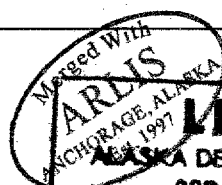


2012

**SUSITNA
HYDROELECTRIC PROJECT**

FEDERAL ENERGY REGULATORY COMMISSION
PROJECT No. 7114



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**FISCAL YEAR 1985
BUDGET BOOK**

HARZA-EBASCO
SUSITNA JOINT VENTURE

JUNE 1984
DOCUMENT NO. 2012

ALASKA POWER AUTHORITY

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ATN-83-0030
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SUSITNA HYDROELECTRIC PROJECT

ATTACHMENT C-1

TO

CONTRACT BETWEEN

ALASKA POWER AUTHORITY

AND

HARZA-EBASCO SUSITNA JOINT VENTURE

DETAILED SCOPE OF WORK

FISCAL YEAR 1985

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**ALASKA POWER AUTHORITY
SUSITNA HYDRELECTRIC PROJECT
HARZA-EBASCO SUSITNA JOINT VENTURE
FY 1985 BUDGET**

This document presents fiscal year 1985 budget requirements for Harza-Ebasco Susitna Joint Venture to perform the scope of work associated with continuing the licensing and permitting of the Susitna Hydroelectric project, and is intended, by reference, to be a part of Amendment No. 7 to the Professional Services Contract between Harza-Ebasco Susitna Joint Venture and the Power Authority dated January 6, 1983.

In general, the scope of work for FY85 includes:

1. Ongoing environmental studies which are required to support the license, and/or answer concerns of the state and federal regulatory agencies.
2. Preparation of testimony for the Environmental and Need for Power hearings. (Note: the budgets included for these activities are based on judgment estimates and may require significant revision as the hearing process and progress dictate).
3. Assistance to the Power Authority in preparation of power sales agreements with the utilities who will ultimately purchase Susitna's power generation.
4. Refinement of economic and operational studies to support the Need for Power hearings.
5. Continuation of the process of settlement with state and federal regulatory agencies.
6. Logistic support for the environmental field studies performed by Harza-Ebasco, their subcontractors and ADF&G.

6. Maintenance of an Anchorage based project office to provide effective management of the total project efforts, administer the subcontractors, coordinate efforts with the Power Authority and work with the state and federal agencies.

Not included in this budget or scope of work is any activity associated with project engineering or detailed design.

The work has been divided into tasks to facilitate management and control. Table I which is included in this summary section, lists the tasks by number, the name of each task and the total budget required for the task. Table II also shows the tasks, and in addition provides the budget required for each major spending category (i.e., Services, Directs and Subcontracts). Table III provides a comparison between the total budget request for FY85 as prepared in November 1983 and the current requirements. Because of the changed emphasis of the project, the two budgets are not truly comparable and no attempt has been made to rationalize the differences in detail. In general, the environmental program and the Need for Power studies have been expanded while the geotechnical and engineering-related efforts have been eliminated.

The body of this document is comprised of the detailed work scope and budget for each of the tasks. Each task is organized to include:

1. Written scope of work
2. Summary budget required by month for each category of expenditure plus the task budget total.
3. Task level recapitulation of services cost showing total salaries paid, fringe benefits, overhead and fee.
4. Detailed budget required by month for each cost account, category of expenditure and task budget total.
5. Functional organization chart showing primary responsibilities.

Table I
Alaska Power Authority
Susitna Hydroelectric Project
Harza-Ebasco Susitna Joint Venture
FY85 BUDGET SUMMARY
DOLLARS (IN \$1000)

TASK NO.	Task Title	Budget Required
1	Project Management	878981
2	Project Support Services	3728276
	Procurement Support for ADF&G	67500
3	Engineering Program	314410
4	Environmental Program	7313931
5	Geotechnical Program	168186
6	Licensing Support & Permitting	1198570
7	Electrical Power System Study	29690
9	External Review Panel	0
39	Logistics	2157321
40	Need for Power Studies	2391321
41	Transmission Facilities Siting & Licensing	107437
42	Hydrologic & Hydraulic (Envrnmtl) Studies	1318230
-	Demobilization Reserve	0
	Harza-Ebasco Total	19673853

Table II
Alaska Power Authority
Susitna Hydroelectric Project
Harza-Ebasco Susitna Joint Venture
FY85 BUDGET SUMMARY BY TASK AND CATEGORY
DOLLARS (IN \$1000)

TASK NO.	DESCRIPTION	LABOR	DIRECTS	S/C	TOTAL
1	Project Management	766306	112675	0	878981
2	Project Support Services	2254864	1455052	18360	3728276
	Procurement Support for ADF&B	0	67500	0	67500
3	Engineering Program	217310	20600	76500	314410
4	Environmental Program	2235702	294215	4784014	7313931
5	Geotechnical Program	122343	16900	28943	168186
6	Licensing Support & Permitting	538223	132600	527747	1198570
7	Electrical Power System Study	23633	6057	0	29690
9	External Review Panel	0	0	0	0
39	Logistics	141696	247940	1767685	2157321
40	Need for Power Studies	1206811	306800	877710	2391321
41	Transmission Facilities Siting & Licensing	69437	38000	0	107437
42	Hydrologic & Hydraulic (Environmental) Studies	887754	262180	168296	1318230
-	Demobilization Reserve	0	0	0	0
Harza-Ebasco Total		8464079	2960519	8249255	19673853

Table III
Alaska Power Authority
Susitna Hydroelectric Project
Harza-Ebasco Susitna Joint Venture
FY85 BUDGET SUMMARY BY TASK
DOLLARS (IN \$1000)

TASK NO.	DESCRIPTION	CORRECTED BUDGET			CURRENT FORECAST	VARIANCE
		BASE	SUPPL.	TOTAL		
1	Project Management	1858	0	1858	879	979
2	Project Support Services	3220	240	3460	3728	-268
	Procurement Support for ADF&G	720	0	720	68	652
3	Engineering Program	140	509	649	314	335
4	Environmental Program	5909	0	5909	7314	-1405
5	Geotechnical Program	242	3491	3733	168	3565
6	Licensing Support & Permitting	624	0	624	1199	-575
7	Electrical Power System Study	22	114	136	30	106
9	External Review Panel	0	210	210	0	210
39	Logistics	2546	1311	3857	2157	1700
40	Need for Power Studies	717	381	1098	2391	-1293
41	Transmission Facilities Siting & Licensing	222	24	246	108	138
42	Hydrologic & Hydraulic (Envrnmtl) Studies	1137	117	1254	1318	-64
-	Demobilization Reserve	185	0	185	0	185
Harza-Ebasco Total		17542	6397	23939	19674	4265

ALASKA POWER AUTHORITY
 HARZA/EBASCO SUSITNA JOINT VENTURE
 FISCAL YEAR 1985 CONTRACTOR SUMMARY REPORT

ITEM DESCRIPTION -----	FY 85 APPROVED BUDGET -----
HARZA-EBASCO INTERIM II:	
Services	8464079
Directs	2960519
Subcontractor Handling Fees	161514
Sub-Total Harza-Ebasco	11586112
SUBCONTRACTS INTERIM II:	
CIRI/FMAA	1389385
Acres American, Inc.	175000
F. Orth	212967
EDAW, INC	166310
Denkin	30000
S/C-Resources Program Approach	210000
CR-Technical Review Panel	40000
ERTEC-Cultural Resources Program Approach	50000
RM-Bell Consultation	20000
R&M	979216
AEI	905550
W. Trihey	656091
Woodward Clyde and Associates	665459
LGL	455000
U of A -- Palmer	35000
U of A - Fairbanks	63000
R.A. Kreig	152000
B. Kessel	20000
FERC Hearing Preparation - Unident. Subcontractor	20000
Air Logistics, Inc.	883375
Alaska Air Guides	33888
Battelle-Northwest	134000
SH Clark	165000
U of A - ISER	147000
General Electric	52500
Dames & Moore	112000
P. Weir	110000
Direct Testimony - Unident. Subcontractor	30000
Prof. Tyrell	10000
Hamblin-Reservior Temp/Ice Consultant	15000

ALASKA POWER AUTHORITY
 HARZA/EBASCO SUSITNA JOINT VENTURE
 FISCAL YEAR 1985 CONTRACTOR SUMMARY REPORT

ITEM DESCRIPTION -----	FY 85 APPROVED BUDGET -----
Calkins-Instream Ice Consultant	25000
Glacial Data Reduction	25000
Streamflow Forecasting	50000
Sediment Consultant	50000
Sub-Total Subcontracts	8087741 =====
TOTAL FISCAL 1985 APPROVED BUDGET	19673853

CONTRACT SUMMARY	
ORIGINAL CONTRACT	691161
TOTAL INTERIM II AMEND. 1-4	9308839
TOTAL INTERIM II AMEND. 5	16620000
TOTAL INTERIM II AMEND. 6	7484484
TOTAL INTERIM II AMEND. 7	15271194
TOTAL HARZA-EBASCO	49375678* =====

* Not To Exceed Carries \$815,000 Reserve for Demobilization

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

PROJECT TOTALS

SERVICES	8464079
DIRECTS	2960519
SUBCONTRACTS	8249255

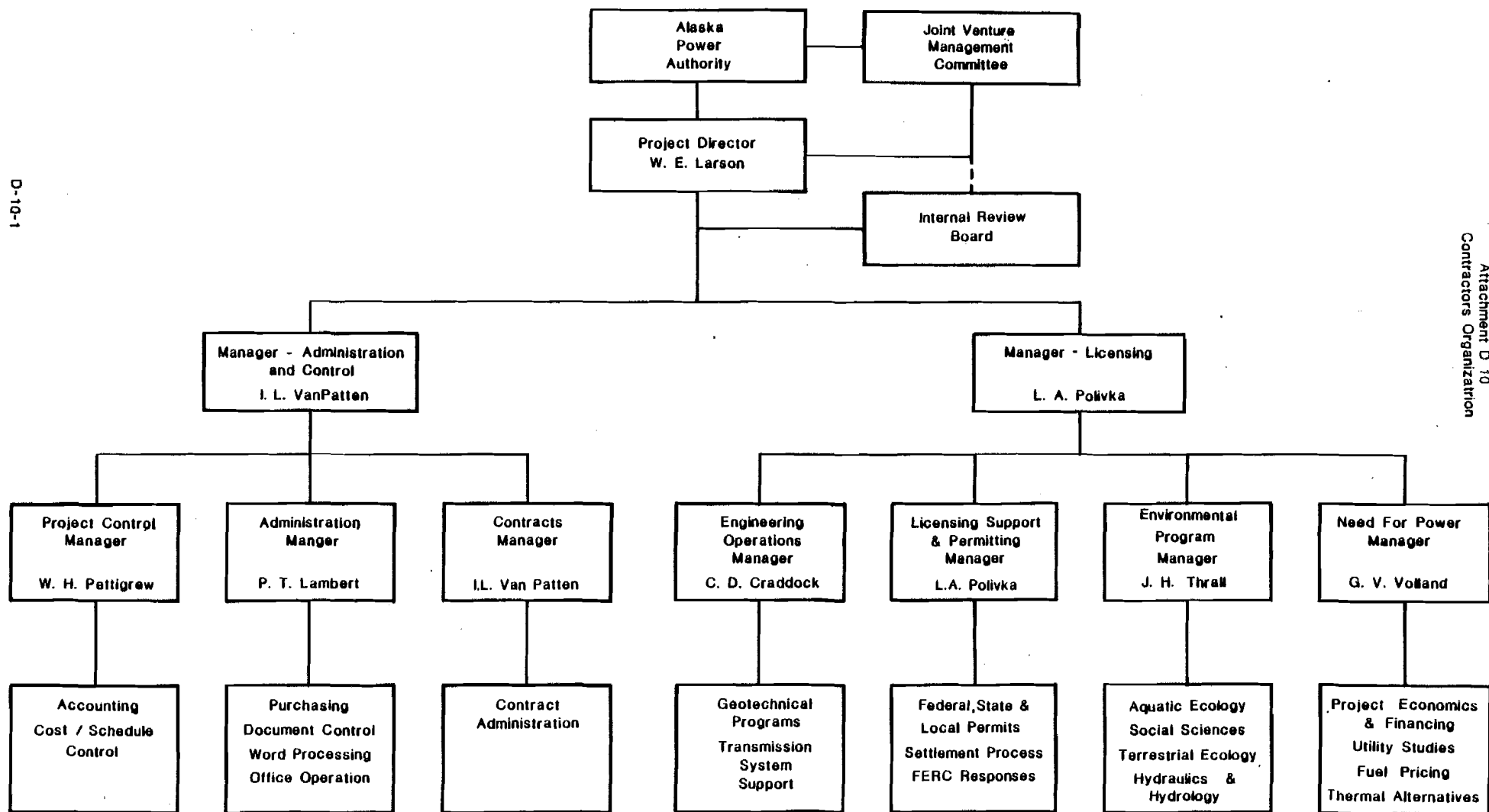
PROJECT TOTAL	19673853

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

PROJECT SUMMARY: SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	120697	2470744.21	839572.38	1622064.71	469128.36	5401509.67
Home Office Staff	59092	1204605.33	409423.84	1181891.70	266648.55	3062569.44
TOTAL STAFF	179789	3675349.54	1248996.23	2803956.42	735776.92	8464079.11



HARZA-EBASCO SUSITNA JOINT VENTURE
ORGANIZATION-PHASE I SERVICES-LICENSING

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

PAGE 12

	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

FISCAL YEAR 1985 PROJECT TOTALS													
	2105075	2166980	2024867	1619113	1653490	1696467	1674612	1475612	1403242	1197441	1386598	1270356	19673853

TASK 1
PROJECT MANAGEMENT

Task 1 consists of level of effort activities associated with the highest level of project team managers. These managers direct the efforts required to complete the FERC licensing process for the Susitna Hydroelectric Project within the established budget and schedule consistent with established technical standards.

Management efforts are divided into categories including overall project management, licensing management, administration and control management, environmental program management, engineering operations management, and contract compliance. All of these project management activities will take place in the Anchorage office.

Services

01-010-01 Management and Coordination of Total Project

To direct the accomplishment of the environmental, regulatory, and engineering tasks required to obtain the FERC license and the Federal, State, and local permits required for the Susitna Project, three senior level managers will be utilized, namely the Project Director, the Licensing Manager, and the Administration and Control Manager.

The Project Director is responsible for all services performed and will provide the principal contact between the Power Authority and the Contractor.

The Project Director will:

- o Direct all activities of the Joint Venture. This will be done primarily thru his 2 principal subordinates, the Licensing Manager and the Administration and Control Manager

- o Maintain close liaison with the Power Authority
- o Review and sign all communications with the Power Authority
- o Initiate Internal Review Board participation in project work as required to support the FERC license application
- o Generally guide and direct the development of detailed procedures to be used in the execution of project work

The Licensing Manager will be responsible for all of the Contractor's activities related to obtaining the necessary licenses and permits for the initiation of construction of the Susitna Project, including providing support for the FERC license application; obtaining Federal, State, and local permits; and directing any engineering operations necessary for such activities. The Licensing manager will also be the principal point of contact between the Power Authority's legal counsel and the Contractor.

The Licensing Manager will direct the activities of:

- o The Environmental Program Manager (Task 4)
- o The Engineering Operations Manager (Task 3)
- o The Need for Power Manager (Task 40)

In addition, the Licensing Manager will perform the duties of the Licensing Support and Permitting Manager for Task 6.

The Project Administration and Control Manager will be responsible for all of the Contractor's activities related to contract administration, cost and schedule control, accounting, and office management.

The Project Administration and Control Manager will manage Tasks 2 and 39. Principal responsibilities include:

- o Non-technical administration of subcontracts
- o Administration and accounting in the Anchorage offices
- o Project team budget, cost, and schedule control functions
- o Preparation of project status reports
- o Site logistics
- o Maintenance of the document control systems
- o Project procurement
- o Administration of the Anchorage office including management of all project support personnel

In addition, the Project Administration and Control Manager will perform the duties of the Contract Manager under Task 2.

01-010-02 Management and Coordination of Environmental and Licensing

The Environmental Program Manager will implement the work plan described in Task 4 and 42 and direct all environmental programs needed for project licensing.

The Environmental Program Manager will be the principal Contractor contact with Power Authority environmental staff on technical issues and will assist as needed with settlement of environmental issues.

The Environmental Program Manager will also manage:

- o Planning and executing all environmental programs necessary to supply data which supports the FERC licensing process
- o Resolving environmental issues that may impede project licensing and permitting
- o Preparing periodic progress reports on the status of all environmental program activities
- o Preparing all technical environmental documents developed by the Contractor and its subcontractors

01-010-03 Management and Coordination of Engineering

The Engineering Operations Manager Report will function on a part time basis to oversee Tasks 3, 5, 7, and 41. Efforts will also consist of obtaining necessary engineering data, primarily from the home offices of specialty individuals, to respond to FERC requests.

The Engineering Operations Manager Report will also function within the above named tasks to perform specific engineering assignments required for FERC. The Engineering Operations Manager will be the principal contact with the Contractor's Internal Review Board.

01-010-06 Liaison and Support

The home offices of the Joint Venture partners will supply short term technical support and other specialized support services (drafting, computer, etc.). Most of these support efforts have been included in the individual tasks in which they will be required. Coordination of activities through liaison between the Anchorage office and the home offices, however, will be a management responsibility and is included in this task. Also included in

this task is an allowance for the Project Director to utilize home office personnel to support special efforts.

Directs

01-020-01 Travel and Living Expenses

This budget item includes the cost of airfare and expenses for lodging, meals, etc. while traveling on project business and per diem expenses for temporary assignments. The estimated number of trips is shown below:

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Anchorage and Bellevue	10	5
Anchorage and New York	4	5
Anchorage and Chicago	10	5
Anchorage and Washington D.C.	6	5
Anchorage and Juneau	4	2

01-020-02 Relocation

This item covers the relocation of permanent personnel (longer than a one year assignment) to the project. Costs include shipment of household effects and one vehicle, cost associated with disposal/rental of previous residence, etc.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

PAGE 1

TASK 01	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL LABOR	65047	75454	59182	66720	61417	56183	58682	58081	75287	63062	58490	68701	766306

TOTAL DIRECTS	4800	33200	38800	4000	4000	4000	4000	4000	4000	4000	4000	3875	112675

TASK 01 TOTALS	69847	108654	97982	70720	65417	60183	62682	62081	79287	67062	62490	72576	878981

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 01 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	7260	298454.36	101450.38	195979.17	56590.10	652474.03
Home Office Staff	1664	44536.24	15136.98	44163.54	9995.52	113832.28
TOTAL STAFF	8924	342990.60	116587.36	240142.71	66585.62	766306.31

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 01

878981

TOTAL SERVICES

766306

01-010-01	MNGMT & CO-ORD. OF TOTAL PROJ	506281	
01-010-02	MNGMT & CO-ORD. OF ENVIRON & LICENSING	149269	
01-010-03	MNGMT & CO-ORD. OF ENGINEERING	58680	
01-010-06	CONTRACT COMPLIANCE & OTHER H.O. SUPPORT	52076	766306

TOTAL DIRECTS

112675

01-020-01	TRAVEL AND LIVING EXPENSES	52275	
01-020-02	RELOCATION	60400	112675

RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

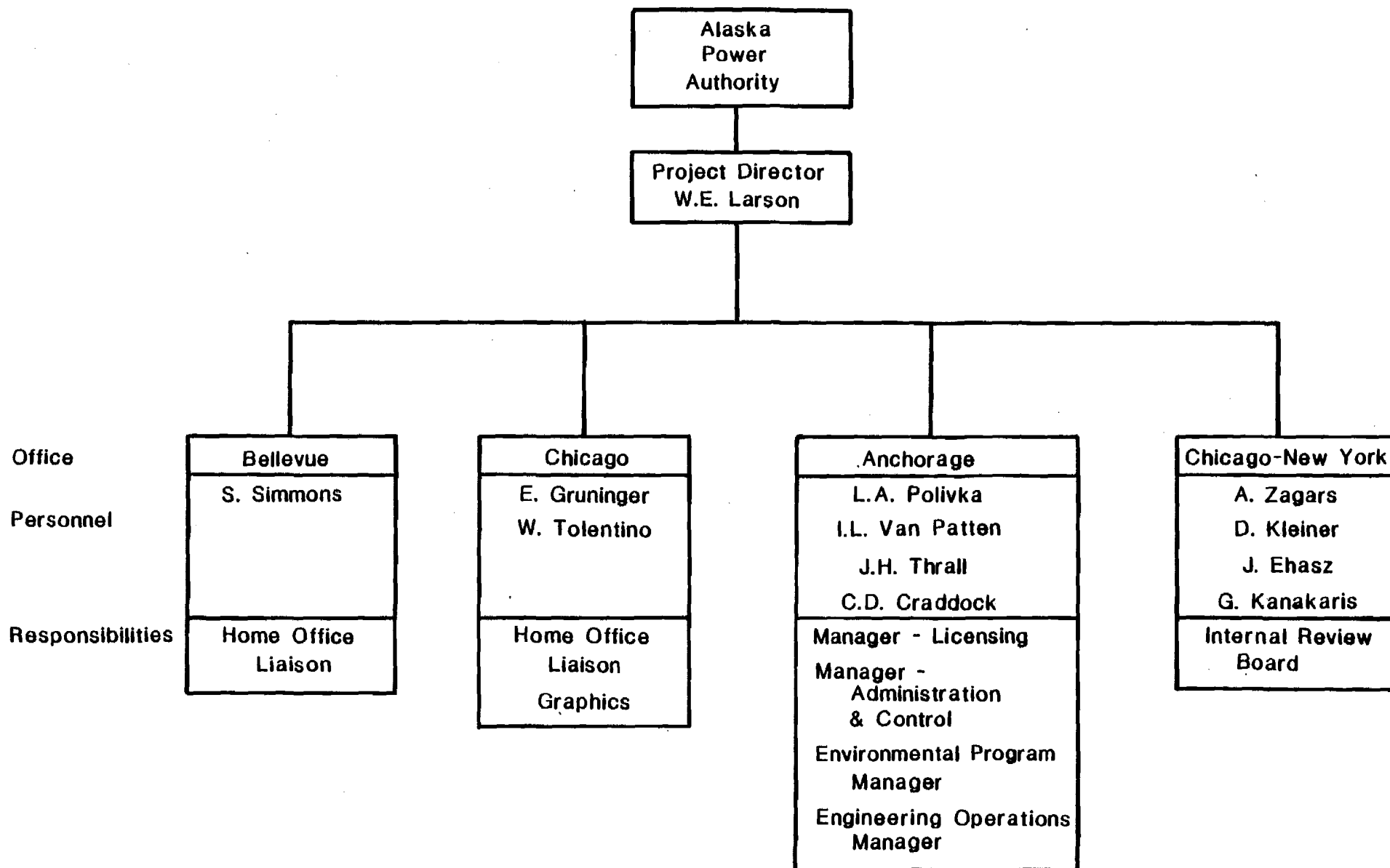
PAGE 1

TASK 01	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

LABOR 010													
01-010-01	MNGMT & CO-ORD. OF TOTAL PROJ												
	47015	53742	38026	45008	37136	38081	38081	36369	50451	41350	36778	44244	506281
01-010-02	MNGMT & CO-ORD. OF ENVIRON & LICENSING												
	8817	12497	11941	12497	15066	8887	11386	12497	15621	12497	12497	15066	149269
01-010-03	MNGMT & CO-ORD. OF ENGINEERING												
	4890	4890	4890	4890	4890	4890	4890	4890	4890	4890	4890	4890	58680
01-010-06	CONTRACT COMPLIANCE & OTHER H.O. SUPPORT												
	4325	4325	4325	4325	4325	4325	4325	4325	4325	4325	4325	4501	52076
LABOR 010 TOTALS	65047	75454	59182	66720	61417	56183	58682	58081	75287	63062	58490	68701	766306

DIRECTS													
01-020-01	TRAVEL AND LIVING EXPENSES												
	4800	5800	5800	4000	4000	4000	4000	4000	4000	4000	4000	3875	52275
01-020-02	RELOCATION												
	0	27400	33000	0	0	0	0	0	0	0	0	0	60400
TOTAL DIRECTS	4800	33200	38800	4000	4000	4000	4000	4000	4000	4000	4000	3875	112675

TASK 01 TOTALS	69847	108654	97982	70720	65417	60183	62682	62081	79287	67062	62490	72576	878981



July 1, 1984

TASK 1 - PROJECT MANAGEMENT

TASK 2

PROJECT SUPPORT SERVICES

INTRODUCTION

Project support services consist of activities that can be categorized into Administrative Services, Project Control, and Contract Administration. The Task 2 services budget is limited to personnel in these departments and support from home offices. In addition, direct costs which are general in nature and are used by all HE staff are included in Task 2. Support services from subcontractors are limited to drafting for Task 2 needs and an allowance is included as a support for special presentations. The primary duties are categorized into items including general administration and clerical support, accounting, contract administration, purchasing, cost and schedule control, document control, and quality control.

SERVICES

02-011-01 General Administration and Clerical Support

The Administrative Manager is responsible for office administration, document control and communications, quality control, purchasing, and word processing. The General Administration group includes the Office Supervisor, Document Control Supervisor, Word Processing Supervisor, Purchasing Agent, and clerical support staff.

02-011-02 Accounting

The Accounting staff will maintain accounting records and make payments. Their responsibilities include audits of subcontractors' and

Contractor's invoices to verify contract compliance and adherence to accounting practices as they may affect project invoicing to the Power Authority. The scope of services is to:

- o Provide timely investment of project and Power Authority funds,
- o Process invoices from subcontractors, consultants, vendors and joint venture partners,
- o Maintain general ledger books of accounts,
- o Prepare Contractor's invoices,
- o Perform bank reconciliations,
- o Assist in reconciliation of billings to cost reports,
- o Perform periodic audits of subcontract invoices,
- o Establish and maintain capital asset inventory in accordance with Power Authority procedures, and
- o Provide project cost data as a part of the accounting statements.

02-011-03 Contract Administration

The Contract Administration function will be located in Anchorage to administer subcontracts. Duties include pre-award and post-award controls. In both phases, staff members are assigned to handle contract administration services in support of the Technical Manager.

During pre-award, the Contract Administrator prepares and issues bid packages, receives and commercially evaluates bids, and provides input for the letter of recommendation. The Contract Manager performs the technical overview and is responsible for schedule and cost compliance.

The Contract Administrator supports the Contract Manager post-award by responding to correspondence dealing with commercial matters, assessing of invoices and claims, as well as implementing contract closeout procedures and audits. The final approval of invoices and signatory authority rests with the Administration and Control Manager and the Project Director of the Harza-Ebasco Susitna Joint Venture respectively.

The scope of these services is to:

- o Prepare Contract terms and conditions in accordance with the needs of the particular contract, while adhering to the established HESJV procedures and the requirements of the Power Authority,
- o Place advertisements of upcoming subcontract proposals in newspapers,

- o Prepare, assemble, and issue bid packages,
- o Receive and commercially evaluate subcontract proposals,
- o Prepare recommendation letters,
- o Upon receiving comments from the Power Authority; conduct negotiations in the best interests of the Power Authority,
- o Prepare and issue contracts,
- o Prepare and issue change orders,
- o Administer on-going contracts,
- o Assess claims, and
- o Support ADF&G in leases and other services.

02-011-04 Purchasing

The Purchasing Department procures supplies, materials, and equipment for Anchorage office operations and, when required, the camp.

The scope of services is to:

- o Establish and maintain purchase requisition and order logs,
- o Solicit bids, receive bids, and evaluate proposals,

- o Expedite items to meet delivery requirements, and
- o Prepare and maintain material received reports.

02-011-05 Document Control

The Document Control Department provides the project with a computerized information management system. This Department also maintains the following:

- o The tracking of FERC requests for supplemental information for which responses are being prepared,
- o The tracking of past responses to FERC requests for supplemental information and agency comments to provide a basis for preparing timely responses to questions raised by intervenors,
- o The logging/tracking of project related documents and document distribution schedules,
- o The tracking of actions required by Harza-Ebasco in response to external requests or needs,
- o The tracking of actions required from external sources to provide timely information to Harza-Ebasco operations,

- o The tracking of commitments made by Harza-Ebasco in the responses to agency comments, and
- o The logging/tracking of all correspondence related to the project.

02-012-01 Project Control Management

The Project Control Manager (PCM) directs the Cost/Schedule Engineers and reviews all work projects before publication. In addition, the PCM tracks all Project Change Requests, Changed Work Authorizations and the status of Management Reserve funds. Special projects and presentation materials are prepared by the PCM with assistance of the Cost/Schedule staff.

02-012-02 Cost/Schedule Control

The Cost/Schedule Engineer's responsibilities are: to monitor actual cost and the consistency of the remaining project activities with the schedule of the remaining work, develop work schedules in conjunction with the task leaders, monitor progress against the budget and schedule, and analyze both cost and schedule variances.

Directs

02-020-01 Temporary Services

This item covers expenses of temporary help for clerical services (secretaries, word processors, clerks, etc.). In addition, this item

covers hiring of short term staff to handle peak loads, especially in word processing, or for intermediate absences of permanent staff (illness, vacation, etc.).

02-020-02 Phone/Communications

This item includes operating costs of the Anchorage office telephone system, the charges related to the Watana Camp telephones, charges which are project related from the Home Offices, and the costs of operating the telecopy and telex machines.

02-020-03 Office Rent

This item covers the costs for leasing office space at 711 H Street and amortized leasehold improvements.

02-020-04 Furniture Rent/Purchase

In order to meet immediate minimum requirements; desks, bookcases, tables, chairs, etc. are rented over short periods from local suppliers. Upon verification of availability of surplus inventory from the Power Authority, decisions to purchase additional furniture (and reduce rental furniture) are made.

02-020-05 Supplies

This item covers all office supplies, including reproduction center paper and supplies, word processing supplies, drafting supplies, computer supplies, and general office supplies.

02-020-06 Postage, Air Express, Freight

This item includes all postage, overnight express packages, parcel post, and other shipment costs for correspondence, documents, and other materials.

02-020-07 Photocopy/Prints

This item includes photocopying and printing for Task 2 at commercial print shops.

02-020-08 Vehicle Expense

This item includes the cost of leasing vehicles for Harza-Ebasco Susitna Joint Venture, plus gas, oil, servicing, and repairs.

02-020-09 Insurance

This item includes general liability insurance, errors and omissions insurance, vehicle insurance, and personal property insurance on behalf of Harza-Ebasco in accordance with contract terms with the Power Authority.

02-020-12 Equipment Procurement - Word Processing

Additional work stations and other peripheral equipment.

02-020-14 Reproduction Equipment Rental & Maintenance

This item includes one Xeros Model 9500, one Xerox Model 1075, one Xerox Model 3450, and another copier to be selected. The 9500 copier

02-020-20 Travel & Living Expenses

This item covers the air fare and per diems of temporary staff assigned to Anchorage, per diems of permanent staff travelling on business outside of Anchorage, and per diems for home visits.

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
New York and Anchorage	4	10
Chicago and Anchorage	4	10
Chicago and Anchorage	3	5
Chicago and Anchorage	2	30
Seattle and Anchorage	4	12
Seattle and Anchorage	3	30

02-020-22 Computer

Includes the cost to lease Project/2 schedule processor software for nine months and for procurement of hardware and software to computerize the accounting work efforts. In addition, miscellaneous upgrades and replacements for the existing microcomputers is included.

02-020-34 Special Presentation Materials

This item includes an allowance for the cost of materials for presentations which are requested by the Power Authority. At this time, none are scheduled.

02-020-22 Computer

Includes the cost to lease Project/2 schedule processor software for nine months and for procurement of hardware and software to computerize the accounting work efforts. In addition, miscellaneous upgrades and replacements for the existing microcomputers is included.

02-020-34 Special Presentation Materials

This item includes an allowance for the cost of materials for presentations which are requested by the Power Authority. At this time, none are scheduled.

02-020-36 Warehouse Lease & Improvements

This item covers the costs for the warehouse being leased to store the core samples from Watana and other Susitna related Power Authority property. In addition, an estimate of \$20,000 is included to erect storage shelving, fencing and partitions as required in the warehouse.

02-020-41 Harris Computer Communications

This item covers the purchase of document control equipment and related supplies to support the Project's Document Control functions.

02-020-42 Harris Computer Charges

This item covers the monthly charges for use of the Harris computer - principally for Document Control and the tracking of commitments to FERC.

02-020-43 Document Control Equipment & Supplies

This item covers the purchase of document control equipment and related supplies to support the Project's Document Control functions.

02-020-44 Micro Filming Equipment & Supplies

This item covers the purchase of microfilming equipment and other related supply items to support the micro filming function.

Subcontractors

02-103-01 CIRI/FMAA - Drafting

Drafting support services for budget and cost control presentations, forms, flow charts, etc.

02-103-02 CIRI/FMAA - Special Presentation Drafting

This item is an allowance for drafting services provided to the Power Authority for specific, special request items.

02-105-01 Subcontractor Handling Fee

A handling fee equal to 2 percent of the subcontractor costs.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

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TASK 02	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
TOTAL LABOR	155594	222081	198589	186822	217160	153880	151233	165843	217099	186822	186822	212919	2254864
TOTAL DIRECTS	124660	195960	194860	133560	98760	179960	92510	89510	105912	95510	114910	96440	1522552
TOTAL SUBCONTRACTORS	1020	2040	1020	2040	1020	2040	1020	2040	1020	2040	1020	2040	18360
TASK 02 TOTALS	281274	420081	394469	322422	316940	335880	244763	257393	324031	284372	302752	311399	3795776

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 02 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	60888	926466.18	314783.74	608175.24	176414.47	2025839.63
Home Office Staff	3945	89713.65	30491.85	88962.15	19856.85	229024.50
TOTAL STAFF	64833	1016179.83	345275.59	697137.39	196271.32	2254864.13

Alaska Power Authority
 Harza-Ebasco Susitna Joint Venture
 Fiscal Year 1985: Cost Summary

TASK 02

3795776

TOTAL SERVICES

2254864

02-011-01	GENERAL ADMINISTRATION AND CLERICAL SUPPORT	556791	
02-011-02	ACCOUNTING	288094	
02-011-03	CONTRACT ADMINISTRATION	358004	
02-011-04	PURCHASING	79176	
02-011-05	DOCUMENT CONTROL	228390	1510455

02-012-01	PROJECT CONTROL MANAGEMENT	166517	
02-012-02	COST SCHEDULE CONTROL	577892	744409

TOTAL DIRECTS

1522552

02-020-01	TEMPORARY SERVICES	48000	
02-020-02	PHONE/COMMUNICATIONS	126000	
02-020-03	OFFICE RENT	303032	
02-020-04	FURNITURE RENT / PURCHASE	14400	
02-020-05	SUPPLIES	102000	
02-020-06	POSTAGE, AIREXPRESS, FRIEGHT	74400	
02-020-07	PHOTOCOPY/PRINTS	36000	
02-020-08	VEHICLE EXPENSE	76200	
02-020-09	INSURANCE	110000	
02-020-12	EQUIPMENT PROCUREMENT-WORD PROCESSING	20000	
02-020-14	REPRODUCTION EQUIPMENT RENTAL AND MAINTENANCE	96000	
02-020-16	OFFICE EQUIPMENT PROCUREMENT & MAINTENANCE	12000	
02-020-17	PERSONNEL RELOCATION	93400	
02-020-20	TRAVEL AND LIVING EXPENSES	50000	
02-020-22	COMPUTER	20000	
02-020-26	ADF&G WAREHOUSE RENT	46500	
02-020-33	ADF&G LINE 500	30000	
02-020-34	SPECIAL PRESENTATIONS MATERIALS	12000	
02-020-36	WAREHOUSE LEASE AND IMPROVEMENTS	48120	
02-020-41	HARRIS COMPUTER COMMUNICATIONS	48000	
02-020-42	HARRIS COMPUTER CHARGES	48000	
02-020-43	DOCUMENT CONTROL EQUIPMENT AND SUPPLIES	12000	
02-020-44	MICRO FILMING EQUIPMENT & SUPPLIES	96500	1522552

TOTAL SUBCONTRACTORS

18360

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

02-104-01	CIRI/FMAA-DRAFTING	12000	
02-104-02	CIRI/FMAA-SPECIAL PRESENTATION DRAFTING	6000	18000
02-105-01	SUBCONTRACTOR HANDLING FEE	360	360

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

[illegible]

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

[illegible]

RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

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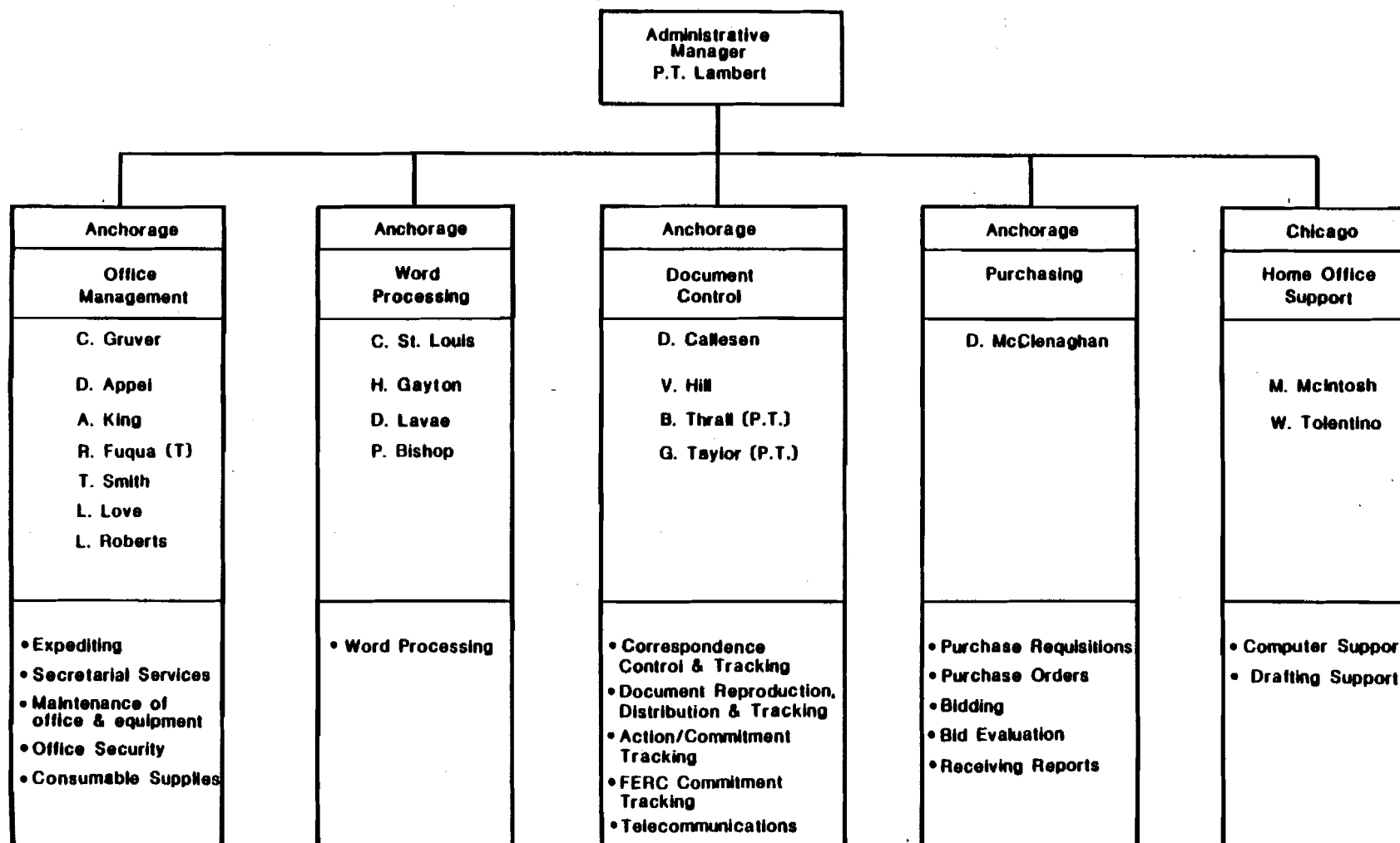
TASK 02	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

DIRECTS													
02-020-42 HARRIS COMPUTER CHARGES	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	48000
02-020-43 DOCUMENT CONTROL EQUIPMENT AND SUPPLIES	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	12000
02-020-44 MICRO FILMING EQUIPMENT & SUPPLIES	0	40000	40000	3000	3000	1500	1500	1500	1500	1500	1500	1500	96500
TOTAL DIRECTS	124660	195960	194860	133560	98760	179960	92510	89510	105912	95510	114910	96440	1522552

