finance committee regarding the funding levels it finds necessary.

ISSUES

The Governor's budget does contain a request for funding of a lake fertilization program. The policy decision is whether to follow the recommended program; increase or decrease the scope; or adopt a different policy.

MEMORANDUM

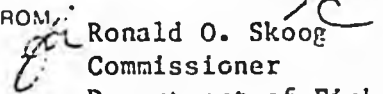
State of Alaska

TO Ronald Lehr
 Director
 Budget & Management Division
 Office of the Governor

DATE: March 20, 1981

FILE NO:

TELEPHONE NO: 465-4160

FROM:  Ronald O. Skoog
 Commissioner
 Department of Fish and Game

SUBJECT: Budget Amendment

The Fisheries Rehabilitation, Enhancement and Development (FRED) Division requests an amendment to its FY 82 budget to include an additional \$1,208,800 for mark, tag, and recovery efforts Statewide. This hatchery evaluation effort will be a joint project of the three Fisheries Divisions and private nonprofit hatchery operators.

To put this request into perspective, a brief description of where we are now and where we are going follows:

Voters of Alaska have approved salmon enhancement bonds approximating 80 million dollars. FRED Division operates 17 hatcheries throughout the State and will operate three more before the end of FY 82. The total operational egg capacities for these 20 facilities will be 624.5 million. Additionally, the Legislature established the Private Nonprofit (PNP) Hatchery Program. Since the inception of the PNP Program, 12 PNP salmon hatchery permits have been issued. Permitted egg capacities of these is about 185 million eggs.

Enhancement programs are now demonstrating large scale salmon production resulting in millions of supplementally produced adult salmon. Supplemental returns now make up a significant portion of localized runs and will soon constitute a substantial part of the State's total salmon production.

1980 Salmon Fry-Smolt Production	Releases	Returns (Prelim.)
Southeastern - State	6,196,764	38,276
PNP	13,802,224	11,554
Southcentral - State	46,551,080	841,206
PNP	22,221,000	1,494,930
Total	88,771,068	2,385,966

Projected Adult Returns in 1981 -

Southeastern - State	76,700
Southcentral - State	60,600

Problem Statement

Rehabilitated salmon runs and new salmon runs produced by State and PNP facilities, while desirable, may present new problems that must be dealt with. These include commercial, sport, and subsistence harvest allocations, seasons, and location of openings. To perpetuate the strengths of the wild stocks and the effectiveness of the enhancement facilities, natural escapements and hatchery brood stocks must be maintained. We can only guarantee the most effective overall salmon fisheries program by gaining a more intimate knowledge of the stocks and runs involved. This can best be accomplished by a coordinated mark recovery program.

Problem Solution

Through a cooperative effort of the three Fisheries Divisions and the PNP groups, we have prepared a Statewide proposal that will allow the evaluation of each facility's adult salmon production, in addition to providing information concerning stock migration, timing, separation, and harvest rates. Fishery professionals and members of the PNP groups all agree that to do anything less would cause chaos in future program management. In addition, detailed marking provides knowledge regarding methods on improving production.

In order to obtain this information in 1982, 1,482,000 (PNP & State) fish in Southeast and 2,841,000 fish in Southcentral regions of the State must be marked. Numbers of fish that must be marked will increase as each facility reaches full design capacity.

Commercial, sport, and subsistence fisheries and the hatcheries' rack returns must be sampled to provide the data necessary to most efficiently manage the fisheries and the hatcheries and still protect wild stocks and ensure hatchery brood stock requirements. To be most useful to in-season management of fisheries and hatcheries, mark recovery and sampling information must be made available to managers in a timely manner.