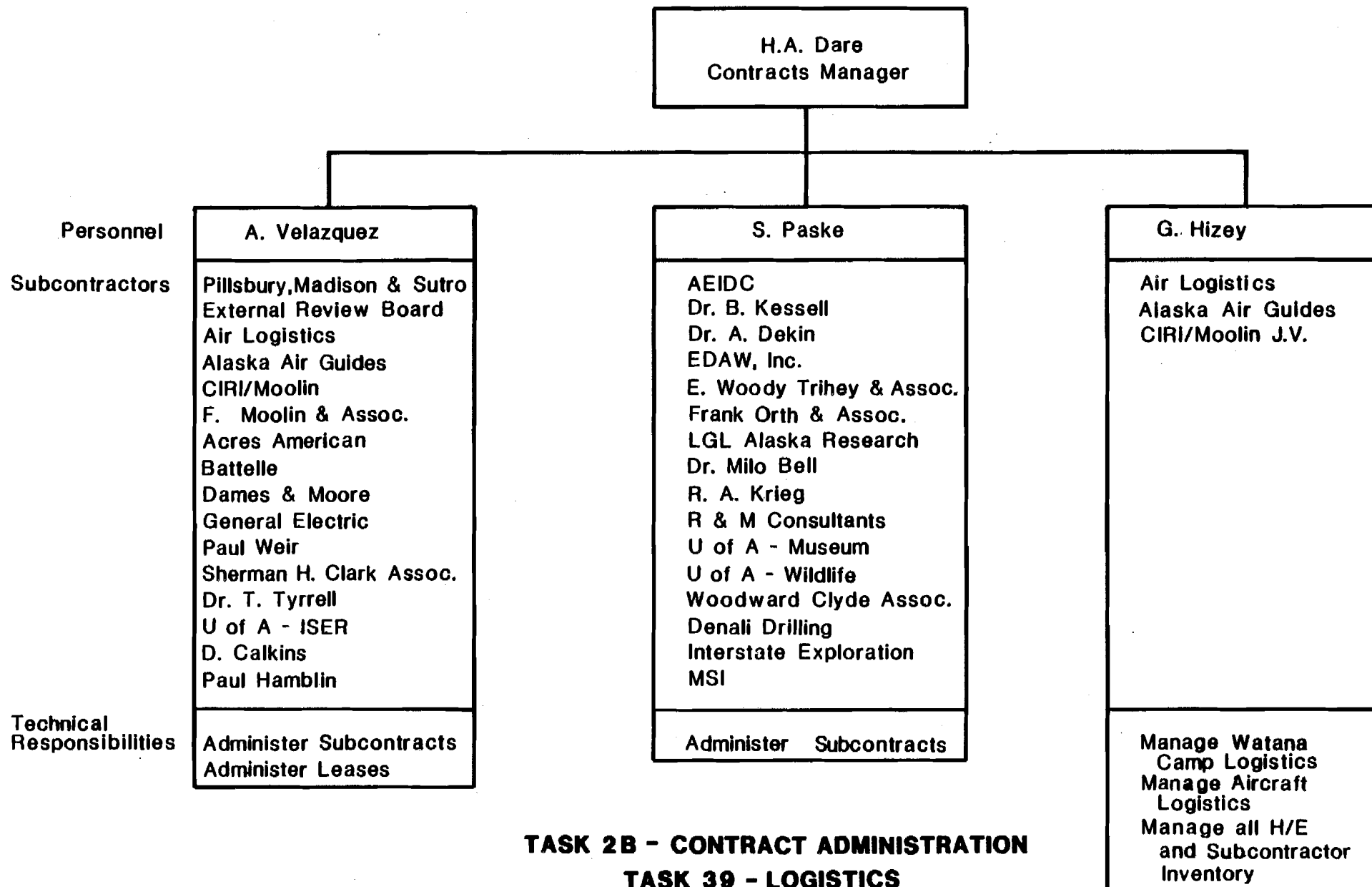
SUBCONTRACTOR 104													
02-104-01 CIRI/FMAA-DRAFTING	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	12000
02-104-02 CIRI/FMAA-SPECIAL PRESENTATION DRAFTING	0	1000	0	1000	0	1000	0	1000	0	1000	0	1000	6000
SUBCONTRACTOR 104 TOTALS	1000	2000	1000	2000	1000	2000	1000	2000	1000	2000	1000	2000	18000

SUBCONTRACTOR 105													
02-105-01 SUBCONTRACTOR HANDLING FEE	20	40	20	40	20	40	20	40	20	40	20	40	360
SUBCONTRACTOR 105 TOTALS	20	40	20	40	20	40	20	40	20	40	20	40	360

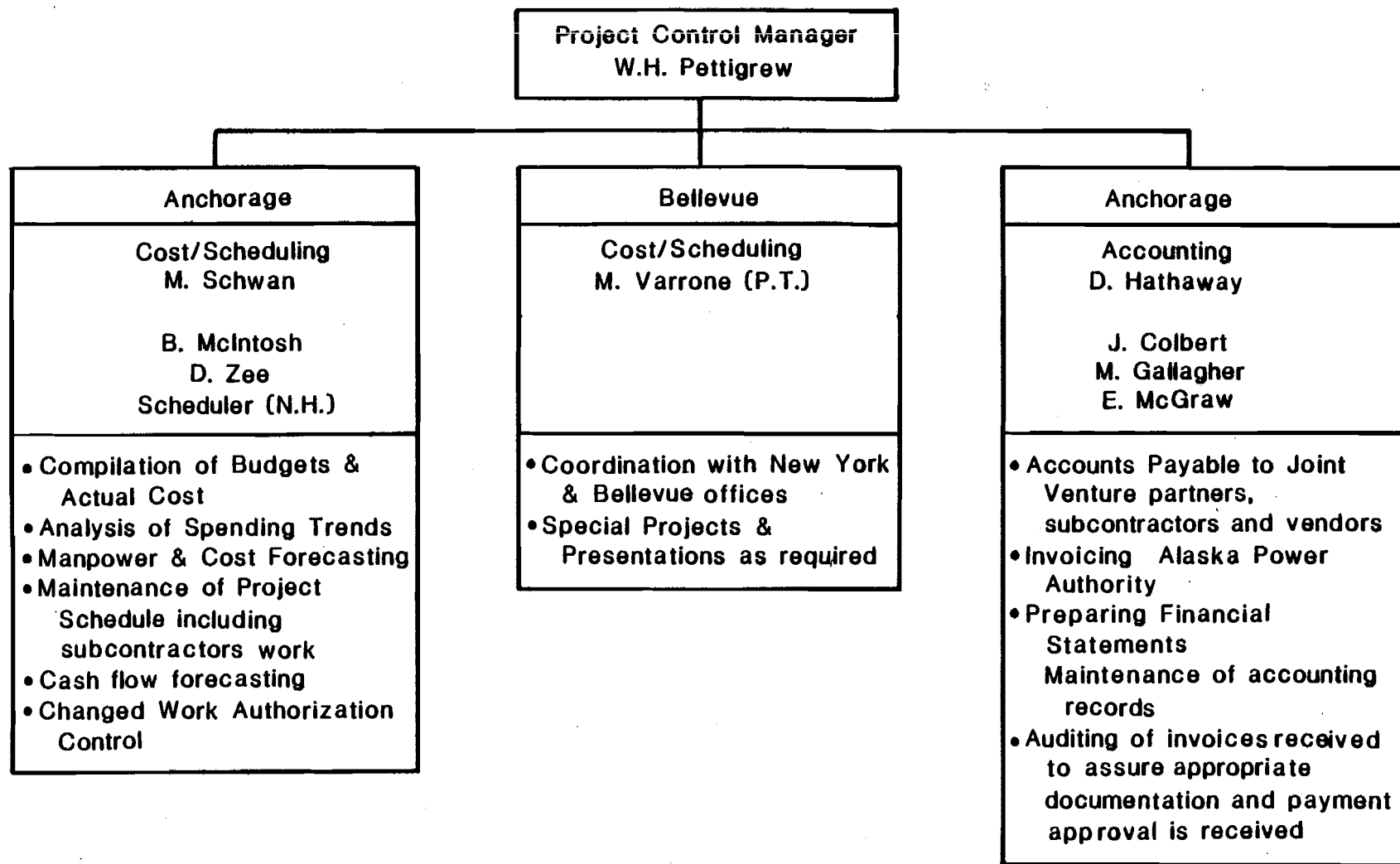
TASK 02 TOTALS	281274	420081	394469	322422	316940	335880	244763	257393	324031	284372	302752	311399	3795776



TASK 2A - ADMINISTRATIVE MANAGEMENT



July 1, 1984



TASK 2C - COST AND SCHEDULING CONTROL

July 1, 1984

TASK 3
ENGINEERING

The work program for FY85 stresses only activities necessary to support the Federal Energy Regulatory Commission (FERC) licensing process. In some cases, activities are a continuation from FY84.

Services

03-010-06 Geotechnical Data Review

Information gathered from review of previous geotechnical studies, underground explorations, laboratory testing, geophysical studies, instrumentation readings, field mapping programs etc., will be collected and evaluated on a continuing basis. This data bank will allow designers and reviewers to plan and evaluate forthcoming exploration programs along with establishing the criteria and parameters necessary for detailed design.

Geotechnical data summaries will be available to the FERC staff prior to the hearings on Dam Safety.

03-010-07 Support for Input to Testimony

Provide engineering input to counsel, the pre-hearing process, discovery requests and the direct filed testimony prepared by a subcontractor for the Dam Safety Hearings.

During the review of the DEIS and preparation of the FEIS, the process will require responses to engineering related matters.

03-010-09 Support for Need for Power, Dam Safety and
Environmental Hearings

This activity provides the expected support requirement for the FERC process activities relating to the hearings which will be needed in FY85.

To date the level of effort for assessing the feasibility design of Devil Canyon has been less than that expended for Watana. In support of the Dam Safety Hearing Process, Devil Canyon Dam design will be reviewed.

03-010-15 Best Management Practices Manuals Review

This activity provides a review of the Best Management Practices Manuals to ensure constructability and reasonability of practices be incurred on a subcontractor.

03-010-16 1984 Geotechnical Report Review

Draft copies of the report will be furnished to the Internal Review Board for review and comment.

03-010-17 Draft EIS and Final EIS Review

Assistance in providing review and comment on the technical aspects of the DEIS and FEIS are covered by this activity.

Directs

03-020-02 Travel and Living Expenses

Travel and living expenses to coordinate and oversee activities in the

Chicago and Bellevue offices associated with the above work. The travel estimate consists of the following:

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Anchorage and Washington DC	1	3
Anchorage and Chicago	2	5
Chicago and Anchorage	2	10
Chicago and Anchorage	2	6
Anchorage and Bellevue	2	20

Subcontractors

03-143-01 Acres American Inc - Discovery Activities Dam Safety
Hearings

Contribute to preparation of responses to requests for information during the discovery period.

03-143-02 Acres American - Preparation of Direct Testimony, Dam
Safety Hearings

Prepare direct testimony for Dam Safety Administrative Hearings.

03-143-03 Acres American - Administrative Hearing

Attendance at hearing and presentation of testimony.

03-133-03 Subcontractor Handling Fee

A handling fee equal to 2 percent of subcontract costs.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
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TASK 03	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
TOTAL LABOR	39151	39456	30703	14721	12390	7640	7640	23893	12301	8863	8863	11689	217310
TOTAL DIRECTS	1900	2200	1800	2300	1800	4000	0	0	0	0	3300	3300	20600
TOTAL SUBCONTRACTORS	0	0	0	0	0	20400	30600	25500	0	0	0	0	76500
TASK 03 TOTALS	41051	41656	32503	17021	14190	32040	38240	49393	12301	8863	12163	14989	314410

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 03 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	1510	52759.74	17938.91	34639.62	10034.34	115372.64
Home Office Staff	1372	39928.18	13573.46	39594.86	8841.36	101937.86
TOTAL STAFF	2882	92687.92	31512.37	74234.48	18875.70	217310.50

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 03

314410

TOTAL SERVICES

217310

03-010-06	GEOTECHNICAL DATA REVIEW	18336	
03-010-07	SUPPORT FOR INPUT TO TESTIMONY	43701	
03-010-09	SUPPORT FOR NEED FOR POWER HEARING, DAM SAFETY	48133	
03-010-15	BEST MANAGEMENT PRACTICES MANUALS REVIEW	40253	
03-010-16	1984 GEOTECHNICAL REPORT REVIEW	35868	
03-010-17	DRAFT EIS AND FINAL EIS REVIEW	31019	217310

TOTAL DIRECTS

20600

03-020-02	TRAVEL AND LIVING EXPENSES	20600	20600
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TOTAL SUBCONTRACTORS

76500

03-133-01	SUBCONTRACTOR HANDLING FEE	1500	1500
03-143-01	ACRES, DISCOVERY ACTIVITIES DAM SAFETY HEARINGS	10000	
03-143-02	ACRES, PREPARATION OF DIRECT TESTIMONY DAM SAFETY	45000	
03-143-03	ACRES, ADMINISTRATIVE HEARINGS	20000	75000

TASK 03	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

LABOR 010													
03-010-06	GEOTECHNICAL DATA REVIEW												
	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	18336
03-010-07	SUPPORT FOR INPUT TO TESTIMONY												
	3132	6189	3132	3591	5730	2674	2674	3591	76	3591	3591	5730	43701
03-010-09	SUPPORT FOR NEED FOR POWER HEARING, DAM SAFETY												
	1451	4584	3591	3744	4431	3438	3438	840	10697	3744	3744	4431	48133
03-010-15	BEST MANAGEMENT PRACTICES MANUALS REVIEW												
	3786	17098	14468	4200	701	0	0	0	0	0	0	0	40253
03-010-16	1984 GEOTECHNICAL REPORT REVIEW												
	17934	0	0	0	0	0	0	17934	0	0	0	0	35868
03-010-17	DRAFT EIS AND FINAL EIS REVIEW												
	11320	10057	7984	1658	0	0	0	0	0	0	0	0	31019

LABOR 010 TOTALS													
	39151	39456	30703	14721	12390	7640	7640	23893	12301	8863	8863	11689	217310

DIRECTS													
03-020-02	TRAVEL AND LIVING EXPENSES												
	1900	2200	1800	2300	1800	4000	0	0	0	0	3300	3300	20600

TOTAL DIRECTS													
	1900	2200	1800	2300	1800	4000	0	0	0	0	3300	3300	20600

SUBCONTRACTOR 133													
03-133-01	SUBCONTRACTOR HANDLING FEE												
	0	0	0	0	0	400	600	500	0	0	0	0	1500

SUBCONTRACTOR 133 TOTALS													
	0	0	0	0	0	400	600	500	0	0	0	0	1500

SUBCONTRACTOR 143													
03-143-01	ACRES,DISCOVERY ACTIVITIES DAM SAFETY HEARINGS												
	0	0	0	0	0	10000	0	0	0	0	0	0	10000

RUN DATE 08/03/84

ALASKA POWER AUTHORITY
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FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

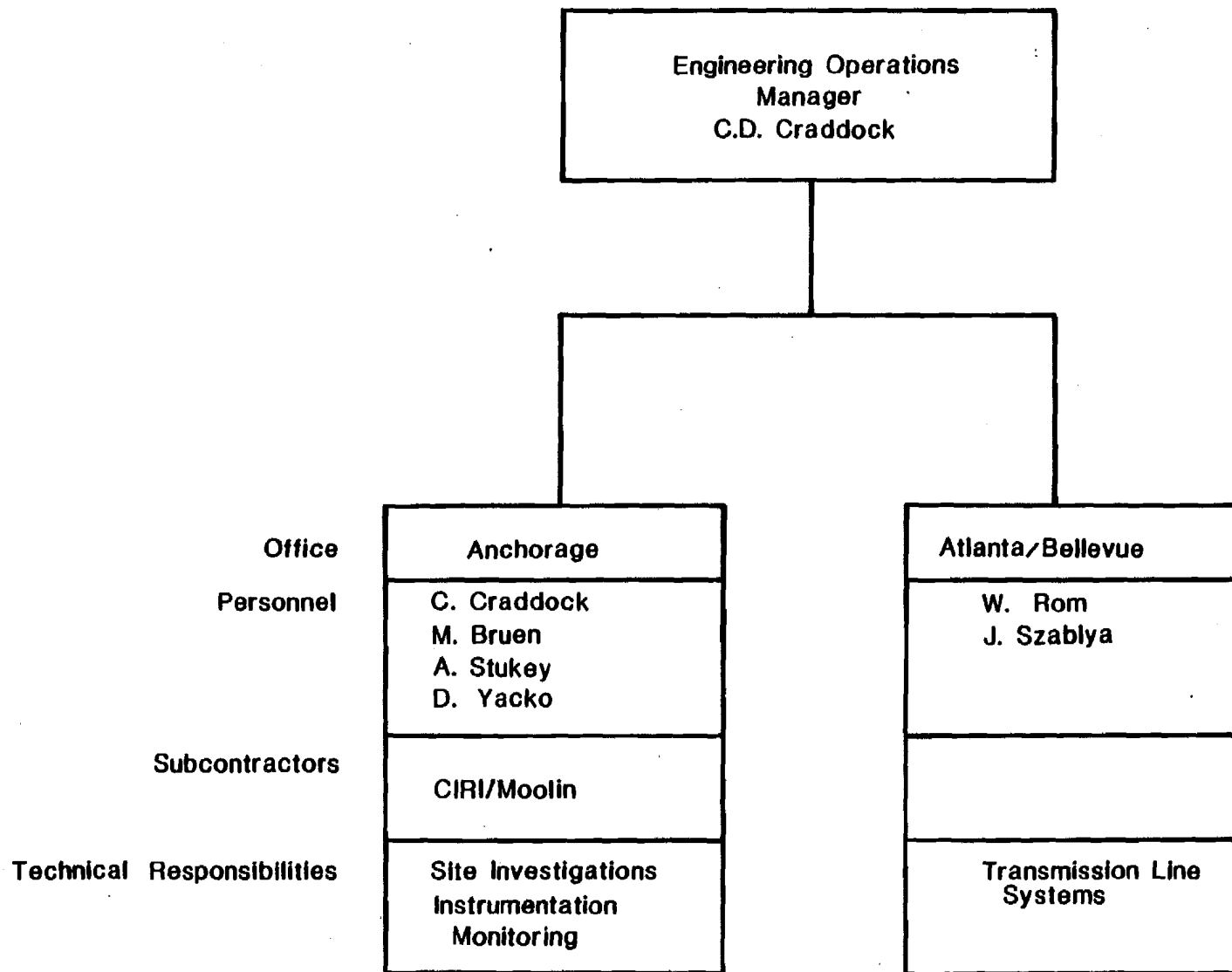
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TASK 03	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 143													
03-143-02 ACRES, PREPARATION OF DIRECT TESTIMONY DAM SAFETY	0	0	0	0	0	0	20000	25000	0	0	0	0	45000
03-143-03 ACRES, ADMINISTRATIVE HEARINGS	0	0	0	0	0	10000	10000	0	0	0	0	0	20000

SUBCONTRACTOR 143 TOTALS	0	0	0	0	0	20000	30000	25000	0	0	0	0	75000

TASK 03 TOTALS	41051	41656	32503	17021	14190	32040	38240	49393	12301	8863	12163	14989	314410



July 1, 1984

TASKS 3, 5, 7, 41 - ENGINEERING

ALASKA POWER AUTHORITY
SUSITNA HYDRELECTRIC PROJECT
HARZA-EBASCO SUSITNA JOINT VENTURE
FY 1985 BUDGET

This document presents fiscal year 1985 budget requirements for Harza-Ebasco Susitna Joint Venture to perform the scope of work associated with continuing the licensing and permitting of the Susitna Hydroelectric project, and is intended, by reference, to be a part of Amendment No. 7 to the Professional Services Contract between Harza-Ebasco Susitna Joint Venture and the Power Authority dated January 6, 1983.

In general, the scope of work for FY85 includes:

1. Ongoing environmental studies which are required to support the license, and/or answer concerns of the state and federal regulatory agencies.
2. Preparation of testimony for the Environmental and Need for Power hearings. (Note: the budgets included for these activities are based on judgment estimates and may require significant revision as the hearing process and progress dictate).
3. Assistance to the Power Authority in preparation of power sales agreements with the utilities who will ultimately purchase Susitna's power generation.
4. Refinement of economic and operational studies to support the Need for Power hearings.
5. Continuation of the process of settlement with state and federal regulatory agencies.
6. Logistic support for the environmental field studies performed by Harza-Ebasco, their subcontractors and ADF&G.

TASK 4

ENVIRONMENTAL

The work plan for FY85 includes a much greater level of detail than in prior years. It is consistent with the plans established with the Power Authority. The account numbers correspond to the task numbers presented in the FY85 Detailed Plan of Study. The services provided by H-E are presented in three major sub groups: Social Sciences, Terrestrial and Aquatic.

Services

Social Science Program:

04-011-04 SSP-Administration and Contract Management

This effort will consist of general administrative activities such as weekly staff meetings, progress report preparation, budget revisions and reforecasting, and the nontechnical aspects of contract management as well as contract preparation, preparation of amendments and CWA's, reviewing invoices and progress reports, and tracking expenditures relative to budgets. This activity will be conducted by Harza-Ebasco.

04-011-05 SSP-FERC Supplemental Information Requests

The Social Science Program will continue to prepare written responses to FERC supplemental information requests. This will include both responses to new requests made by FERC in FY 1985 as well as responses which were to be supplied to FERC based on information submitted to FERC in FY 1984. Harza-Ebasco will be responsible for preparing each response. Frank Orth & Associates and EDAW, Inc. will provide input to Harza-Ebasco as requested.

04-011-08 SSP-DEIS/FEIS Review Memorandums

The Power Authority must review and comment on the DEIS and FEIS and on comments on these documents to ensure that all analyses and conclusions are based on accurate information, to provide clarification(s), and to provide alternative interpretations where appropriate. Social Science Program activities that will lead to the completion of this task will involve the following activities: correcting inaccuracies, and preparing additional information (which will strengthen some conclusions, differ from others, and provide clarification for others). Additionally, comments prepared by other agencies and the public will be reviewed to identify those comments and conclusions with which a substantial difference of opinion remains. These reviews will provide a basis for identifying specific conclusions which may need resolution through the settlement and hearing processes. This cost account assumes that comments on the DEIS are due July 25, 1984 and comments on the FEIS are due on January 25, 1985. Harza-Ebasco will be responsible for providing review comments to the Power Authority. Frank Orth & Associates and EDAW, Inc. will provide input to Harza-Ebasco as requested.

04-011-09 SSP-Settlement Process Input

The Social Science Program will provide ongoing input into the settlement process by reviewing agency concerns, consolidating them into concise issues, and participation in internal and agency meetings and preparation of issues papers aimed at resolving issues. This cost account covers only those settlement process efforts requiring less than a person-week each month for preparation. This activity will be conducted by Harza-Ebasco with support from Frank Orth & Associates and EDAW, Inc. as required.

04-011-10 SSP-General Licensing Support

Numerous miscellaneous activities will be required to fully meet the requirements of the Power Authority and FERC for completing the licensing

process smoothly. These activities will be supportive of the other main activities of the Social Science Program.

04-011-11 SSP-Workshops

An important aspect of the settlement process is the dissemination of information to familiarize agency personnel with Social Science Program study methodologies, analyses, and results for FY 1985 work and to outline proposed work activities and methodologies for FY 1986. This cost account assumes that a two-day Social Science Program workshop will be held in April 1985 that focuses on providing agencies with the information identified above. Harza-Ebasco will be responsible for organizing and conducting the workshop. Frank Orth & Associates and EDWA, Inc. will provide input as required.

04-011-13 SSP-Hearing Preparation

Steps in the hearings process that will require participation by members of the Social Science Program include the discovery process, filing of direct testimony, filing of rebuttal testimony, possible filing of surrebuttal testimony and cross examination of witnesses. Although most of these steps will not occur in FY85, it is necessary to begin preparation for accomplishing these steps. A major element of the environmental hearings process will focus on the impacts of the Susitna Hydroelectric Project on cultural resources, socioeconomic and recreational resources and the potential effectiveness of planned mitigation measures. Information may need to be condensed and summarized into formats appropriate to support the hearings process scheduled to begin December 28, 1984. The primary activities which will occur during FY85 include the selection of persons who will testify on behalf of the Power Authority, consultation with Power Authority Licensing Counsel, responses to discovery requests from FERC and intervenors, and the initiation of preparation of written direct testimony.

Specific deliverables to result from the activities of this task include: (1) designation of expert witnesses to testify on terrestrial resources on behalf of the Power Authority; (2) position papers by expert witnesses defining areas to be discussed and input required from other participants; (3) responses to discovery requests; and (4) draft outline of direct testimony from each expert witness. In addition, the designated expert witnesses will participate in activities leading to deliverables of other terrestrial study tasks and will initiate preparation of their direct testimony to be filed on September 25, 1985. Representatives from Frank Orth and Associates and EDAW, Inc. will participate in this task at the request of Harza-Ebasco.

04-011-14 SSP-Program Coordination

This cost account covers coordinating the activities of Social Science Program subcontractors and Harza-Ebasco Social Science Program subtask leaders. It also includes the efforts required to ensure cross-discipline coordination with the Aquatic and Terrestrial Programs and with Harza-Ebasco hydrologic, engineering, and logistical personnel. Harza-Ebasco will be responsible for organizing and conducting all coordination meetings. Frank Orth & Associates and EDAW, Inc. will participate as necessary.

04-011-15 SSP-Public Access Report Input

This task will evaluate the effects of alternative public access policies on cultural, socioeconomic, recreation, aesthetic, and land use resources. This will include assessments of public use of the access roads, the rail spur, reservoirs, airstrips, and transmission line rights-of-way. Access to other locations, such as to Portage Creek and across the dam to the south shore will also be evaluated. Harza-Ebasco Social Science Program personnel will be responsible for preparing appropriate sections of this report. EDAW, Inc. will provide input as necessary.

04-011-16 SSP-Access Road Location Report Input

This task involves the review and finalization of the Social Science Program sections of the draft access road report begun in FY84. The University of Alaska Museum, Frank Orth and Associates, and EDAW, Inc. will provide input as necessary.

04-011-17 SSP-Construction Location Report Input

This task will provide cultural resources, recreation, aesthetic, and land use input into a report which will examine the proposed siting of the Watana and Devil Canyon construction camps and the implications of alternative siting(s) within the project area. Social Science Program subtask leaders will be responsible for providing appropriate input to this report. EDAW, Inc. will provide assistance to Harza-Ebasco as necessary.

04-011-18 SSP-Instream Flow Comparisons Report Input

The Aquatics Program will be conducting research in order to prepare an Instream Flow Comparisons Report. Information on potential changes in water quality, temperature and ice, and other physical processes will be supplied to the Social Science Program. The Social Science Program; to the extent possible will provide information on the current and projected river use by area and the significance of that use.

04-011-19 SSP-Detailed Plan of Study Development and Updating

This effort includes the finalization and updating of the Social Science Program Detailed Plan of Study for FY 1985 and the development of Detailed Plan of Study for FY 1986. Each document will provide the rationale and objective(s) for each work activity as well as a description of the study area, methodology, data management, and deliverables. Harza-Ebasco will be

responsible for preparing and updating the Social Science Program Detailing Plans of Study. Frank Orth & Associates and EDAW, Inc. will provide input as required.

04-011-20 CR-Workshop

A significance criteria workshop will be held in October 1984 which will include a presentation of the framework developed for evaluating the significance of cultural resources in the study area. Materials describing the framework will be distributed to participants prior to the workshop so that a productive round-table discussion can occur. A special effort will be made to solicit the comments of Native Americans and the Alaska archeological community. Harza-Ebasco will take the lead in organizing and conducting the workshop. The University of Alaska Museum will prepare a document summarizing the methodology used to develop the significance framework and will participate in the workshop as requested by the Power Authority.

04-011-21 CR-QA Program

Harza-Ebasco will review the procedures/quality control manual prepared by the University of Alaska Museum as part of the Q-A Program undertaken in FY 1984. In addition, Harza-Ebasco will recommend procedures to the Power Authority for conducting periodic field and laboratory records and audits and field inspections as part the of Q-A Program.

04-011-22 CR-Report Review

In this task, Harza-Ebasco will provide technical review of all reports prepared by the University of Alaska Museum and submitted to the Power Authority. Harza-Ebasco will provide all review comments in writing to the Power Authority.

04-011-23 CR-Program Approach

The cultural resources program will continue to be reevaluated in light of current procedures and schedules and the role of the Advisory Council on Historic Preservation, the State Historic Preservation Officer, and the University of Alaska Museum. This reevaluation will provide the overall strategy toward developing an appropriate mitigation plan. Harza-Ebasco will conduct the reevaluation in conjunction with the Power Authority and appropriate agencies. In addition, Dr. Albert A. Dekin and a Cultural Resources Program Technical Review Board will participate at the request of Harza-Ebasco.

04-011-24 CR-Impact Assessment and Mitigation Planning

Harza-Ebasco will evaluate how and to what degree all identified cultural resource sites and/or districts within the area affected by the Project (which have been determined to be eligible for the National Register of Historic Places) will be affected by the Project. In the absence of formal determinations of National Register eligibility, assessments of impacts will be made for all sites which are considered significant under the criteria established through significance studies. For all National Register eligible (or significant) sites or districts which will be impacted by the Project, recommendations will be made for means of avoiding or minimizing those impacts identified as adverse.

04-011-30 SE-Winter River Users Analysis

This task will utilize a multi-method, triangulated approach to the description of winter river use on the Susitna River. Because winter use is thought to be of relatively low intensity and to occur over a large geographic area, efforts to survey winter users would not be cost effective. Therefore, the approach taken in this task will include interviews with

lodge operators, trappers, guides operating in the study area, and knowledgeable area residents. In addition, observational data from winter fly-overs and other fieldwork will be utilized. To this end, an outline of information needs regarding winter river use will be prepared, along with an interview guide formulating the questions that could be asked or the observations that could be made to obtain this information. These materials will be circulated to those conducting the various field efforts that would bring them into contact with the persons or situations that could provide this information. Given the disbursed character of the data collection effort, a special procedure for compiling, verifying, and synthesizing the information will be designed and implemented. In addition, special care will be taken to review the draft report with persons knowledgeable about the region and winter activities. Harza-Ebasco will be responsible for completing this task.

04-011-31 SE-Worker Characteristics Analysis

During FY85, data from a hand-out survey of workers at both staging sites on the Intertie Project and at Terror Lake will be coded and analyzed. A report will be prepared in draft and final form for each of these surveys. In addition, contact will be made with project managers/logistics personnel and researchers in Canada and in other parts of Alaska to obtain any other available information about worker characteristics at remote, northern sites. If other ongoing projects are identified, an attempt will be made to administer a hand-out survey to the work force. A white paper identifying changes to the model used for forecasting socioeconomic impacts suggested by the surveys and estimating the consequences of those changes will be prepared. A white paper summarizing the information obtained from the surveys and other research will also be prepared. Harza-Ebasco will be responsible for overall direction on this task, for review of the draft and final worker survey reports and the white paper on implications for the model, and for preparation of the draft and final white paper on worker

characteristics. Frank Orth and Associates, Inc. will be responsible for the coding, analysis, and write-up of the worker surveys, for preparation of the white paper on model implications, and for review of the white paper on worker characteristics.

04-011-35 SE-Adjacent Landowners Analysis

In this task, information about the land settlement process in the study area and the development plans of landowners will be collected and analyzed to update and expand the assessment of project impacts. Data collection will involve discussions with the ADNR and with each of the major landholders in the study area. The focus of the information-gathering effort will be on developing a current, accurate description of landownership status, a profile of landowners in the study area, and a description of landowners' plans and opinions. This task will require careful coordination with the Land Use and Recreation subtasks and with other project-related efforts dealing with land or ownership issues. Harza-Ebasco will be responsible for completing all aspects of this task. Frank Orth and Associates, Inc. will provide assistance in identifying and specifying model modifications and will review the memorandum on modeling.

04-011-36 SE-Remote Parcel Owners Analysis

Owners of remote parcels in the study area constitute a population group that may be affected by the Project in unique ways. In addition, decisions by remote-parcel owners have the potential to alter baseline conditions in the study area in a manner that could affect the consequences of the project. To date, although the ADNR maintains a list of remote parcel owners, little is known about their current use of the remote parcels, about their plans for future use of their land, or about their expectations regarding project effects. Because the development of remote parcels could

have widespread impacts on fish and wildlife and on hunting and fishing in the study area, it is particularly important to establish better information about current conditions and potential future development and to determine whether some form of a monitoring program regarding remote parcels should be recommended. The purpose of this monitoring program would be to provide a firmer basis for evaluating the relationship between project impacts, development of remote parcels and the impacts of remote-parcel development. Harza-Ebasco will be responsible for this task.

04-011-38 SE-Land Use and Housing Constraints

This study entails the gathering of secondary data concerning land use and the availability of land for residential development, and the capacity of builders to expand housing supply in local impact-area communities. In conjunction with the Land Use Subtask, land use information would be obtained from the ADNR for the communities located in the unorganized borough and from local organizations in the various communities. Of particular interest is the Community of Cantwell, Inc. and the Cantwell Village Corporation. An analysis of the ability of the housing market to respond to anticipated increases in demand would be made by examining secondary data on housing starts and by conducting key informant interviews with local and regional housing developers. If appropriate, capacity constraints would be incorporated into the socioeconomic model and the model run to determine the consequences that various assumptions regarding land and housing constraints would have on the population impacts of the Project. Harza-Ebasco would have responsibility for overseeing this task, for collecting the information concerning land use and builders constraints and for reviewing the model runs. Frank Orth and Associates, Inc. would have responsibility for participating in the development of the detailed plan of study, for specifying the format of the data necessary to the model and for modifying the model and making the sensitivity runs.

04-011-39 SE-Air Taxi Operators Analysis

Information about air taxi operations in the study area will be obtained from a number of the study tasks being conducted in FY85. In particular, the river user survey will provide detailed, quantitative information about float plane activity on the Susitna during the open-water season. The surveys of guides, lodge operators, households and businesses in local impacted communities, and the resource user survey will all include questions regarding air taxi operations. The winter river use study will also collect information about airplane use of the river during the winter. The purpose of this task is to integrate the information obtained from these other studies and supplement it with additional information from available secondary sources and interviews with air taxi operators. Harza-Ebasco will be responsible for this task.

04-011-40 Refinement of Impacts on Communities

The first step in this task will be to review the methods used previously to collect information on the local impact communities to identify the need for revision and expansion, and to delineate the information needed from this task by other FY85 activities. Based on this review, a detailed plan of study will be developed for the task and for each of the principal components: the household survey, the business survey, the public sector survey, and the refinement of social effects. The household and business surveys will be conducted by personal interviews with a representative sample of households and business owners/managers in each community. The public sector survey will be conducted by personal or telephone interviews with public officials. The information needed to refine the description of the existing environment and the analysis of social effects will be obtained through a combination of personal and telephone interviews, secondary data, and observations in the community. In each instance, previous information and agency comments will be reviewed and utilized to delineate specific

information needs for each component, to develop or revise field instruments (questionnaires, interview guides, and data sheets) that will yield this information, to field test these instruments as appropriate, and to assign procedures for developing a sampling frame and drawing a sample of respondents that will yield precise and statistically valid results. This will involve resolution of a number of issues regarding community boundaries, vacant housing, and the definition and identification of local businesses. Once the field instruments and sampling procedures have been reviewed, revised quality assurance procedures will be established and a field team will be trained. Field work will be completed and the results reviewed for completeness and accuracy. As the field work is progressing, completed questionnaires and interview forms will be coded and entered into computer data files. The data will be cleaned, the analytic procedures finalized, and as data become available, the analysis will proceed. Because the FY85 effort for the household, business, and public sector surveys represents a second round of research in the communities of Talkeetna, Trapper Creek, and Cantwell, special attention will be given in the analysis to comparison with FY84 results. For each community in the study, one report presenting the survey results will be prepared. A separate report summarizing the results of the social effects study will also be prepared. This report will address all six study communities. Included in each report will be a section comparing the characteristics of the community in FY85 to assumptions used in the ISER and Susitna socioeconomic models. Harza-Ebasco will have overall responsibility for this task. Frank Orth and Associates will assist in the development of the plan of study and the revision of the questionnaires, the analysis of the data, and the preparation of the draft and final reports.

04-011-44 SE-Mitigation Plan Update

During FY85, many activities will be undertaken to improve the ability to delineate specific mitigation measures and to assess their likely effective-

ness. The first step in this task will be to review the License Application and the FY84 Mitigation Plan Update and develop an outline of 1) priority mitigation issues (i.e. what impacts need most attention); 2) information requirements, and 3) information sources. This will be followed by the development of a detailed work plan describing the flow of the data collection and analysis to be conducted. It is anticipated that additional information will be available during FY85 concerning the attitudes and concerns of various special populations as well as residents of the local impact area. This will allow more specific discussion of the complex trade-offs involved in the Mitigation Plan. In addition, as mitigation alternatives are further refined, it will be possible to develop substantially more specific information about the mechanisms, programs, and agencies available for providing the recommended mitigative actions and to delineate and evaluate a comprehensive plan. Specific attention will be paid to the trade-offs that are involved in project design and mitigation alternatives. Measures that reduce one type of socioeconomic impact may aggravate another. Reduced socioeconomic impacts may increase impact on the natural environment. Once a reasonably satisfactory plan for the socioeconomic component has been developed, the team will be in the position to participate in trade-off evaluations with representatives of the other components. The analysis will result in the preparation of a draft and final Mitigation Plan Update Report. Harza-Ebasco will have primary responsibility for this task and will take the lead for organizing the work and for preparing the reports. Frank Orth and Associates will participate in the development of the detailed plan of study, in the delineation of information needs, in the analysis of the consequences of various mitigation measures, and in reviewing the draft report.

04-011-51 SE-Permanent Village Evaluation Report

A variety of issues must be considered in evaluating alternatives for locating, lodging, and supporting operations workers. The problem to be

addressed requires careful delineation of the major trade-off issues associated with the location, lodging, and support of the operations work force followed by compilation and analysis of information that will clarify the nature of the trade-offs associated with the various alternatives. It is anticipated that the first step in the process will be to delineate the alternatives to be considered and the major trade-off issues to be addressed. The alternatives will then be further refined to provide a limited set of alternatives upon which to base the trade-off evaluation. Information from various secondary services will then be compiled and analyzed, including computer runs to explore the implications of various alternatives, to provide a basis for a draft report outlining the trade-off issues involved with each alternative. This draft will be reviewed with other members of the Harza-Ebasco team and the Power Authority. Modifications suggested by this review will be analyzed and the draft report revised to final form. Responsibility for developing the detailed plan of work, coordinating the analysis, and overseeing the preparation of the draft and final reports will rest with Harza-Ebasco. Frank Orth and Associates, Inc. will participate in the analytic process, providing suggestions about alternatives and running the socioeconomic model to examine the population, housing and facilities/services/fiscal consequences of each. Frank Orth and Associates, Inc. will also participate in review of the draft report. EDAW, Inc. will provide relevant input regarding recreation and aesthetics.

04-011-52 SE-Worker Transportation Alternatives Report

Based on work conducted in FY84 and previously, members of the Harza-Ebasco socioeconomic team and Frank Orth and Associates would work together to develop a set of transportation alternatives for analysis. The alternatives delineated would take into account likely effects on worker location and family accomplishments, union requirements and constraints, project operating/construction requirements, transportation costs to the worker and to the Project as well as other factors identified as important trade-off

considerations. Once the alternatives are delineated, the socioeconomic model will be run to develop estimates of worker location and population impacts and an analysis will be made of the implications of the alternative for union agreements, worker compensation or project cost for transportation, and project logistics. This task will interface with Task #04-011-53, an analysis of worker shift and rotation schedules. An important function of this analysis will be 1) to determine the least cost mode, 2) to determine the least socioeconomic impact mode, 3) to identify Fatal flaws or serious problems with any of the proposed alternatives, and 4) to develop information about the most promising alternatives that would support more detailed analysis of their effects on the study area. Harza-Ebasco would have overall responsibility for this task, overseeing the development of the detailed work plan, coordinating the analysis, and report preparation. Frank Orth and Associates would participate in the delineation of alternatives for examination, would run the socioeconomic model to estimate the worker location and population effects of each alternative, and would review the draft report.

04-011-53 SE-Worker Shift and Rotation Schedule Report

Feasible alternatives for worker shift and rotation schedules during construction and operation will be delineated in this task. In addition, information about each alternative (which will be necessary to analyze its implications for transportation alternatives, worker residence, traffic impacts, and costs) will be compiled and presented in a format useable for persons conducting the analysis. A report will be prepared that describes the alternatives, presents the data, and summarizes and issues/constraints associated with each alternative. Harza-Ebasco will be responsible for directing and managing this task and preparing the draft and final report. Frank Orth and Associates will participate in the delineation of alternatives for examination, will run the socioeconomic model to estimate

the worker location and population effects of each alternative, and will review the draft report.

04-011-54 SE-Lodge Operators Analysis

The principal activity in this task will be a survey of lodge operators serving the study area. This will require compilation of a directory of all lodges and lodge operators, preparation of an interview guide, and implementation of personal (face-to-face) interviews with all lodge operators operating in the study area. The interview would cover the following topics: demographic and household characteristics; description of lodge facilities and activities; number and characteristics of clients; business/economic linkages (eg. to guides, air taxi operators, taxidermists, etc.); resource use in the study area by lodge operator and household; resource use in the study area by others; and attitudes and expectations about the future. Harza-Ebasco would be responsible for completing this task.

04-011-55 SE-Guide Analysis

This task will involve a survey of big game and river guides working in the study area. The first step in completing this task will be to compile a directory of the guides serving the area. The next step will be to review existing information (for example, the recent ADF&G survey) and prepare and pre-test an interview guide to be administered to the guides. Personal interviews will then be conducted, the data coded, and analyses prepared. The outcome of the task would be a report documenting the findings and presenting data that would be incorporated in the refinement of project impacts and projections. In addition, the information from this task would be incorporated into a section of the white paper discussing the potential for and consequences of project impacts. Harza-Ebasco would be responsible for all aspects of this task.

04-011-57 SE-Trappers Analysis

This task constitutes a joint effort of the socioeconomic and terrestrial components and is designed to provide information about both furbearers and trappers. Work initiated in FY 1984 has developed preliminary information about trapping in the impoundment area and a preliminary draft of a survey instrument. In FY85, three phases of effort will be conducted. During the summer, a literature review and informal interviews will be conducted to more clearly delineate the information needs of the study. The study will involve the use of key informants using a Snowball sampling technique supplemented by secondary data to develop a list of all households actively engaged in trapping in the study area. In the fall of FY85, a presentation will be made to the Alaskan Trappers Association, and a first round of interviews with trappers will be conducted. Members of these households will then be contacted and interviewed to obtain information about expected trapping activities and harvest, household composition and characteristics, other resource use, and attitudes and expectations about the future. Respondents will be asked to keep records concerning trapping effort and success during the trapping season. A second round of interviews, using a revised questionnaire/interview guide will be conducted at the completion of the trapping season in the spring of 1985. The results of this research will be analyzed and a draft and final report prepared. A section for the white paper on special populations will be prepared. Harza-Ebasco will be responsible for overall supervision of this task and for development of the survey instrument and interviewer instructions/training for the socioeconomic component of the information needs. A Harza-Ebasco team member will participate in the presentation to the Alaska Trappers Association and will assist in the fieldwork, data analysis and report preparation. Harza-Ebasco will be responsible for reviewing and approving all project documents. Phil Gipson (U of A) will subcontract with Harza-Ebasco and will be responsible for the information concerning furbearers,

for field logistics, for data analysis, and for preparing the sections of the report dealing with furbearers and trapping success.

04-011-58 SE-Boat Operations Analysis

This task will supplement information being obtained from the River User Survey with additional information about boat operators. Based on information from the River User Survey and other sources, a directory of persons operating boats on the Susitna for commercial/business purposes will be prepared. A sample of these persons will be interviewed to review the results of the River User Survey and obtain additional information about the characteristics and importance of boat operations on the Susitna River. These personal interviews will be used to develop a profile of commercial/business boat operations and to obtain information about boat operator's attitudes and expectations for the future. The interview format will contain both structured and unstructured components. Data from the interviews will be analyzed and the information combined with that from the River User Survey, other secondary sources, and other components. This information will be used to refine the assessment of project impacts on boat operators and businesses. Based on this report, a section for the white paper on special populations will be prepared. Harza-Ebasco will be responsible for all aspects of this task.

04-011-59 SE-Sport Hunters and Fishermen Analysis

This task will entail a number of coordinative and analytic steps. The first step is to work with members of the terrestrial and aquatics group to develop the analytic framework, problem statement, information needs and sources, and detailed study plan. This process is similar to, and tied with, the identification of mitigation options and refinement of the mitigation plan.

In addition to the information available from secondary sources and other project work conducted in FY84, this task will utilize results and data from the 1) River User Survey, 2) the Trappers Survey, 3) the Lodge Operators Survey, 4) the Community Surveys, 5) the Susitna Area Resident Resource User Survey, 6) the Guide Survey and, 7) the Winter River User Assessment. These efforts should provide adequate information about fishing and fishermen, but it will probably not provide adequate information about all sport hunting or hunters. Consequently, one component of this task will be to utilize available secondary data (for example from ADF&G, the Alaska Public Survey, etc.) to ensure that the hunting and fishing activities, interests, and perspectives of urban Alaskan residents are appropriately addressed. Harza-Ebasco will have overall responsibility for coordinating the work on this task and for preparing the white papers. Other team members (terrestrial and aquatics) will provide input to the analysis.

04-011-61 Recreation Impact Refinement

Refinement of the impacts on recreation resources will focus on obtaining information related to four recreational activities: hunting, fishing, boating, and non-consumptive activities.

Hunting - Discussions with Terrestrial Program representatives and ADF&G staff will be held to define hunting characteristics specific to the area, and to collect available information related to the numbers and distribution of hunters and harvest data as specific in the project area. Hunting information will also be obtained from the lodge and guide surveys to be conducted during the 1984 field season. Demand projections will focus on the potential use of project road, railroad, air, and reservoir access by hunters. Particular attention will be paid to the potential for increased boat access and resultant effects due to hunting pressure north and south of the Susitna River. The potential effects of linking access modes, such as the access roads and reservoirs will also be explored. A similar case

comparison, if available and feasible, will be made to help determine the potential with-project demand. Meetings will be held with representatives of the Terrestrial Program to coordinate use and resource data in order to assess the overall impact the Project may have on hunting.

Fishing - Existing use of project area streams and lakes will be obtained through discussion with ADF&G staff and through the lodge, guide, and general use surveys to be conducted during the 1984 field season. Location, frequency, and distribution of use will be identified and described. Demand projections will focus on the potential use of project road, railroad, air, and reservoir access and quantified by each mode of access. Assessment of fishing demand will be closely associated with data collected for the non-consumptive activities. Assessment of overall effects of the Project on fishing will be closely coordinated with the Aquatic Program and its information on fishery resources.

Boating - Existing boating use will be obtained for areas above and below Portage Creek. Boating use below Portage Creek will be obtained through the Susitna River use survey. Future demand for downstream boating will be determined based on the use data collected on the river. Meetings will be conducted with Aquatic, Navigation, and Socioeconomic representatives to determine the overall significance the proposed project flow regime would have on boating activities and related resources attractions. Existing boating use upstream of Portage Creek will be determined through the guide and lodge operators surveys and discussions with boating groups. Evaluation of with-project demand in the reservoir areas will be closely coordinated with the evaluation of hunting demand and fishery mitigation studies. Assessment of the impacts to boating will include an evaluation of the potential for white-water boating in area tributaries and an assessment of the potential for white-water boating below Watana Dam in the event that Devil Canyon is delayed or not constructed.

Non-Consumptive Activities - Analysis of non-consumptive activities will focus on hiking, camping, berry gathering, and ATV use. Particular emphasis will be placed on use and demand for camping. Existing and future use projections will be defined by comparing activity use levels at recreation sites in the area that have characteristics and conditions similar to the project area. This information will be obtained through discussions with district park managers and through surveys of selected sites. Additional information will be obtained through the guide and lodge operators surveys planned for the 1984 field season under the Socioeconomics subtask. Data gathered from the survey and other methods will be used to project future demand. This information, in addition to related resource information obtained from other Program task studies, will be used to assess the significance of the project on these general recreation activities. Results of the evaluation will be used to refine the recreation plan. Harza-Ebasco will be responsible for providing voerall direction and mangement of this task. EDAW, Inc. will review draft survey insruments, collect secondary data necessary for refining impacts, refine the impacts, and prepare the draft and final refinement report.

04-011-62 RE-Tourism Potential of Project Facilities

This task will estimate the potential of the Susitna Project to meet or generate tourist demand for visitation of the project facilities. The methodolgy will include: interviewing Alaska tour operators; collecting tourism profiles and tourist counts for adjacent and comparable projects; conducting a secondary source review of existing tourism projections for South-Central Alaska; estimating the potential capture rate of the proposed project's recreation features; recommending changes in project use projections and proposed features for input into the revised Recreation Plan; and preparing a report summarizing the findings and recommendations of this work. Harza-Ebasco will provide overall direction and management of this task, including the work and preparing the draft and final reports.

04-011-63 RE-Recreation Plan Refinement

Refinement of the Recreation Plan will involve coordinating the results of the Recreation Subtask with the results of the Socioeconomic, Aesthetic, and Land Use subtasks and the Terrestrial and Aquatic programs. Meetings will be held with agency representatives to discuss the results of the impact refinement studies (#04-011-61) and how they may affect the Recreation Plan. Discussions with Native groups will also be held to determine the actual demand and/or need for linkages to Native landholdings and overall compatibility with regional recreation opportunities and goals. Harza-Ebasco will be responsible for directing and managing the work to be completed in this task. EDAW, Inc. will conduct the necessary work to refine the Recreation Plan and will prepare the draft and final refinement reports.

04-011-64 LU-Operating and Management Agreements

This task will include the identification of current land ownership status and the land requirements of each recreation facility proposed in the License Application. Discussions will be held (in conjunction with the Power Authority) with landowners, and land managers to determine what steps will be required in order to obtain the land and/or easements. During the refinement of the REcreation Plan, operating and management needs and costs will be updated. This information will then be discussed with appropriate entities, including ADF&G, ADNR, BLM, Mat-Su Borough, and Native corporations. This task will be conducted by Harza-Ebasco.

04-011-65 RE-Recreation Opportunities for On-Site Workers

Information from the permanent village evaluation (#04-011-51), worker shift and rotation schedule (#04-011-53), and worker transportation alternatives (#04-011-52) tasks in the Socioeconomic Subtask will be used to determine the leisure time available for project workers. This information will be used to determine the day-use zone for on-site workers as well as potential

overnight sites within the project area. (Estimates of participation in recreational activities will be made based in part on information obtained through the Terror Lake Construction Worker Survey conducted during FY 1984). Once the extent and distribution of worker demand is estimated, discussions will be held with Aquatic and Terrestrial program representatives to determine the potential input of on-site worker recreation activities on area resources. An evaluation will be made of facilities that would meet the demands of those workers relative to selected town and camp sites. Harza-Ebasco will provide overall direction and management of this task. EDAW, Inc. will conduct the work necessary to complete the analysis and will prepare the draft and final reports.

04-011-66 RE-Non-Consumptive Activities Survey

Information related to camping and other general recreation activities such as hiking, ATV use, berry picking and winter sports specific to the project vicinity is not well documented. Existing use estimates on these activities were based on general information. With development of access related to the Project, the potential may exist for use of these activities to increase significantly over existing conditions. In order to evaluate the effects this increase may have, more information on these activities at sites in the project vicinity needs to be obtained. This information will be obtained through surveys of area recreation sites that have similar characteristics to the project area. Results of the surveys will be used to refine the recreation impacts and update the recreation plan as well as other program mitigation plans. The surveys will be coordination and conducted by Harza-Ebasco during the 1984 field season.

04-011-71 AE-Aesthetic Impacts Refinement

Information on aesthetic impacts will be refined to take into account proposed mitigation programs for other disciplines and Power Authority

polcies. Taking into consideration proposed project roads, recreation facilities, and off-site public areas, major viewpoints of project facilities will be determined and viewsheds will be plotted and confirmed in the field. In addition, estimates will be made of the possible numbers of viewers and the duration of view at each viewpoint. Furthermore, designated scenic quality mapping zones will be verified and refined in the field. Additionally, estimates will be made of the significance of the visual impact of each project feature taking into consideration associated landscape character types, aesthetic value and absorption capabilities, viewsheds and number of viewers. The results of this work will be documented in a refinement report. Harza-Ebasco will provide overall direction and management of this task. EDAW, Inc. will take the lead in conducting the work necessary to complete this task, including the preparation of the draft and final report.

04-011-72 AE-Feasibility of Aesthetic Mitigation Measures

Members of the Aesthetic Subtask will participate with Harza-Ebasco design engineers and other project staff in an interdisciplinary review team to consider the feasibility of aesthetic mitigation measures outlined in the License Application. Members of the Aesthetic Subtask will present recommendations to the team and will prepare a revised list of aesthetic mitigation measures determined to be feasible. Issues to be covered include: recommendations for creative design alternatives and adjustments, resiting studies, construction techniques and restrictions, and rehabilitation techniques. Determinations of feasibility will be made as to whether each mitigation measure is or is not a feasible alternative or technique or whether additional planning and engineering design would be required to determine its feasibility. The design engineers would be responsible for developing alternative design concepts that responded to the proposed aesthetic mitigation recommendations. the contents of the Aesthetic Mitigation Selection Report would be the responsibility of members of the

Aesthetics Subtask. Harza-Ebasco will provide overall direction and management of this task. EDAW, Inc. will provide assistance in preparing information for presentation to the interdisciplinary review team and the draft and final report.

04-011-73 AE-Draft Aesthetics Mitigation Plan

A Draft Aesthetics Mitigation Plan will be prepared based on the results of the aesthetics impact refinement (#04-011-71) and the feasibility of aesthetic mitigation measures (#04-011-72) tasks. The plan will include operational policies, construction and rehabilitation techniques, design changes, and the identification of alternative designs and siting studies to be completed. Harza-Ebasco will provide overall direction and management of this task. EDAW, Inc. will prepare the draft and final reports.

04-011-81 LU-Other Project Development Plans

Work conducted within this task will include two primary components. First, most of the key information for the assessment will be obtained through personal contacts with landowners and managing agencies. Second, an analysis of this information and existing data on potential development activity will be conducted and a report on anticipated development in the project area will be written. The primary agency/landowner contacts will be with BLM, ADNR, the Mat-SU Borough, and Native corporations. With regard to BLM lands, the emphasis will be on updating the status of BLM planning and management for the Denali Planning Block. Contacts with DNR will have a dual focus on the agency's land disposal program and its planning activities. The key planning effort to be monitored will be the cooperative Susitna ARea Plan, involving primarily DNR and the Mat-Su Borough. Native Corporations will be consulted to determine which lands in the project area they intend to develop, what activities are proposed for each area, and the projected schedule of development. The ADNR Division of Parks and private

The ADNR Division of Parks and private lodge operators will also be contacted concerning their future plans. The report assessing development plans will include, to the extent possible, independent Harza-Ebasco judgment of the likelihood of development activities on other lands in the project area. This work will be conducted by Harza-Ebasco.

04-011-82 LU-Project and Land Management Decisions

This task will largely involve building upon the results of the work activity concerning development plans (#04-011-81). All completed plans and current planning activities will be reviewed to identify potential points of conflict with proposed elements of the Project. Given the acreages involved and knowledge of current planning efforts, BLM management and the state/local Susitna Area Plan will receive the greatest attention. Potential conflicts will be identified and discussed with the appropriate agency, and a range of options for conflict resolution will be developed. The options identified could involve plan adjustments to acknowledge and accommodate the effects of the Project, or refinements of elements of the Project to attain consistency with plans. This task will be conducted by Harza-Ebasco.

A report will be prepared to describe potential land management conflicts, identify possible options for conflict resolution, and recommend the best option for each case.

04-011-83 LU-Habitat Mitigation Lands

This task will require integrating the results of Terrestrial Program's detailed assessment of candidate compensation lands with land use studies conducted to date. Land recommended for selection as compensation lands will be analyzed against existing and planned land use to determine the land use impacts of those selections. The Susitna Area Plan and BLM planning and management activities will also be reviewed to identify potential conflicts

with the land selection recommendations. This work will be conducted by Harza-Ebasco.

04-011-95 SE-Specialty Businesses Analysis

This task will serve as a coordinator for the various research activities addressing specialty businesses and particular population groups during FY 1985, and will be responsible for compiling and analyzing information on any such groups not addressed more specifically elsewhere. For such groups, the focus of the effort will be on delineating the magnitude and economic importance of the specialty businesses, the general characteristics of those

engaged in such businesses and assessing the potential consequences of the Project for the businesses and the people engaged in them. A major element of the task will be the coordination of information from various other subtasks and the integration of the sections for the white paper prepared as part of each task that will be addressing special populations. This will involve the development of a white paper outline, coordination with those working on other tasks, and assistance in the preparation and review of the white paper itself. Harza-Ebasco will have responsibility for this task.

04-011-96 SE-Economic Implications of Project Flows

The first step in this task would be to determine the frequency of high river flows. Depending upon the severity of anticipated high flows, the frequency could be estimated for five-, ten-, twenty-, fifty-, or one-hundred-year intervals. For example, if on the basis of preliminary investigation it was found that a high, damaging flow at Talkeetna could occur as frequently as every five years, then it would be appropriate to initiate the assessment of potential flood damages on the basis of five-year, high-flow frequencies. If it were found that high water with the Susitna Project in place would cause damage at intervals as short as every five

years, the Project would turn toward developing a plan for relocating homes, businesses, and other local facilities to higher ground. If it were found that the frequency of damaging high flows was closer to twenty years and that the damage would not be excessive, then the project would turn more toward assessing the level of damages that would likely occur at frequencies of twenty years and more. Given the case where damages would occur relatively frequently, the Project would necessarily have to address relocation, assuming that there would be no other feasible method for providing flood protection. As assessment of the community's topography would be conducted to determine the relocation needs and alternatives, and the relocation would be costed out. The objective of the relocation would generally be to produce a plan that would protect the community from at least a one-hundred-year flood, the generally accepted level of protection. The more likely situation would be occasional high flows that would cause damages but not warrant substantial relocation. To assess damages, high water frequencies and levels would be assessed, and the approximate extent of damages at different frequency levels would be analyzed. If the present worth of the forecasted damages exceeded the cost of relocation, then some relocation would be justified.

In either case, it would be important to determine whether high water was attributable to the Susitna Project or not. While the state might choose to incur the costs for flood damages or prevention thereof, it would be important, from the standpoint of the Project's economics and opinion to demonstrate the extent to which a flooding problem should be attributed to the Project. Harza-Ebasco will be responsible for conducting this task.

04-011-97 SE-Alaska Hiring Policies

The first step in this task will be to delineate the pertinent legislation regarding employment in Alaska and to establish its current status. The second step will be to compile available information and to assess the

implications of this legislation on worker characteristics, settlement patterns, and speculative in-migration. If necessary, adjustments will be made in the socioeconomic model to reflect these implications. Based on this analysis, a memorandum will be prepared summarizing the findings. Harza-Ebasco will be responsible for this task.

04-011-98 SE-Report Review

In this task, Harza-Ebasco will provide technical review of all reports and final computer output prepared by Frank Orth & Associates. Specifically, this will include the socioeconomic projection revisions, the socioeconomic impact projections summary, the traffic analysis, the railhead analysis, and the socioeconomic model refinement.

04-011-99 SE-Special Populations Analysis

Since most of the information to be presented in the white paper will be obtained and analyzed by other FY85 tasks, the major effort in this task will be to delineate and communicate the objectives, outline, format, and timetable of the white paper and to oversee the production and mitigation of the various white paper sections that will be prepared as the final deliverable in the other tasks. This will require careful specification of the type of information to be included in each section, the degree of detail and length of each section, coordination of information among those preparing various sections of the report, and review of section outlines and drafts. Once the draft sections have been prepared, and reviewed by the various team members knowledgeable about each of the special populations, the linkages between the various populations will be re-examined. Appropriate revisions will be made and the draft white paper revised and prepared for review outside the study team. Comments from this review will be evaluated and incorporated into the white paper as appropriate. Harza-Ebasco will be responsible for the entire task.

Terrestrial Program:

04-013-02 Plan of Study Development and Updating

This effort includes the finalization and updating of the detailed plan of study for FY85. In addition it includes the development of the detailed plan of study for FY86. The detailed plan of study provides the background and objectives, description of the study area, methodology, data management, and reports for each task being performed in a given fiscal year. It also provides information on long-term plans and quality assurance. This is a H-E task with input from subcontractors, primarily LGL.

04-013-08 Responses to FERC Supplemental Information Requests

This effort involves the preparation of responses to FERC requests for supplemental information. Responses to previous requests as well as a limited amount of new requests is included. This is a H-E activity.

04-013-09 Terrestrial Workshops

An important aspect of the settlement process is the dissemination of information to familiarize agency personnel with project study methodologies, analyses and results. This process will also facilitate feedback from the agencies which will assist the resolution of impact issues and mitigation plans. The primary means of providing for this information transfer will be through a series of five workshops during 1984 and early 1985.

Appropriate members of the Terrestrial Study Team will coordinate and participate in these workshops and coordination meetings depending on the particular topics to be covered. Deliverables will consist of prepared workshop materials and presentations and workshop summaries.

Five specific terrestrial workshops are planned for FY84 and FY85. The tentative schedule for workshops during the remainder of FY84 and FY85 is as follows:

	<u>Workshop</u>	<u>Date</u>
Workshop 1:	FY85 Terrestrial Program Scoping Workshop	April 10, 1984
Workshop 2:	Impact Assessment and Mitigation Plan Refinement Workshop	June 27, 1984
Workshop 3:	Impact Assessment and Mitigation Plan Refinement Workshop	September 28, 1984
Workshop 4:	Terrestrial Program Update Workshop	December 12, 1984
Workshop 5:	Mitigation Plan Workshop	April 30, 1985

04-013-10 Mitigation Plan Refinement

This task represents the refinement of botanical and wildlife resource mitigation plans through the specific identification of objectives, implementation procedures including schedules and probable costs, and supporting technical rationale.

The following reports will be prepared:

1. FY85 Mitigation Plan Refinement Report - this report will provide a detailed description of each aspect of the mitigation plan including a description of options where appropriate.

2. Recommended Mitigation Plan - this document will be prepared by Harza-Ebasco based on subcontractor input and will recommend a detailed and specific mitigation plan, based on consideration of all reasonable options, that is consistent with plans proposed by the Aquatic and Social Science Programs and project construction and operation plans.

The first report will be prepared by LGL with input from H-E, as well as other subcontractors. H-E will also provide technical review. The second report will be prepared by H-E with subcontractor input.

04-013-11 Impact/Mitigation Planning Tracking System

A "bookkeeping" system is being maintained and applied to the terrestrial biology program, so that the current status of impact assessment; mitigation planning and resolution of each impact issue can be tracked and easily determined as the program progresses. This process was initiated during FY84 with the preparation of an Impact Assessment and Mitigation Planning Summary for Wildlife and Botanical Resources. This document is a matrix which summarizes impact assessment and mitigation planning as it evolved through the spring of 1984. The matrix is organized so that the development of impact assessment and mitigation planning can be followed horizontally across each page.

Two revisions will be made to the Impact Assessment and Mitigation Planning Summary to document refinements accomplished during the FY85 program. Refinements contained in various FY85 project reports, including the impact assessment and mitigation planning refinement reports, will be shown in the successive revisions. In particular, it is expected that the "Proposed Mitigation Measures" column will show considerable refinement during FY85.

04-013-14 Furbearer and Trapper Surveys

This cost account includes beaver field studies, beaver population model refinement, a survey of Middle Susitna Basin trappers and other furbearer field studies.

Beaver field studies include cache surveys, life history studies and overwinter/breakup survival study. The objective of the cache surveys is to obtain accurate counts of beaver caches in each type of aquatic habitat that will be influenced by the Project. Counts will be made from a helicopter during September and/or early October. Emphasis will continue to be placed on the region between Devil Canyon and Talkeetna. Cache counts will be made on key tributary streams, such as Deadman and Portage creeks, and in representative segments of the Susitna River downstream from Talkeetna. A survey for caches will also be made along the Susitna River in the proposed impoundment zones to verify that few resident beaver are present in these areas.

The objectives of the beaver life history studies are to:

1. Relate number of beavers in a colony to size of the cache established by that colony.
2. Evaluate how cache formation relates to water level, water temperature, ice formation, vegetation availability and growth changes, day length, ambient temperatures and other environmental factors.
3. Determine home range sizes of beavers in study colonies.
4. Determine foraging areas and vegetation harvested.

5. Relate vegetation harvested to cache composition.

Representative beaver colonies will be selected for study in each of the seven aquatic habitat types except Type 6, Tributary Mouth Habitat, because this type does not appear to be used as overwintering habitat by beavers. Beavers will be studied by direct observation and with the aid of radio-telemetry. Vegetation and caches will be surveyed directly by the study team.

Twelve colonies will be selected, ranging in size from two or three individuals to 10 or more. Direct observations will be made to count the beavers present. Caches constructed by these colonies will be measured and photographed. A correlation analysis will then be constructed to relate size of cache to number of beavers in the colony.

Adult, yearling and juvenile beavers will be live-trapped and radio-tagged in two colonies to determine home range size, foraging area and relationships between plants harvested and plants stored in caches. Radio-tagged beavers will be located periodically through winter and the following spring to determine winter movements, overwinter survival and dispersal. Environmental conditions including day length, ambient and water temperatures, ice conditions and vegetation characteristics will be assessed throughout the study period.

The objectives of the beaver overwinter/breakup survival study are to determine the survival rate of beavers through the winter season and to assess the effects of breakup on their continued survival. Beaver colony overwintering sites between Talkeetna and Devil Canyon will be visited prior to and following breakup. Physical features of successful and failed sites will be identified, measured and compared.

Beaver population model refinement will be conducted to enhance beaver impact assessment and mitigation plan refinement. The model will be updated using information gathered from the literature, from project vegetation and hydrologic studies and from beaver field studies.

The objectives of the trapper survey are to:

1. Estimate the numbers and locations of furbearers harvested in the upper Susitna drainage.
2. Record furbearer observations made by trappers.
3. Provide information on economic value of pelts harvested and efforts expended on trapping for use in socioeconomic studies.

Trappers operating in the upper Susitna region will be visited by personnel of the furbearer study team and interviewed in person. Questions concerning sightings of furbearers, extent of trapping efforts, etc., will be presented to each participant. Trappers not available for personal interview will be interviewed by telephone if possible.

Other furbearer field studies will include furbearer distribution surveys, otter and mink autumn concentration surveys and fox den surveys. The objectives of the furbearer distribution surveys are to:

1. Determine the distribution and relative abundance of furbearers downstream from Devil Canyon to Talkeetna.
2. Monitor annual furbearer population changes in the impoundment zones and in the downstream area.

3. Identify furbearer habitat relationships.

The study team will conduct aerial transect surveys for sign of furbearers in snow in early winter (late October - early November) along the Susitna River between the Tyone River and Talkeetna. Data will be computer coded and analyzed. Furbearer distribution, habitat preference, relative abundance and population trends will be calculated.

There are 14, six-mile long transects at intervals of six miles from Portage Creek to the Tyone River. A similar transect system is envisioned for the lower river, with similar transect design from Portage Creek to Talkeetna. To determine accuracy of track identification, ground truth checks will be conducted. Checks for furbearer sign on sandbars and mudbanks during summer will be used to verify that furbearers are present along the river throughout the year.

Objectives of the otter and mink autumn concentration surveys are to:

1. Determine if there is an annual autumn concentration of otters and mink along the Susitna River in the proposed impoundment zones.
2. Determine if track counts made in separate years indicate relative abundance.

Sample points established in 1980 will be surveyed in early November 1984. A similar survey design will be developed for representative downstream sections of the river. Data collected will be analyzed to determine the distribution and intensity of suspected movements.

The objectives of the fox den surveys are to:

1. Survey existing dens to determine annual use.

2. Locate other traditional dens.
3. Compare past and present usage to determine relative abundance and trends.

Dens known or suspected to have been active in the past will be visited in early May to determine present use. An effort will be made to locate previously undiscovered dens. Present and past usage will be compared to determine population trends and breeding success.

Field work, data analysis and report preparation for furbearer and trapper surveys will be conducted by the U. of A. at Fairbanks under the direction of Dr. Phil Gipson. H-E will provide input, technical review and logistical and other support.

04-013-15 Settlement Process Input

The Terrestrial Program will provide on-going input into the settlement process by reviewing agency concerns, consolidating them into concise issues, participation in internal and agency meetings and preparation of issue papers aimed at resolving issues. This cost account covers only those settlement process efforts requiring less than a man-week for preparation. Larger anticipated efforts that support settlement are budgeted separately. This activity is conducted by H-E with support from subcontractors.

04-013-16 DEIS/FEIS Review

The Power Authority must review and comment on the DEIS and FEIS and on comments on these documents to ensure that all analyses and conclusions are based on accurate information, to provide clarifications and to provide alternative interpretations where appropriate.

Terrestrial Program activities that will lead to completion of this task will involve several elements. These elements will consist of correcting inaccuracies and preparing additional information which will strengthen some conclusions, differ from others and provide clarification for others. Additionally, comments prepared by other agencies and the public will be reviewed to identify those comments and conclusions with which a substantial difference of opinion remains. These reviews will provide a basis for identifying specific conclusions which may need resolution through the settlement and hearings processes. This cost account assumes that comments on the DEIS are due July 25, 1984, and comments on the FEIS are due on January 25, 1985.

04-013-20 H-E Support of ADF&G Big Game Studies

The Alaska Department of Fish and Game (ADF&G) will be conducting field studies of moose, (both upstream in the vicinity of the impoundments and downstream of the impoundments), caribou, brown and black bear and wolves. These studies will include the continuation of an intensive moose calf mortality study, initiated in FY84, severe winter studies (should a severe winter occur), and field testing of moose carrying capacity model, as well as the continuation of habitat use and distribution monitoring and annual censuses. H-E will provide technical review, coordination with other activities and logistical and other reports.

04-013-30 Moose Browse Inventory

The objective of this task is to provide accurate and precise estimates of standing crop biomass of winter forage for moose in the middle Susitna Basin. Sampling efforts will be prioritized based on available vegetation maps, vegetation types known to contain important winter browse species, aerial extent of important vegetation types, cost-benefit ratio of sampling intensity to statistical accuracy and logistic feasibility. A biometrician

will work closely with the project leader and work crews to assure the statistical validity of the sampling effort.

Sampling efforts will be undertaken during July and August of the summers of 1984 (FY85) and 1985 (FY86). Preliminary vegetation maps of selected areas in the middle Basin will be used to stratify the samples during 1984. At randomly located sites within vegetation types stratified by elevation, slope and/or aspect, approximately twenty 1-m² quadrats will be clipped. Current annual woody growth of browse species important in winter moose diets will be clipped and bagged by species. Samples will be oven-dried and weighed to determine the weight of browse available per unit area by vegetation type.

Results from summer 1984 field studies will be presented in draft and final reports. Reports will include documentation of browse quantity for sampled vegetation types and recommendations for summer 1985 site stratification based on digitized vegetation maps. Recommendations for sampling intensity during summer 1985 to achieve the desired statistical accuracy will be addressed. The final report will also recommend final stratification plans for elevation, slope and aspect modifiers to mapped vegetation types.

Data collection, analysis and report writing will be conducted by ADF&G with participation and substantial input from LGL. H-E will provide technical review, coordination with other activities and logistical and other support.

04-013-31 Vegetation Mapping and Digitizing

The objective of this task is to prepare a detailed and accurate 1:63,360 scale photobase map of vegetation on about 2,000 sq. mi. in the project area along with a concise and explicit user guide.

Available 1:24,000 true color and 1:60,000 CIR aerial photography in combination with other photography will be utilized. Mapping procedure will include stereoscopic interpretation of vegetation, delineation of vegetation type boundary lines and labeling of the resulting polygons.

Mapping of vegetation will employ the classification system of Viereck et al. (1982). The entire area within the delineated boundary will be mapped, including waterbodies, unvegetated terrain and disturbed areas. All vegetation types will be mapped to at least Classification Level III. Forest, tall shrub and low shrub communities will be mapped to Classification Level IV. For open forest, woodland forest, tall shrub and low shrub the percent cover of willow, shrub birch and alder will be indicated.

Following production of the preliminary mapping based on photointerpretation, field studies will be conducted to eliminate ambiguity and to provide greater detail and accuracy of vegetation coverage. It is expected that ground-truth data will provide categorical detail beyond the limitations of the photography.

Digitization of the final map product (along with pertinent physical parameters) will be conducted to facilitate its use for browse inventory planning, habitat utilization analyses, and other applications.

R.A. Kreig and Associates will conduct this task. H-E will provide technical review, coordination with other activities and logistical and other support.

04-013-32 Impact Assessment Refinement

This task represents the refinement of botanical and wildlife resource impact assessments through incorporation of new information collected and

new analyses conducted since the license application. Emphasis will be placed on areas of agency concern and specifically at resolving issues.

The following reports will be prepared:

1. Final Wildlife Habitat/Instream Flow Relationships Report - this report will update and refine our assessment of the effects of altered flows downstream of the Project on wildlife and wildlife habitat and will provide input to the Aquatic Program's Instream Flow Relationships Report.
2. Economic and Environmental Comparisons Report input - this input will provide an assessment of the effects of alternative instream flow regimes on wildlife and wildlife habitat.
3. FY85 Impact Assessment Refinement Report - this report will represent a compilation of impact assessment updates and refinements based on recently collected data and analyses directed at resolving issues.

The first and third reports will be prepared by LGL with input from H-E, as well as other subcontractors. H-E will also provide technical review. The second report will be prepared by H-E with input from LGL and other subcontractors.

04-013-33 Wetlands Mapping

Project area wetlands mapping will be conducted as part of the National Wetlands Inventory in a cooperative effort between the U.S. Fish and Wildlife Service (USFWS) and the Power Authority. Data will be collected and 13 wetland maps at a scale of 1:63,360 will be produced.

Mapping is to be performed through stereoscopic interpretation of high altitude color infrared aerial photographs with detailed ground sampling. Wetlands will be classified according to the U.S. Fish and Wildlife Service's "Classification of Wetlands and Deepwater Habitats of the U.S." (Cowardin et al. 1979). A minimum mapping polygon size of 2 to 4 acres for wetlands will be utilized.

USFWS will conduct the mapping and H-E will provide technical review, coordination with other activities and logistical and other support.

04-013-34 General Administration and Contract Management

This effort consists of general administrative activities such as weekly staff meetings, progress report preparation, budget revisions and reforecasting, and the nontechnical aspects of contract management. This latter task includes contract preparation, preparation of amendments and CWA's, reviewing invoices and progress reports and tracking expenditures relative to budgets. This activity is conducted by H-E.

04-013-35 Terrestrial Program Coordination

This cost account covers coordinating the activities of terrestrial subcontractors and H-E terrestrial staff. It includes the efforts required to ensure cross-discipline coordination with the Aquatic and Social Science Programs and with H-E Engineering and Logistics Tasks. It also includes the preparation for a participation in monthly Terrestrial Program progress and coordination meetings.

04-013-36 FERC Hearings Preparation

A major element of the environmental hearings process will focus on the impacts of the Susitna Hydroelectric Project on wildlife and botanical

resources and the potential effectiveness of planned mitigation measures. Information may need to be condensed and summarized into formats appropriate to support the hearings process scheduled to begin December 28, 1984. Steps in the hearings process that will require participation by members of the Terrestrial Study Team include the discovery process, filing of direct testimony, filing of rebuttal testimony, possible filing of surrebuttal testimony and cross examination of witnesses. Although most of these steps will not occur in FY85, it is necessary to begin preparation for accomplishing these steps.

The primary activities which will occur during FY85 include the selection of persons who will testify on behalf of the Power Authority, consultation with Power Authority Licensing Counsel, responses to discovery requests from FERC and intervenors and the initiation of preparation of written direct testimony. Specific deliverables to result from the activities of this task include:

1. Designation of expert witnesses to testify on terrestrial resources on behalf of the Power Authority.
2. Position papers by expert witnesses defining areas to be discussed and input required from other participants.
3. Responses to discovery requests.
4. Draft outline of direct testimony from each expert witness.

In addition, the designated expert witnesses will participate in activities leading to deliverables of other terrestrial study tasks and will initiate preparation of their direct testimony to be filed on September 25, 1985.

04-013-37 Permanent Village Evaluation Report Input

This task will provide botanical and wildlife resources input into a report which will examine the implications of locating the permanent village outside of the project area. This is a H-E activity.

04-013-39 Camp and Village Location Report Input

This task will provide botanical and wildlife resources input into a report which will examine the proposed siting of the Watana construction camp and village and the implications of alternative sitings within the project area. This is a H-E activity.

04-013-40 Worker Transportation and Policy Reports

This task will provide botanical and wildlife resources input into reports which will examine the implications of various worker transportation alternatives (including car, bus and air transport) and various worker shift and rotation schedules. This is a H-E activity.

04-013-41 Access Road Location Report

This task involves the review and finalization of the botanical and wildlife resources sections of the draft Access Road Report. It is a H-E task.

Aquatic Program:

04-013-42 Candidate Mitigation Lands Assessment

The objective of this task is to provide specific recommendations to the Power Authority concerning tracts of land to be considered for wildlife habitat compensation, with technical documentation supporting the recommen-

dations. Studies conducted within this task will have two components: (1) a detailed office analysis, including an examination of all available information and extended discussions with project wildlife and habitat specialists; and (2) an aerial reconnaissance of candidate lands identified as a result of the preceding study component.

The identification of lands with characteristics optimal for habitat compensation will require the synthesis of results from ongoing impact assessment and mitigation planning refinement efforts. Wildlife species for which habitat compensation will be an appropriate and effective means of impact mitigation will be identified and the supporting technical rationale clearly documented. Habitat attribute criteria will be developed for the species of concern, so that physical and biological requirements of lands to be selected for habitat compensation can be defined and the criteria systematically applied.

The results of the FY84 habitat enhancement procedures review and follow-up FY85 studies will be studied and applied to existing habitat characteristics of lands under consideration based on the FY84 Candidate Lands Survey. Enhancement procedures will be reviewed with respect to the kinds of habitat with which they are most effective, logistic requirements for implementation, and tradeoffs among various target species requiring habitat compensation. Potential adverse effects of habitat enhancement procedures on target and non-target species will be identified. Applicable criteria for habitat enhancement procedures will be developed as a result of this review.

Candidate lands will be selected through the systematic merging of habitat attribute criteria for target wildlife species, applicable criteria for habitat enhancement procedures and consideration of present and intended future land use patterns. The latter will be necessary to help assure that habitat compensation efforts and expenditures for habitat enhancement are not offset by future incompatible activities on or near selected lands.

When office activities have proceeded as far as possible in defining optimal candidate lands, a reconnaissance will be flown to view and photograph the lands in question. The results of the aerial reconnaissance will be used to refine the earlier office work to the point where specific tracts of land can be defined on maps and prioritized for selection. A detailed report with accompanying maps will be prepared. The report will provide definitive recommendations for the selection of specifically identified compensation lands and document the supporting technical rationale. LGL will prepare the report with input from H-E and other subcontractors. H-E will also provide technical review.

04-013-43 Habitat Enhancement Studies

The objective of this task is to identify factors determining differential use by moose of areas cleared through burning, logging or other means in the Susitna Basin.

There are two categories of factors that must be considered: 1) Those which affect the vegetative response (qualitative as well as quantitative). These include site characteristics such as existing vegetation, soils, topography, etc.; 2) Those factors which affect the moose population's ability to take advantage of increased forage quantity or quality. These include geographic and climatic factors that affect availability of forage, non-nutritional factors that limit the rate of increase of the existing population, movement patterns of the existing population that might prevent or delay use of new areas of higher forage production and factors that might create secondary problems such as attracting moose to areas of high human/moose conflict.

The first step in the evaluation of enhancement procedure was a review of literature and other available information conducted in FY84, on the response of vegetation to mechanical disturbance and burning. The second phase will be an examination of existing disturbed sites in an effort to identify

and assess the factors that influence their usefulness to moose. Sites which are believed to be used lightly by moose as well as those used heavily by moose will be examined.

The initial review of sites will be made based on available information. This will be followed by preliminary field evaluations of moose use and vegetation characteristics. More detailed quantitative studies of selected sites may be recommended.

A report will be prepared documenting the results of the evaluation. H-E will conduct the evaluation with input from LGL and ADF&G.

04-013-44 Downstream Riparian Studies

The objectives of this task are to: (1) obtain a more complete and accurate understanding of vegetation dynamics and its relationship with flow and ice dynamics in the downstream floodplain, and (2) refine our assessment of downstream impacts. Objective 1 will be at least partially satisfied through the conduct of field sampling at the vegetation sites in the downstream floodplain sampled in 1981. This sampling at the same locations with 3 years in between will significantly enhance our understanding of vegetation dynamics. Additionally, field observations, examination of aerial photographs taken between 1981 and 1984, and data from ice observation and flow studies conducted during that period will provide information on the relationships between vegetation dynamics and ice and flow dynamics.

Objective 2 will be addressed through the conduct of limited office analyses that will be based on the results of field studies, the Wildlife Habitat/-Instream Flow Relationships Report and flow and ice analyses. Results will be incorporated into the Economic and Environmental Comparisons Report. More extensive office analyses or additional field studies may be recommend-

ed by the Wildlife Habitat/Instream Flow Relationships Report or subsequent studies, but these are beyond the scope of this task.

The U of A - Palmer will conduct the vegetation field studies with input from H-E and other subcontractors and technical review by H-E. H-E will conduct the office analyses with substantial input from LGL.

04-013-45 Raptor Studies

This cost account includes a bald eagle food habits study, a lower Susitna River bald eagle nest survey and the monitoring of peregrine falcon nest sites.

Objectives of the food habits are to:

1. To collect and identify prey remains at active bald eagle nesting locations in the middle basin of the Susitna River.
2. To observe flight directions taken by one pair of foraging bald eagles nesting in the middle basin of the Susitna River.