In 1980, 19% of the coho catch and 33% of the chinook catch in the Southeast Troll Fisheries were sampled for coded wire tags (CWT). 6,441 heads were processed, and 5,275 CWT's were recovered. Of these tags, 29% were from Alaskan projects. As the number of marked releases increases, the number of fish actually sampled will increase, as will the number of tags that will be recovered and processed. In 1982, it is expected that in this same troll fishery, 2,704 tags will be recovered just from FRED Division's releases. In 1986, this number will be 5,804. These numbers reflect only projections for the Southeast troll sampling program. Seine and gillnet sampling effort throughout the State, as well as troll sampling programs in other areas of the State, will also be expanding rapidly. Considering the large number of facilities and stocks that must be monitored, a highly coordinated effort through a tightly structured team is necessary. The Department, in cooperation with the PNP sector, is determined to ensure that this effort is successful.

The Tag Recovery Lab will be located in Juneau in Regional office space. The lab will contain a large freezer for storing fish heads shipped from all over Southeast. The Lab will also house coded wire tag detectors, dissecting microscopes, and a micro computer. A Fishery Biologist III will serve as project leader and be responsible for the coordination of mark/recovery information. Technicians will actually remove tags from fish heads and read data. Included in the staff will be a Systems Analyst to design a system to efficiently store, edit, integrate, and retrieve the diverse mark, recovery, and sampling data for various analytical, management, and reporting purposes. This information will be used by all three Fisheries Divisions. An inter-Divisional team in Southeast Alaska is drafting a comprehensive proposal to establish the functional organization to ensure that a coordinated comprehensive mark/recovery program is instituted. The schematics of this proposed organization is outlined in Table 5 and Figures 1 and 2.

The following tables summarize budget information and marking locations and numbers. Recovery budget estimates are based on sampling 30% of the fishery.

Enclosures

cc: Janet Green

Table 1

MARK, TAG, AND RECOVERY
FY 82 BUDGET REQUEST

FY 82 BUDGET CONTAINED IN GOVERNOR'S REQUEST

Recovery

FRED	85.8
Comm. Fish	261.1
Sport Fish	250.0

Tagging

FRED (129.3 FRED; 84.9 PNP)	214.2
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Equipment (CWT Taggers)

FRED	285.0
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TOTAL PRESENT FY 82 REQUEST \$1,096.1

ADDITIONAL FY 82 BUDGET REQUEST - FRED DIVISION

For Budget Amendment

Southeast Recovery Lab	309.5
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Marking (FRED)	310.9
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Equipment (Price increase since initial request)	35.0
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Recovery

FRED	361.4
PNP	192.0

TOTAL ADDITIONAL REQUEST \$1,208.8

TOTAL BUDGET \$2,304.9

Table 2. Mark and recovery budget for FY 82 SE Alaska hatchery and fisheries evaluation.

	<u>100</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>500</u>	<u>Total</u>
FRED Marking	55.6	3.4	0.5	15.1		74.6
PNP Marking	31.9	5.0	2.6	11.8		51.3
CWT Machines (8)					160.0	160.0
Recovery						
FRED	68.1	4.1	5.5	2.7	7.1	87.5
CF	233.1	5.0	15.0	3.0	5.0	261.1
SF	57.9	2.9	839.7	.5	3.8	74.0
					Subtotal	708.5

Table 3. Mark and recovery budget for FY 82 SC Alaska hatchery and fisheries evaluation.

FRED Marking	252.1	21.6	31.0	50.4	10.5	365.6
PNP Marking	24.5	2.0	.0	7.1	.0	33.6
CWT Machines (8)					160.0	160.0
Recovery						
FRED	250.0	10.3	30.3	62.9	6.2	359.7
SF	146.7	2.2	9.5	15.1	2.5	176.0
PNP	40.0	4.0	-0-	8.0	140.0	192.0
					Subtotal	1,286.9

Table 4. Recovery Lab in Southeast

Lab	206.7	10.0	23.5	4.0	65.3	309.5
					Total	2,304.9
					*Already Requested	1,096.1
					TOTAL ADDITIONAL REQUEST	1,208.8

* Governor's Budget - FRED 585.0
 CF 261.1
 SF 250.0

Table 5

Recovery Lab

Personal Services		206.7
FB III - Lab Director/Coordinator--Existing FRED budget		
FB III - CF Project Leader--Existing CF Budget		
FB I - Quality control		33.3
FT III - May to Dec (8 months)		18.7
FT III - Jun to Nov (6 months)		14.0
2 FT II's - Jun to Nov (12 months)		25.1
EDP Programmer IV		43.3
Data Entry Clerk III		26.1
Systems Analyst II		46.2
TRAVEL		10.0
CONTRACTUAL		23.5
Rent	11.9	
Computer	3.6	
Telephones	3.0	
Remodeling	3.5	
Misc.	1.5	
COMMODITIES		4.0
Remodeling	1.5	
Supplies	2.5	
EQUIPMENT		65.3
Freezer	30.0	
4 CWT detectors	28.0	
5 CWT holding jigs	.5	
2 calculators	.5	
5 dissecting microscopes	3.5	
Large magnet	.3	
Furniture	2.5	
	TOTAL	309.5

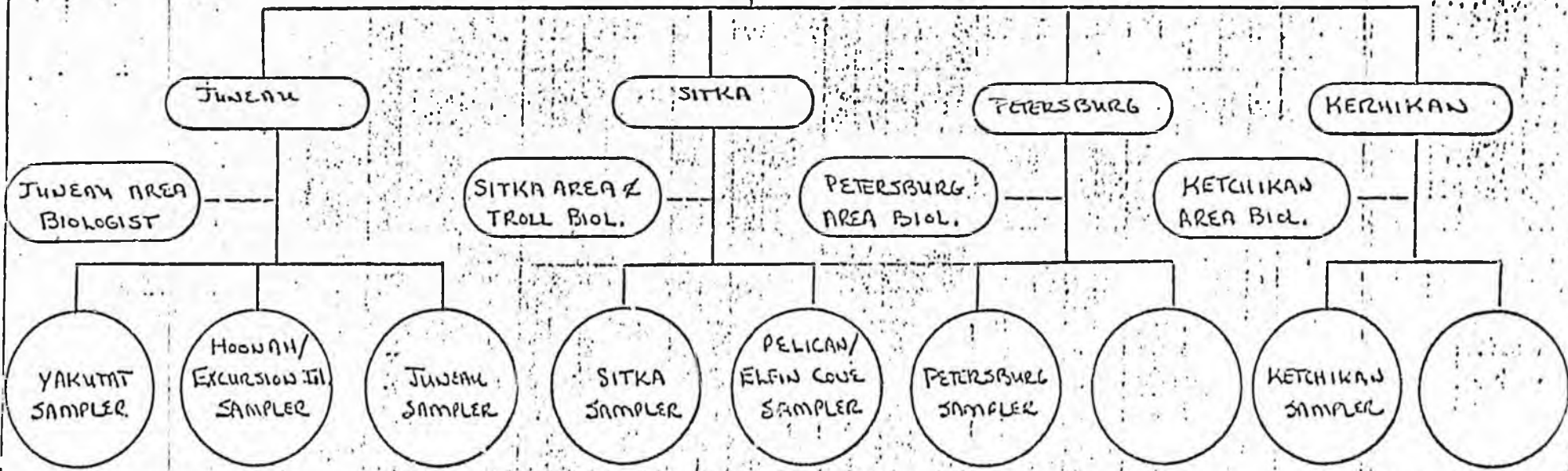
FIGURE 1

ORGANIZATIONAL SCHEMATIC FOR SOUTHEAST ALASKA COMMERCIAL HARVEST CODED WIRE TAG AND MARK RECOVERY SAMPLING PROGRAM

NEW FALL

PROJECT LEADER
FOR
CWT AND MARK RECOVERY
SAMPLING PROGRAM

———— TECHNICAL
----- ADMINISTRATIVE



FISHERIES SAMPLED

TROLL	X	X	X	X	X	X	X	X
SINE		X	X	X		X		X
NET	X	X	X			X		X

NOTE: THE ABOVE SAMPLERS WILL BE USED ON A TIME AVAILABLE BASIS FOR OTHER COMMERCIAL HARVEST SAMPLING DUTIES.