Each nesting location will be visited three times: once during mid-to-late June after any young present are capable of thermoregulation; once during July; and once during late August or September after young have fledged. During the first two visits, prey remains will be collected from beneath the nesting sites and perches. During the third visit, prey remains will be collected from the nests and from the ground beneath the nests and perches. Three nests will be accessed with the aid of climbing spurs and safety lines. The single cliff-nest will be accessed by standard rappelling techniques. Entries and exits from nests will be performed in a manner which will avoid damaging the nests. Prey remains will be dried, sorted and

identified using representative study collections at the University of Alaska Museum.

One pair of adult bald eagles nesting in the Susitna River valley of the middle basin will be watched continuously for about 48 hours prior to the initial visit in June to collect prey remains. The observers will attempt to document the directions and total times taken by the eagles during their hunting forays. Similar watches will be conducted at the selected nest in July and August.

The objective of the lower river nest survey is to recheck and verify the physical locations of all reported bald eagle nests in the Susitna River floodplain between the mouth of the Indian River and Cook Inlet.

The reported locations of bald eagle nests will be verified by an aerial survey, and additional nest locations will be recorded. The aerial survey will be conducted prior to leaf-out by an experienced raptor biologist using either a helicopter or fixed-wing aircraft.

The objective of the peregrine falcon nest monitoring is to monitor the activity status of three peregrine falcon nest sites near the proposed transmission corridor centerline in the vicinity of Nenana.

An experienced raptor biologist accompanied by a second biologist will spend one day observing the nests in question. The trip will be made in June 1985, during the nesting period and prior to fledging. The sites will be reached via the Tanana River by travel in a Zodiac boat from Nenana. The three nest sites and surrounding habitat will be photographed and on-site notes will be taken concerning the active or inactive status of the nests. This task will be conducted only if one or more of the nest sites is found to be active in June 1984.

Field work, data analysis and report preparation for raptor studies will be conducted by LGL. H-E will provide input, technical review and logistical and other support.

04-013-46 Swan/Eagle T-Line Nest Surveys

The objectives of this task are to:

- 1) To determine nest sites and concentrated use areas of all trumpeter swans along the proposed transmission corridor.
- 2) To confirm the locations of previously recorded bald eagle nests near the proposed transmission corridor and to identify and locate geographically any new or previously unreported nest sites.
- 3) To determine the activity status of bald eagle nests along the proposed transmission corridor.

Aerial surveys of trumpeter swan breeding habitat (as determined from the 1980 USFWS swan census) and bald eagle nest sites along the proposed transmission corridors will be conducted in May 1985 prior to tree leaf-out. Observers will record locations of swan nests and groups of non-breeders on topographic maps. Bald eagle nests sites will be similarly recorded and their activity status checked. Distances from the transmission corridor and detailed maps of swan and eagle nest sites, swan use areas and swan brood habitat will be compiled and will incorporate 1985 USFWS survey results for trumpeter swans.

The surveys will be conducted by LGL with input, technical review and logistical and other support from H-E.

04-013-47 Winter Bird Surveys

The objective of these surveys is to estimate the numbers of birds using the impoundment zones in winter (November - March) and to identify habitats of highest value to birds. A series of transect surveys for bird population estimation will be conducted in all major habitat types within the impoundment zones. Survey routes will be plotted on vegetation maps of the study area and bird sighting information cataloged by habitat type to determine habitat preferences of resident birds. In addition, numbers and estimated ages of ptarmigan tracks and notes on food preferences of ptarmigan will be recorded on all surveys as an index of ptarmigan abundance and habitat use.

The report of survey results will include recommendations on habitat types of greatest value to resident birds to provide guidance in mitigation planning for compensation lands.

LGL will conduct the surveys with substantial input from Dr. Brina Kessel at U of A Fairbanks and from H-E. H-E will also provide technical review and logistical and other support.

04-013-48 Input To Fish and Wildlife User Survey

This task will provide botanical and wildlife resources input into the design and analysis of survey efforts, conducted primarily by the Social Sciences Program, that are designed to provide site-specific information on project area hunters, trappers and other resource users. This is primarily a H-E activity.

04-013-49 Input to Social Sciences Mitigation Planning

There is a need for considerable input from the Terrestrial Program to the Social Sciences Mitigation plans as well as the Project Recreation Plan. This task allows for that input on both a technical and policy basis. It is primarily a H-E task but will receive input from subcontractors.

04-014-01 Administrative Assistance

Assumes one full time equivalent to assist in coordinating comments on redraft of EIS; coordinating expert witness logistics preparation and presentation of testimony coordination of responses to discovery requests.

04-016-01 DEIS/FEIS Review

Activities will involve three elements. The first element will consist of preparing additional information which will strengthen some conclusions reached in the DEIS. The second element will consist of preparing information and substantiation for analyses which differ from those reached in the DEIS. The third element will consist of information, analyses and conclusions for topics not discussed in the DEIS which would alter other conclusions of the DEIS.

Preparation of a list of conclusions reached by the FERC in the FEIS with which the Power Authority does not agree. Additionally, comments prepared by other commenting agencies will be reviewed to identify those conclusions with which a substantial difference of opinion remains. This review will provide a basis for identifying specific conclusions which may need resolution through the settlement and hearings processes.

To meet the first objective the deliverables are:

1. Memoranda identifying conclusions reached in the DEIS.
2. Memoranda containing necessary additional information for each conclusion.
3. Memorandum of Power Authority comments on the DEIS.

Deliverables to accomplish the second objective include:

1. Memoranda identifying conclusions reached in the FEIS.
2. Memoranda describing conclusions for which there is substantial disagreement among licensing participants.

04-016-02 Agency Workshops/Settlement Process

An important aspect of the settlement process is dissemination of information to familiarize resource agency personnel with project study methodologies, analyses and results directed toward resolution of primary impact issues. The primary method for providing this information will be a series of agency workshops in which specific topics will be discussed.

Appropriate members of the Aquatic Study Team will participate in preparation for or actually take part in specific workshops depending on particular topics to be covered.

The Power Authority will meet with resource agencies to attempt to reach settlement on various issues and negotiate a project flow regime. Aquatic Team members will provide various information, analyses, documents and other support as requested by the Power Authority.

Deliverables will consist of prepared materials and/or presentations as requested to support the settlement process.

04-016-03 General Aquatic Program Activities Coordination

This task requires effort from all members of the Aquatic Study Team. H-E has an over-all coordinating function that includes monitoring all activities in the aquatic studies to insure that team members are able to accomplish their tasks and that sufficient progress is being made toward over-all study goals. Each team member is responsible for maintaining an appropriate level of communication and coordination with other team members who share common, integrated or related tasks.

Program coordination will be achieved by various means including:

1. Joint preparation of study plans.
2. Weekly team meetings.
3. Team-wide dissemination of information reports, correspondence and memos.
4. Frequent meetings and data and information exchange among team members with related tasks.

There are no other specific deliverables for this task. However, memoranda describing the results of or need for coordination will be prepared when appropriate to affect necessary changes in planned activities, schedules, etc.

04-016-04 Instream Flow Relationships

The Instream Flow Relationships Report will describe the relationships between mainstem flow and fish habitat.

It will be derived primarily from information contained in a series of technical reports. These reports are:

1. Fish Resources and Habitat of the Susitna Basin - this report will be a consolidation of the information on the aquatic resources of the Susitna Basin that is currently dispersed throughout numerous reports, memoranda and workshop minutes. It will be based on information and data that is available through June 1984. This report may be updated as additional information becomes available.
2. Watershed Processes Report - this report will describe the physical processes that occur within the Basin. It will be focused primarily on preproject to with-project changes in streamflow, channel stability and groundwater upwelling.
3. Water Quality/Limnology Report - this report will consolidate much of the existing information on water quality in the Basin and focus on preproject versus with-project changes. Some additional modelling and field studies (primarily concerning turbidity and suspended sediments) will be incorporated into this report to refine information from previous studies.
4. Reservoir and Instream Temperature - this report will present instream temperature forecasts for a range of operational and climatological conditions and a preliminary commentary of their effects on fish habitats and ice processes. During the first half

of FY85 review comments will be addressed, the discussion of with-project instream temperature effects on fish will be enhanced and interpretive discussions of instream temperature effects on ice processes and ice effects on aquatic habitat will be added to the review draft. An initial report will be available by the end of FY84. An updated version will be made in FY85 that will incorporate additional modelling refinements based on 1984 temperature data.

5. Aquatic Habitat Report - this report will describe the response of aquatic habitat surface areas to mainstem discharges. The river reach to be analyzed first in FY85 will be from Talkeetna to Devil Canyon. Efforts on the lower river are continuing and will be described in the Lower River Study Plan.

Compositing follows compilation of site-specific habitat relationships and proceeds to completion of flow relationships hydrographs (FRH) which incorporate relevant information on instream flow habitat relationships and species distribution, abundance and timing. Compositing is a highly analytic step requiring familiarity with detailed Susitna field and refined data, assessment design and quantification techniques. A general compositing process has been established, however, the detailed rationale and analytic techniques must be developed as part of this task.

Three drafts of the Relationships Report will be issued in an effort to transfer available analyses and information into the licensing and settlement processes. Work that had commenced in the latter quarter of FY84 will continue into the first half of FY85.

A preliminary draft of the Relationships Report will be issued in time to contribute to the preparation of the FEIS. However, the major contribution that can be made during the first quarter of FY85 to the FEIS by the Relationships Studies will be derived from the topic area reports. An interim draft of the Relationships Report, envisioned as being a considerable enhancement over the preliminary draft, will be issued by November 30, 1984, to assist with clarifying contradictory statements that might appear in the FEIS. The final draft of the Relationships Report is not expected to contain much new information other than the turbidity and ice effects on habitat. It will be upgraded by responding to comments made on the interim draft and by incorporating more descriptive analyses, graphics and narratives to improve its clarity.

Technical Report Series Deliverables:

<u>REPORT</u>	<u>DRAFT</u>	<u>FINAL</u>
Fish Resources and Habitat	8/31/84	
Watershed processes	8/31/84	
Water Quality	FY84	8/31/84
Reservoir and Instream Temp	8/31/84	3/31/85
Response of Habitat to Flow	8/31/84	10/31/84
Flow Relationships Hydrographs	1/4/85	

Relationships Report:

Preliminary Draft	8/31/84
Interim Draft	11/31/84
Final Draft	3/31/85

04-016-05 Economic and Environmental Comparisons

Several alternative weekly flow regimes will be defined and compared. The flow regime will range from the optimum environmental (aquatic habitat) to the optimum economic regimes and will include natural flows and flows presented in the License Application. Other alternative regimes will be selected based on the needs of navigation, recreation, riparian habitats and water quality.

A project optimization procedure will be used to evaluate alternative flow regimes. This is a computer based, iterative process that will be used to narrow alternatives to a small set of regimes that best provide for the needs of both energy and power generation and the various downstream uses of the river. Emphasis during the Project optimization process will be placed on comparisons of Project economics and fish habitat. At several steps in the procedure the effects of the flow regimes on physical parameters such as water temperature, water quality and ice processes as well as impacts of these physical changes on other instream relationships and uses will be evaluated. These in-process evaluations are necessary to establish boundaries for the next iterations.

Minimum and maximum environmental flows will be established and input to the weekly reservoir operations model to produce a time series of expected flows and energies (based on a 33 year record of historic flows) for four energy demand levels. This will be required to examine the influence of increasing energy demand levels that will occur during the life of the project. Composited habitat relationships will be used to forecast relative fish habitat for the 33 years of record. The resulting time series will be presented as habitat duration curves.

The resultant flow regimes will be analyzed to determine effects (both positive and negative) on each instream flow use. Mitigation opportunities and associated costs will be examined for those instream flow uses that are adversely affected. The affect of each flow regime on project benefits and costs will be determined for comparison with the corresponding environmental effects.

04-016-06 Recommended Flow Report

Provide support and consultation to the Power Authority to develop and document a recommended flow regime from the regimes presented in the Economic and Environmental Comparisons Report.

Summary of the impacts associated with this regime will also be presented.

The report developed under this task will be used as the primary document for the flow negotiation process. It will be presented in draft form to the various utilities and resource agencies. Depending on the outcome of this review, the report will either be: 1) finalized, if no significant comments are received, or 2) a second draft will be prepared (based on comments received) in anticipation of actual instream flow negotiations.

A working report that will be developed in draft form. The final form will depend on results of the review process.

04-016-07 Aquatic Impact Assessment

The Susitna aquatic investigations program includes the following steps: field data collection and analysis, development of habitat relationships, development of composite flow relationships hydrographs

and flow optimization. After the tradeoffs between habitat/fish populations and power generation have been examined in the comparisons process, a recommended operating regime will be developed and negotiated. It is expected that this regime will have some flow-related effects on fishery resources which must be quantified and described in order to plan specific measures to mitigate these effects. This task will quantify the impacts of the negotiated operating regime. Impact analyses of alternative flow regimes will be presented in the Economic and Environmental Comparisons Report and the Recommended Flow Regimes Report. This impact assessment will be more detailed and comprehensive.

A report detailing expected impacts of a negotiated flow regime on aquatic habitat. The schedule will depend on the progress of negotiations. Although this task will begin in FY85, it may not be completed until FY86.

04-016-08 Flow Negotiations

The Power Authority will enter negotiations with various resource agencies to finalize a Project flow schedule. Participation and assistance will be needed from various aquatic study team members (and members from other disciplines) during these negotiations in order that technical assistance be provided to the Power Authority. The coordinator for assuring that this assistance is provided will be H-E. All members of the Aquatic Study Team may be needed to assist the Power Authority in preparing for the actual negotiations.

The overall deliverable is a negotiated flow schedule for Project construction and operation. This will be a memorandum of understanding between the Power Authority and the various resource agencies. More

immediate deliverables will include memoranda, analyses and other documents as requested by the Power Authority.

04-016-09 FERC Hearings Preparation

Steps in the hearing process that will require participation by members of the Aquatic Study Team include the discovery process, filing of direct testimony, filing of rebuttal testimony, possible filing of surrebuttal testimony and cross examination of witnesses. Although most of these steps will not occur in FY86, it is necessary to begin preparation for accomplishing these steps. This is due to the large volume of data and analyses pertaining to the aquatic resources which must be summarized and developed into an appropriate form for hearings.

The primary activities which will occur during FY85 include the selection of persons who will testify on behalf of the Power Authority, consultation with Power Authority Licensing Counsel, responses to discovery requests from FERC and intervenors and preparation of written direct testimony.

Specific deliverables to result from the activities of this task include:

1. Position papers by expert witnesses defining areas to be discussed and input required from other participants.
2. Responses to discovery requests.

3. Draft outline of direct testimony from each expert witness.

In addition, the designated expert witnesses will participate in activities leading to deliverables of other aquatic study tasks.

The schedule for accomplishing this task will be coupled with the schedule set by FERC for the environmental hearing process.

04-016-10 Mitigation/Enhancement Planning

A mitigation report is being developed that will identify mitigation opportunities associated with anticipated Project conditions. The report will further develop the mitigation plan identified in the FERC license application and explore additional mitigation alternatives compatible with Project mitigation policy.

A draft report will be produced by the end of the first quarter of FY85. The report will identify potential areas and methods for habitat modification based on existing information through FY 1984 field efforts.

It is anticipated that Project conditions may improve habitat downstream from Devil Canyon. If habitat improves, there may be an opportunity to enhance salmon runs into the Devil Canyon to Talkeetna reach. The anticipated habitat conditions under Project operation, based on existing information, will be evaluated for their potential to support enhancement. Specific locations and methods will be identified where possible. An enhancement evaluation will be included as a section of the mitigation report.

A mitigation report series will be prepared for the Devil Canyon to Talkeetna reach. It is anticipated that the report series will consist

of interim reports in 1984 and 1985, with updating based on new information and agency policy decisions.

<u>Report Schedule</u>	<u>Draft</u>	<u>Final</u>
First Interim Mitigation Report	8/31/84	10/31/84
Second Interim Mitigation Report	8/31/85	10/31/85

04-016-11 Comprehensive Fish Report

The license application consolidated existing knowledge on the aquatic resources of the Susitna River Basin that was available at that time. Since the application was submitted numerous other studies have been completed or are ongoing. Many of these studies were not interrelated when the final reports were finished. Much of the existing information is now spread out over dozens of volumes of text, reports, workshop minutes and memoranda. Work under this task will be directed at examining this information, deriving key information and presenting a condensation of this material in one document. There will also be an examination of information from areas outside the Susitna Basin that might be pertinent to a better understanding and perspective on the habitat relationships that have been found in the Susitna Basin. This report will supplement and expand the Fish Resources and Habitat Report prepared as part of the Instream Flow Relationships Report Series.

The main deliverable will be the final comprehensive report.

04-016-12 Middle River Habitat Analysis

The successful completion of this task will provide a quantitative assessment of potential effects that might accrue to existing side-channel and mainstem habitats as a result of flow and temperature regulation of the Susitna River.

The objective is to quantify the potential of with-project streamflows for improving existing spawning and rearing conditions at mainstem and side channel locations between Talkeetna and Devil Canyon.

Site Selection: Aerial photographs taken during FY84 (12,000 cfs at Gold Creek) will be systematically reviewed for the purpose of selecting eight to ten candidate study sites that appear to have channel structure and hydraulic conditions that might provide spawning and rearing habitat when mainstem flows are between 8,000 and 14,000 cfs. A brief narrative will be prepared by July 31, 1984, regarding the rationale supporting the selection of each candidate study site for review by Project personnel. Four or five study sites will be selected prior to the third week of July and site specific field work will commence in early August.

The Susitna River discharge needed to maintain flow at each study site, as well as the relationship between the mainstem flow at Gold Creek and that at the study site, will be determined from correlation analyses between the average daily flow at Gold Creek and corresponding miscellaneous streamflow measurements at the respective study sites.

Although emphasis will be placed on evaluating with-project rearing potential, habitat utilization curves for chinook, chum and pink salmon spawning (available in Alaskan literature and Project reports) will be used in concert with the calibrated IFG-2 hydraulic models to forecast flow versus weighted usable area indices for natural and with-project streamflows. Evaluations will also be made of streambed scour, dewatering and freezing for natural and with-project stream flow conditions at each site. The results of these comparative evaluations will be used in a structured, limited factor approach to interpret the weighted usable area indices and discuss the relative difference between existing and with-project mainstem spawning potential.

A draft technical report will be prepared which describes the effects of various levels of Susitna River discharge on mainstem habitat potential. A draft report documenting the model calibration procedures will also be prepared. Final reports will be completed in FY86.

04-016-13 Adult Salmon Spawning Surveys

Routine escapement surveys of streams, sloughs, side channels and the main channel Susitna River will be performed in 1984 to meet the study objective. The surveys will be performed on the ground except for selected tributaries and the main channel which will be surveyed by helicopter. Surveys will be performed by the following schedule:

Sloughs	Weekly, August 15 - October 7, 1984
Tributaries	Weekly, July 21 - October 7, 1984
Mainstem and Side Channel	Weekly, September 1 - October 7, 1984

Slough, side channel, tributary and mainstem habitats associated with the lower Susitna River will be surveyed weekly from the air, from August 15 to October 7. Areas where adult fish are observed will be ground truthed to determine if the area is an actual spawning location and the extent of its use.

ADF&G SuHydro will conduct the study. HE will review the report and provide comments and recommendation at various stages of the study.

04-016-14 Lower River Resident and Juvenile Anadromous Fish Studies

To assess the effects of these changes in flow regime on the habitat of resident and juvenile anadromous fish it is necessary to determine distribution of the species over different seasons and to develop the predictive capability to estimate changes in available rearing habitat

as a function of mainstem discharge to assess the effects of changes in flow regime on the habitats of resident and juvenile anadromous fish. This study will address only the open water season because ice compounds a quantitative assessment of the rearing habitat.

Studies conducted by ADF&G SuHydro (1981-82) in this reach of river have provided limited insight into distribution of the species and responses of habitat in the backwater zones near slough and tributary mouths to mainstem stage changes. The distribution information has provided some insight into the year round distribution of coho and chinook salmon but has provided limited information on pink, chum, and sockeye salmon juveniles.

Analysis of the response of habitat to mainstem discharge of the Susitna River by examination of the distribution of juvenile anadromous fish in backwater zones and the incremental watering and dewatering of these areas provided a general insight as to how the different species present would respond to changing stages of the mainstem Susitna. However, during this analysis, we observed that the cover value of the habitat in these backwater areas and in free flowing areas often changed disproportionately to changes in measured surface area. This observation suggested that monitoring cover response to mainstem discharge would be of importance. Studies conducted in the middle river used habitat models based on cover in addition to hydraulic analysis of areas of use. This methodology will also be used in the lower river studies.

The studies will be planned, based on available information, to examine the habitat availability in different reaches and morphological components of the lower Susitna River for juvenile salmon as well as selected resident species. This habitat availability study will utilize both the Sunshine USGS gaging station at the Park's Highway

bridge and site specific discharge to provide incremental assessment of habitat availability as a function of discharge at each study site.

Selected areas, based on the fish distributional information and on the morphological and reach mapping performed by R&M during 1983, will be studied for seasonal distribution of fish and the response of physical habitat parameters to mainstem discharge. Approximately 15 different sites will be selected for study using the approach mentioned above for sites where water quality and/or cover are the dominant variables influencing habitat quality. Other sites where the dominant hydraulic variables of the habitat are influenced by water depth and velocity are discussed in Task 36. Habitat criteria developed for the upper reach will be supplemented with additional information for this lower reach to simulate the habitat response of fish to mainstem discharge changes.

Distributional data over the seasons will be used to estimate the relative seasonal importance of rearing habitat for the different species. This information will be supplemented by the outmigrant trap studies.

ADF&G SuHydro will conduct the study. HE will review the report and provide comments and recommendation at various stages of the study.

Draft Report on resident and juvenile anadromous habitat studies of the lower river.

04-016-15 Main Channel Salmon Escapement Monitoring

Escapements in the lower reach have been monitored from 1981 through 1983 into the Yentna River at RM 28 and in the Susitna River main channel at RM 80. The results document annual escapement numbers, timing distribution and migrational behavior of sockeye, pink, chum and

coho salmon at these locations. Similar information on the chinook salmon escapements to RM 80 are available for 1982 and 1983.

This task will quantify the numbers of sockeye, pink, chum and coho salmon that reach RM 20, enter the Yentna River (RM 28), reach RM 80 and reach RM 120 of the Susitna River. This task will also determine their migrational timing and behavior. The same basic data will be collected for chinook salmon escapement in the Susitna River main channel at RM 80.

This information will be obtained by implementing a tagging operation at RM 20, using sonar counters and fishwheels in the Yentna River and operating tagging sites at RM 80 and RM 120.

ADF&G SuHydro will conduct the study. HE will review the report and provide comments and recommendation at various stages of the study.

u A report will be produced that specifically answers the study objective. The Draft Report will be issued December 21, 1984 and the Final, February 21, 1985.

04-016-16 Outmigration Studies

Studies by ADF&G SuHydro of outmigrants from the middle river were begun in 1982 and were expanded in 1983. This data set has provided valuable information as to the success of the previous summers' spawning runs, the effects of discharge on redistribution of rearing juveniles and has provided population and survival estimates (when coupled with adult escapement data). Extrapolation of this data set over a longer period of time and at several key sites will provide a comparative index of the production of individual sloughs.

A mark and recapture study of outmigrant juveniles will be conducted to repeat a 1983 study. The juveniles are marked with coded wire tags (CWT) at selected sites and recaptured at a downstream smolt trap at Talkeetna Station. Emphasis will be placed on increased tagging of chum salmon juveniles.

Other data collected during operation of the outmigrant traps will include catch per unit effort and data on daily river stage, turbidity, temperature and other habitat parameters.

The relative production of sockeye and chum salmon in four side sloughs will be estimated by weir counts and recovery of marked fish. Sites near the mouths of sloughs 8A, 9, 11 & 21 will be weired with small mesh seines for three consecutive days. Fish collected on each day will be marked with a unique dye mark and released. Recaptures on all days will be recorded. This information will be analyzed to estimate emergence and outmigration rates from the sites. These results will be compared with habitat information and results of the egg incubation studies at each site. These comparisons should help determine the applicability of the results of Vibert incubation box studies to explaining overall production limits in sloughs.

Several outmigrant traps will be established near the mouth of Portage Creek during the summer of 1984. Chinook and coho collected at these sites will be fin clipped and released approximately four miles upstream. Recaptured outmigrants will be measured for length and the mark recorded. These unique data will be used to estimate outmigration rates.

The timing and rearing of juvenile salmon species has not been established in the lower river. The importance to assess the potential

habitat effects of Project flow regulation of habitats associated with the mainstem lower Susitna need to be established.

Monitoring of outmigrant timing and condition will be conducted at a site below the confluence of the Susitna and Yentna Rivers. This outmigrant trap will provide an estimate of the timing, size and relative numbers of juvenile salmon that are leaving the fresh water system. Chinook movement into the mainstem environments will be estimated at temporary outmigrant traps established and operated intermittently on the Deshka River. The movement of chum, slough sockeye and chinook into the lower river will be evaluated by use of the data obtained from the Talkeetna station trap and intermittent sampling of the Talkeetna River.

The study will be conducted by ADF&G SuHydro. HE will review reports and provide comments at various stages of the study.

04-016-17 Streamflow and Flood Frequency Studies

The objective of this study is to define natural and with-project flow duration and flood frequency curves for key locations in the Lower River. The discharges for a given duration or frequency derived from these curves will be used in other studies to evaluate project impacts due to changes in flow regimes.

Daily streamflow are available from nine USGS gaging stations in the Susitna River Basin. With project discharge will be estimated using studies of reservoir operations carried out by Harza-Ebasco. Monthly and weekly streamflow data and flow duration and flood frequency curves will be developed both for natural and with-project conditions for the Susitna River near Sunshine and at Susitna Station stream gaging

stations. The natural flows of these stations will be modified based on reservoir releases to develop data for with-project conditions.

A report will be prepared which documents the results of the study.

04-016-18 Suspended Sediment - Turbidity Studies

The primary objective is to relate predicted with-project suspended sediment concentrations and characteristics to their potential turbidity related biological effects downstream from the Project reservoirs.

Studies and data existing prior to May 1984 will be used to produce a draft report of expected biological impacts to the Middle Susitna River reach to be included in the IFRS report on Water Quality/Limnology.

Future studies, including DYRESM model predictions, will be used to refine the knowledge presented in the IFRS reports.

Analyses and assessments of pre- and with-project suspended sediments and turbidity and predictions of potential water quality changes during winter periods will include the lower river reach. Predictions of with-project turbidity will provide information for other studies related to potential impacts on the biological food web.

Data needed for predicting biological effects include:

1. Temporal quantification (at least monthly means and ranges for data) of suspended sediment concentrations and their cumulative size distribution analysis for Project reservoir discharges (these data will come from reservoir operations simulations);

2. Computation of a relationship between with-project turbidity in nephelometric turbidity units (NTU) and suspended sediment quantities and characteristics;
3. Computation of the area of substrate per unit discharge in selected habitats which may support viable benthic periphyton populations.

Analyses and discussions will summarize the most probable effects of with-project suspended sediment and turbidity conditions on the mainstem Susitna River in terms of benthic productivity and salmonid incubation and rearing.

Position paper(s) on the with-project suspended sediment issues.

04-016-20 Load Following Alternative

Power studies are currently assessing load following at Watana powerhouse as an alternative to base loading during the years that Watana will operate alone. If this alternative has economic benefits relative to base loading, the downstream environmental impacts caused by load following will need to be assessed. Environmentally acceptable maximum daily flow changes and maximum hourly flow changes (ramping rates) will need to be established for various periods of the year.

Activities will include:

1. Examine naturally occurring rates of flow and stage change at Gold Creek in the range of with-project flow (i.e. 5,000 to 20,000 cfs) for the available USGS gage traces from the Gold Creek gage.

2. Observe rates of change of stage during 1984 storm events at several locations in the mainstem.
3. Perform a literature review and an evaluation of the downstream effects on aquatic resources from water surface fluctuations caused by hydroelectric generation. The transferability of the operating experiences from Pacific Northwest hydro projects to the Susitna project will be examined. Results from the literature review would provide the biological perspective necessary to evaluate effects of varying stage changes and to recommend interim operating criteria for load following at Watana dam.
4. Perform dynamic routings of various load following alternatives using the model DMBRK. Using recommendations for interim operating criteria obtained in Task 4A and other alternatives, dynamically route Watana discharges downstream. Evaluate the environmental effects of these load following alternatives.

Data required for successful completion of this task include:

1. Several continuous stage recorders will be required for the successful completion of Item 2.
2. Hourly discharge data will be required from the hourly load program for item 4.

Items 1 & 2 - Technical memorandum on natural stage discharge fluctuation and on 1984 stage changes.

Item 3 - Report on findings of literature review and interim operations criteria.

04-016-21 Lower River Morphological Assessment

The objective is to document and assess the effects of different flow rates on the morphology of the Susitna River between Talkeetna and Cook Inlet. The study will provide the information necessary to forecast changes in wetted surface areas in the mainstem and side-channels due to Project operation.

Photography (scale: 1" = 2000') of the lower Susitna River was obtained in 1983 for flow rates at Sunshine of 56,500; 37,500; 22,000 and 13,600 cfs. Additional sets of photography at flow rates of about 75,000 cfs (with-project 5-year flood) and 95,000 cfs (pre-project 2-year flood) are needed. This photography will define wetted areas at flood levels which control channel morphology. Wetted areas will be digitized and summed to characterize flow related changes in the lower river.

A preliminary determination of important aquatic habitat sites in the lower river will be made. The location of these areas will be identified on blue line prints of the lower river and a brief narrative prepared describing the rationale for their selection. The blue line prints and rationale will be discussed with other members of the aquatic study team and a consensus sought regarding the number of priority of areas to be analyzed. Photo enlargements of these areas will be obtained through R&M for the 1983 lower river photography. Helicopter over flights will be made at approximately the same mainstem discharges (Sunshine) that the 1983 photography was obtained. During the helicopter overflights habitat types will be identified using the same (or a slightly modified) definition of habitat types used in the middle river and their locations delineated on blue line prints. The wetted surface areas of these locations will be digitized for entry into the computerized data base developed by EWT&A during 1983.

Analysis of the response of habitat surface areas to changes in mainstem flow at Sunshine will be completed.

A technical report will be prepared to present the findings of analysis of streamflow effects on habitat surface areas in the lower river. The report will be integrated with findings from lower river sediment studies to estimate effects of aggradation below the Chulitna River Confluence.

04-016-23 Lower River Ice Observations

The objectives of this study will be to obtain a better understanding of lower river ice processes. Specific study objectives will be to:

1. Refine the estimate of when ice cover progression at the Susitna-Chulitna confluence begins.
2. Estimate the magnitude of staging with-project on the lower river.
3. Document the impact of mainstem freeze-up on existing and potential side channel and slough habitats.
4. Make field observations of significant hydraulic parameters related to ice cover progression on the lower river.

Ice process observations were carried out on the lower river during this past winter. Observations of ice generation in the Chulitna and Talkeetna Rivers have been carried out for several years. Estimates of ice production in the middle reach of the Susitna River will be available from the ice process modeling studies carried out in FY84 and ongoing in FY85.

This study will be conducted using field observations and hydraulic computations.

Data to be collected in the field include:

1. River channel cross sections at six locations in the Lower River chosen to be representative of their respective reaches.
2. Observations of staging and ice thicknesses at these cross sections during open water season, freeze-up and ice cover periods on the Lower River.
3. Observations of staging at selected habitat locations in the Lower River during the freeze-up and ice cover period.
4. Observations of the progression of the ice cover periods on the Lower River.
5. Observations of frazil ice generation in the Yentna, Chulitna and Talkeetna Rivers.
6. Observations of break-up in the Lower River including maximum water levels resulting from ice jams.
7. Observations of ice bridge formation at the mouth of the Susitna River at Cook Inlet.

Analyses of the data will include:

1. Analysis of factors leading of formation of an ice bridge at the mouth of the Susitna River at Cook Inlet.

2. Analysis of the natural volume of ice in the Lower River.
3. Estimation of the volume of ice required to cover the Lower River with-project.
4. Estimation of the with-project staging at the six cross sections.
5. Estimation of the time required to form an ice cover on the Lower River, with-project.

Two reports will be prepared. The first will document field observations. The second will document the analytical results.

04-016-24 Lower River Sediment Aggradation

The objectives of these studies are to evaluate sedimentation processes in various sections of the lower river and to identify the potential impacts. The study area will include the reach of the river between Susitna Station and the Chulitna - Susitna confluence.

Two years of data are currently available from the USGS at four locations near the confluence area. Suspended sediment data are also available from the USGS at the Gold Creek and Susitna Station gaging stations.

The stations where the data are being collected for the evaluation of project impacts in the Lower reach, include:

1. Susitna River near Talkeetna,
2. Chulitna River near Talkeetna,

3. Susitna River below the confluence of the Susitna and Chulitna Rivers (new station established in 1983), and
4. Susitna River at Sunshine.

The sediment data collected at these stations include suspended and bedload discharges. To evaluate project impacts downstream from Sunshine, suspended and bedload discharge measurements also will be required on the Susitna River at Susitna Station and Yentna River near Susitna Station. USGS is currently collecting suspended sediment data on the Susitna River at Susitna Station.

The current sediment sampling program at USGS will be continued for FY85 and they will initiate suspended and bedload discharge measurements on the Susitna River at Susitna Station and on the Yentna River.

Bed material samples will be collected at selected locations in the lower reach in the mainstem. The sampling will be done twice, once during high flow season and second time prior to freeze-up of the river.

The lower reach will be sub-divided into 8 to 10 sub-reaches depending upon locations of sloughs and major tributaries to estimate potential aggradation/degradation. Computations of total sediment load transport (bedload plus suspended) will be made at the stream gaging locations. Aggradation/degradation in each sub-reach will be computed using empirical relationships. The streamflow and flood peaks data required for these computations will be obtained from "Streamflow and Flood Frequency Studies" discussed earlier.

As part of the evaluation of sediment processes, relationships of discharge to stream velocities and depths are necessary. This

information will be derived from staff gage readings obtained by ADF&G as part of their lower river Resident and Anadromous Fish Program utilizing surveyed cross sections of the lower river and a mathematical model of the reach between the Sunshine Bridge and the Chulitna - Susitna confluence. This hydraulic study will also provide necessary information to Lower River Ice and Temperature Studies.

This study will have two components; field observations and data collection, and office analysis. The field work will include:

1. Selection of river cross sections at locations most significant for ice and sedimentation studies;
2. Installation of staff gages at the selected river cross sections and also at other locations where stage-discharge relationships are required;
3. Surveying of river cross sections;
4. A field program to observe staff gages and to measure mainstem and side channels velocities for a selected range of discharges at Sunshine gage.

The office analyses will include:

1. Calibration of HEC-2 for the reach between the confluence of the Chulitna and Susitna Rivers and Sunshine gage using surveyed river cross sections and river stages observed for a range of discharges;

2. Computations of water surface profiles for 8 to 10 selected discharges for the above reach which can be used to support sediment, ice and temperature studies;
3. Preparation of relationships between discharge, stage, depth and velocity and water surface profiles at significant locations, in the reach upstream of the Parks Highway Bridge;
4. Computations of relationships between discharge, stage, depth and velocity for the reach downstream of Parks Highway Bridge using steady, uniform flow assumptions.

Two reports will be prepared. The first will summarize the results of water surface profile and stage-discharge relationship work. The second will summarize the results of the aggradation studies.

04-016-25 Assessment of the Available Food Source in Turbid Susitna River
Habitats for Rearing Juvenile Chinook Salmon

Project related changes in the habitat conditions associated with the development of the Susitna Hydroelectric Project may have impacts on the density and timing of emergence of the invertebrate communities presently utilized as a food source by rearing juvenile chinook salmon. With-project changes in these invertebrate communities could have secondary impacts on the condition and survival of juvenile chinook salmon. Examination of these invertebrate communities would serve as a basis for predicting the rearing capabilities of potentially affected habitats under with-project conditions.

Previous investigations by the ADF&G SuHydro have shown that juvenile chinook salmon are most often found in turbid water habitats in or near

the mainstem (ADF&G, 1983). In habitats where the turbid mainstem flow comes together with the flow from clearwater tributaries and/or sloughs, chinook salmon juveniles are most often found in the turbid water environment (RJ 1984 report). Other ADF&G SuHydro (1982) studies examined the food habits of rearing juvenile salmon, including chinook, in regard to percent stomach composition, species electivity, etc. However, it is unclear whether juvenile chinook salmon that utilize turbid water mainstem affected macrohabitats are dependent on invertebrate organisms which are present in these areas for their food source or which are produced elsewhere.

The invertebrate food sources presently available to juvenile chinook salmon in these areas may be affected by physical and chemical changes associated with Project operation. There is a need to provide quantification of the response of the invertebrate community and the food habitats of juvenile chinook salmon to potential changes in the habitats they presently utilize. This information will serve to relate changes in the condition and survival of these fish to changes in physical and chemical habitat parameters.

Previous investigations by ADF&G SuHydro have provided a good data base on the abundance and distribution of chinook salmon juveniles within the middle river reach and a preliminary evaluation of their food habits. In addition, IFG-4 modeling of selected side channels within this reach has provided velocity, depth, cover and substrate data along specified transects within these sites. Locations of study sites will be selected to utilize established transects of IFG-4 modeling sites within this reach. Other sites may be established in other areas that have been found to contain large numbers of chinook juveniles.

Habitat data to be collected along transects at each study site will include: point specific water depths, velocities, substrates, and

general water quality. Drift invertebrate samples will be collected and analyzed along transects to quantify the availability of food sources with changes in discharge. Stomach analysis will also be performed on a limited number of chinook salmon to correlate the available food source with that being utilized by fish. Comparisons will be made of the available invertebrate drift between the various habitats to determine the dominant available food source at each site. An indication of the effects of possible with-project changes in habitat conditions on the available food source will be made utilizing flow, temperature and fish data.

ADF&G SuHydro will conduct the study. HE will review the report and provide comments and recommendation at various stages of the study.

04-016-26 Preparation of a Written Report for the FY84 Incubation Study

The objective of this Task conducted by ADF&G SuHydro is to complete the analysis of incubation-related data (intragravel water quality, embryo survival and substrate composition) collected from August, 1983 to May, 1984 and prepare a report synthesizing this information and previous data with information available in published literature.

Four types of data will be analyzed: intragravel and surface water quality data, surface and intragravel temperature data, development and survival of embryos and substrate composition. The report will include a discussion of the analyzed data and a section comparing the results of this study to results of similar studies.

There are three primary sources of data that will be used for report preparation: 1) data collected during the FY82 - FY84 field studies,

2) a report by Wangaard and Burger (1983) and 3) other published literature.

HE will review the report and provide comments.

04-016-27 Middle River - Main Channel Escapement Monitoring at
Talkeetna Station (RM 103)

Based on results of field studies conducted by ADF&G SuHydro during 1981, 1982 and 1983, it has been determined that the RM 103 area of the middle river is a site of significant milling by chinook, sockeye, pink, chum and coho salmon. Continued escapement monitoring, through a complete escapement cycle, would provide refined estimates of natural variability in salmon use of the middle river reach and milling at RM 103. This task will directly aid resource managers in establishing baseline data for potential project monitoring and will support the settlement and hearing processes.

Four fishwheels will be operated by ADF&G SuHydro at RM 103 from June 7 to September 9, to record daily catches and tag and release all intercepted adult salmon. The catch data will define species timing distribution and migrational behavior. The tagging operation will provide escapement estimates for each species.

04-016-28 Lower River Tributary Access Analysis

The objective of this study is to determine whether or not alteration of discharge by the proposed Project will result in reductions of mainstem water surface elevations of sufficient magnitude in the lower river that access by adult salmon into tributary streams would become unacceptably restricted without mitigative actions.

Tributary mouths that might warrant investigation will be identified during July. Photographic enlargements of each tributary mouth area will be obtained from the available lower river photography. Streamflow records will be reviewed to identify mainstem and tributary flows.

A visual interpretation of the photography will be completed. If exposed streambed gravels or shallow riffles are not visible, it will be assumed that depth of flow at the tributary mouth for the flow condition photographed is not shallow enough to impair access. The tributary mouth will be visited at a low flow period (probably September) and representative depth measurements obtained. The location of these depth measurements will be noted on a copy of the tributary mouth photograph. At the time of this site visit, a visual assessment of channel stability will also be made. Sufficient photographic evidence (channel structure and streambed particle size) will be obtained for documentation.

A first level of analysis will be undertaken. If exposed streambed gravels or shallow riffles appear to be present, a study site will be established on the lower 0.25 miles of the tributary and cross sections and thalweg profiles surveyed. Staff gage readings will be obtained in the mainstem or side channel above and below the tributary mouth and at three cross sections along the thalweg profile. An analysis of these data will demonstrate the effects of mainstem discharge on depth of flow in the tributary.

A higher level of analysis will be applied if it is determined after viewing the available photography and making a site visit, that the tributary mouth area might be unstable due to sand/gravel deposition or the side channel into which the tributary discharged might dewater upstream of the tributary due to with-project reductions in mainstem

flow. These analyses are not described in detail because of the unlikelihood they will be required. Field data collection beyond that necessary for the first level of analysis would principally consist of streamflow and bedload material measurements.