FIGURE 2 - FUNCTIONAL ORGANIZATION OF ADF/G SOUTHEAST ALASKA REGION FISHERIES MARK/RECOVERY PROGRAM (ADF/G-3/81)

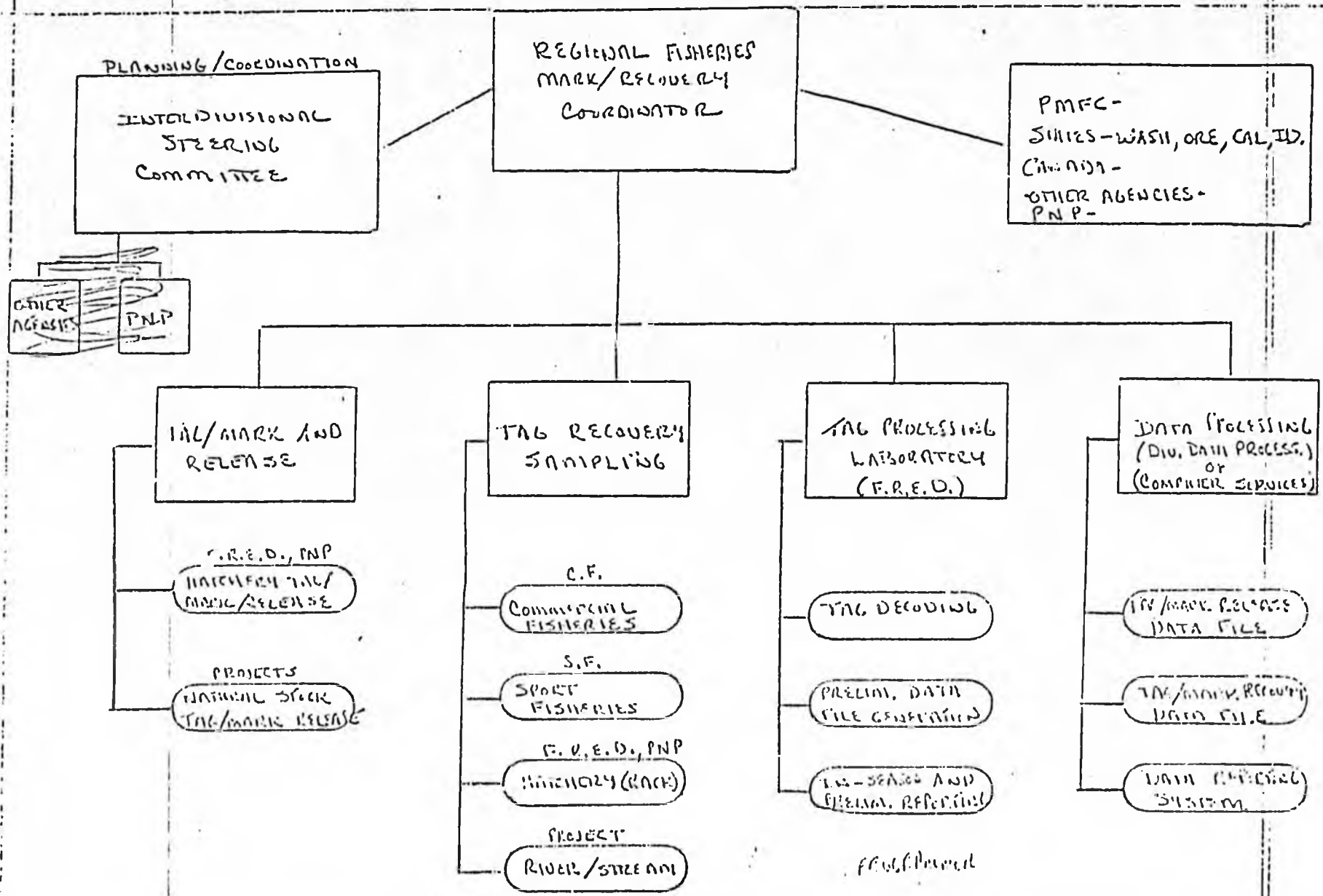


Table 6

Proposed Marking Plan and Budget Summary for FY 82

(\$ in thousands)

<u>Facility/Species</u>	<u>100</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>Total</u>
Beaver Falls 100,000 chum	9.2		0.5	1.0	10.7
Crystal Lake 100,000 king	7.4			1.2	8.6
25,000 coho	1.6			0.3	1.9
47,000 chum	4.4			0.7	5.1
	13.4			2.2	15.6
Deer Mountain 100,000 king	7.4			1.1	8.5
25,000 coho	1.6			0.3	1.9
	9.0			1.4	10.4
Hidden Falls No king 100,000 chum	8.6	2.8		4.8	16.2
Klawock 25,000 coho	1.6			0.3	1.9
50,000 chum	4.8			1.7	6.5
	6.4			2.0	8.4
Snettisham 50,000 chum	4.6	0.6		2.4	7.6
12,000 coho	0.8			0.2	1.0
50,000 king	3.6			1.1	4.7
	9.0	0.6		3.7	13.3
GRAND TOTAL	55.6	3.4	0.5	15.1	74.6
684,000 CWT's				+ 5 EA. CWT machines @ 20,000 ea.	100.0
				TOTAL	\$174.6

Table 7

PROPOSED MARKING PLAN AND BUDGET SUMMARY FOR FY 82 PRIVATE NONPROFIT

Facilities in Southeast Alaska

Facility	\$ in 1,000's				
	N/P 100	200	300	400	Total
<u>SSRAA</u>					
Chum-Diss. Cr. CWT 59,000	5.4	0.6	0.3	1.5	7.8
Carroll R. CWT 59,000	5.4	0.6	0.3	1.5	7.8
King-Unuk CWT 80,000	6.7	0.6	0.2	0.9	8.4
Coho-Indian R. CWT 25,000	(costs included w/kings)				
<u>NSRAA</u>					
Chum-mixed Single clip 50,000	1.1		0.2	0.7	2.0
Pink-mixed Single clip 50,000	1.1		0.2	0.7	2.0
<u>DIPAC</u>					
Chum-mixed Single clip 50,000	1.1		0.2	0.7	2.0
Pink-mixed Single clip 50,000	1.1		0.2	0.7	2.0
<u>Sheldon Jackson</u>					
Pink-Indian R. Double clip 50,000	1.4			0.3	1.7
Chum-mixed Double clip 50,000	1.4	0.3		0.5	2.2
Coho-mixed CWI 25,000 smolt	1.6	0.3		0.1	2.0
<u>Burro Creek</u>					
Chum-Single clip 50,000	1.1	0.5	0.2	0.8	2.6
Pink-Single clip 50,000	1.1	0.5	0.2	0.8	2.6
<u>AK Aquaculture</u>					
Pink-Single clip 50,000	1.1	0.5	0.2	0.8	2.6
Chum-Single clip 50,000	1.1	0.5	0.2	0.8	2.6
<u>Meyers Chuck</u>					
Pink-Single clip 50,000	1.2	0.6	0.2	0.0	3.0
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Subtotal: Marking Activities	31.9	5.0	2.6	11.8	51.3
Equipment Purchases to Accomplish Above:					
3 ea. CWT machines (complete) @ \$20.00 each					60.0
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TOTAL:					111.3

Table 10

SOUTHEAST RECOVERY

	<u>100</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>500</u>	<u>Total</u>
<u>FRED RECOVERY</u>						
Coastwide	68.1	4.1	5.5	2.7	7.1	87.5
<u>SPORT FISH RECOVERY</u>						
Ketchikan	9.5	2.3	2.5	.5	.2	15.0
Juneau/Yakutat	14.2	-0-	-0-	-0-	1.8	16.0
SE King	34.2	.6	6.4	--0-	1.8	43.0
	<u>57.9</u>	<u>2.9</u>	<u>8.9</u>	<u>.5</u>	<u>3.8</u>	<u>74.0</u>
<u>COMM FISH RECOVERY</u>						
Troll Fishery	233.1	5.0	15.0	3.0	5.0	261.1
					TOTAL	422.6