04-016-29 Evaluation of Middle River Mainstem and Tributary Spawning
Habitat Relationships

During the open water field season, ADF&G SuHydro survey crews will locate mainstem, side channel and tributary salmon spawning areas in the middle river reach. These spawning areas will be stratified by sub-reach. Representative areas will be selected and temperature recording devices situated to monitor intragravel and surface water temperatures. In addition, porosity samples will be collected at each of the selected sites. During the ice covered period, open leads in the middle reach of the Susitna River will be identified and categorized as velocity or warm water upwelling leads. The middle reach will again be stratified by sub-reach and accessibility for purposes of selecting representative warm water upwelling leads, which may be potential salmon spawning areas, to measure intragravel and surface water temperatures and substrate composition.

The deliverable product will be in the form of a final report and will include:

1. Analysis of the intragravel and surface water temperature relationships between mainstem, side channel and tributary salmon spawning areas.
2. Substrate composition analysis of mainstem, side channel and tributary salmon spawning areas.

3. An index of the warm water upwelling leads with intragravel and surface water temperatures and porosity samples collected at representative sites.
4. Provide a summary of the pre-FY85 temperature information collected in mainstem, side channel and tributary salmon spawning areas.

04-016-30 Slough Groundwater and Water Balance Studies

Aquifer testing at existing wells at Slough 9 will be conducted to obtain data on hydraulic conductivity and storage coefficient. Potential tests include constant-head tests, constant-rate pumping tests and constant rate injection tests.

Water levels in existing deep wells and in selected shallow wells will be monitored at Slough 9, along with open-water stages on the mainstem, side-channels and sloughs. Using the results from the aquifer testing and water level monitoring, estimates will be made at the theoretical temporal variations of groundwater flow into Slough 9. The estimates will be verified by conducting a water balance study of Slough 9. Precipitation will be measured at the Sherman Station, with accumulating precipitation cans located at other portions of the basin in order to determine the spatial distribution of precipitation, including orographic effects. Evaporation will be estimated from data gathered at Watana Camp. Streamflow will be continuously monitored in the slough and in the tributary which enters Slough 9 approximately halfway upstream from the mouth. Frequent discharge measurements will be made to establish reliable rating curves.

Up to 10 seepage meters will be installed in both Slough 9 and Slough 11 to determine the relationship between seepage rate and mainstem

discharge at Gold Creek. Approximately 20 readings will be made at each seepage meter. All visible upwelling locations will be mapped.

04-016-31 Development of Long-Term Monitoring Plan

Preproject studies have been designed to predict potential impacts due to Project construction and operation and to describe means with which to avoid or minimize these impacts. To assure the mitigation plans incorporated into the license are achieving their intended goals, a long-term monitoring program must be developed and initiated.

Efforts under this task will concentrate on developing a detailed planning document that can be presented to the various resource agencies. This document will describe the potential impacts to be monitored, the methods and parameters to be monitored, the limits of concern, potential measures to rectify the impact and an alternative schedule for completion of certain elements of the monitoring program if no impacts are detected.

The Power Authority, with the assistance of Harza-Ebasco, organizations in the aquatic study team and individuals from other disciplines, will develop a working document that will be presented to the various resource agencies for review and comment. If needed, a meeting will be held to resolve any areas of disagreement. The document will then be finalized and submitted for incorporation into the license.

Harza-Ebasco will coordinate the planning efforts for the Power Authority.

A draft monitoring program document will be the first deliverable developed. Responses to agency comments on the draft will be the second deliverable.

The third deliverable will be the finalized document that will be incorporated into the license.

04-016-32 Lower Susitna Stream Temperature Analysis

This task is intended to provide estimates of with-project instream temperatures and their effects on Susitna fishery resources in order to provide a tool useful in optimizing reservoir operations, mitigation planning and to aid the settlement process.

If biologically significant instream temperature differences between pre- and with-project conditions are predicted for the Susitna River below the Chulitna and Talkeetna confluences, a lower river instream temperature analysis will be required. This analysis will involve setting up a data base to use the instream temperature model (SNTMP) for prediction of weekly average water temperatures. The instream temperature estimates produced by this task will be integrated with estimates of flow effects and slough habitat changes to quantify fisheries impacts by species and life stage. The predicted stream temperature and heat transfer relationships will also be useful for improving estimates of the lower river ice processes.

The data requirements of the stream temperature model are of three types: structural, hydrologic and meteorologic. Most of the structural data can be developed from topographic maps and reconnaissance field work. The exception is stream width data. Representative stream transects will be surveyed for a range of flow events.

Required hydrologic data include mainstem flows and temperatures, tributary flows and temperatures, and estimates of distributed flows and temperatures. Mainstem flow data are necessary for simulating

mainstem temperatures and estimating distributed flows. Mainstem temperatures are required to validate the stream temperature predictions. Tributary flows and temperatures are necessary for validation studies and to provide estimates of tributary influences on the mainstem for with-project simulations.

Mainstem temperature recorders will be installed above the confluences of large tributaries and at the end-of-simulation point. Mainstem flows can be estimated from historical data and flows observed during the stream width data collection.

Tributary temperatures should be collected for all major tributaries. A major tributary can be defined as one which contributes at least 5% of the mainstem flow under any condition, pre- or with-project. Tributary flow data will be collected on these major tributaries.

Distributed flows and temperatures will be estimated using the techniques developed from the upper river SNTMP study and from the mainstem and tributary data collection.

Necessary meteorologic data include air temperature, wind speed, humidity, and solar radiation data. As with the upper river SNTMP simulations, the data collected at the NWS station at Talkeetna will be adjusted to represent local conditions. A meteorological collection station located in a representative lower river location might be recommended to verify the appropriateness of using adjusted Talkeetna data to represent lower river conditions.

Much of the data required for lower river temperature analysis will be available through the work necessary to complete other tasks.

1. Model validation report.
2. Report documenting with-project simulations and associated fisheries resource analysis.

04-016-34 Winter Studies of Resident and Juvenile Anadromous Fishes

Data on the distribution of overwintering juvenile salmon and resident species are small when compared to data available for the open water season. Many of the problems in understanding overwintering habitat are caused by very difficult sampling conditions that prevail during the winter months. Sampling techniques are often limited to baited gear because of the ice cover and the prevalence of slush ice under the cover. The decreased activity of fish associated with colder temperatures often lower the effectiveness of this type of sampling equipment. Although catch data over a wide variety of habitats has been accumulated during previous winter periods, the lack of trends and small numbers of fish collected do not provide strong conclusions as to the importance of different types of mainstem habitat. Relatively low catch rates of chinook and coho salmon have occurred at many sites associated with the mainstem that have some thermal influence from ground water sources. The distribution of fish appears to be rather broad but not associated with mainstem flows. This suggests that the near zero degree (centigrade) water does not provide suitable conditions for overwintering, probably because of continual formation of anchor ice and unstable flows as ice processes continue to develop throughout the winter. Ground water sources in the side sloughs and tributary mouth areas appear to be of major importance but there is limited data to support this statement.

Radio telemetry data for burbot and primarily for rainbow tagged in the upper river suggest these species will often be found in areas of higher conductivity and warmer temperatures. This suggests they may

seek ground water sources in the winter. These areas are usually in deeper and faster water than the areas where chinook and coho juveniles are thought to overwinter. Fall movements suggest that essentially all of these species that rear in clear water tributaries enter the mainstem Susitna to overwinter. Currently, we have a very small number of data points to support these conclusions.

Further studies on distribution of rearing salmon and resident species will be conducted to evaluate the effects of with-project discharges on overwintering habitat. This study will obtain more information on winter utilization of sloughs using temporary beach seine wiers across the mouths of sloughs that do not have mainstem water breaching their upper heads. This data collection effort will be associated with the coded wire tagging program planned for spring, 1984.

Outmigrant trapping proposed for Portage Creek will provide the needed information to assess the outmigration of chinook and coho into the mainstem Susitna. From this information and the outmigration observed from the sloughs, the overwintering habitat importance will be inferred.

The microhabitat utilized within sloughs and the response of juveniles to habitat discharge changes will be estimated by intensive winter studies on one slough/side channel complex. Juvenile chinook and coho salmon collected in the slough 9 complex of the upper river will be marked with a series of fin clip combinations. These fish will be collected by beach seines, minnow traps and electrofishing equipment. A wier will be installed under the ice near the mouth of the slough to capture fish moving in or out. These fish will also be marked and checked for marks.

Discharge will be monitored throughout the slough during the entire winter period and habitat conditions, including temperature, dissolved oxygen, conductivity, cover, substrate, depth, and water velocity, will be recorded at all collection sites.

These data will be used to describe the responses of juvenile salmon to discharge changes and the utilization of micro-habitat within the slough complex.

Further information will be obtained on rainbow trout overwintering habitat by use of radio telemetry. Habitat requirements and winter distribution will be established by relocation of radio tagged fish and measurement of habitat conditions at the relocation sites.

ADF&G SuHydro will conduct the study. HE will review the report and provide comments and recommendation at various stages of the study.

04-016-35 Slough Access Criteria

The access and passage criteria developed during FY83 and FY84 were evolutionary steps in the understanding and quantification of conditions needed for access and passage of salmon into slough and side channel spawning areas. This process has produced the present product of an access/passage criteria curve which will be presented in the FY84 report. This curve was produced as a result of review of field data and observations collected over the past two field seasons and professional judgement. Field data are necessary to verify these access and passage criteria.

Side channel and slough sites in the middle river where access and passage problems have been documented will be selected as study sites. Observations of fish passage activity will be made at each site noting

whether successful passage, successful passage with difficulty and exposure, or unsuccessful passage occurs. Measurements of length and depth of the access/passage reach at each site will be collected. These data will be used to verify the access/passage criteria curve developed during FY84.

Refined access/passage criteria curves for chum salmon. Refined estimates of mainstem discharge required for access and passage for all sites where passage and access have been evaluated previously in the middle river.

04-016-36 Lower River Rearing Habitat Investigations - IFG Hydraulic Modeling

Two approaches have been used to quantify the responses of rearing habitat to changes in discharge. The two approaches differ in their applications. The first approach is applied to sites where the dominant hydraulic variables of the habitat are influenced by water quality and/or cover. The other is applied to sites where water depth and velocity are the dominant hydraulic variables of the habitat. This task emphasizes the second approach.

IFG hydraulic models of water velocity, water depth, substrate and cover will be developed for a maximum of six selected sites at which the dominant hydraulic variables of the habitat are influenced by water depth and velocity. These hydraulic models, which will be developed by ADF&G SuHydro staff with the assistance of a hydraulic engineer, will be meshed with rearing habitat utilization data to relate changes in rearing habitat with changes in discharge (WUA or equivalent).

Water depth and velocity, substrate, and cover data will be obtained along selected representative transects under a variety of discharge

conditions. These data will be input to IFG hydraulic models and used to calibrate the model to predict changes in hydraulic conditions as a function of change in discharge. Study site selection will be based on degree of habitat utilization and extent of habitat dewatering expected with project flows based on lower river morphological assessments (R&M, 1984).

Final products will include calibrated IFG hydraulic models for use in juvenile anadromous fish studies to estimate the response of rearing habitat to changes in mainstem discharge.

04-016-37 Preliminary Mitigation Studies for the Devil Canyon to Talkeetna Reach

The objectives are:

1. To identify potential sites for habitat modification in the Devil Canyon to Talkeetna Reach.
2. To evaluate the feasibility of various habitat enhancement techniques.

The task will consist of field surveys and studies to identify potential mainstem, side channel, and slough areas for habitat modification. Habitat characteristics demonstrated to be important components of presently utilized habitats such as depth, temperature, substrate and presence of upwelling will be used to develop evaluation criteria.

After candidate locations are identified, an analysis will be performed to evaluate the conditions likely to exist under Project operation and identify methods to promote use of these areas by spawning or rearing

salmon. Side and upland slough sites exist within the Devil Canyon to Talkeetna reach that exhibit some characteristics expected under Project operation. These slough sites will be used as models of Project conditions and examined to evaluate modifications that would promote their use as habitat. Efforts in FY85 will be restricted to physical and/or biological monitoring of habitat conditions. Project conditions to be evaluated include wetted areas with improper substrate, areas of suitable substrate with insufficient flow and suitable spawning habitat that is inaccessible because of low mainstem water levels.

Candidate areas in the mainstem and side channels will be surveyed in fall as flows drop to levels that approximate anticipated Project flows. A physical assessment of habitat will be performed to evaluate their potential suitability as habitat under Project conditions. Key parameters include temperature, substrate, depth, velocity and presence or absence of upwelling.

The results of the FY85 field investigations and habitat analysis will be presented in the ADF&G SuHydro 1984 field season report series. This analysis will be used by WCC to evaluate the feasibility of the proposed habitat modifications as effective mitigations and will be included in the Second Interim Mitigation Report.

04-016-38 Impact Assessment of Construction-Related Activities:
Transmission Line and Access Road

An impact assessment report will be prepared to address impacts associated with construction activities. Specific areas to be covered include construction of the dams, floodplain gravel mining, construction of the camps and permanent village, diversion tunnel, access roads and transmission lines. The report will refine and

quantify the assessment provided in the FERC license application based on current construction planning and available Project information.

A construction impact assessment report will be produced.

04-016-39 Mitigation Planning for Construction Activities

Activities anticipated to produce aquatic impacts include construction of the access roads, transmission lines, floodplain gravel pits, camps, permanent village and other project facilities. The mitigation planning effort will identify appropriate mitigation, such as siting, scheduling and designs, that will avoid or minimize impacts for the construction activities and facilities. The mitigation plan will be included in the construction impact assessment report.

A detailed construction mitigation plan will be developed. The plan will be organized by activity or facility.

04-016-40 Impoundment Resident Fish Mitigation Planning

Available information on resident fishes in the impoundment area will be summarized to update the assessment in the FERC license application. Mitigation options will be refined to further assess their applicability as compensatory measures. The options considered will be submitted for agency review and policy decision. Emphasis will be placed on those options that appear to have the highest probability of success.

A report will be prepared describing the impoundment area resident fish populations, the anticipated loss of habitats and expected consequences to fish populations, and the options considered as compensation. A

preferred project mitigation alternative will be presented. The report will be attached to the report described in Task 38.

04-016-41 Baseline Water Quantity and Quality Monitoring at Tsusena and
Deadman Creeks

A water monitoring plan will be developed to produce the information necessary to document water quality and quantity parameters in sufficient detail to assist in facilities designs and to acquire appropriate permits. The plan will be based on a thorough review of permit and design information requirements and produce data sufficient to:

1. determine whether the proposed Tsusena Creek water source is adequate to produce sufficient potable water supply (with treatment).
2. produce design criteria for a potable water supply treatment facility using Tsusena Creek water.
3. provide estimates of the quantity and quality of waste effluents discharged from the potable water treatment facility.
4. estimate the waste assimilative capacity of Deadman Creek and the with-project effects on water quality.
5. produce design criteria for a wastewater treatment facility discharging effluent to Deadman Creek.

A report summarizing necessary monitoring programs for Tsusena and Deadman Creeks which will outline:

1. monitoring schedules.
2. sampling locations.
3. type of samples collected.
4. quantity of samples collected.
5. cost estimates of monitoring program.

04-016-45 Primary Productivity Studies Within the Susitna River, Other
Glacial Streams and Some Non-Glacial Streams

Appropriate substrates (either natural or artificial) from various habitats of the Susitna and other rivers will be analyzed for indices of autochthonous primary productivity (e.g., chlorophyll "a" per unit of standing crop organic carbon). Additional physical measurements such as water depth, turbidity, suspended sediment, discharge, temperature, Secchi disc or other photic zone indicators will be made in each sampling site. Physical characteristics will be analyzed to investigate the relationships between benthic primary productivity and habitat physical parameters.

Comparative data from various Susitna River habitats and from other south-central Alaskan rivers will be useful in forecasting with-project impacts to the downstream biological food web, including resident and anadromous fishes.

04-016-47 Middle River Tributary Stability Study

The objectives of this study are to quantify the extent of potential aggradation in the mainstem near the mouths of Indian River and Portage

Creek, and to determine whether this aggradation will result in impacts to habitat access.

The following elements will be part of this study:

1. Suspended sediment, bedload and bed materials measurements by the USGS on Indian River and Portage Creek.
2. Surveying cross sections on the tributaries near the mouths and on the mainstem just upstream and downstream of mouth.
3. Periodic discharge measurements and continuous stage recording on the tributaries.
4. Analyses to estimate bedload transportable by tributaries and to quantify aggradation or degradation of material at tributary mouths.
5. Estimation of impact of aggradation or degradation on tributary access.

Currently available data and results of analyses of these data have been compiled into a report entitled Susitna Hydroelectric Project - Reservoir and River Sedimentation. There are currently no data on suspended sediment and bedload discharge from the tributaries. ADF&G recorded water stage during 1983 on the tributaries. R&M made discharge measurements on these tributaries and some bed material sampling has been made. However, the data available is not sufficient to support a quantitative analysis of sedimentation in the tributaries.

A report documenting the results of the analyses will be provided.

04-016-55 Navigation Studies

The regulation of discharge in the Susitna River due to the proposed Susitna Project may cause problems with the navigability of the Susitna River principally by sportspersons. This study will evaluate various reaches of the Susitna River in terms of this navigability. Preliminary results of a recreational user survey will be used to identify specific reaches of the Susitna River for evaluation of the navigability vs discharge relationship. Where appropriate stage discharge relationships will be developed and integrated with local knowledge of the river channel and surveyed cross sections to evaluate the potential effect of with altered flow regime on navigation use.

04-016-56 General License Support

Numerous miscellaneous activities will be required to fully meet the requirements of the Power Authority and FERC for completing the Licensing Process smoothly. These activities will be supportive of the other main activities of the Aquatic Program.

04-016-57 Issue Papers/Settlement Process

The settlement of agency issues is a prime goal of the FY85 studies. To facilitate the settlement process H-E will prepare several technical documents to support the negotiation and settlement process. The documents will include a brief statement of the status of each issue. Internal planning memoranda for resolving each issue, and a series of technical papers which summarize the available information pertaining to each issue.

04-016-58 Monthly Progress Reports

The monthly progress reports will describe the status of each study program based on the previous month's activities. These reports will include many or all of the following: activities completed, problems and solutions, personnel considerations, program modifications, status of budget and schedule, and upcoming activities.

04-016-60 General Administration and Contract Management

This task is designed to provide support to the Aquatic Program in the form of general administrative activities such as weekly staff meetings, budget review, revisions and unforecasting, technical progress review of HE staff and subcontractor activities. The task includes preparation of contract documents, necessary amendments to the contracts and supporting documentation. Also included in this task are the preparation of change work authorization requests review of subcontractor invoices and progress reports and monitoring of subcontractor budget expenditures. This task will be conducted by HE aquatic program staff.

04-016-61 General Plan of Study/Workscope Preparation

The General Plan of Study for fiscal year 1984 will describe the specific study objectives and work tasks, detailed study methodology including sampling and analysis procedures, data management and report formats, quality assurance procedures, data management and report deliverables for each study element. The various tasks described in the study plan will address specific elements necessary for completion of analyses for several aspects of the FERC Licensing procedure. These aspects include input to the DEIS, (FERC Node 2435), input to the FEIS

(FERC Node 2800), the Settlement process (FERC Node 6920) and the Hearings Process (FERC Node 6310).

Workscopes for continuing and additional studies for the subcontractors will be developed. The workscopes will reflect specific issues pertaining to the analysis of effects of the Susitna Project. The workscopes will be developed in consultation with appropriate resource agencies as part of the general licensing process.

04-016-63 Access Road Location Report Input

During FY85, the evaluation of the access road location will be finalized. Additional evaluation, based on data collected in 1983, will enable refinement of the evaluation. The activities in this task will provide for the revision of the access road report and inclusion of the additional information. The task will be accomplished by HE staff.

04-016-64 Camp and Permanent Village Location Report Input

This activity will provide for the evaluation of existing and potentially affected aquatic resources which may be used in the evaluation of the construction camp and permanent village siting studies. The study will enable a complete evaluation of the environmental effects of the possible and selected sites for the construction camp and permanent village.

04-016-65 Transmission Line Location Report Input

During FY85, the Transmission Line report will be revised and refined. This task will provide for refinement of the existing evaluations based on additional aquatic resources information obtained since the previous

report was completed. This will be conducted by HE aquatic program staff.

04-016-66 Multilevel Outlet Design Alternatives Evaluation

Results of the reservoir and instream temperature and ice studies conducted to date and the concurrent evaluation of altered temperatures on fish populations has indicated a potential benefit to existing fish populations if it were possible to release 4°C water from the Watana Reservoir during the winter months. An engineering study to evaluate the feasibility of providing a low level part in the operational multilevel outlet structure will be conducted. As part of this feasibility study, the potential benefits to the aquatic resources will be evaluated.

Directs

04-020-01 Travel & Living Expense

Air travel and the associated expenses for staff who will be required to support the task activities.

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Anchorage and Bellevue	24	7
Anchorage and Bellevue	5	14
Anchorage and Bellevue	12	3
Anchorage and Bellevue	13	5
Anchorage and Chicago	5	14
New York and Anchorage	8	7
Anchorage and Washington, D.C.	8	10

04-020-04 Printing

This item will include production of copies of all Environmental study documents from Harza-Ebasco or of the subcontractors. These documents will be for distribution to intervenors, lawyers, agencies, the client, and subcontractors as required.

04-020-05 Computer

This item will include computer useage cost for analyses related to the social sciences.

04-020-07 Relocation

Cost to relocate personnel to Anchorage for performance of this task.

Subcontractors

Similar to services, subcontractors are divided into three prime subtasks; Social Sciences, Aquatic and Terrestrial

FRANK ORTH AND ASSOCIATES, INC.

04-113-01 FERC Supplemental Information Requests

Refer to description of Cost Account 04-011-05

04-113-02 Settlement Process Input

Refer to description of Cost Account 04-011-09

04-113-03 DEIS Review Memorandum

Refer to description of Cost Account 04-011-08

04-113-04 Workscope and Detailed Plan of Study

Refer to description of Cost Account 04-011-19

04-113-05 Intertie and Terror Lake Worker Survey Report

Refer to description of Cost Account 04-011-31

04-113-07 Socioeconomic Mitigation Plan Update

Refer to description of Cost Account 04-011-44

04-113-08 Socioeconomic Impact Projections Summary

Refer to description of Cost Account 04-011-98

04-113-09 Household and Business Surveys

Refer to description of Cost Account 04-011-40

FRANK ORTH AND ASSOCIATES, INC. (Cont'd)

04-113-20 Hearings Preparation

Refer to description of Cost Account 04-011-13

04-113-21 Program Coordination

Refer to description of Cost Account 04-011-14

04-113-22 FEIS Review Memorandum

Refer to description of Cost Account 04-011-08

04-113-23 Access Road Location Report Input

Refer to description of Cost Account 04-011-15

04-113-24 Permanent Village Evaluation Report

Refer to description of Cost Account 04-011-51

04-113-26 Worker Transportation Alternatives Report

Refer to description of Cost Account 04-011-52

04-113-27 Worker Shift and Rotation Schedule Report

Refer to description of Cost Account 04-011-53

04-113-29 Traffic Analysis

Refer to description of Cost Account 04-011-98

04-113-30 Railhead Analysis

Refer to description of Cost Account 04-011-98

04-113-31 Model Refinement

Refer to description of Cost Account 04-011-23

04-113-32 Land Use and Housing Constraints

Refer to description of Cost Account 04-011-38

04-113-28 Public Sector Survey

Refer to description of Cost Account 04-011-40

04-113-33 Project Management

Refer to description of Cost Account 04-011-04

EDAW, INC.

04-123-01 RE/AE-FERC Supplemental Information Requests

Refer to description of Cost Account 04-011-05

04-123-02 RE/AE-DEIS Review Memorandum

Refer to description of Cost Account 04-011-08

04-123-05 RE-Workscope and Detailed Plan of Study

Refer to description of Cost Account 04-011-19

04-123-06 RE-Settlement Process Input

Refer to description of Cost Account 04-011-09

04-123-08 RE-Hearings Preparation

Refer to description of Cost Account 04-011-13

04-123-15 RE-Program Coordination

Refer to description of Cost Account 04-011-14

04-123-16 RE-Public Access Report Input

Refer to description of Cost Account 04-011-15

04-123-17 RE-Access Road Location Report Input

Refer to description of Cost Account 04-011-16

04-123-18 RE-Camp Location Report Input

Refer to description of Cost Account 04-011-17

04-123-19 RE-Recreation Impacts Refinement

Refer to description of Cost Account 04-011-61

EDAW, INC. (Cont'd)

04-123-21 RE-Recreation Plan Refinement

Refer to description of Cost Account 04-011-63

04-123-22 RE-Permanent Village Evaluation Report

Refer to description of Cost Account 04-011-51

04-123-23 RE-Recreation opportunities for On-Site Workers

Refer to description of Cost Account 04-011-65

04-123-50 AE-Workscope and Detailed Plan of Study

Refer to description of Cost Account 04-011-19

04-123-51 AE-Settlement Process Input

Refer to description of Cost Account 04-011-09

04-123-53 AE-Hearings Preparation

Refer to description of Cost Account 04-011-13

04-123-54 AE-Program Coordination

Refer to description of Cost Account 04-011-14

04-123-55 AE-Access Road Location Report Input

Refer to description of Cost Account 04-011-16

04-123-57 AE-Aesthetic Impacts Refinement

Refer to description of Cost Account 04-011-71

04-123-58 AE-Feasibility of Aesthetic Mitigation Measures

Refer to description of Cost Account 04-011-72

EDAW, INC. (Cont'd)

04-123-59 AE-Draft Aesthetic Mitigation Plan

Refer to description of Cost Account 04-011-73

04-123-60 AE-Permanent Village Evaluation Report

Refer to description of Cost Account 04-011-51

04-123-61 AE-Camp Location Report Input

Refer to description of Cost Account 04-011-17

SUBTOTAL EDAW, INC: \$185,859

ALBERT A. DEKIN CONSULTING SERVICES

04-133-01 Cultural Resources Program Approach

Refer to description of Cost Account 04-011-23

SUBTOTAL ALBERT A. DEKIN: \$30,000

UNIDENTIFIED SUBCONTRACTOR FOR RESOURCE USERS SURVEY

04-153-01 Unidentified Subcontractor - Resource Users Survey

Refer to description of Cost Account 04-011-56

SUBTOTAL UNIDENTIFIED SUBCONTRACTOR - RESOURCE USERS SURVEY

CULTURAL RESOURCES PROGRAM TECHNICAL REVIEW BOARD

04-173-01 Technical Review

Refer to description of Cost Account 04-011-23

SUBTOTAL CULTURAL RESOURCES PROGRAM REVIEW BOARD: \$40,000

CULTURAL RESOURCES PROGRAM APPROACH

04-183-01 Unidentified Subcontractor - Program Approach

Refer to description of Cost Account 04-011-23

SUBTOTAL CULTURAL RESOURCES PROGRAM APPROACH: \$50,000

LGL

04-303-02 Plan of Study Development and Updating

Refer to description of Cost Account 04-013-02.

04-303-09 Terrestrial Workshops

Refer to description of Cost Account 04-013-09.

04-303-10 Mitigation Plan Refinement

Refer to description of Cost Account 04-013-10.

04-303-11 Impact/Mitigation Planning Tracking System

Refer to description of Cost Account 04-013-11.

04-303-16 DEIS/FEIS Review

Refer to description of Cost Account 04-013-16.

04-303-30 Moose Browse Inventory

Refer to description of Cost Account 04-013-30.

04-303-32 Impact Assessment Refinement

Refer to description of Cost Account 04-013-32.

04-303-36 FERC Hearings Preparation

Refer to description of Cost Account 04-013-36.

04-303-42 Candidate Mitigation Lands Assessment

Refer to description of Cost Account 04-013-42.

04-303-43 Habitat Enhancement Studies

Refer to description of Cost Account 04-013-43.

LGL (Cont'd)

04-303-44 Downstream Riparian Studies

Refer to description of Cost Account 04-013-44.

04-303-45 Raptor Studies

Refer to description of Cost Account 04-013-45.

04-303-46 Swan/Eagle T-Line Nest Surveys

Refer to description of Cost Account 04-013-46.

04-303-47 Winter Bird Surveys

Refer to description of Cost Account 04-013-47.

U of A - Palmer

04-313-09 Terrestrial Workshops

Refer to description of Cost Account 04-013-09.

04-313-36 FERC Hearing Preparation

Refer to description of Cost Account 04-013-36.

04-313-44 Downstream Riparian Studies

Refer to description of Cost Account 04-013-44.

U of A - Alaska Cooperative
Wildlife Res. Unit (Dr. Gipson)

04-323-09 Terrestrial Workshops

Refer to description of Cost Account 04-013-09.

04-323-10 Mitigation Plan Refinement

Refer to description of Cost Account 04-013-10.

04-323-14 Furbearer and Trapper Studies

Refer to description of Cost Account 04-013-14.

04-323-32 Impact Assessment Refinement

Refer to description of Cost Account 04-013-32.

04-323-36 FERC Hearing Preparation

Refer to description of Cost Account 04-013-36.

04-323-44 Downstream Riparian Studies

Refer to description of Cost Account 04-013-44.

R.A. Kreig & Associates

04-333-09 Terrestrial Workshops

Refer to description of Cost Account 04-013-09.

04-333-31 Vegetation Mapping and Digitizing

Refer to description of Cost Account 04-013-31.

U of A - Alaska Cooperative
Wildlife Res. Unit (Dr. Kessel)

04-343-09 Terrestrial Workshops

Refer to description of Cost Account 04-013-09.

04-343-10 Mitigation Plan Refinement

Refer to description of Cost Account 04-013-10.

04-343-32 Impact Assessment Refinement

Refer to description of Cost Account 04-013-32.

04-343-36 FERC Hearing Preparation

Refer to description of Cost Account 04-013-36.

04-343-47 Winter Bird Surveys

Refer to description of Cost Account 04-013-47.

R & M CONSULTANTS, INC.

04-263-01 RM DEIS/FEIS Review

Refer to Description of Cost Account 04-016-01

04-263-02 RM Agency Workshops

Refer to Cost Account 04-016-02

04-263-03 RM General Aquatic Program Coordination

Refer to Description of Cost Account 04-016-03

04-263-04 RM Instream Flow Studies

Refer to Description of Cost Account 04-016-04

04-263-05 RM Instream Flow Studies

Refer to Description of Cost Account 04-016-04

04-263-09 RM FERC Hearings Preparation

Refer to Description of Cost Account 04-016-09

04-263-12 RM Middle River Habitat Analysis

Refer to Description of Cost Account 04-016-12

04-263-18 RM Suspended Sediment/Tributary

Refer to Description of Cost Account 04-016-18

R & M CONSULTANTS, INC. (Cont'd)

04-263-19 RM Hydrological/Meteorological Data

Refer to Description of Cost Account 04-016-19

04-263-21 RM Lower River Morphological Assessment

Refer to Description of Cost Account 04-016-21

04-263-22 RM Middle River Habitat Map

Refer to Description of Cost Account 04-016-22

04-263-23 RM Lower River Ice Observations

Refer to Description of Cost Account 04-016-23

04-263-24 RM Lower River Sediment Aggradation

Refer to Description of Cost Account 04-016-24

04-263-28 RM Lower River Tributary Access

Refer to Description of Cost Account 04-016-28

04-263-30 RM Slough Groundwater

Refer to Description of Cost Account 04-016-30

04-263-43 RM Glacier Studies

Refer to Description of Cost Account 04-016-43

04-263-55 RM Navigation Studies

Refer to Description of Cost Account 04-016-55

R & M CONSULTANTS, INC. (Cont'd)

04-263-56 RM General Licensing Consultation

Refer to Description of Cost Account 04-016-56

04-263-60 RM Contract Management Administration

Refer to Description of Cost Account 04-016-60

04-263-61 RM Upper Basin Winter Precipitation

Refer to Description of Cost Account 04-016-08

04-263-62 RM - MaClaren and Tyone Weather Stations

Refer to description of Cost Account 04-016-08

AEIDC

04-273-02 AEI - Agency Workshops/Settlement

Refer to Description of Cost Account 04-016-02

04-273-03 AEI - General Aquatic Program Coordination

Refer to Description of Cost Account 04-016-03

04-273-04 AEI - Instream Flow Studies

Refer to Description of Cost Account 04-016-04

04-273-05 AEI - Environmental and Economic Comparisons

Refer to Description of Cost Account 04-016-05

04-273-06 AEI - Recommended Flow Report

Refer to Description of Cost Account 04-016-06

04-273-07 AEI - Aquatic Impact Assessment

Refer to Description of Cost Account 04-016-07

04-273-09 AEI - FERC Hearings Preparation

Refer to Description of Cost Account 04-016-09

04-273-32 AEI - Lower River Temperature Analysis

Refer to Description of Cost Account 04-016-32

04-273-56 General Licensing Consultation

Refer to Description of Cost Account 04-016-56

04-273-60 AEI - Contract Management Administration

Refer to Description of Cost Account 04-016-60

E.W. TRIHEY AND ASSOCIATES

04-283-02 WT - Agency-Workshops/-Settlement

Refer to Description of Cost Account 04-016-02

04-283-03 WT - General Aquatic Program Coordination

Refer to Description of Cost Account 04-016-03

04-283-04 WT - Instream Flow Studies

Refer to Description of Cost Account 04-016-04

04-283-09 WT - FERC Hearings Preparation

Refer to Description of Cost Account 04-016-09

04-283-12 WT - Middle River Habitat Analysis

Refer to Description of Cost Account 04-016-12

04-283-14 ADF&G Consultation

Refer to Description of Cost Account 04-016-14

04-283-21 WT - Lower River Morphological Assessment

Refer to Description of Cost Account 04-016-21

04-283-22 WT - Middle River Habitat Map

Refer to Description of Cost Account 04-016-22

04-283-28 WT - Lower River Tributary Access

Refer to Description of Cost Account 04-016-28

E.W. TRIHEY AND ASSOCIATES (Cont'd)

04-283-36 WT - Lower River Rearing (IFG)

Refer to Description of Cost Account 04-016-36

04-283-56 WT - General Licensing Consultation

Refer to Description of Cost Account 04-016-56

04-283-60 WT - Contract Management/Administration

Refer to Description of Cost Account 04-016-60

WOODWARD CLYDE CONSULTANTS

04-293-02 WC - Agency Workshops/Settlement

Refer to Description of Cost Account 04-016-02

04-293-03 WC - General Aquatic Program

Refer to Description of Cost Account 04-016-03

04-293-04 WC - Instream Flow Studies

Refer to Description of Cost Account 04-016-04

04-293-09 WC - FERC Hearings Preparation

Refer to Description of Cost Account 04-016-09

04-293-10 WC - Mitigation/Enhancement Planning

Refer to Description of Cost Account 04-016-10

04-293-11 WC - Comprehensive Fish Report

Refer to Description of Cost Account 04-016-11

04-293-37 WC - Mitigation Demonstration

Refer to Description of Cost Account 04-016-37

04-293-39 WC - Construction Mitigation

Refer to Description of Cost Account 04-016-39

04-293-40 WC - Impoundment Mitigation

Refer to Description of Cost Account 04-016-40

04-293-56 WC - General Licensing Consultation

Refer to Description of Cost Account 04-016-56

04-293-60 WC - Contract Administration and Management

Refer to Description of Cost Account 04-016-60

CIRI/MOOLIN

04-354-01 CIRI/Moolin - Task 4 Drafting

Drafting support when, and as, required by the Environmental staff will be provided by CIRI/Moolin.

Unidentified Consultants

04-363-50 Unidentified Licensing Support

04-353-36 FERC Hearing Preparation

Refer to description of Cost Account 04-013-36.