Table 9

SOUTHCENTRAL RECOVERY

	<u>100</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>500</u>	<u>Total</u>
<u>FRED Recovery</u>						
Big Lake	60.2	4.4	2.8	27.4	-0-	94.8
Halibut Cove -						
Sport Fish	22.7	0.5	3.3	5.7	1.9	34.1
Comm. Fish	22.7	0.5	3.3	5.7	1.9	34.1
Beluga -						
Fritz Creek	16.0	-0-	1.0	4.6	1.4	23.0
Leisure	13.0	-0-	1.5	1.5	1.0	17.0
Cannery	6.7	0.6	5.0	1.2	-0-	13.5
Sikusuilag - 0						
Kitoi	21.2	2.2	1.7	3.0	-0-	28.1
Tutka	35.7	0.9	2.9	5.4	-0-	44.9
Kasilof -						
Smolts	30.5	0.2	2.9	3.9	-0-	37.5
Big Lake and						
Crocked Creek	8.4	0.0	0.9	1.0	-0-	10.3
Karluk	12.9	1.0	5.0	3.5	-0-	22.4
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Subtotals	250.0	10.3	30.3	62.9	6.2	359.7
PWSAC						
Equipment -						
Traps, Sonar						
PNP Recovery	40.0	4.0	-0-	8.0	140.0	192.0
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<u>Sport Fish Recovery</u>						
Deshka	74.4	2.2	5.5	6.9	-0-	89.0
Kenai	72.3	-0-	4.0	8.2	2.5	87.0
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	146.7	2.2	9.5	15.1	2.5	176.0

Table 8

Proposed Marking Plan and budget Summary for FY 82

	SOUTHCENTRAL					Total
	100	200	300	400	500	
(\$ in thousands)						
<u>FRED Marking</u>						
Big Lake CWT & Clips 260,000	11.0	-0-	1.0	3.0	-0-	15.0
Jewel Lake) Quartz Lake)> CWT & Clips 150,000	5.4	-0-	0.2	1.9	-0-	7.5
Halibut Cove CWT & Clips 50,000	4.0	-0-	0.0	1.4	0.1	5.5
Beluga Lake) Fritz Creek)> CWT & Clips 25,000	2.0	-0-	-0-	0.7	0.1	2.8
Whittier CWT & Clips 90,000	2.4	-0-	-0-	0.8	0.1	3.3
Seward CWT & Clips 25,000	7.8	-0-	0.9	1.8	0.2	10.7
Cannery Creek CWT & Clips 224,000	14.9	1.6	2.5	3.0	0.5	22.5
Main Bay CWT & Clips 126,000	23.8	1.4	2.0	4.0	0.5	31.7
Sikusuilag CWT & Clips 160,000	14.6	0.8	-0-	1.2	-0-	16.6
Russell Creek CWT & Clips 136,000	19.5	14.4	-0-	0.2	-0-	34.1
Kitol CWT & Clips 240,000	23.1	1.0	1.2	5.9	-0-	31.2
Tutka CWT & Clips 105,000	32.8	0.3	2.7	5.1	-0-	40.9
Kasilof CWT & Clips 480,000	35.0	0.5	4.0	3.2	-0-	42.7
East Creek CWT & Clips 280,000	23.0	0.6	4.9	8.2	8.0	44.7

Table 11

New Permanent Full Time Positions Requested
for Mark, Tag, and Recovery

FRED

Fish Biologist I - Lab
EDP Programmer IV - Lab
Data Entry Clerk III - Lab
Systems Analyst II - Lab

COMM FISH

*Fish Biologist II - Troll Recovery
*Fish Biologist I - Troll Recovery

New Seasonal or Non Permanent Positions Requested
for Mark, Tag, and Recovery

*Comm Fish - 22 seasonal or non perm positions for 62 months
*Sport Fish - 25 seasonal or non perm positions for 89 months
**FRED - 125 seasonal or non perm positions for 370 months

* Included in Governor's FY 82 Budget Request

** 47 seasonal and non perm positions included in Governor's FY 82 Budget
Request