04-400-01 Subcontractor Handling Fee

A handling fee equal to 2 percent of the subcontractor costs.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

PAGE 4

TASK 04	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL LABOR	169878	213386	203931	203899	209907	166107	156912	167130	210005	178195	169301	186971	2235702

TOTAL DIRECTS	54751	21751	21751	16951	48351	16951	20951	16951	16951	24952	16951	16953	294215

TOTAL SUBCONTRACTORS	468976	455723	553770	466608	432627	398549	440607	352226	339951	317728	299097	258152	4784014

TASK 04 TOTALS	693605	690860	779452	687458	690965	581607	618470	536307	566907	520875	485349	462076	7313931

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 04 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	35503	816812.58	277545.35	536239.17	154764.15	1785361.25
Home Office Staff	10366	182070.03	61906.09	167989.25	38375.06	450340.43
TOTAL STAFF	45869	998882.61	339451.44	704228.42	193139.21	2235701.68

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 04

7313931

TOTAL SERVICES

2235702

04-011-04	SSP-ADMINISTRATION & CONTR. MANAGEMENT	49543
04-011-05	SSP-FERC SUPPLEMENTAL INFORMATION REQUESTS	10865
04-011-08	SSP-DEIS/FEIS REVIEW MEMORANDUMS	34953
04-011-09	SSP-SETTLEMENT PROCESS INPUT	36562
04-011-10	SSP-GENERAL LICENSING SUPPORT	47041
04-011-11	SSP-WORKSHOP	11030
04-011-13	SSP-HEARINGS PREPARATION	60774
04-011-14	SSP-PROGRAM COORDINATION	35074
04-011-15	SSP-PUBLIC ACCESS REPORT INPUT	6818
04-011-16	SSP-ACCESS ROAD LOCATION INPUT	7099
04-011-17	SSP-CONSTRUCTION LOCATION REPORT INPUT	3669
04-011-18	SSP-INSTREAM FLOW COMPARISONS REPORT INPUT	4154
04-011-19	SSP-DTLD PLAN OF STUDY DEVELOPMENT & UPDATING	24019
04-011-20	CR-WORKSHOP	4156
04-011-21	CR-QA PROGRAM	2077
04-011-22	CR-REPORT REVIEW	17464
04-011-23	CR-PROGRAM APPROACH	6642
04-011-24	CR-IMPACT ASSESSMENT AND MITIGATION PLANNING	42493
04-011-30	SE-WINTER RIVER USERS ANALYSIS	12173
04-011-31	SE-WORKER CHARACTERISTICS ANALYSIS	2054
04-011-35	SE-ADJACENT LANDOWNERS ANALYSIS	9131
04-011-36	SE-REMOTE PARCEL OWNERS ANALYSIS	7114
04-011-38	SE-LAND USE AND HOUSING CONSTRAINTS	4869
04-011-39	SE-AIR TAXI OPERATORS ANALYSIS	14025
04-011-40	SE-REFINEMENT OF IMPACT ON COMMUNITIES	147317
04-011-44	SE-MITIGATION PLAN UPDATE	10005
04-011-51	SE-PERMANENT VILLAGE EVALUATION REPORT	10386
04-011-52	SE-WORKER TRANSPORTATION ALTERNATIVES REPORT	10387
04-011-53	SE-WORKER SHIFT AND ROTATION SCHEDULE REPORT	9359
04-011-54	SE-LODGE OPERATORS ANALYSIS	7114
04-011-55	SE-GUIDE ANALYSIS	7366
04-011-57	SE-TRAPPERS ANALYSIS	8522
04-011-58	SE-BOAT OPERATIONS ANALYSIS	7975
04-011-59	SE-SPORT HUNTERS AND FISHERMEN ANALYSIS	9789
04-011-61	RE-RECREATION IMPACT REFINEMENT	8801
04-011-62	RE-TOURISM POTENTIAL OF PROJECT FACILITIES	3230
04-011-63	RE-RECREATION PLAN REFINEMENT	4845
04-011-64	RE-OPERATING & MGMT AGREEMENTS	3632
04-011-65	RE-RECREATION OPPORTUNITIES FOR ON-SITE WORKERS	2421
04-011-66	RE-NON-CONSUMPTIVE ACTIVITIES SURVEY	30714
04-011-71	AE-AESTHETIC IMPACTS REFINEMENT	2422
04-011-72	AE-FEASIBILITY OF AESTHETIC MITIGATION MEASURES	2016

Alaska Power Authority
 Harza-Ebasco Susitna Joint Venture
 Fiscal Year 1985: Cost Summary

04-011-73	AE-DRAFT AESTHETICS MITIGATION PLAN	2422	
04-011-81	LU-OTHER PROJECT DEVELOPMENT PLANS	4128	
04-011-82	LU-PROJECT AND LAND MANAGEMENT DECISIONS	2752	
04-011-83	LU-HABITAT MITIGATION LANDS	1376	
04-011-95	SE-SPECIALTY BUSINESS ANALYSIS	25794	
04-011-96	SE-ECONOMIC IMPLICATIONS OF PROJECT FLOWS	7856	
04-011-97	SE-ALASKA HIRING POLICIES	2054	
04-011-98	REPORT REVIEW	63841	
04-011-99	SPECIAL POPULATION ANALYSIS	20057	870380
04-013-02	PLAN OF STUDY DEVELOPMENT AND UPDATING	21458	
04-013-08	RESPONSES TO FERC SUPPL INFO REQUESTS	2970	
04-013-09	TERRESTRIAL WORKSHOPS	9309	
04-013-10	MITIGATION PLAN REFINEMENT	12144	
04-013-11	IMPACT/MITIGATION PLANNING TRACKING SYSTEM	5570	
04-013-14	FURBEARER & TRAPPER STUDIES	8471	
04-013-15	SETTLEMENT PROCESS INPUT	20987	
04-013-16	DEIS/FEIS REVIEW	18349	
04-013-20	ADF&G BIG GAME STUDIES	6841	
04-013-30	MOOSE BROWSE INVENTORY	8438	
04-013-31	VEGETATION MAPPING AND DIGITIZING	8063	
04-013-32	IMPACT ASSESSMENT REFINEMENT	8897	
04-013-33	WETLANDS MAPPING	2273	
04-013-34	GENERAL ADMINISTRATION AND CONTRACT MANAGEMENT	56641	
04-013-35	TERRESTRIAL PROGRAM COORDINATION	14964	
04-013-36	FERC HEARINGS PREPARATION	35169	
04-013-37	PERMANENT VILLAGE EVAL REPORT INPUT	3510	
04-013-39	CAMP/VILLAGE LOCATION REPORT INPUT	3096	
04-013-40	WORKER TRANSPORTATION/POLICY REPORT INPUT	2205	
04-013-41	ACCESS ROAD LOCATION REPORT	3594	
04-013-42	CANDIDATE MITIGATION LANDS ASSESSMENT	4997	
04-013-43	HABITAT ENHANCEMENT STUDIES	9221	
04-013-44	DOWNSTREAM RIPARIAN STUDIES	10485	
04-013-45	RAPTOR STUDIES	4142	
04-013-46	SWAN/EAGLE TRANSMISSION LINE NEST SURVEYS	1924	
04-013-47	WINTER BIRD SURVEYS	3550	
04-013-48	INPUT TO F&W USER SURVEYS	6030	
04-013-49	INPUT TO SOC SCI MITIG PLANNING	9093	302391
04-014-01	ADMINISTRATIVE ASSISTANCE	131064	131064
04-016-01	DEIS/FEIS REVIEW	1897	

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

04-016-02	AGENCY WORKSHOPS/SETTLEMENT PROCESS	51113
04-016-03	GENERAL AQUATIC PROGRAM COORDINATION	39522
04-016-04	INSTREAM FLOW RELATIONSHIPS	136255
04-016-05	ENVIRONMENTAL AND ECONOMIC COMPARISONS	51809
04-016-06	RECOMMENDED FLOW REPORT	9503
04-016-07	AQUATIC IMPACT ASSESSMENT	19718
04-016-08	FLOW NEGOTIATIONS	12572
04-016-09	FERC HEARINGS PREPARATION	87389
04-016-10	MITIGATION/ENHANCEMENT PLANNING	5428
04-016-11	COMPREHENSIVE FISH REPORT	29601
04-016-12	MIDRIVER HABITAT ANALYSIS	4068
04-016-13	SALMON SPAWNING SURVEYS	3936
04-016-14	LOWER RIVER RESIDENT AND JUVENILE STUDY	6920
04-016-15	SALMON ESCAPEMENT	5314
04-016-16	OUTMIGRATION STUDIES	5774
04-016-17	STREAM FLOW & FLOOD FREQUENCY	2364
04-016-18	SUSPENDED SEDIMENT/TURBIDITY	21852
04-016-20	LOAD FOLLOWING	7486
04-016-21	LOWER RIVER MORPHOLOGY ASSESSMENT	4603
04-016-23	LOWER RIVER ICE OBSERVATIONS	7110
04-016-24	LOWER RIVER SEDIMENT AGGRADATION	3551
04-016-25	FOOD RESOURCES FOR CHINOOKS	1838
04-016-26	EGG INCUBATION	1838
04-016-27	MIDRIVER ESCAPEMENT-TALKEETNA	1869
04-016-28	LOWER RIVER TRIBUTARY ACCESS	7850
04-016-29	MIDDLE RIVER MAINSTREAM SPAWNING	8659
04-016-30	SLOUGH GROUNDWATER	8330
04-016-31	LONG TERM MONITORING	13266
04-016-32	LOWER RIVER TEMPERATURE ANALYSIS	12433
04-016-34	WINTER R.J. STUDY	10336
04-016-35	SLOUGH ACCESS CRITERIA	6878
04-016-36	LOWER RIVER REARING IFG	10382
04-016-37	MITIGATION STUDIES (DVL CNYN TO TALK)	16126
04-016-38	CONSTRUCTION IMPACT ASSESSMENT	5023
04-016-39	CONSTRUCTION IMPACT MITIGATION	9366
04-016-40	IMPOUNDMENT MITIGATION	12377
04-016-41	WATER QUALITY-TSUSENA/DEADMAN CREEKS	5526
04-016-45	PRIMARY PRODUCTIVITY STUDIES	5972
04-016-47	MIDDLE RIVER TRIBUTARY STABILITY ANALYSIS	8688
04-016-55	NAVIGATION STUDIES	22340
04-016-56	GENERAL LICENSE SUPPORT	12674
04-016-57	ISSUE PAPERS/SETTLEMENT PROCESS	136947
04-016-58	MONTHLY PROGRESS REPORTS	3252
04-016-60	GENERAL ADMINISTRATION AND CONTRACT MANAGEMENT	5014
04-016-61	PLAN OF STUDY/WORKSCOPE PREPARATION	56114
04-016-63	ACCESS ROAD LOCATION REPORT INPUT	11597
04-016-64	CAMP AND PERMANENT VILLAGE LOCATION REPORT INPUT	6662
04-016-65	TRANSMISSION LINE LOCATION REPORT INPUT	9969

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

04-016-66	EVALUATION OF MULTILEVEL OUTLET ALTERNATIVES	2756	931867
TOTAL DIRECTS			294215
04-020-01	TRAVEL AND LIVING EXPENSES	143815	
04-020-04	PRINTING	60000	
04-020-05	CCOMPUTER	12000	
04-020-06	MISCELLANEOUS	18000	
04-020-07	RELOCATION	60400	294215
TOTAL SUBCONTRACTORS			4784014
04-113-01	FERC SUPPLEMENTAL INFORMATION REQUESTS	2433	
04-113-02	SETTLEMENT PROCESS INPUT	7295	
04-113-03	DEIS REVIEW MEMORANDUM	2070	
04-113-04	WORKSCOPE AND DETAILED PLAN OF STUDY	4172	
04-113-05	INTERTIE WORKER SURVEY REPORT	12500	
04-113-07	SOCIOECONOMIC MITIGATION PLAN UPDATE	7146	
04-113-08	SOCIOECONOMIC IMPACT PROJECTIONS SUMMARY	5619	
04-113-09	FO&A-HOUSEHOLD AND BUSINESS SURVEYS	33032	
04-113-20	HEARINGS PREPARATION	18079	
04-113-21	PROGRAM COORDINATION	24961	
04-113-22	FEIS MEMORANDUM	2070	
04-113-23	ACCESS ROAD LOCATION REPORT INPUT	3630	
04-113-24	PERMANENT VILLAGE EVALUATION REPORT	6161	
04-113-26	WORKER TRANSPORTATION ALTERNATIVES REPORT	5982	
04-113-27	WORKER SHIFT AND ROTATION SCHEDULE REPORT	5886	
04-113-28	PUBLIC SECTOR SURVEY	8498	
04-113-29		8658	
04-113-30	RAILHEAD ANALYSIS	5475	
04-113-31	MODEL REFINEMENT	19024	
04-113-32	LAND USE AND HOUSING CONSTRAINTS	4891	
04-113-33	PROJECT MANAGEMENT	25385	212967
04-123-01	RE/AE-FERC SUPPLEMENTAL INFORMATION REQUESTS	1920	
04-123-02	RE/AE-DEIS REVIEW MEMORANDUM	1821	
04-123-05	RE-WORKSCOPE AND DETAILED PLAN OF STUDY	2384	
04-123-06	RE-SETTLEMENT PROCESS INPUT	4111	
04-123-08	RE-HEARINGS PREPARATION	15339	
04-123-15	RE-PROGRAM COORDINATION	18151	
04-123-16	RE-PUBLIC ACCESS REPORT INPUT	6960	
04-123-17	RE-ACCESS ROAD LOCATION REPORT INPUT	3383	

Alaska Power Authority
 Harza-Ebasco Susitna Joint Venture
 Fiscal Year 1985: Cost Summary

04-123-18	RE-CAMP LOCATION REPORT INPUT	3862	
04-123-19	RE-RECREATION IMPACTS REFINEMENT	12302	
04-123-21	RE-RECREATION PLAN REFINEMENT	10150	
04-123-22	RE-PERMANENT VILLAGE EVALUATION REPORT	3986	
04-123-23	RE-RECREATION OPPORTUNITIES FOR ON-SITE WORKERS	4725	
04-123-50	AE-WORKSCOPE AND DETAILED PLAN OF STUDY	2474	
04-123-51	AE-SETTLEMENT PROCESS INPUT	4050	
04-123-53	AE-HEARINGS PREPARATION	8389	
04-123-54	AE-PROGRAM COORDINATION	14337	
04-123-55	AE-ACCESS ROAD LOCATION REPORT INPUT	3499	
04-123-57	AE-AESTHETICS IMPACTS REFINEMENT	10673	
04-123-58	AE-FEASIBILITY OF AESTHETIC MITIGATION MEASURES	7152	
04-123-59	AE-DRAFT AESTHETIC MITIGATION PLAN	6387	
04-123-60	AE-PERM.VILLAGE EVALUATION REPORT	3782	
04-123-61	AE-CAMP LOCATION REPORT INPUT	16473	166310
04-133-01	DEKIN-CULTURAL RESOURCES PROGRAM APPROACH	30000	30000
04-153-01	UNIDENTIFIED S/C-RESOURCE USERS SURVEY	210000	210000
04-173-01	CR TECHNICAL REVIEW PANEL	40000	40000
04-183-01	ERTEC-CULTURAL RESOURCES PROGRAM APPROACH	50000	50000
04-253-01	RM-M. BELL - CONSULTATION	20000	20000
04-263-01	RM-DEIS/FEIS REVIEW	0	
04-263-02	RM-AGENCY WORKSHOPS	14850	
04-263-03	RM-GENERAL AQUATIC PROGRAM COORDINATION	44341	
04-263-04	RM-INSTREAM FLOW STUDIES (ICE)	25225	
04-263-05	RM-INSTREAM FLOW STUDIES (WATERSHED)	22390	
04-263-09	RM-FERC HEARINGS PREPARATION	20076	
04-263-12	RM-MIDDLE RIVER HABITAT ANALYSIS	17457	
04-263-18	RM-SUSPENDED SEDIMENT/TURBIDITY	123231	
04-263-19	RM-HYDROLOGICAL/METEOROLOGICAL DATA	178702	
04-263-21	RM-LOWER RIVER MORPHOLOGY ASSESSMENT	87266	

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04-263-22	RM-MIDDLE RIVER HABITAT MAP	20228	
04-263-23	RM-LOWER RIVER ICE OBSERVATIONS	63265	
04-263-24	RM-LOWER RIVER SEDIMENT AGGRADATION	60778	
04-263-28	RM-LOWER RIVER TRIBUTARY ACCESS	23312	
04-263-30	SLOUGH GROUNDWATER	74386	
04-263-43	RM-GLACIER STUDIES	16276	
04-263-55	RM-NAVIGATION FIELD STUDIES	46359	
04-263-56	RM-GENERAL LICENSING CONSULTATION	19773	
04-263-60	RM-CONTRACT MANAGEMENT/ADMINISTRATION	12407	
04-263-61	RM-UPPER BASIN WINTER PRECIPITATION	53559	
04-263-62	RM-MACLAREN AND TYONE WEATHER STATIONS	46335	970216
04-273-02	AEI-AGENCY WORKSHOPS/SETTLEMENT	50643	
04-273-03	AEI-GENERAL AQUATIC PROGRAMS COORDINATION	22004	
04-273-04	AEI-INSTREAM FLOW RELATIONSHIPS	250160	
04-273-05	AEI-ENVIRONMENTAL AND ECONOMIC COMPARISONS	144738	
04-273-06	AEI-INSTREAM FLOW RELATIONSHIPS (P&2)	27824	
04-273-07	AEI-AQUATIC IMPACT ASSESSMENT	97046	
04-273-09	AEI-FERC HEARINGS PREPARATION	12152	
04-273-32	AEI-LOWER RIVER TEMPERATURE ANALYSIS	207582	
04-273-56	GENERAL LICENSING CONSULTATION	11098	
04-273-60	AEI-CONTRACT MANAGEMENT/ADMINISTRATION	82303	905550
04-283-02	WT-AGENCY WORKSHOPS/SETTLEMENT	19883	
04-283-03	WT-GENERAL AQUATIC PROGRESS COORDINATION	25871	
04-283-04	WT-INSTREAM FLOW RELATIONSHIPS REPORT	168926	
04-283-09	WT-FERC HEARINGS PREPARATION	11034	
04-283-12	WT-MIDDLE RIVER HABITAT ANALYSIS	217906	
04-283-14	ADF&G CONSULTATION	56258	
04-283-21	WT-LOWER RIVER MORPHOLOGY ASSESSMENT	16826	
04-283-22	WT-MIDDLE RIVER HABITAT MAP	58508	
04-283-28	WT-LOWER RIVER TRIBUTARY ACCESS	11138	
04-283-36	WT-LOWER RIVER REARING (IFG)	29486	
04-283-56	GENERAL LICENSING SUPPORT	29242	
04-283-60	WT-CONTRACT MANAGEMENT/ADMINISTRATION	11013	656091
04-293-02	WC-AGENCY WORKSHOPS/SETTLEMENT	23450	
04-293-03	WC-GENERAL AQUATIC PROGRESS COORDINATION	28060	
04-293-04	WC-INSTREAM FLOW RELATIONSHIPS	233174	
04-293-09	WC-FERC HEARINGS PREPARATION	18042	
04-293-10	WC-MITIGATION/ENHANCEMENT PLANNING	208183	
04-293-11	WC-COMPREHENSIVE FISH REPORT	18020	

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04-293-37	WC-MITIGATION DEMONSTRATION	23254	
04-293-39	WC-CONSTRUCTION MITIGATION	65365	
04-293-40	WC-IMPOUNDMENT MITIGATION	11553	
04-293-56	GENERAL LICENSING SUPPORT	15724	
04-293-60	WC-CONTRACT MANAGEMENT/ADMINISTRATION	20634	665459
04-303-02	PLAN OF STUDY DEVELOPMENT AND UPDATING	5000	
04-303-09	TERRESTRIAL WORKSHOPS	15000	
04-303-10	MITIGATION PLAN REFINEMENT	120000	
04-303-11	IMPACT/MITIGATION PLANNING TRACKING SYSTEM	15000	
04-303-16	DEIS/FEIS REVIEW	10000	
04-303-30	MOOSE BROWSE INVENTORY	70000	
04-303-32	IMPACT ASSESSMENT REFINEMENT	110000	
04-303-36	FERC HEARING PREPARATION	20000	
04-303-42	CANDIDATE MITIGATION LANDS ASSESSMENT	20000	
04-303-43	HABITAT ENHANCEMENT STUDIES	15000	
04-303-44	DOWNSTREAM RIPARIAN STUDIES	10000	
04-303-45	RAPTOR STUDIES	25000	
04-303-46	SWAN/EAGLE T-LINE NEST SURVEYS	5000	
04-303-47	WINTER BIRD SURVEYS	15000	455000
04-313-09	TERRESTRIAL WORKSHOPS	2000	
04-313-36	FERC HEARING PREPARATION	3000	
04-313-44	DOWNSTREAM RIPARIAN STUDIES	30000	35000
04-323-09	TERRESTRIAL WORKSHOPS	3000	
04-323-10	MITIGATION PLAN REFINEMENT	2000	
04-323-14	FURBEARER AND TRAPPER STUDIES	50000	
04-323-32	IMPACT ASSESSMENT REFINEMENT	3000	
04-323-36	FERC HEARINGS PREPARATION	3000	
04-323-44	DOWNSTREAM RIPARIAN STUDIES	2000	63000
04-333-09	TERRESTRIAL WORKSHOPS	2000	
04-333-31	VEGETATION MAPPING AND DIGITIZING	150000	152000
04-343-09	TERRESTRIAL WORKSHOPS	2000	
04-343-10	MITIGATION PLAN REFINEMENT	5000	
04-343-32	IMPACT ASSESSMENT REFINEMENT	8000	

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04-343-36	FERC HEARING PREPARATION	2500	
04-343-47	WINTER BIRD SURVEYS	2500	20000
04-353-36	FERC HEARING PREPARATION	20000	20000
04-354-01	CIRI/MOOLIN-DRAFTING	18624	18624
04-400-01	SUBCONTRACTOR HANDLING FEE	93797	93797

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LABOR 011													
04-011-04	SSP-ADMINISTRATION & CONTR. MANAGEMENT												
	3596	4422	4422	4422	8996	6000	3189	2980	2778	2980	2778	2980	49543
04-011-05	SSP-FERC SUPPLEMENTAL INFORMATION REQUESTS												
	990	1126	1401	803	1401	803	667	803	1401	0	667	803	10865
04-011-08	SSP-DEIS/FEIS REVIEW MEMORANDUMS												
	14030	8289	3202	0	0	0	8056	1376	0	0	0	0	34953
04-011-09	SSP-SETTLEMENT PROCESS INPUT												
	2279	4933	4815	4933	3336	2576	2279	2000	2279	2442	2415	2275	36562
04-011-10	SSP-GENERAL LICENSING SUPPORT												
	3847	4396	3798	4719	4444	3482	3003	5047	2580	3531	3798	4396	47041
04-011-11	SSP-WORKSHOP												
	0	0	1375	1768	0	0	0	0	3218	4669	0	0	11030
04-011-13	SSP-HEARINGS PREPARATION												
	0	0	0	0	0	0	5699	10869	12263	10377	9992	11574	60774
04-011-14	SSP-PROGRAM COORDINATION												
	3336	3061	2921	3061	2921	3061	2510	3061	2510	2650	2921	3061	35074
04-011-15	SSP-PUBLIC ACCESS REPORT INPUT												
	0	0	0	1211	1050	1474	1345	1738	0	0	0	0	6818
04-011-16	SSP-ACCESS ROAD LOCATION INPUT												
	0	0	0	0	0	646	646	807	0	688	2500	1812	7099
04-011-17	SSP-CONSTRUCTION LOCATION REPORT INPUT												
	0	0	785	785	0	0	646	807	646	0	0	0	3669
04-011-18	SSP-INSTREAM FLOW COMPARISONS REPORT INPUT												
	0	969	0	0	0	0	323	1431	1431	0	0	0	4154
04-011-19	SSP-DTLD PLAN OF STUDY DEVELOPMENT & UPDATING												
	1450	392	1127	392	1127	392	804	599	4372	5400	2943	5021	24019
04-011-20	CR-WORKSHOP												
	0	0	2078	2078	0	0	0	0	0	0	0	0	4156
04-011-21	CR-QA PROGRAM												
	831	831	415	0	0	0	0	0	0	0	0	0	2077
04-011-22	CR-REPORT REVIEW												
	1164	1164	1164	1164	1164	2912	2912	1164	1164	1164	1164	1164	17464

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*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
LABOR 011													
04-011-23 CR-PROGRAM APPROACH	415	415	415	415	415	415	415	415	415	415	1246	1246	6642
04-011-24 CR-IMPACT ASSESSMENT AND MITIGATION PLANNING	0	0	0	4156	6649	4156	1662	4156	6753	3948	4779	6234	42493
04-011-30 SE-WINTER RIVER USERS ANALYSIS	0	0	0	0	1217	0	1156	1217	2496	1826	1826	2435	12173
04-011-31 SE-WORKER CHARACTERISTICS ANALYSIS	0	0	0	1027	1027	0	0	0	0	0	0	0	2054
04-011-35 SE-ADJACENT LANDOWNERS ANALYSIS	0	0	0	0	608	3957	4566	0	0	0	0	0	9131
04-011-36 SE-REMOTE PARCEL OWNERS ANALYSIS	1636	1826	1826	1826	0	0	0	0	0	0	0	0	7114
04-011-38 SE-LAND USE AND HOUSING CONSTRAINTS	0	0	0	0	2435	1217	1217	0	0	0	0	0	4869
04-011-39 SE-AIR TAXI OPERATORS ANALYSIS	755	2496	2435	3470	3287	0	1582	0	0	0	0	0	14025
04-011-40 SE-REFINEMENT OF IMPACT ON COMMUNITIES	4593	10833	42276	44245	23218	17709	4443	0	0	0	0	0	147317
04-011-44 SE-MITIGATION PLAN UPDATE	0	0	0	0	0	0	0	2435	2244	2244	1027	2055	10005
04-011-51 SE-PERMANENT VILLAGE EVALUATION REPORT	0	0	0	0	0	0	1027	3462	3462	2435	0	0	10386
04-011-52 SE-WORKER TRANSPORTATION ALTERNATIVES REPORT	0	0	0	0	0	0	0	4490	3462	2435	0	0	10387
04-011-53 SE-WORKER SHIFT AND ROTATION SCHEDULE REPORT	0	0	0	0	0	0	0	2435	3462	3462	0	0	9359
04-011-54 SE-LODGE OPERATORS ANALYSIS	1636	1826	1826	1826	0	0	0	0	0	0	0	0	7114
04-011-55 SE-GUIDE ANALYSIS	1888	2191	1461	913	913	0	0	0	0	0	0	0	7366
04-011-57 SE-TRAPPERS ANALYSIS	0	0	0	0	0	0	0	0	0	0	3652	4870	8522

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*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
LABOR 011													
04-011-58 SE-BOAT OPERATIONS ANALYSIS													
	1888	2435	0	0	1826	1826	0	0	0	0	0	0	7975
04-011-59 SE-SPORT HUNTERS AND FISHERMEN ANALYSIS													
	1510	1461	1461	1461	1461	2435	0	0	0	0	0	0	9789
04-011-61 RE-RECREATION IMPACT REFINEMENT													
	1211	1292	807	1211	2019	1292	646	323	0	0	0	0	8801
04-011-62 RE-TOURISM POTENTIAL OF PROJECT FACILITIES													
	323	969	1938	0	0	0	0	0	0	0	0	0	3230
04-011-63 RE-RECREATION PLAN REFINEMENT													
	0	0	0	0	0	0	0	0	807	1292	1777	969	4845
04-011-64 RE-OPERATING & MGMT AGREEMENTS													
	0	0	0	0	0	0	0	0	807	403	403	2019	3632
04-011-65 RE-RECREATION OPPORTUNITIES FOR ON-SITE WORKERS													
	0	0	0	0	1211	807	403	0	0	0	0	0	2421
04-011-66 RE-NON-CONSUMPTIVE ACTIVITIES SURVEY													
	9203	8939	8939	1211	1211	1211	0	0	0	0	0	0	30714
04-011-71 AE-AESTHETIC IMPACTS REFINEMENT													
	0	646	807	969	0	0	0	0	0	0	0	0	2422
04-011-72 AE-FEASIBILITY OF AESTHETIC MITIGATION MEASURES													
	0	0	0	0	0	0	403	403	403	0	0	807	2016
04-011-73 AE-DRAFT AESTHETICS MITIGATION PLAN													
	0	0	0	0	0	0	0	0	0	605	1817	0	2422
04-011-81 LU-OTHER PROJECT DEVELOPMENT PLANS													
	0	0	0	0	0	1376	1376	1376	0	0	0	0	4128
04-011-82 LU-PROJECT AND LAND MANAGEMENT DECISIONS													
	0	0	0	0	0	1376	688	688	0	0	0	0	2752
04-011-83 LU-HABITAT MITIGATION LANDS													
	0	0	0	0	0	0	1376	0	0	0	0	0	1376
04-011-95 SE-SPECIALTY BUSINESS ANALYSIS													
	0	0	0	0	0	0	0	4870	7659	6633	5415	1217	25794
04-011-96 SE-ECONOMIC IMPLICATIONS OF PROJECT FLOWS													
	0	0	0	0	0	0	0	0	0	3928	3928	0	7856

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LABOR 011													
04-011-97 SE-ALASKA HIRING POLICIES	1027	1027	0	0	0	0	0	0	0	0	0	0	2054
04-011-98 REPORT REVIEW	5826	10512	7327	8142	10923	8347	5676	1233	1078	1027	1644	2106	63841
04-011-99 SPECIAL POPULATION ANALYSIS	0	0	0	0	0	0	0	0	8923	5780	4563	791	20057
LABOR 011 TOTALS	63434	76451	99021	96208	82859	67470	58715	60185	76613	70334	61255	57835	870380

LABOR 013													
04-013-02 PLAN OF STUDY DEVELOPMENT AND UPDATING	2056	1833	1051	759	1158	759	759	1855	2690	2562	2887	3089	21458
04-013-08 RESPONSES TO FERC SUPPL INFO REQUESTS	181	415	181	314	181	314	181	314	181	314	80	314	2970
04-013-09 TERRESTRIAL WORKSHOPS	0	526	2480	0	1053	2362	0	0	526	2362	0	0	9309
04-013-10 MITIGATION PLAN REFINEMENT	0	0	0	0	162	0	364	2327	3273	2908	2381	729	12144
04-013-11 IMPACT/MITIGATION PLANNING TRACKING SYSTEM	598	364	396	364	598	364	598	364	598	364	598	364	5570
04-013-14 FURBEARER & TRAPPER STUDIES	801	598	963	598	729	598	729	598	729	598	567	963	8471
04-013-15 SETTLEMENT PROCESS INPUT	1573	1775	1573	1775	1775	1775	1775	1775	1775	1573	1775	2068	20987
04-013-16 DEIS/FEIS REVIEW	3000	4073	577	234	963	3307	3834	1835	526	0	0	0	18349
04-013-20 ADF&G BIG GAME STUDIES	396	396	396	598	598	396	396	396	598	396	656	1619	6841
04-013-30 MOOSE BROWSE INVENTORY	1255	1255	720	963	598	598	598	598	1255	598	0	0	8438
04-013-31 VEGETATION MAPPING AND DIGITIZING	436	890	598	890	963	963	598	598	445	598	364	720	8063

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LABOR 013													
04-013-49 INPUT TO SOC SCI MITIG PLANNING	396	396	396	598	890	728	1093	1255	1255	890	598	598	9093
LABOR 013 TOTALS	24035	31768	24436	23614	27624	22106	21664	23216	28536	23791	23971	27630	302391

LABOR 014													
04-014-01 ADMINISTRATIVE ASSISTANCE	10213	12924	9879	10339	12464	9420	9420	10339	12924	10339	10339	12464	131064
LABOR 014 TOTALS	10213	12924	9879	10339	12464	9420	9420	10339	12924	10339	10339	12464	131064

LABOR 016													
04-016-01 DEIS/FEIS REVIEW	813	0	0	0	0	0	1084	0	0	0	0	0	1897
04-016-02 AGENCY WORKSHOPS/SETLEMENT PROCESS	6904	4649	4649	4649	4649	975	3835	3835	3835	3835	4649	4649	51113
04-016-03 GENERAL AQUATIC PROGRAM COORDINATION	2508	3661	2440	3186	5491	3796	2712	3796	2712	2712	2712	3796	39522
04-016-04 INSTREAM FLOW RELATIONSHIPS	13429	22745	18583	13082	15818	9502	7154	8275	9780	5145	5829	6913	136255
04-016-05 ENVIRONMENTAL AND ECONOMIC COMPARISONS	220	2575	2355	4554	3989	7297	6856	7888	6028	3975	3036	3036	51809
04-016-06 RECOMMENDED FLOW REPORT	0	0	0	0	0	0	0	0	1267	2851	2851	2534	9503
04-016-07 AQUATIC IMPACT ASSESSMENT	0	0	0	835	1463	1691	2066	3837	3010	2655	1955	2206	19718
04-016-08 FLOW NEGOTIATIONS	835	835	1252	835	1252	782	835	1043	1252	1043	1043	1565	12572
04-016-09 FERC HEARINGS PREPARATION	5364	4821	4821	4477	4484	6012	6666	9677	9621	7813	10192	13441	87389

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*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
LABOR 016													
04-016-10 MITIGATION/ENHANCEMENT PLANNING	137	687	687	687	825	0	825	0	0	1237	206	137	5428
04-016-11 COMPREHENSIVE FISH REPORT	2261	1103	1103	2206	2482	3236	3236	1030	3236	3236	3236	3236	29601
04-016-12 MIDRIVER HABITAT ANALYSIS	0	288	288	0	576	288	0	360	360	0	720	1188	4068
04-016-13 SALMON SPANNING SURVEYS	950	689	919	0	0	1378	0	0	0	0	0	0	3936
04-016-14 LOWER RIVER RESIDENT AND JUVENILE STUDY	950	1148	1148	0	1378	0	0	0	0	1148	1148	0	6920
04-016-15 SALMON ESCAPEMENT	950	919	919	0	0	0	0	0	1378	1148	0	0	5314
04-016-16 OUTMIGRATION STUDIES	950	919	919	0	0	0	0	0	0	1148	1838	0	5774
04-016-17 STREAM FLOW & FLOOD FREQUENCY	0	394	0	394	0	394	0	394	0	394	0	394	2364
04-016-18 SUSPENDED SEDIMENT/TURBIDITY	0	2052	1800	3240	3240	1440	1440	1440	1800	1800	1800	1800	21852
04-016-20 LOAD FOLLOWING	1610	2244	1267	1267	0	0	0	343	0	0	343	412	7486
04-016-21 LOWER RIVER MORPHOLOGY ASSESSMENT	1237	687	687	550	275	137	137	0	550	0	0	343	4603
04-016-23 LOWER RIVER ICE OBSERVATIONS	204	197	197	1184	1382	197	1184	197	197	197	1974	0	7110
04-016-24 LOWER RIVER SEDIMENT AGGRADATION	0	197	0	0	0	1184	592	592	592	394	0	0	3551
04-016-25 FOOD RESOURCES FOR CHINOOKS	0	0	0	919	919	0	0	0	0	0	0	0	1838
04-016-26 EGG INCUBATION	0	0	0	919	919	0	0	0	0	0	0	0	1838
04-016-27 MIDRIVER ESCAPEMENT-TALKEETNA	950	0	0	0	0	0	919	0	0	0	0	0	1869

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*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
LABOR 016													
04-016-28 LOWER RIVER TRIBUTARY ACCESS													
	0	1116	919	0	1378	0	0	493	987	987	1970	0	7850
04-016-29 MIDDLE RIVER MAINSTREAM SPAWNING													
	1425	1378	1378	1378	574	0	0	1378	0	0	0	1148	8659
04-016-30 SLOUGH GROUNDWATER													
	1224	1184	987	1974	0	0	0	0	0	0	1974	987	8330
04-016-31 LONG TERM MONITORING													
	0	0	0	3446	3848	2297	1378	0	2297	0	0	0	13266
04-016-32 LOWER RIVER TEMPERATURE ANALYSIS													
	0	0	1184	1184	1184	1184	1184	1184	1184	987	1184	1974	12433
04-016-34 WINTER R.J. STUDY													
	0	0	0	0	0	2297	2297	2297	2297	1148	0	0	10336
04-016-35 SLOUGH ACCESS CRITERIA													
	2041	2369	987	0	0	1481	0	0	0	0	0	0	6878
04-016-36 LOWER RIVER REARING IFG													
	1425	1378	1378	0	0	0	2297	0	0	1148	1378	1378	10382
04-016-37 MITIGATION STUDIES (DVL CNYN TO TALK)													
	1425	2297	2297	1378	0	0	0	1838	0	2297	2297	2297	16126
04-016-38 CONSTRUCTION IMPACT ASSESSMENT													
	1224	1431	1184	987	0	0	0	0	197	0	0	0	5023
04-016-39 CONSTRUCTION IMPACT MITIGATION													
	1224	1184	987	987	839	1184	0	0	0	0	987	1974	9366
04-016-40 IMPOUNDMENT MITIGATION													
	1224	1184	987	987	0	0	0	2073	1974	987	987	1974	12377
04-016-41 WATER QUALITY-TSUSENA/DEADMAN CREEKS													
	0	789	789	0	987	0	987	987	987	0	0	0	5526
04-016-45 PRIMARY PRODUCTIVITY STUDIES													
	0	0	0	0	0	0	0	0	1378	0	2297	2297	5972
04-016-47 MIDDLE RIVER TRIBUTARY STABILITY ANALYSIS													
	1633	1974	1184	1184	1184	493	0	0	1036	0	0	0	8688
04-016-55 NAVIGATION STUDIES													
	2916	3491	887	1140	3744	2027	1267	1717	0	1717	1717	1717	22340

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LABOR 016													
04-016-56	GENERAL LICENSE SUPPORT												
	1084	0	1423	1762	1356	1017	0	0	2508	1084	1084	1356	12674
04-016-57	ISSUE PAPERS/SETTLEMENT PROCESS												
	9806	16800	8897	13093	16689	11375	9001	7014	14964	6257	7804	15247	136947
04-016-58	MONTHLY PROGRESS REPORTS												
	271	271	271	271	271	271	271	271	271	271	271	271	3252
04-016-60	GENERAL ADMINISTRATION AND CONTRACT MANAGEMENT												
	1084	1220	271	271	271	271	271	271	271	271	271	271	5014
04-016-61	PLAN OF STUDY/WORKSCOPE PREPARATION												
	3918	2044	0	0	0	2931	4202	8199	12014	10911	4799	7096	56114
04-016-63	ACCESS ROAD LOCATION REPORT INPUT												
	0	0	0	271	1974	1481	1752	987	987	1974	1184	987	11597
04-016-64	CAMP AND PERMANENT VILLAGE LOCATION REPORT INPUT												
	0	0	0	0	1184	0	1184	987	1481	987	0	839	6662
04-016-65	TRANSMISSION LINE LOCATION REPORT INPUT												
	0	0	0	0	1974	493	1481	987	1481	1974	0	1579	9969
04-016-66	EVALUATION OF MULTILEVEL OUTLET ALTERNATIVES												
	0	1323	551	441	441	0	0	0	0	0	0	0	2756
LABOR 016 TOTALS													
	72196	92243	70595	73738	87040	67111	67113	73390	91932	73731	73736	89042	931867

DIRECTS													
04-020-01	TRAVEL AND LIVING EXPENSES												
	14251	14251	14251	9451	13451	9451	13451	9451	9451	17452	9451	9453	143815
04-020-04	PRINTING												
	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	60000
04-020-05	COMPUTER												
	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	12000
04-020-06	MISCELLANEOUS												
	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	18000
04-020-07	RELOCATION												
	33000	0	0	0	27400	0	0	0	0	0	0	0	60400

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TOTAL DIRECTS	54751	21751	21751	16951	48351	16951	20951	16951	16951	24952	16951	16953	294215

SUBCONTRACTOR 113													
04-113-01 FERC SUPPLEMENTAL INFORMATION REQUESTS	239	186	186	237	185	185	237	186	186	236	185	185	2433
04-113-02 SETTLEMENT PROCESS INPUT	364	364	365	365	364	366	364	365	365	3283	366	364	7295
04-113-03 DEIS REVIEW MEMORANDUM	0	2070	0	0	0	0	0	0	0	0	0	0	2070
04-113-04 WORKSCOPE AND DETAILED PLAN OF STUDY	0	0	0	0	0	0	0	1841	1227	0	1104	0	4172
04-113-05 INTERTIE WORKER SURVEY REPORT	2141	3639	2782	2141	1284	513	0	0	0	0	0	0	12500
04-113-07 SOCIOECONOMIC MITIGATION PLAN UPDATE	0	0	0	0	0	0	0	0	3860	1946	1340	0	7146
04-113-08 SOCIOECONOMIC IMPACT PROJECTIONS SUMMARY	0	0	0	0	0	0	0	311	3271	1523	514	0	5619
04-113-09 FOIA-HOUSEHOLD AND BUSINESS SURVEYS	1055	0	1055	8960	13177	8785	0	0	0	0	0	0	33032
04-113-20 HEARINGS PREPARATION	0	0	0	0	0	0	3013	3013	3014	3014	3014	3011	18079
04-113-21 PROGRAM COORDINATION	2211	2207	2207	2208	2207	2207	2207	2207	1692	2092	1724	1792	24961
04-113-22 FEIS MEMORANDUM	0	0	0	0	0	0	2070	0	0	0	0	0	2070
04-113-23 ACCESS ROAD LOCATION REPORT INPUT	0	0	0	0	0	0	0	0	0	1432	2198	0	3630
04-113-24 PERMANENT VILLAGE EVALUATION REPORT	0	0	0	0	0	0	0	3980	2181	0	0	0	6161
04-113-26 WORKER TRANSPORTATION ALTERNATIVES REPORT	0	0	0	0	0	0	0	0	4331	1651	0	0	5982

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SUBCONTRACTOR 113													
04-113-27	WORKER SHIFT AND ROTATION SCHEDULE REPORT												
	0	0	0	0	0	0	0	0	3815	2071	0	0	5886
04-113-28	PUBLIC SECTOR SURVEY												
	290	192	5553	1209	964	290	0	0	0	0	0	0	8498
04-113-29													
	257	1031	2062	2062	2062	1031	153	0	0	0	0	0	8658
04-113-30	RAILHEAD ANALYSIS												
	276	2916	1515	512	256	0	0	0	0	0	0	0	5475
04-113-31	MODEL REFINEMENT												
	1234	2365	0	0	2365	2365	2365	3600	2365	2365	0	0	19024
04-113-32	LAND USE AND HOUSING CONSTRAINTS												
	280	0	0	2698	1124	563	113	113	0	0	0	0	4891
04-113-33	PROJECT MANAGEMENT												
	2120	2115	2115	2115	2115	2115	2115	2115	2115	2115	2115	2115	25385
SUBCONTRACTOR 113 TOTALS													
	10467	17085	17840	22507	26103	18420	12637	17731	28422	21728	12560	7467	212967

SUBCONTRACTOR 123													
04-123-01	RE/AE-FERC SUPPLEMENTAL INFORMATION REQUESTS												
	0	0	0	355	713	852	0	0	0	0	0	0	1920
04-123-02	RE/AE-DEIS REVIEW MEMORANDUM												
	0	0	769	1052	0	0	0	0	0	0	0	0	1821
04-123-05	RE-WORKSCOPE AND DETAILED PLAN OF STUDY												
	0	0	0	0	0	0	0	596	596	596	596	0	2384
04-123-06	RE-SETTLEMENT PROCESS INPUT												
	0	0	0	0	374	379	379	379	379	1842	379	0	4111
04-123-08	RE-HEARINGS PREPARATION												
	0	0	0	0	0	0	2559	2556	2556	2556	2556	2556	15339
04-123-15	RE-PROGRAM COORDINATION												
	1497	1497	1545	1497	1497	1497	1543	1543	1543	1497	1497	1498	18151
04-123-16	RE-PUBLIC ACCESS REPORT INPUT												
	0	0	0	0	1540	1803	1803	1814	0	0	0	0	6960

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SUBCONTRACTOR 123													
04-123-17 RE-ACCESS ROAD LOCATION REPORT INPUT	0	0	0	0	0	0	619	619	619	763	763	0	3383
04-123-18 RE-CAMP LOCATION REPORT INPUT	1049	1049	715	1049	0	0	0	0	0	0	0	0	3862
04-123-19 RE-RECREATION IMPACTS REFINEMENT	0	0	0	0	0	1786	2629	2629	2629	2629	0	0	12302
04-123-21 RE-RECREATION PLAN REFINEMENT	2537	2537	2537	2539	0	0	0	0	0	0	0	0	10150
04-123-22 RE-PERMANENT VILLAGE EVALUATION REPORT	0	717	717	717	717	369	373	376	0	0	0	0	3986
04-123-23 RE-RECREATION OPPORTUNITIES FOR ON-SITE WORKERS	0	0	0	0	0	930	930	930	930	1005	0	0	4725
04-123-50 AE-WORKSCOPE AND DETAILED PLAN OF STUDY	0	0	0	0	0	0	0	821	0	0	821	832	2474
04-123-51 AE-SETTLEMENT PROCESS INPUT	0	0	0	370	365	365	365	365	365	1482	373	0	4050
04-123-53 AE-HEARINGS PREPARATION	0	0	0	0	0	0	0	1677	1678	1678	1678	1678	8389
04-123-54 AE-PROGRAM COORDINATION	1194	1194	1194	1195	1195	1195	1195	1195	1195	1195	1195	1195	14337
04-123-55 AE-ACCESS ROAD LOCATION REPORT INPUT	0	0	0	0	0	0	339	940	960	1260	0	0	3499
04-123-57 AE-AESTHETICS IMPACTS REFINEMENT	1524	1524	1524	1524	1524	0	1524	1529	0	0	0	0	10673
04-123-58 AE-FEASIBILITY OF AESTHETIC MITIGATION MEASURES	764	847	847	0	0	847	1262	1291	1294	0	0	0	7152
04-123-59 AE-DRAFT AESTHETIC MITIGATION PLAN	0	769	770	0	0	0	820	820	748	1230	1230	0	6387
04-123-60 AE-PERM.VILLAGE EVALUATION REPORT	1029	818	1029	906	0	0	0	0	0	0	0	0	3782
04-123-61 AE-CAMP LOCATION REPORT INPUT	1751	1306	1306	1306	1306	1306	1306	1306	1306	1306	1308	1660	16473

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SUBCONTRACTOR 253 TOTALS	2000	2000	2000	2000	2000	0	0	2000	2000	2000	2000	2000	20000

SUBCONTRACTOR 263													
04-263-01 RM-DEIS/FEIS REVIEW	0	0	0	0	0	0	0	0	0	0	0	0	0
04-263-02 RM-AGENCY WORKSHOPS	1350	0	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	14850
04-263-03 RM-GENERAL AQUATIC PROGRAM COORDINATION	1410	1410	1410	1410	1410	1410	4515	7464	7464	7464	7464	1510	44341
04-263-04 RM-INSTREAM FLOW STUDIES (ICE)	6074	8140	4203	4374	2434	0	0	0	0	0	0	0	25225
04-263-05 RM-INSTREAM FLOW STUDIES (WATERSHED)	2399	2400	0	0	0	7523	7523	0	2545	0	0	0	22390
04-263-09 RM-FERC HEARINGS PREPARATION	0	0	0	0	0	0	3194	3194	3422	3422	3422	3422	20076
04-263-12 RM-MIDDLE RIVER HABITAT ANALYSIS	4929	8350	4178	0	0	0	0	0	0	0	0	0	17457
04-263-18 RM-SUSPENDED SEDIMENT/TURBIDITY	33587	26504	21563	15517	13940	5492	6628	0	0	0	0	0	123231
04-263-19 RM-HYDROLOGICAL/METEOROLOGICAL DATA	27914	23312	12379	8733	10775	10393	19552	21905	10270	9585	11950	11934	178702
04-263-21 RM-LOWER RIVER MORPHOLOGY ASSESSMENT	10765	13056	16812	14997	8766	7414	11449	0	4007	0	0	0	87266
04-263-22 RM-MIDDLE RIVER HABITAT MAP	6018	3341	2656	5842	2371	0	0	0	0	0	0	0	20228
04-263-23 RM-LOWER RIVER ICE OBSERVATIONS	0	0	3515	10932	12676	6035	8522	5933	0	3877	10461	1314	63265
04-263-24 RM-LOWER RIVER SEDIMENT AGGRADATION	2100	2483	53124	1987	1084	0	0	0	0	0	0	0	60778
04-263-28 RM-LOWER RIVER TRIBUTARY ACCESS	3784	1958	6167	1189	2390	6047	0	1777	0	0	0	0	23312

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SUBCONTRACTOR 263													
04-263-30	SLOUGH GROUNDWATER												
	10238	24494	17261	11665	8127	0	2601	0	0	0	0	0	74386
04-263-43	RM-GLACIER STUDIES												
	754	0	3159	0	3328	4301	3403	0	1331	0	0	0	16276
04-263-55	RM-NAVIGATION FIELD STUDIES												
	8667	3552	7784	7931	3450	6015	6714	0	2246	0	0	0	46359
04-263-56	RM-GENERAL LICENSING CONSULTATION												
	3280	1321	1321	1321	1321	1321	3280	1321	1321	1322	1322	1322	19773
04-263-60	RM-CONTRACT MANAGEMENT/ADMINISTRATION												
	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1034	1033	12407
04-263-61	RM-UPPER BASIN WINTER PRECIPITATION												
	22002	7541	2259	2260	2259	2260	3684	2259	2260	2259	2260	2256	53559
04-263-62	RM-MACLAREN AND TYONE WEATHER STATIONS												
	17208	5817	2081	2081	2081	2081	3353	2081	3293	2081	2089	2089	46335
SUBCONTRACTOR 263 TOTALS													
	163513	134713	162256	92623	78796	62676	86802	48318	40543	32394	41352	26230	970216

SUBCONTRACTOR 273													
04-273-02	AEI-AGENCY WORKSHOPS/SETTLEMENT												
	10176	8584	7150	2240	1436	4392	4750	4392	5468	805	805	445	50643
04-273-03	AEI-GENERAL AQUATIC PROGRAMS COORDINATION												
	2355	3209	1908	2230	2297	445	1340	1018	2259	1463	2230	1250	22004
04-273-04	AEI-INSTREAM FLOW RELATIONSHIPS												
	40743	49445	26441	24486	29470	15833	17648	11860	11633	7798	7209	7594	250160
04-273-05	AEI-ENVIRONMENTAL AND ECONOMIC COMPARISONS												
	6418	9071	12817	16730	18076	20140	18196	15660	11961	8993	3518	3158	144738
04-273-06	AEI-INSTREAM FLOW RELATIONSHIPS (P&2)												
	1381	4337	5288	7054	8601	1163	0	0	0	0	0	0	27824
04-273-07	AEI-AQUATIC IMPACT ASSESSMENT												
	1076	1968	1968	5402	3439	4879	8587	14474	14022	17602	13956	9673	97046
04-273-09	AEI-FERC HEARINGS PREPARATION												
	0	0	0	0	0	0	805	2529	2371	2701	2082	1664	12152

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SUBCONTRACTOR 273													
04-273-32 AEI-LOWER RIVER TEMPERATURE ANALYSIS	3627	5243	4180	9918	11920	15201	18849	24915	24738	26596	30782	31613	207582
04-273-56 GENERAL LICENSING CONSULTATION	892	892	1089	892	892	892	892	892	1009	892	892	892	11038
04-273-60 AEI-CONTRACT MANAGEMENT/ADMINISTRATION	7444	7923	5208	5029	6782	3958	5555	6068	5961	11204	11348	5823	82303
SUBCONTRACTOR 273 TOTALS													
	74112	90672	66049	73981	82913	66903	76622	81808	79502	78054	72822	62112	905550

SUBCONTRACTOR 283													
04-283-02 WT-AGENCY WORKSHOPS/SETTLEMENT	2754	1042	6711	1042	1042	1042	1042	1042	1042	1042	1041	1041	19883
04-283-03 WT-GENERAL AQUATIC PROGRESS COORDINATION	1042	1042	1042	1041	1042	1042	2594	3896	3896	4096	4096	1042	25871
04-283-04 WT-INSTREAM FLOW RELATIONSHIPS REPORT	22390	23909	13937	17569	19756	15395	17372	19830	16586	2182	0	0	168926
04-283-09 WT-FERC HEARINGS PREPARTION	0	0	0	0	0	0	1839	1839	1839	1839	1839	1839	11034
04-283-12 WT-MIDDLE RIVER HABITAT ANALYSIS	29462	18881	20789	15899	13429	10715	15697	14038	18380	19673	21230	19713	217906
04-283-14 ADF&G CONSULTATION	4323	4937	3833	4877	3710	4362	4362	4262	4363	4954	5546	6729	56258
04-283-21 WT-LOWER RIVER MORPHOLOGY ASSESSMENT	903	1313	2527	2322	2092	2843	1967	552	1203	1104	0	0	16826
04-283-22 WT-MIDDLE RIVER HABITAT MAP	3767	3211	3868	3868	3863	3800	6222	4835	5392	7297	6477	5908	58508
04-283-28 WT-LOWER RIVER TRIBUTARY ACCESS	3492	2792	592	592	1835	0	0	0	1835	0	0	0	11138
04-283-36 WT-LOWER RIVER REARING(IFG)	1302	3228	1926	2577	1614	4603	2252	2252	2352	2026	3328	2026	29486
04-283-56 GENERAL LICENSING SUPPORT	1401	2715	2358	2000	2000	2117	1642	1642	2000	3789	3789	3789	29242

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SUBCONTRACTOR 293 TOTALS	51205	56687	70928	57248	54416	54185	52969	51086	58330	55979	54954	47472	665459

SUBCONTRACTOR 303													
04-303-02 PLAN OF STUDY DEVELOPMENT AND UPDATING	0	0	0	0	0	0	0	0	2500	500	1000	1000	5000
04-303-09 TERRESTRIAL WORKSHOPS	0	0	5000	0	1000	4000	0	0	0	5000	0	0	15000
04-303-10 MITIGATION PLAN REFINEMENT	2000	3000	5000	5000	20000	30000	30000	10000	5000	5000	2500	2500	120000
04-303-11 IMPACT/MITIGATION PLANNING TRACKING SYSTEM	2000	1000	1000	1000	2000	1000	1000	1000	1000	1000	1000	2000	15000
04-303-16 DEIS/FEIS REVIEW	3000	0	0	0	0	5000	2000	0	0	0	0	0	10000
04-303-30 MOOSE BROWSE INVENTORY	12000	12000	5000	5000	4000	4000	5000	10000	2000	1000	2000	8000	70000
04-303-32 IMPACT ASSESSMENT REFINEMENT	10000	10000	20000	20000	12000	6000	6000	11000	3500	3500	5500	2500	110000
04-303-36 FERC HEARING PREPARATION	0	0	0	0	0	0	0	2000	3000	4000	5000	6000	20000
04-303-42 CANDIDATE MITIGATION LANDS ASSESSMENT	1000	4000	2000	1000	1000	3000	6000	2000	0	0	0	0	20000
04-303-43 HABITAT ENHANCEMENT STUDIES	1000	3000	4000	5000	2000	0	0	0	0	0	0	0	15000
04-303-44 DOWNSTREAM RIPARIAN STUDIES	2000	3000	2000	0	0	0	0	0	0	0	1000	2000	10000
04-303-45 RAPTOR STUDIES	2000	1000	1000	3000	3000	2000	0	0	0	0	5000	8000	25000
04-303-46 SWAN/EAGLE T-LINE NEST SURVEYS	0	0	0	0	0	0	0	0	0	0	3000	2000	5000
04-303-47 WINTER BIRD SURVEYS	0	0	0	0	3000	1000	2000	1000	2000	4000	2000	0	15000

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TASK 5
GEOTECHNICAL EXPLORATION

There are no plans for any funding in FY85 for a Geotechnical Field Exploration Program.

Services

05-010-08 Report Preparation

Complete the 1984 Watana Field Explorations and summary report.

05-010-11 Watana Observation Device Monitoring

Prepare observation device data graphs.

05-010-12 Observation Device Reading

Read and test groundwater and temperature at the Watana site.

05-010-13 Compilation of Geotechnical Field Data

Implementation of field and laboratory methods to obtain basic data including the monitoring of the subsurface site conditions. Geologic data on groundwater and temperature will be summarized and furnished to the FERC staff prior to the Dam safety hearings.

Directs

05-020-03 Printing and Miscellaneous

Printing and miscellaneous expenses associated with the 1984 Field Exploration Report.

05-020-04 Travel and Lining Expenses

Expenses for personnel involved in final preparation of the 1984 Geotechnical Exploration Report.

Subcontractors

05-184-01 CIRI/FMAA Task 5 - Drafting

Drafting support for the Geotechnical Report preparation will be provided by CIRI/FMAA.

05-133-01 Subcontractor Handling Fee

A Handling Fee equal to two percent of the subcontracts cost.

05-173-01 Watana Observation Device Reading

R&M to provide assistance for the transfer of all data collected previously to 1983.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
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TASK 05	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
TOTAL LABOR	24234	7029	8337	8725	10518	7949	7948	8725	10907	8725	8726	10520	122343
TOTAL DIRECTS	13400	1000	2000	0	500	0	0	0	0	0	0	0	16900
TOTAL SUBCONTRACTORS	21838	14	3500	14	644	14	644	14	644	14	644	959	28943
TASK 05 TOTALS	59472	8043	13837	8739	11662	7963	8592	8739	11551	8739	9370	11479	168186

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 05 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	2196	48685.32	16535.88	31951.80	9223.20	106396.20
Home Office Staff	344	6228.02	2116.15	6174.69	1427.98	15946.85
TOTAL STAFF	2540	54913.34	18652.03	38126.49	10651.18	122343.05

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 05			168186
TOTAL SERVICES			122343
05-010-08	REPORT PREPARATION	24234	
05-010-11	WATANA OBSERVATION DEVICE MONITORING	28744	
05-010-12	WATANA OBSERVATION DEVICE READING	19387	
05-010-13	COMPILATION OF GEOTECHNICAL FIELD DATA	49978	122343
TOTAL DIRECTS			16900
05-020-03	PRINTING AND MISCELLANEOUS	12500	
05-020-04	TRAVEL AND LIVING EXPENSES	4400	16900
TOTAL SUBCONTRACTORS			28943
05-133-01	SUBCONTRACTOR HANDLING FEE	348	348
05-173-01	WATANA OBSERVATION DEVICE READING	9000	9000
05-184-01	CIRI/MOOLIN-DRAFTING	19595	19595

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FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

[illegible]

RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

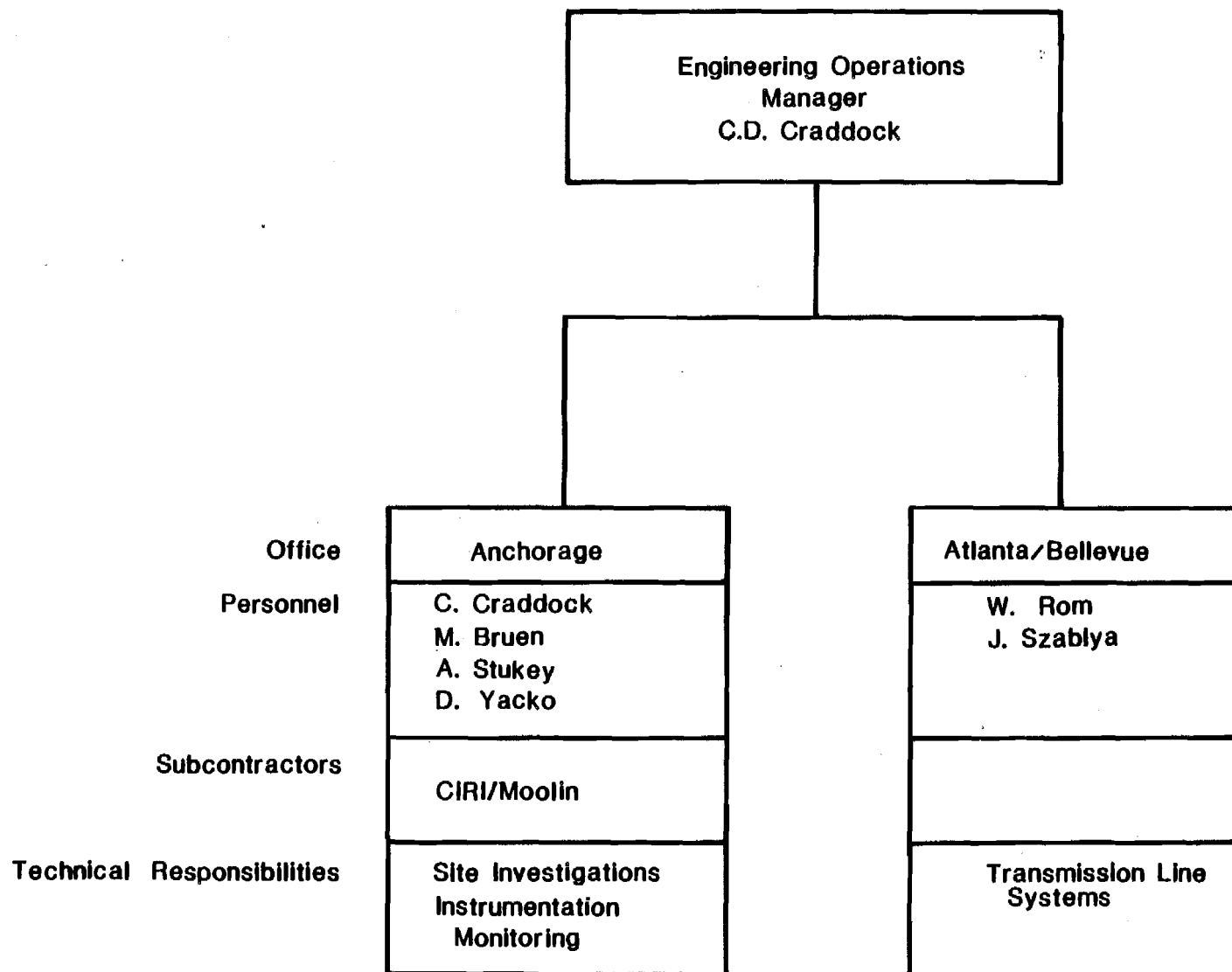
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TASK 05	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 173 TOTALS													
6200	0	2800	0	0	0	0	0	0	0	0	0	0	9000

SUBCONTRACTOR 184													
05-184-01 CIRI/MOOLIN-DRAFTING													
15500	0	630	0	630	0	630	0	630	0	630	945	19595	
SUBCONTRACTOR 184 TOTALS													
15500	0	630	0	630	0	630	0	630	0	630	945	19595	

TASK 05 TOTALS													
59472	8043	13837	8739	11662	7963	8592	8739	11551	8739	9370	11479	168186	



July 1, 1984

TASKS 3, 5, 7, 41 - ENGINEERING

TASK 6

FERC LICENSING, SETTLEMENT, & PERMITTING

The prime responsibilities of this task are to coordinate support activities for the FERC licensing process, the settlement process, and the various permits required for the project. Task 6 will maintain a coordinating, a supporting, and a monitoring role. The level of effort activities and the deliverables are described below.

Services

06-010-03 EIS Support

Sections of the DEIS will be assigned to the appropriate contractor or subcontractor personnel for review and comment. Scheduling, review, editing, and production of comments will be coordinated, and the approved comments filed with FERC by Task 6 personnel.

Preparation of responses to agency and public comments on the DEIS will be coordinated and responses provided to the commenting parties and to FERC for use in the FEIS. Liaison with counsel will be maintained and responses to any additional FERC information requests will be coordinated.

06-010-04 Supplemental Information Request Tracking

Task 6 personnel will provide technical support for a computerized tracking system for FERC and other agency requests for supplemental information. The tracking system will also include information items to be sent to FERC which were referenced in previous responses to information requests.

06-010-05 Permit Support

Close coordination with the permitting subcontractor and with Contractor technical personnel will be maintained to ensure timely acquisition of permits and other authorizations necessary for project activities. A 4-5 month summer total suspended particulates (TSP) air quality monitoring program will be carried out at the present Watana camp site.

06-010-07 Settlement Support

The Contractor will coordinate its personnel and other support as required for the issue settlement process. Included will be contributions to agency coordination guidelines, identification and preparation of issues lists, issue analyses, preparation of draft letters to agencies, coordination during preparation of study plans for resolving issues, coordination of issues tracking reports, dissemination of reports and other technical material to agencies, and coordination of responses to agency comments.

06-010-08 Need for Power Hearings Support

Task 6 personnel will provide assistance in the gathering of reports and other documents required for the Need for Power Hearings.

06-010-09 Environment/Dam Safety Hearings Support

These hearings will address matters of engineering and safety of project structures and operation, and any environmental matters still in dispute. Coordination of Contractor effort and assistance to expert witnesses and Power Authority Counsel will be provided during all phases of these hearings, including the pre-hearing conference, discovery and supplemental discovery periods, preparation of direct testimony, and preparation of expert witnesses for cross-examination.

06-010-10 Best Management Practices Manuals

The Contractor will provide overview and coordination for five Best Management Practices Manuals/Plans to be prepared by a subcontractor.

Directs

06-020-01 Printing

Printing costs for reproduction of materials for responses to FERC supplemental information requests, for materials to support settlement, and for BMP manuals, are estimated to be as shown.

06-020-02 Travel and Living Expenses

Travel to Anchorage and living expenses for home office support, and Anchorage personnel travel and expenses for License/Permit Tracking and Settlement meetings are estimated to be as shown.

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Anchorage and Washington, D.C.	4	4
Anchorage and Juneau	2	2
Anchorage and Fairbanks	2	2
<u>06-020-04 Relocation</u>		

Costs associated with relocation of Chicago home office personnel to work in Anchorage.

06-020-05 Miscellaneous

Miscellaneous direct costs, including summer TSP monitoring program analysis and supplies, are estimated to be as shown.

06-020-06 Workshop Directs

Direct costs for settlement process workshops, which will include room rental, etc. for fourteen workshops, is estimated to be as shown.

Subcontracts

06-134-01 Subcontractor Handling Fee

A handling fee equal to 2 percent of subcontract cost.

06-135-01 Field Permit Application Preparation, Processing and Monitoring

CIRI/Moolin and Associates (CIRI/FMAA) will assist the Contractor in identifying data needed for field program permit applications, reviewing work plans needed for these permit applications, processing and submitting the applications to the appropriate agencies, monitoring field work to insure compliance with permit stipulations, and preparing input for the permit tracking system.

06-135-02 Long Lead Time Permit Applications

CIRI/FMAA will prepare applications for long lead time permits as appropriate. Such items may include COE 404 applications, ADF&G Title 16 permit applications, and ADEC PSD application.

06-135-03 Best Management Practice Manuals

CIRI/FMAA will prepare the following five Best Management Practices Manuals/Plans in accordance with the investigation memoranda approved in FY84 by the Power Authority:

- o Contingency Plan for Oil and Hazardous Material Spills
- o Fuel and Hazardous Materials Management Manual

- o Erosion and Sedimentation Control Manual
- o Rehabilitation and Revegetation Manual
- o Liquid and Solid Waste Management Manual

06-135-04 Special Task: Air Quality Monitoring

Continuation of the Air Quality monitoring program begun in FY84 through October 1984 by CIRI/FMAA.

06-135-05 CIRI/FMAA - Drafting

Drafting support for the licensing and permitting efforts, including the BMP manuals, will be provided by CIRI/FMAA.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
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TASK 06	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
TOTAL LABOR	55168	53728	40814	44451	51608	37149	36469	40739	49217	40739	39883	48258	538223
TOTAL DIRECTS	29400	12500	12300	13000	11300	10300	7300	7300	7300	7300	7300	7300	132600
TOTAL SUBCONTRACTORS	96902	74562	72828	73032	71196	55608	25354	24882	9647	7504	7504	8728	527747
TASK 06 TOTALS	181470	140790	125942	130483	134104	103057	69123	72921	66164	55543	54687	64286	1198570

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 06 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	7812	178782.46	60746.03	117399.22	33900.51	390828.22
Home Office Staff	3356	57699.88	19602.48	57230.60	12861.44	147394.40
TOTAL STAFF	11168	236482.34	80348.51	174629.82	46761.95	538222.62

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 06

1198570

TOTAL SERVICES

538223

06-010-03	EIS SUPPORT	50611	
06-010-04	SUPPLEMENTAL INFO REQUEST TRACKING	27025	
06-010-05	PERMIT SUPPORT	104350	
06-010-07	SETTLEMENT SUPPORT	267141	
06-010-08	NEED FOR POWER HEARINGS SUPPORT	4608	
06-010-09	ENVIRONMENTAL/SAFETY HEARINGS SUPPORT	66464	
06-010-10	BEST MANAGEMENT PRACTICES MANUALS	18024	538223

TOTAL DIRECTS

132600

06-020-01	PRINTING	36000	
06-020-02	TRAVEL & LIVING	48000	
06-020-04	RELOCATION	17400	
06-020-05	MISCELLANEOUS	17200	
06-020-06	WORKSHOP DIRECTS	14000	132600

TOTAL SUBCONTRACTORS

527747

06-134-01	SUBCONTRACTOR HANDLING FEE	10346	10346
06-135-01	CIRI/FMAA-FLD PRMT APPL PREP, PROCESS AND MONITOR	85801	
06-135-02	CIRI/FMAA-LONG LEAD TIME PERMIT APPLICATIONS	135038	
06-135-03	CIRI/FMAA-BMP MANUALS	240418	
06-135-04	CIRI/FMAA SPECIAL TASK: AIR QUALITY MONITORING	12000	
06-135-05	CIRI/MOOLIN-DRAFTING	44144	517401

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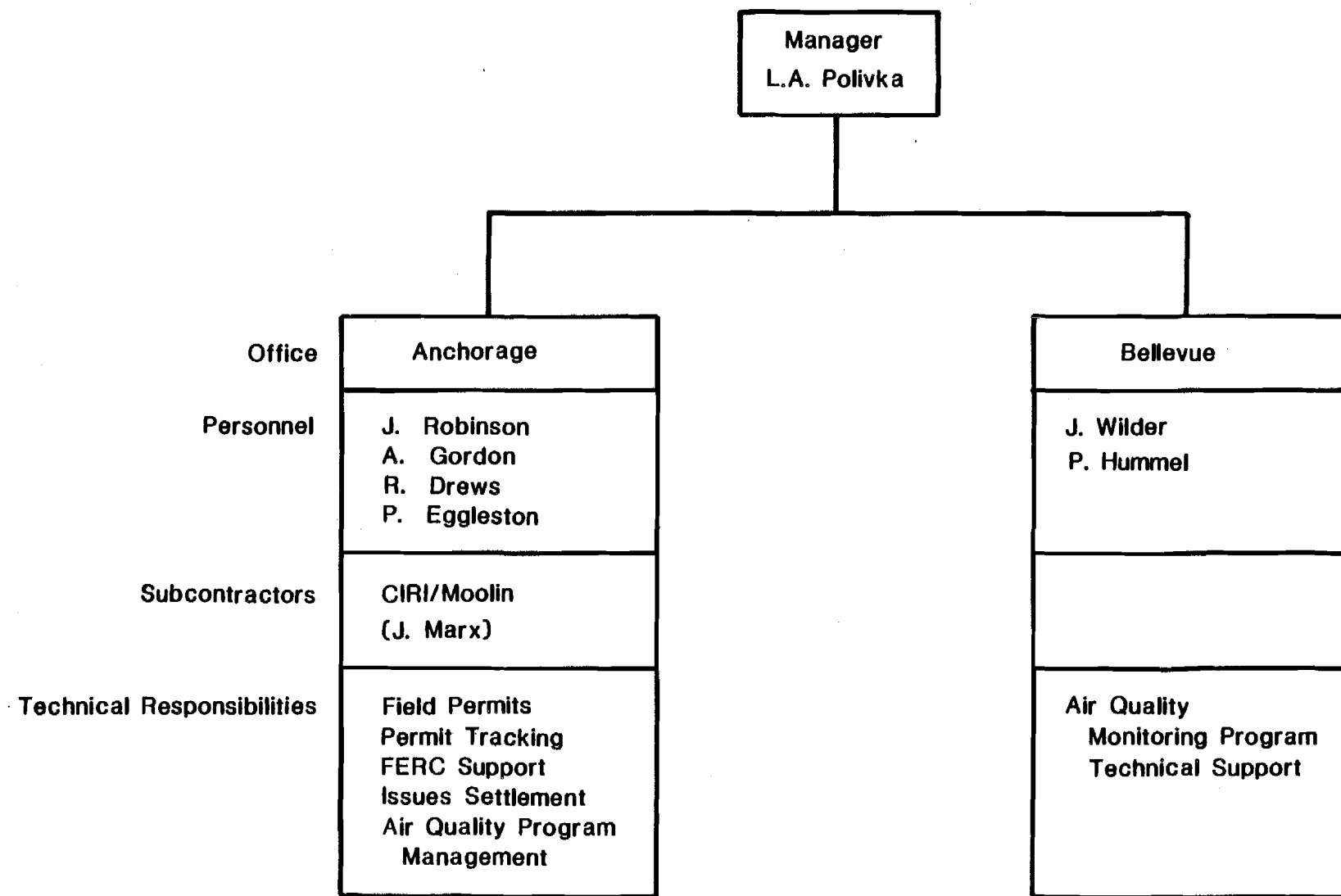
TASK 06	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL DIRECTS	29400	12500	12300	13000	11300	10300	7300	7300	7300	7300	7300	7300	132600

SUBCONTRACTOR 134													
06-134-01 SUBCONTRACTOR HANDLING FEE	1900	1462	1428	1432	1396	1090	497	487	189	147	147	171	10346
SUBCONTRACTOR 134 TOTALS													
	1900	1462	1428	1432	1396	1090	497	487	189	147	147	171	10346

SUBCONTRACTOR 135													
06-135-01 CIRI/FMAA-FLD PRMT APPL PREP, PROCESS AND MONITOR	6500	8000	6300	6500	7700	7000	7000	7500	8601	6500	6500	7700	85801
06-135-02 CIRI/FMAA-LONG LEAD TIME PERMIT APPLICATIONS	17000	17000	17000	17000	17000	17000	17000	16038	0	0	0	0	135038
06-135-03 CIRI/FMAA-BMP MANUALS	42500	42500	42500	42500	42500	27918	0	0	0	0	0	0	240418
06-135-04 CIRI/FMAA SPECIAL TASK: AIR QUALITY MONITORING	3000	3000	3000	3000	0	0	0	0	0	0	0	0	12000
06-135-05 CIRI/MOOLIN-DRAFTING	26002	2600	2600	2600	2600	2600	857	857	857	857	857	857	44144
SUBCONTRACTOR 135 TOTALS													
	95002	73100	71400	71600	69800	54518	24857	24395	9458	7357	7357	8557	517401

TASK 06 TOTALS	181470	140790	125942	130483	134104	103057	69123	72921	66164	55543	54687	64286	1198570



July 1, 1984

TASK 6 - LICENSING SUPPORT AND PERMITTING

TASK 7

ELECTRIC POWER SYSTEM STUDY

The purpose of Task 7 in FY85 is to respond to requests to support the FERC License Application in relation with the electric power system configuration during the Need-for-Power Hearing of the FERC licensing process. Also, Task 7 shall provide a feasibility and cost study concerning the utilization of the intertie transmission line for construction power.

Services

07-010-01 System Studies and Economic Comparison

A study will be made to determine the feasibility and cost of utilizing the Intertie as a source of construction power.

Directs

07-020-01 Travel and Living Expenses

This item includes the air fare and per diem associated with traveling to Anchorage. It is based on the following trip assumptions:

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Anchorage and Belleuve	1	5 days

07-020-04 Printing

The cost of reproducing the construction power report and reproduction of documents to support Need for Power responses.

07-020-05 Computer

The cost of utilizing computer services to aid in the above items.

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08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 07 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	0	0.00	0.00	0.00	0.00	0.00
Home Office Staff	368	9256.16	3147.52	9179.20	2050.24	23633.12
TOTAL STAFF	368	9256.16	3147.52	9179.20	2050.24	23633.12

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 07

29690

TOTAL SERVICES

23633

07-010-01 SYSTEM STUDIES AND ECONOMIC COMPARISON

23633

23633

TOTAL DIRECTS

6057

07-020-01 TRAVEL AND LIVING EXPENSES

1157

07-020-04 PRINTING

800

07-020-05 COMPUTER TIME

4100

6057

RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
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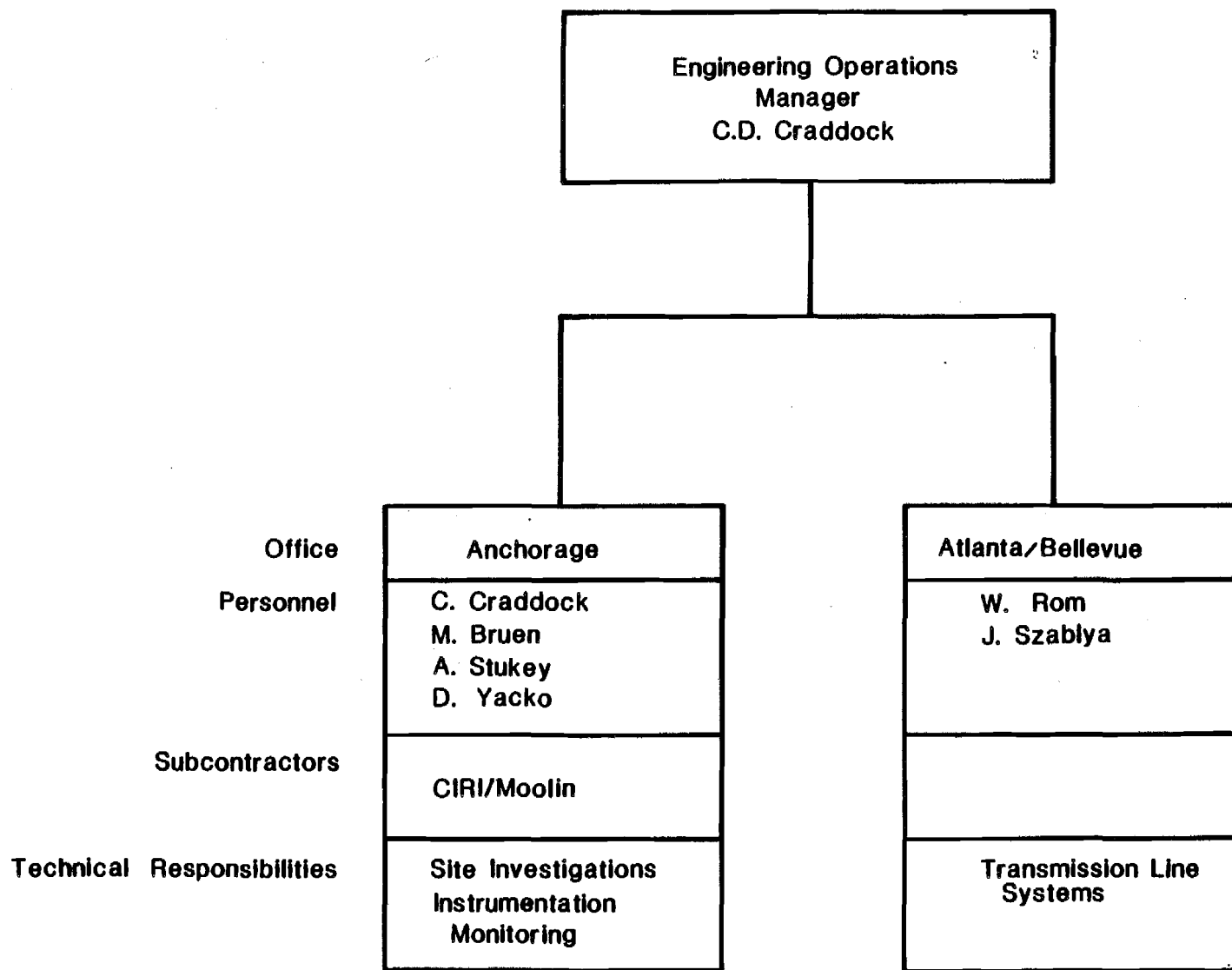
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TASK 07	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

LABOR 010													
07-010-01 SYSTEM STUDIES AND ECONOMIC COMPARISON	0	7385	16248	0	0	0	0	0	0	0	0	0	23633
LABOR 010 TOTALS	0	7385	16248	0	0	0	0	0	0	0	0	0	23633

DIRECTS													
07-020-01 TRAVEL AND LIVING EXPENSES	0	0	1157	0	0	0	0	0	0	0	0	0	1157
07-020-04 PRINTING	0	0	800	0	0	0	0	0	0	0	0	0	800
07-020-05 COMPUTER TIME	0	2000	2100	0	0	0	0	0	0	0	0	0	4100
TOTAL DIRECTS	0	2000	4057	0	0	0	0	0	0	0	0	0	6057

TASK 07 TOTALS	0	9385	20305	0	0	0	0	0	0	0	0	0	29690



July 1, 1984

TASKS 3, 5, 7, 41 - ENGINEERING

TASK 39
LOGISTICS

Task 39 involves logistical support for the Susitna project. The support contributions include all aviation and lodging in support of field activities.

For FY85 base budgeting, it is assumed that the field camp will be closed on October 1st for the winter, and that Talkeetna will be utilized as an operations base until camp reopening April 1st.

Services

39-010-01 Logistical Services

Coordination of Logistics

Direct Costs

39-020-02 Jet Fuel Purchase out of Camp

Jet fuel purchased away from the camp refers to refueling of helicopters at places other than the Watana Camp fuel dump. The limited fuel capacity of the helicopters requires them to take on fuel in Talkeetna, Cantwell, and other locations when their missions have taken them out of range of Watana Camp or when operating from Talkeetna with the camp closed.

39-020-03 Extraordinary Aircraft Support

Extraordinary air support is the chartering of aircraft other than those currently subcontracted when an unusual or infrequently used type of aircraft is required.

39-020-04 Talkeetna Lodging

Talkeetna lodging includes the costs associated with room and board in motels in Talkeetna when Watana Camp is closed.

39-020-08 Camp Fuel Aircraft

Purchasing and transportation of fuel to storage bladders at Watana camp.

39-020-09 Relocations

Relocation of permanent personnel (longer than a one year assignment) to the project. Costs include shipment of household effects and one vehicle, costs associated with disposal/rental of previous residence, etc.

Subcontracts

39-143-02 - 39-143-27 Helicopter Air Logistics

Furnish rotary wing support for field activities.

39-153-02 - 39-153-27 Alaska Air Guides - Fixed Wing

Provide fixed wing support for commutig to site and aerial observation.

39-193-01 Subcontractor Handling Fee

A handling fee equal to 2 percent of subcontractor costs.

39-203-02 - 39-203-41 CIRI/Moolin Camp Operation

CIRI-Moolin is responsible for housekeeping, food service, and maintenance support for Watana camp.

Special projects to be performed include:

39-203-28 Cargo Pad

A cargo pad sufficiently large to service the Bell 205 series of helicopter is needed. Without this pad, all sling loads must be made up in the mud or snow and the rigger is placed in a dangerous position because of unsure footing.

39-203-29 Communication Equipment

The G.E. "Lunchbox" radios have been in constant use since their purchase from Alyeska Surplus Management in 1980. They have now had so many charges that they no longer can be relied upon to function. While it is possible to purchase battery cells for replacement, they also are used and are not guaranteed. Battery cells cost \$250-\$300 each.

Many of the Field Observation Programs depend on radios for emergency, as well as operation contact and at the present time the radios are unreliable to the extent that one cannot determine whether a radio is good for 10 hours or 10 minutes. A 5 watt, hand held radio can be purchased new for \$850.00 complete with case and charger. Ten are required for most programs.

39-203-30 Dishwasher

An approved dishwasher and ancillary sanitary equipment for the camp kitchen has been needed for several years.

The present machinery does not meet the sanitary requirements of DEC and requires all dishwashing be done by hand. This is labor intensive and expensive. In addition, the improved system will allow us to use our trays, for the greater convenience of the guests.

39-203-31 Fuel Bladders

The present bladders, have for the most part, been on site for four years and were surplus Alaska Pipeline Service Co. material. Two bladders require replacement this year, one for 25,000 gallons and the other for 50,000 gallons. This must be done before the next fuel haul.

39-203-32 Sanitary Landfill

Sanitary Landfill

A sanitary landfill for the disposal of sewage sludge and non putrescible solid waste is a requirement of the Department of Environmental Conservation, for Watana Camp. At present, we are on limited

permit which allows us to package waste and fly it into Talkeetna for disposal. The DEC has allowed us to postpone our construction of this facility until we receive our FY 1985 budget. The use of Talkeetna's facilities are denied us after this time as their facility is actually too small for their own requirements. A landfill of this size should serve the camp for three years.

39-203-33 All Terrain Vehicle

An all terrain, eight wheel vehicle can be permitted by BLM to carry refuse to the sanitary landfill as it renders minimal damage to the tundra. This vehicle will also be used for waterline maintenance and borehole readings.

39-203-34 Water Filters

A water filter system incorporating 5 micron filters and charcoal is needed to trap giardia cysts and eliminate much of the iodine taste from the drinking and cooking water.

39-203-35 Clean up after Denali Demobilization

General Clean up and land restoration as a result of the winter Denali demobilization.

RUN DATE 08/09/84

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TASK 39	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL LABOR	10708	14008	10708	11206	13510	10210	10210	11206	14008	11206	11206	13510	141696

TOTAL DIRECTS	5000	32400	3000	7680	7540	8220	9600	7620	9900	9640	136800	10540	247940

TOTAL SUBCONTRACTORS	388484	371433	261508	91615	87848	63395	70326	64311	90173	70198	76806	131588	1767685

TASK 39 TOTALS	404192	417841	275216	110501	108898	81825	90136	83137	114081	91044	224812	155638	2157321

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 39 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	2276	64814.80	22037.48	42549.65	12293.64	141695.58
Home Office Staff	0	0.00	0.00	0.00	0.00	0.00
TOTAL STAFF	2276	64814.80	22037.48	42549.65	12293.64	141695.58

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 39		2157321
TOTAL SERVICES		141696
39-010-01 HARZA/EBASCO LOGISTICAL SERVICES	141696	141696
TOTAL DIRECTS		247940
39-020-02 JET FUEL PURCHASED OUT OF CAMP	58000	
39-020-03 EXTRAORDINARY AIRCRAFT SUPPORT	10000	
39-020-04 TALKETNA LODGING-AIR QUALITY MONITORING	27540	
39-020-08 CAMP FUEL AIRLIFT	125000	
39-020-09 RELOCATION	27400	247940
TOTAL SUBCONTRACTORS		1767685
39-143-02 HELICOPTER AIR LOG.-H/E STAFF SUPERVISION	87129	
39-143-03 HELICOPTER AIR LOG.-LGL	16662	
39-143-05 HELICOPTER AIR LOG.-U OF A FAIRBANKS(AAES)	27803	
39-143-06 HELICOPTER AIR LOG.-R.A. KREIG & ASSOCIATES	13722	
39-143-07 HELICOPTER AIR LOG.-ADF&G TERRESTRIAL	76915	
39-143-08 HELICOPTER AIR LOG.-UNIV. OF ALASKA MUSEUM	41090	
39-143-09 HELICOPTER AIR LOG.-AEIDC	11222	
39-143-10 HELICOPTER AIR LOG.-R&M AQUATIC	102822	
39-143-12 HELICOPTER AIR LOG.-E.W. TRIHEY	14614	
39-143-14 HELICOPTER AIR LOG.-ADF&G AQUATIC	312372	
39-143-17 HELICOPTER AIR LOG.-HARZA/EBASCO INSTRUMENTATION	27017	
39-143-20 HELICOPTER AIR LOG.-HYDROLOGY /HYDRAULICS	13614	
39-143-21 HELICOPTER AIR LOG.-T LINE OVERFLIGHTS	664	
39-143-22 HELICOPTER AIR LOG.-WOODWARD CLYDE	15921	
39-143-24 HELICOPTER AIR LOG.-USFW	2142	
39-143-25 HELICOPTER AIR LOG.-EDAW	109573	
39-143-26 HELICOPTER AIR LOG.-PERMITTING	938	
39-143-27 HELICOPTER AIR LOG.-AIR QUALITY MONITORING	9155	883375
39-153-02 ALASKA AIR GUIDES-HARZA/EBASCO SUPERVISION	12078	
39-153-03 ALASKA AIR GUIDES-LGL	2574	
39-153-04 ALASKA AIR GUIDES-U OF A PALMER(AAES)	1584	
39-153-05 ALASKA AIR GUIDES-UNIV. OF ALASKA FAIRBANKS	198	
39-153-06 ALASKA AIR GUIDES-R.A. KREIG & ASSOCIATES	1188	

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39-153-07	ALASKA AIR GUIDES-ADF&G TERRESTRIAL	1584	
39-153-08	ALASKA AIR GUIDES-R&M AQUATIC	1188	
39-153-09	ALASKA AIR GUIDES-AEIDC	1188	
39-153-17	ALASKA AIR GUIDES-HARZA/EBASCO INSTRUMENTATION	2376	
39-153-22	ALASKA AIR GUIDES-WOODWARD CLYDE	30	
39-153-24	ALASKA AIR GUIDES-USFW	396	
39-153-26	ALASKA AIR GUIDES-PERMITTING	594	
39-153-27	ALASKA AIR GUIDES-AIR QUALITY MONITORING	8910	33888
39-193-01	SUBCONTRACTOR HANDLING FEE	34657	34657
39-203-02	CIRI/FMAA CAMP LODGING FOR H/E	7920	
39-203-03	CIRI/FMAA CAMP LODGING FOR LGL	5720	
39-203-05	CIRI/FMAA CAMP LODGING FOR UA FBKNS (TERRESTRIAL	2640	
39-203-06	CIRI/FMAA CAMP LODGING FOR KREIG & ASSOC.	4950	
39-203-07	CIRI/FMAA CAMP LODGING FOR ADF&G (TERRESTRIAL)	61050	
39-203-08	CIRI/FMAA CAMP LODGING FOR R&M AQUATIC	6710	
39-203-11	CIRI/FMAA CAMP LODGING FOR UA MUSEUM	161040	
39-203-12	CIRI/FMAA CAMP LODGING FOR EDW	3300	
39-203-17	CIRI/FMAA CAMP LODGING FOR H/E INSTRUMENTATION	13200	
39-203-20	CIRI/FMAA CAMP LODGING FOR HYDRAULICS	330	
39-203-22	CIRI/FMAA CAMP LODGING FOR WOODWARD CLYDE	1540	
39-203-24	CIRI/FMAA CAMP LODGING FOR USFW	440	
39-203-26	CIRI/FMAA CAMP LODGING FOR PERMITTING	220	
39-203-27	CIRI/FMAA CAMP LODGING FOR AIR QUAL. MONITORING	440	
39-203-28	CIRI/FMAA-SP.PROJ.-CARGO PAD	3100	
39-203-29	CIRI/FMAA-SP.PROJ.-COMMUNICATION EQUIPMENT	8500	
39-203-30	CIRI/FMAA-SP.PROJ.-CAMP DISHWASHER	8500	
39-203-31	CIRI/FMAA-SP.PROJ.-FUEL BLADDERS	55250	
39-203-32	CIRI/FMAA-SP.PROJ.-SANITARY LANDFILL	19080	
39-203-33	CIRI/FMAA-SP.PROJ.-ALL TERRAIN VEHICLE	6900	
39-203-34	CIRI/FMAA-SP.PROJ.-WATER FILTERS	5700	
39-203-35	CIRI/FMAA-CLEAN UP AFTER DENALI DRILLING DEMOB	1800	
39-203-38	CIRI/MOOLIN-HOME OFFICE MANAGEMENT	180264	
39-203-39	CIRI/MOOLIN-WATANA CAMP MANAGEMENT	142953	
39-203-40	CIRI/MOOLIN-TALKEETNA FIELD MANAGEMENT	62218	
39-203-41	CIRI/MOOLIN-CAMP CLOSE & REOPEN	52000	815765

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TASK 39	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

LABOR 010													
39-010-01 HARZA/EBASCO LOGISTICAL SERVICES													
	10708	14008	10708	11206	13510	10210	10210	11206	14008	11206	11206	13510	141696

LABOR 010 TOTALS	10708	14008	10708	11206	13510	10210	10210	11206	14008	11206	11206	13510	141696

DIRECTS													
39-020-02 JET FUEL PURCHASED OUT OF CAMP													
	3000	3000	2000	5000	3000	6000	6000	6000	6000	6000	6000	6000	58000
39-020-03 EXTRAORDINARY AIRCRAFT SUPPORT													
	2000	2000	1000	1000	1000	0	0	0	0	1000	1000	1000	10000
39-020-04 TALKEETNA LODGING-AIR QUALITY MONITORING													
	0	0	0	240	0	0	0	0	0	240	0	0	480
39-020-04 TALKEETNA LODGING-ADF&G													
	0	0	0	0	0	1200	300	300	300	0	300	0	2400
39-020-04 TALKEETNA LODGING-AEIDC													
	0	0	0	0	180	0	0	180	0	0	0	0	360
39-020-04 TALKEETNA LODGING-HARZA/EBASCO													
	0	0	0	300	840	180	780	300	780	1020	1440	1380	7020
39-020-04 TALKEETNA LODGING-LGL													
	0	0	0	0	360	0	360	0	360	120	120	0	1320
39-020-04 TALKEETNA LODGING-PERMITTING													
	0	0	0	120	0	0	0	0	0	0	0	0	120
39-020-04 TALKEETNA LODGING-R&M													
	0	0	0	600	600	600	600	840	600	720	1140	720	6420
39-020-04 TALKEETNA LODGING-R&M (INSTRUMENTATION)													
	0	0	0	0	1200	0	1200	0	1200	0	1200	1200	6000
39-020-04 TALKEETNA LODGING-UAFBNKS (FUR)													
	0	0	0	300	240	240	240	0	420	540	600	240	2820
39-020-04 TALKEETNA LODGING-UAFBNKS (BIRD)													
	0	0	0	0	120	0	120	0	120	0	0	0	360
39-020-04 TALKEETNA LODGING-WWC													
	0	0	0	120	0	0	0	0	120	0	0	0	240

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TASK 39	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

DIRECTS													
39-020-08 CAMP FUEL AIRLIFT	0	0	0	0	0	0	0	0	0	0	125000	0	125000
39-020-09 RELOCATION	0	27400	0	0	0	0	0	0	0	0	0	0	27400
TOTAL DIRECTS	5000	32400	3000	7680	7540	8220	9600	7620	9900	9640	136800	10540	247940

SUBCONTRACTOR 143													
39-143-02 HELICOPTER AIR LOG.-H/E STAFF SUPERVISION	7711	8340	5238	2451	11060	5806	9413	5674	8494	6664	5808	10470	87129
39-143-03 HELICOPTER AIR LOG.-LGL	1713	1497	1637	0	3277	0	2789	0	2517	1904	1328	0	16662
39-143-05 HELICOPTER AIR LOG.-U OF A FAIRBANKS(AAES)	1285	428	0	0	0	0	0	0	0	0	332	654	2699
39-143-05 HELICOPTER AIR LOG.-U OF A FAIRBANKS FURBEARING	2142	855	2619	1362	4096	1659	0	1621	2202	3094	2655	654	22959
39-143-05 HELICOPTER AIR LOG.-U OF A FAIRBANKS(BIRDS)	0	0	0	0	819	0	697	0	629	0	0	0	2145
39-143-06 HELICOPTER AIR LOG.-R.A. KREIG & ASSOCIATES	4284	5346	4092	0	0	0	0	0	0	0	0	0	13722
39-143-07 HELICOPTER AIR LOG.-ADF&G TERRESTRIAL	25702	21384	1637	681	2048	2074	3486	2028	12584	1190	829	3272	76915
39-143-08 HELICOPTER AIR LOG.-UNIV. OF ALASKA MUSEUM	19919	19888	0	0	0	0	0	0	0	0	0	0	39807
39-143-08 HELICOPTER AIR LOG.-UNIV. OF ALASKA MUSEUM(SPL	0	1283	0	0	0	0	0	0	0	0	0	0	1283
39-143-09 HELICOPTER AIR LOG.-AEIDC	1713	2138	491	0	2458	0	1046	2432	944	0	0	0	11222
39-143-10 HELICOPTER AIR LOG.-R&M AQUATIC	6640	9409	8512	8850	6964	7880	2440	3242	2202	5236	3984	5562	70921
39-143-10 HELICOPTER AIR LOG.-R&M AQUATIC(SPECIAL HELIC)	0	2138	3110	408	4506	4562	3835	4458	3460	2618	1825	981	31901

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TASK 39	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 143													
39-143-12	HELICOPTER AIR LOG.-E.W. TRIHEY												
	3641	2138	5075	1770	0	0	1046	0	944	0	0	0	14614
39-143-14	HELICOPTER AIR LOG.-ADF&G AQUATIC												
	38981	46757	44653	22192	11800	17834	13248	17428	19820	23321	28211	25847	312372
39-143-17	HELICOPTER AIR LOG.-HARZA/EBASCO INSTRUMENTATION												
	1071	0	2456	0	6145	0	5229	0	4719	0	2489	4908	27017
39-143-20	HELICOPTER AIR LOG.-HYDROLOGY /HYDRAULICS												
	857	855	655	545	3277	0	0	3242	1258	952	664	1309	13614
39-143-21	HELICOPTER AIR LOG.-T LINE OVERFLIGHTS												
	0	0	0	0	0	0	0	0	0	0	664	0	664
39-143-22	HELICOPTER AIR LOG.-WOODWARD CLYDE												
	2142	4277	2619	1089	3277	0	0	0	2517	0	0	0	15921
39-143-24	HELICOPTER AIR LOG.-USFW												
	2142	0	0	0	0	0	0	0	0	0	0	0	2142
39-143-25	HELICOPTER AIR LOG.-EDAW												
	32555	32504	24883	0	0	0	0	0	0	0	0	19631	109573
39-143-26	HELICOPTER AIR LOG.-PERMITTING												
	0	428	0	272	0	0	0	0	0	238	0	0	938
39-143-27	HELICOPTER AIR LOG.-AIR QUALITY MONITORING												
	2142	2994	1637	1906	0	0	0	0	0	476	0	0	9155
SUBCONTRACTOR 143 TOTALS													
	154640	164659	109514	41526	59807	39815	43229	40125	62290	45693	48789	73288	883375

SUBCONTRACTOR 153													
39-153-02	ALASKA AIR GUIDES-HARZA/EBASCO SUPERVISION												
	1386	792	990	792	1386	396	990	792	1386	792	1386	990	12078
39-153-03	ALASKA AIR GUIDES-LGL												
	594	792	594	0	198	0	0	0	198	0	198	0	2574
39-153-04	ALASKA AIR GUIDES-U OF A PALMER(AAES)												
	594	396	0	0	0	0	0	0	0	0	396	198	1584
39-153-05	ALASKA AIR GUIDES-UNIV. OF ALASKA FAIRBANKS												
	0	0	0	0	0	0	198	0	0	0	0	0	198

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

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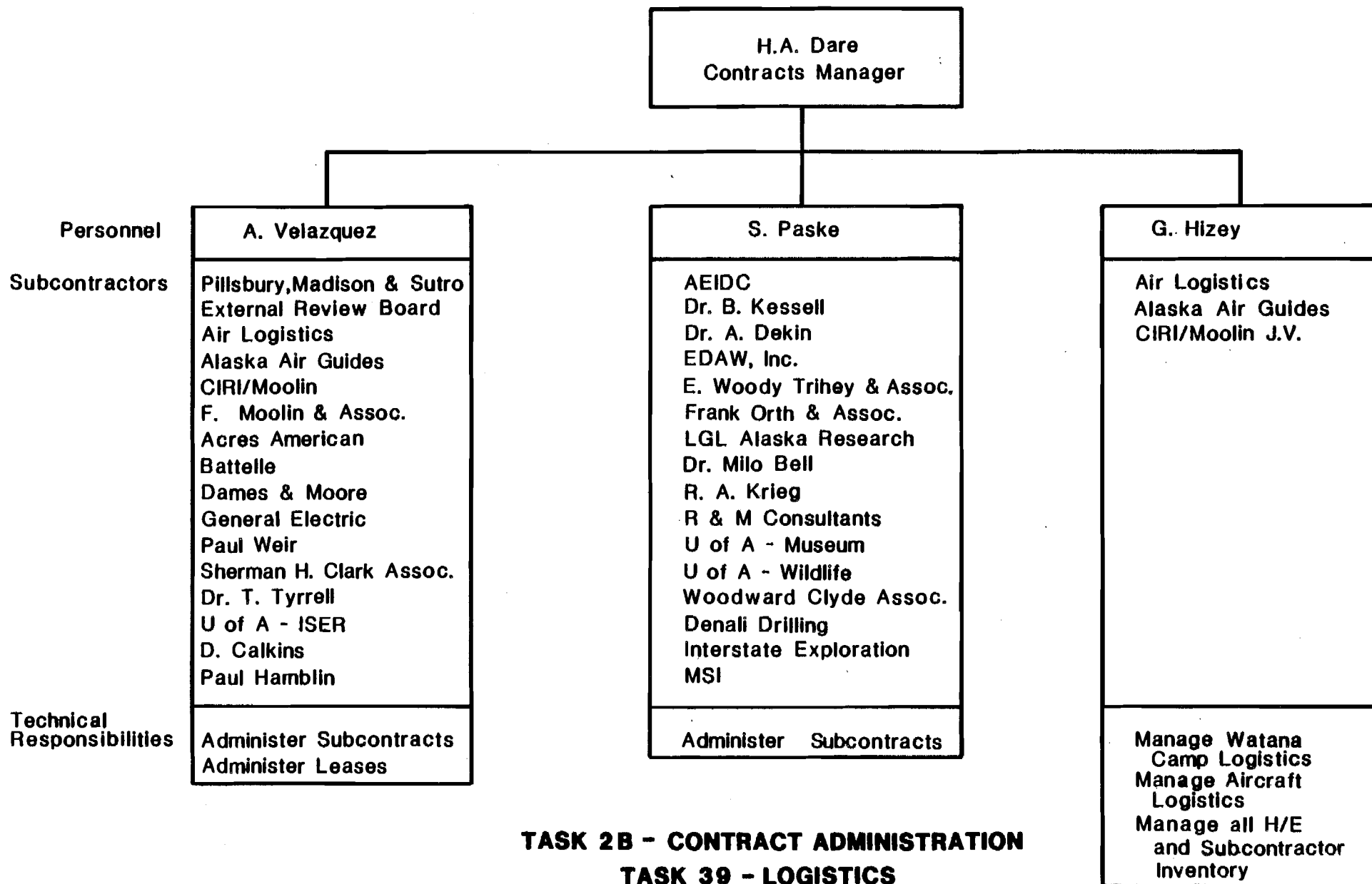
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TASK 39	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 203													
39-203-31 CIRI/FMAA-SP.PROJ.-FUEL BLADDERS	0	0	55250	0	0	0	0	0	0	0	0	0	55250
39-203-32 CIRI/FMAA-SP.PROJ.-SANITARY LANDFILL	0	9540	9540	0	0	0	0	0	0	0	0	0	19080
39-203-33 CIRI/FMAA-SP.PROJ.-ALL TERRAIN VEHICLE	6900	0	0	0	0	0	0	0	0	0	0	0	6900
39-203-34 CIRI/FMAA-SP.PROJ.-WATER FILTERS	5700	0	0	0	0	0	0	0	0	0	0	0	5700
39-203-35 CIRI/FMAA-CLEAN UP AFTER DENALI DRILLING DEMOB	1800	0	0	0	0	0	0	0	0	0	0	0	1800
39-203-38 CIRI/MOOLIN-HOME OFFICE MANAGEMENT	15022	15022	15022	15022	15022	15022	15022	15022	15022	15022	15022	15022	180264
39-203-39 CIRI/MOOLIN-WATANA CAMP MANAGEMENT	47651	47651	47651	0	0	0	0	0	0	0	0	0	142953
39-203-40 CIRI/MOOLIN-TALKEETNA FIELD MANAGEMENT	0	0	0	6913	6913	6913	6913	6913	6913	6913	6913	6914	62218
39-203-41 CIRI/MOOLIN-CAMP CLOSE & REOPEN	0	0	0	22000	0	0	0	0	0	0	0	30000	52000
SUBCONTRACTOR 203 TOTALS													
	219693	193543	142113	43935	24135	21935	24135	21935	24135	21935	24135	54136	815765

TASK 39 TOTALS													
	404192	417841	275216	110501	108898	81825	90136	83137	114081	91044	224812	155638	2157321



July 1, 1984

TASK 40

NEED FOR POWER STUDIES

The objectives of this task in FY85 will be to support the economic and financial conclusions of the License Application and subsequent studies before the FERC, to assist the Power Authority in negotiations with utilities and to prepare studies to support Project financing and the marketing of Project power. All work is to be performed under schedules set by FERC.

The FY85 budget has been established on the basis of accomplishing the following major objectives:

1. Finalize the preparation of comments and narrative discussion of the DEIS including supporting studies.
2. Prepare additional studies required to support direct testimony based on issues raised in the DEIS.
3. Finalizing direct testimony prepared in FY84 for Administrative Hearings including the results of the additional studies.
4. Assist counsel in witness preparation and assembly of supporting material for witnesses.
5. Participate in Administrative Hearings.
6. Assist counsel in discovery and in preparing briefs including preparation of additional analyses if required.

7. Prepare utilities expansion plans for the Railbelt utilities which will identify their most likely course of action and associated energy costs in the period prior to Project operation.
8. Assist the Power Authority in power sales negotiations with utilities and prepare supporting studies.
9. Assist the Power Authority in finalizing a financing and marketing plan for project power including the preparation of supporting studies.
10. Prepare project operation and dispatch studies to support hearings and utility negotiations.
11. Prepare economic studies to assist in settlement program.

Services

40-010-04 Discovery Activities - Need for Power

This work is related to the Need for Power Hearings Process. The work will consist of collecting, compiling and disseminating information and preparing responses requested by the FERC staff, intervenors, and other agencies and individuals; preparing questions on testimony and requesting discovery data of FERC and opponents; receiving, analyzing and indexing discovery information from FERC and opponents; advising counsel, general coordination and filing. This estimate is preliminary because the extent of requests cannot be anticipated.

40-010-05 Pre-Hearing Studies and Direct Testimony

This task encompasses the work required to finish preparation and support direct testimony. Preparation of draft testimony, except for coal witnesses

was completed in FY84. Work in FY85 will include revision and review of the draft testimony to take into account points raised in the DEIS and also the completion of coal price testimony. The identification and execution of additional studies which will be required to support testimony in light of the DEIS is included in this Task. The preparation of witnesses is also included in this task. While the work in this task encompasses the NFP testimony and this testimony is also intended to be used for the environmental hearings with minor revisions.

The testimony is anticipated to cover economics, fuel price forecasts, project operation, capacity and energy production, generation expansion, and financial requirements.

Extended discussion and contacts with the following witnesses is expected: Acres, S.H.Clark, Dames & Moore, Battelle, P. Weir Co., and ISER.

40-010-06 Discovery Activities - Environmental Hearings

This item is related to the Environmental Hearings. The work will consist of collecting, compiling, and disseminating information; expanding discussions of testimony items, reviewing and preparing questions on testimony of others, indexing and filing. Although NFP and Environmental Hearings might be combined, this has been retained as a separate task for the present because of timing differences of the discovery periods.

This estimate is preliminary because the extent of requests cannot be anticipated.

40-010-13 Presentation of Testimony - Need for Power

This task is part of the Need for Power Hearings. It consists of the presentation of direct and subsequent rebuttal testimony and conferences with counsel concerning cross-examination of witnesses for APA, FERC, and the intervenors. Approximately 10 witnesses and coordinators from the Joint Venture will participate.

This estimate is based on a three-week hearing period according to the April 1984 "Bear Book" schedule transposed on the basis of the hearing order being issued December 28, 1984.

40-010-14 Initial, Reply & Exception Briefs -
Need for Power

This item is part of the Need for Power Hearing Process. The effort consists of assisting counsel in the preparation of briefs, the review of opponents briefs, and the preparation of recommendations to the Power Authority and counsel. The extent of the work is not definable now, but time scheduled by FERC is short.

40-010-26 Financial and Market Support

The effort consists of assisting the Power Authority in marketing Susitna power to Railbelt Utilities resulting in power sales agreements. Work will include presentation of Susitna power and energy capabilities for integration into each of the utility systems and allocation of power among the utilities under normal and adverse streamflow conditions. This task will also include the preparation of studies, similar to those performed for the Economic and Financial

Update, which will be used to support presentations to the State financial institutions and the FERC with respect to project financing.

40-010-27 Comment on DEIS and Provide Input to FEIS

This item provides input to the Environmental Impact Statements. The effort consists of reviewing the DEIS to ensure that data and analysis are complete and accurate. For those items which are not complete, or at the request of FERC, additional information will be provided for the FEIS. In addition, comments will be prepared on certain subject areas where the assumptions, analyses and/or conclusions do not agree with those of the Power Authority as expressed in the License Application.

The work will cover economic conditions, oil and fuel price forecasts, system operation, the project and alternatives, flow releases and economic analyses.

Major effort is expected by Joint Venture personnel from extended discussions and contacts with Acres, S.H. Clark, Dames & Moore, Battelle, P. Weir Co., and ISER.

40-010-29 Project Operation and Dispatch

The studies will provide basic information for discussion of project operation with Railbelt Utilities, to identify effect on power generation of instream flow requirements, and to support preparation of direct testimony for the Environmental Hearings. Studies will be performed for base load, load following, and peaking operation. Both Watana alone and Watana with Devil Canyon will be analyzed. Reservoir rule curves and reservoir operating guides will be developed for a range of operating conditions. Hourly operation will be performed to

provide data balancing environmental quality with economic return. Provision for additional units also will be studied.

These studies are a continuation of the studies begun in FY84.

40-010-30 Settlement Process - Economic Data Input

The work will involve specialized economic studies to provide data for resolving outstanding issues. Meetings and conferences will be held among agencies, the public and intervenors.

40-010-33 Utility Expansion Planning

This effort is related to the Marketing Support (40-010-26), the Settlement Process (40-010-30) and the preparation of testimony for the Environmental Hearings.

The program consists of using utility planning information including forecasts, retirement schedules, reliability criteria, etc., to develop expansion plans for each utility. It is anticipated that the expansion planning will be performed using the EGEAS or similar model. The results will be used to establish the cost of power on the bases of four independent utilities operating in the Railbelt in the period prior to the operation of the Project and immediately after the date of scheduled initial project operation if the project is not built. The rental cost of the EGEAS or similar model computer program is not included in the estimate as it is intended to be provided by the Power Authority.

Direct

40-020-01 Air Travel and Per Diem

These costs are comprised of the following items:

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Chicago and Washington, D.C.	20	4
Chicago and Anchorage	17	5
Seattle and Washington, D.C.	13	2
Seattle and Anchorage	5	5
Seattle and Chicago	10	3

40-020-03 Computer

Models runs for economic and project operation studies. Also includes 1st year software charges for EGEAS model.

40-020-04 Printing

Printing costs for four reports on project operation and one report on utility planning. All testimony will be reproduced by counsel.

40-020-09 GE, OGP Model Operation

Computer model utilization cost.

Subcontractor

40-103-04 Acres, Discovery Activities - Need for Power Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-103-05 Acres, Prehearing Studies and Preparation of Testimony

Prepare direct testimony for Need for Power Administrative Hearings.

40-103-06 Acres, Discovery Activities - Environmental Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-103-13 Acres, Presentation of Testimony - Need for Power Hearings

Attendance at hearing and presentation of testimony

40-103-27 Acres, Comment on DEIS and Provide Input to FEIS

Provide input to EIS process.

40-113-04 Battelle, Discovery Activities - Need for Power Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-113-05 Battelle, Prehearing Studies and Preparation of Testimony

Prepare direct testimony for Need for Power Administrative Hearings

40-113-06 Battelle, Discovery Activities - Environmental Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-113-13 Battelle, Presentation of Testimony - Need for Power Hearings

Attendance at Hearing and presentation of testimony

40-113-27 Battelle, Comment on DEIS and Provide Input to FEIS

Provide input to EIS process.

40-123-04 Sherman H. Clark, Discovery Activities - Need for Power Hearings

Contribute to preparation of response to requests for information during the Discovery period.

40-123-05 Sherman H. Clark, Prehearing Studies and Preparation of Testimony - Need for Power Hearings

Prepare direct testimony for Need for Power Administrative Hearings.

40-123-06 Sherman H. Clark, Discovery Activities - Environmental Hearings

Contribute to preparation of response to requests for information during the Discovery period.

40-123-13 Sherman H. Clark, Presentation of Testimony - Need for Power Hearings

Attendance at Hearing and presentation of testimony

40-123-27 Sherman H. Clark, Comment on DEIS and Provide Input
to FEIS

Provide input to EIS Process

40-133-01 ISER, Economic & Financial Update

Refinement of MAP Model to take into account suggestions by DOR on corporate income tax and to respond to other comments received on the model.

40-133-04 ISER, Discovery Activities - Need for Power Hearings

Contribute to preparation of response to requests for information during the Discovery period.

40-133-05 ISER, Prehearing Studies & Preparation of Direct Testimony

Prepare direct testimony for Need for Power Administrative Hearings.

40-133-06 ISER, Discovery Activities - Environmental Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-133-13 ISER, Presentation of Testimony - Need for Power Hearings

Attendance at Hearing and presentation of testimony

40-133-27 ISER, Comment on DEIS and Provide Input to FEIS

Provide input to EIS process.

40-143-05 General Electric, Prehearing Studies and Preparation of
Direct Testimony

Prepare direct testimony for Need for Power Administrative Hearing.

40-143-13 General Electric, Presentation of Testimony -
Need for Power Hearings

Attendance at Hearing and presentation of testimony.

40-153-04 Dames & Moore, Discovery Activities - Need for Power Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-153-05 Dames & Moore, Prehearing Studies and Preparation of Testimony

Prepare direct testimony for Need for Power Administrative Hearings.

40-153-06 Dames & Moore, Discovery Activities - Environmental Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-153-13 Dames & Moore, Presentation of Testimony -
Need for Power Hearings

Attendance at Hearing and presentation of testimony.

40-153-27 Dames & Moore, Comment on DEIS and Input to FEIS

Provide input to EIS Process.

40-173-04 Paul Weir Company, Discovery Activities - Need for Power Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-173-05 Paul Weir Company, Prehearing Studies and Preparation of
Testimony

Prepare direct testimony for Administrative Hearings.

40-173-06 Paul Weir Company, Discovery Activities - Environmental Hearings

Contribute to preparation of responses to requests for information during the Discovery period.

40-173-13 Paul Weir Company, Presentation of Testimony - Need for
Power Hearings

Attendance at Hearing and preparation of testimony.

40-173-17 Paul Weir Company, Comment on DEIS and Input to FEIS

Provide input to EIS process.

40-203-05 Unassigned Prehearing Studies and Preparation of

Testimony Subcontract

Prepare testimony for Need for Power Administrative Hearings.

40-213-05 Professor Tyrrell Prehearing Studies and Preparation

Testimony

Prepare testimony for Need for Power Administrative Hearings.

40-223-01 Subcontractor Handling Fee

Handling fee equal to 2% of subcontract cost.

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TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL LABOR	113823	150022	119096	131278	141456	132435	99852	96110	59621	52650	53400	57068	1206811

TOTAL DIRECTS	70100	12400	33800	17400	14900	16500	30500	37500	35900	11500	21300	5000	306800

TOTAL SUBCONTRACTORS	68340	30600	5100	0	20400	221850	281520	168300	10200	0	71400	0	877710

TASK 40 TOTALS	252263	193022	157996	148678	176756	370785	411872	301910	105721	64150	146100	62068	2391321

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 40 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	1066	30892.68	10500.10	20285.98	5852.34	67531.10
Home Office Staff	21269	445851.89	151525.23	442076.12	99826.74	1139279.98
TOTAL STAFF	22335	476744.57	162025.33	462362.10	105679.08	1206811.08

Alaska Power Authority
 Harza-Ebasco Susitna Joint Venture
 Fiscal Year 1985: Cost Summary

TASK 40

2391321

TOTAL SERVICES

1206811

40-010-04	DISCOVERY ACTIVITIES-NEED FOR POWER HRGS.	69686
40-010-05	PRE-HEARING STUDIES AND PREPARATION OF TESTIMONY	403984
40-010-06	DISCOVERY ACTIVITIES-ENVIRONMENTAL HEARINGS	34211
40-010-13	PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	65759
40-010-14	INITIAL, REPLY & EXCEPTION BRIEFS-NEED FOR POWER	19533
40-010-26	FINANCIAL & MARKETING SUPPORT	81161
40-010-27	COMMENTS ON DEIS AND PROVIDE INPUT TO FEIS	85111
40-010-29	PROJECT OPERATION AND DISPATCH	325924
40-010-30	SETTLEMENT PROCESS-ECONOMIC DATA INPUT	25169
40-010-33	UTILITY EXPANSION PLANNING	96273

1206811

TOTAL DIRECTS

306800

40-020-01	TRAVEL AND LIVING EXPENSES	84800
40-020-03	COMPUTER	135000
40-020-04	PRINTING	12000
40-020-05	GE - OGP COMPUTER MODEL	75000

306800

TOTAL SUBCONTRACTORS

877710

40-103-04	ACRES, DISCOVERY ACTIVITIES-NEED FOR POWER	10000
40-103-05	ACRES, PREHEARING STUDIES & PREP. OF TESTIMONY	45000
40-103-06	ACRES, DISCOVERY ACTIVITIES-ENVIRONMENTAL HEARING	10000
40-103-13	ACRES, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	20000
40-103-27	ACRES, COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	15000

100000

40-113-04	BATTELLE, DISCOVERY ACTIVITIES-NEED FOR POWER	24000
40-113-05	BATTELLE, PERHRG. STUDIES & PREP. OF TESTIMONY	45000
40-113-06	BATTELLE, DISCOVERY ACTIVITIES-ENVIRONMENTAL HEAR	10000
40-113-13	BATTELLE-PRES. OF TESTIMONY-NEED FOR POWER HRGS.	40000
40-113-27	BATTELLE, COMNT ON DEIS AND PROVIDE INPUT TO FEI	15000

134000

40-123-04	SH CLARK, DISCOVERY ACTIVITIES-NEED FOR POWER	20000
40-123-05	SH CLARK, PREHRG. STUDIES & PREP. OF TESTIMONY	60000

Alaska Power Authority
 Harza-Ebasco Susitna Joint Venture
 Fiscal Year 1985: Cost Summary

40-123-06	SH CLARK, DISCOVERY ACTIVITIES-ENVIRONMENTAL HRGS	20000	
40-123-13	SH CLARK-PRES. OF TESTIMONY-NEED FOR POWER HRGS.	50000	
40-123-27	SH CLARK, COMNT ON DEIS AND PROVIDE INPUT TO FEIS	15000	165000
40-133-01	ISER-ECONOMIC & FINANCIAL UPDATE	52000	
40-133-04	ISER, DISCOVERY ACTIVITIES-NEED FOR POWER	10000	
40-133-05	ISER, PREHEARING STUDIES & PREP. OF TESTIMONY	45000	
40-133-06	ISER, DISCOVERY ACTIVITIES-ENVIRONMENTAL HEARINGS	10000	
40-133-13	ISER, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	15000	
40-133-27	ISER, COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	15000	147000
40-143-05	GE, PREHEARING STUDIES & PREP. OF TESTIMONY	7000	
40-143-13	GE, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	40500	
40-143-27	GE, COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	5000	52500
40-153-04	D&M, DISCOVERY ACTIVITIES-NEED FOR POWER	10000	
40-153-05	D&M, PREHEARING STUDIES & PREP. OF TESTIMONY	54000	
40-153-06	D&M, DISCOVERY ACTIVITIES-ENVIRONMENTAL HEARINGS	10000	
40-153-13	D&M, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	23000	
40-153-27	D&M, COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	15000	112000
40-173-04	P. WEIR, DISCOVERY ACTIVITIES-NEED FOR POWER	10000	
40-173-05	P. WEIR, PREHRG. STUDIES & PREP. OF TESTIMONY	45000	
40-173-06	P. WEIR, DISCOVERY ACTIVITIES-ENVIRONMENTAL HRGS	10000	
40-173-13	P. WEIR, PRES. OF TESTIMONY-NEED FOR POWER HRGS.	30000	
40-173-27	P. WEIR, COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	15000	110000
40-203-05	PRESENTLY UNIDENTIFIED S/C FOR DIRECT TESTIMONY	30000	30000
40-213-05	PROF. TYRELL-PREHRG. STUDIES & PREP. OF TSTMY	10000	10000
40-223-01	SUBCONTRACTOR HANDLING FEE	17210	17210

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

LABOR 010													
40-010-04 DISCOVERY ACTIVITIES-NEED FOR POWER HRGS.	0	0	0	0	0	0	69686	0	0	0	0	0	69686
40-010-05 PRE-HEARING STUDIES AND PREPARATION OF TESTIMONY	39811	69451	59236	57853	68439	59675	17115	6931	7287	5703	5703	6780	403984
40-010-06 DISCOVERY ACTIVITIES-ENVIRONMENTAL HEARINGS	0	0	0	0	0	0	0	0	0	10587	10587	13037	34211
40-010-13 PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	0	0	0	0	0	0	0	65759	0	0	0	0	65759
40-010-14 INITIAL, REPLY & EXCEPTION BRIEFS-NEED FOR POWER	0	0	0	0	0	0	0	0	10587	0	8946	0	19533
40-010-26 FINANCIAL & MARKETING SUPPORT	0	14050	14548	13769	12692	26102	0	0	0	0	0	0	81161
40-010-27 COMMENTS ON DEIS AND PROVIDE INPUT TO FEIS	54496	20389	5113	5113	0	0	0	0	0	0	0	0	85111
40-010-29 PROJECT OPERATION AND DISPATCH	18463	32950	27492	31373	33643	23495	10778	20815	33336	28164	28164	37251	325924
40-010-30 SETTLEMENT PROCESS-ECONOMIC DATA INPUT	0	0	0	0	2456	1228	2273	2605	8411	8196	0	0	25169
40-010-33 UTILITY EXPANSION PLANNING	1053	13182	12707	23170	24226	21935	0	0	0	0	0	0	96273
LABOR 010 TOTALS	113823	150022	119096	131278	141456	132435	99852	96110	59621	52650	53400	57068	1206811

DIRECTS													
40-020-01 TRAVEL AND LIVING EXPENSES	25100	2400	3800	4900	2900	6500	8000	12500	13400	1500	1300	2500	84800
40-020-03 COMPUTER	0	10000	10000	10000	10000	10000	20000	25000	20000	10000	10000	0	135000
40-020-04 PRINTING	0	0	0	2500	2000	0	2500	0	2500	0	0	2500	12000
40-020-05 GE - OGP COMPUTER MODEL	45000	0	20000	0	0	0	0	0	0	0	10000	0	75000

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
TOTAL DIRECTS	70100	12400	33800	17400	14900	16500	30500	37500	35900	11500	21300	5000	306800

SUBCONTRACTOR 103

40-103-04	ACRES,DISCOVERY ACTIVITIES-NEED FOR POWER	0	0	0	0	0	10000	0	0	0	0	0	0	10000
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40-103-05	ACRES, PREHEARING STUDIES & PREP. OF TESTIMONY	0	0	0	0	0	0	20000	25000	0	0	0	0	45000
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[illegible]

40-103-13	ACRES, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	0	0	0	0	0	10000	10000	0	0	0	0	0	20000
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[illegible]

SUBCONTRACTOR 103 TOTALS												
10000	5000	0	0	0	20000	30000	25000	0	0	10000	0	100000

SUBCONTRACTOR 113

40-113-04	BATTELLE,DISCOVERY ACTIVITIES-NEED FOR POWER	0	0	0	0	0	24000	0	0	0	0	0	0	24000
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40-113-05	BATTELLE, PERHRG. STUDIES & PREP. OF TESTIMONY	0	0	0	0	0	20000	25000	0	0	0	0	45000
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40-113-06 BATTELLE, DISCOVERY ACTIVITIES-ENVIRONMENTAL HEAR

40-113-13 BATTELLE-PRES. OF TESTIMONY-NEED FOR POWER HRGS.

40-113-27 BATTELLE, COMNT ON DEIS AND PROVIDE INPUT TO FEI
10000 5000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 15000

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
SUBCONTRACTOR 113 TOTALS	10000	5000	0	0	0	44000	40000	25000	0	0	10000	0	134000

[illegible]

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 133 TOTALS	17000	5000	5000	0	0	28000	37000	35000	10000	0	10000	0	147000

40-143-05 GE, PREHEARING STUDIES & PREP. OF TESTIMONY

40-143-13	GE, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	0	0	0	0	20000	20500	0	0	0	0	0	0	40500
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40-143-27	GE, COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	0	0	0	0	0	5000	0	0	0	0	0	0	5000
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SUBCONTRACTOR 143 TOTALS												
0	0	0	0	20000	32500	0	0	0	0	0	0	52500

40-153-04	D&M, DISCOVERY ACTIVITIES-NEED FOR POWER	0	0	0	0	0	10000	0	0	0	0	0	0	10000
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40-153-05	D&M, PREHEARING STUDIES & PREP. OF TESTIMONY	0	0	0	0	0	29000	25000	0	0	0	0	54000
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40-153-06	D&M, DISCOVERY ACTIVITIES-ENVIRONMENTAL HEARINGS	0	0	0	0	0	0	0	0	0	10000	0	10000
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40-153-13	D&M, PRES. OF TESTIMONY-NEED FOR POWER HEARINGS	0	0	0	0	0	13000	10000	0	0	0	0	0	23000
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[illegible]

SUBCONTRACTOR 153 TOTALS												
10000	5000	0	0	0	23000	39000	25000	0	0	10000	0	110000

40-173-04	P. WEIR, DISCOVERY ACTIVITIES-NEED FOR POWER	0	0	0	0	0	10000	0	0	0	0	0	0	10000
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RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

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TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 173													
40-173-05 P.WEIR,PREHRG. STUDIES & PREP. OF TESTIMONY	0	0	0	0	0	0	20000	25000	0	0	0	0	45000
40-173-06 P.WEIR,DISCOVERY ACTIVITIES-ENVIRONMENTAL HRGS	0	0	0	0	0	0	0	0	0	0	10000	0	10000
40-173-13 P.WEIR,PRES. OF TESTIMONY-NEED FOR POWER HRGS.	0	0	0	0	0	15000	15000	0	0	0	0	0	30000
40-173-27 P.WEIR,COMMENT ON DEIS AND PROVIDE INPUT TO FEIS	10000	5000	0	0	0	0	0	0	0	0	0	0	15000
SUBCONTRACTOR 173 TOTALS													
	10000	5000	0	0	0	25000	35000	25000	0	0	10000	0	110000

SUBCONTRACTOR 203													
40-203-05 PRESENTLY UNIDENTIFIED S/C FOR DIRECT TESTIMONY	0	0	0	0	0	0	30000	0	0	0	0	0	30000
SUBCONTRACTOR 203 TOTALS													
	0	0	0	0	0	0	30000	0	0	0	0	0	30000

SUBCONTRACTOR 213													
40-213-05 PROF.TYRELL-PREHRG. STUDIES & PREP. OF TSTMY	0	0	0	0	0	0	10000	0	0	0	0	0	10000
SUBCONTRACTOR 213 TOTALS													
	0	0	0	0	0	0	10000	0	0	0	0	0	10000

SUBCONTRACTOR 223													
40-223-01 SUBCONTRACTOR HANDLING FEE	1340	600	100	0	400	4350	5520	3300	200	0	1400	0	17210
SUBCONTRACTOR 223 TOTALS													
	1340	600	100	0	400	4350	5520	3300	200	0	1400	0	17210

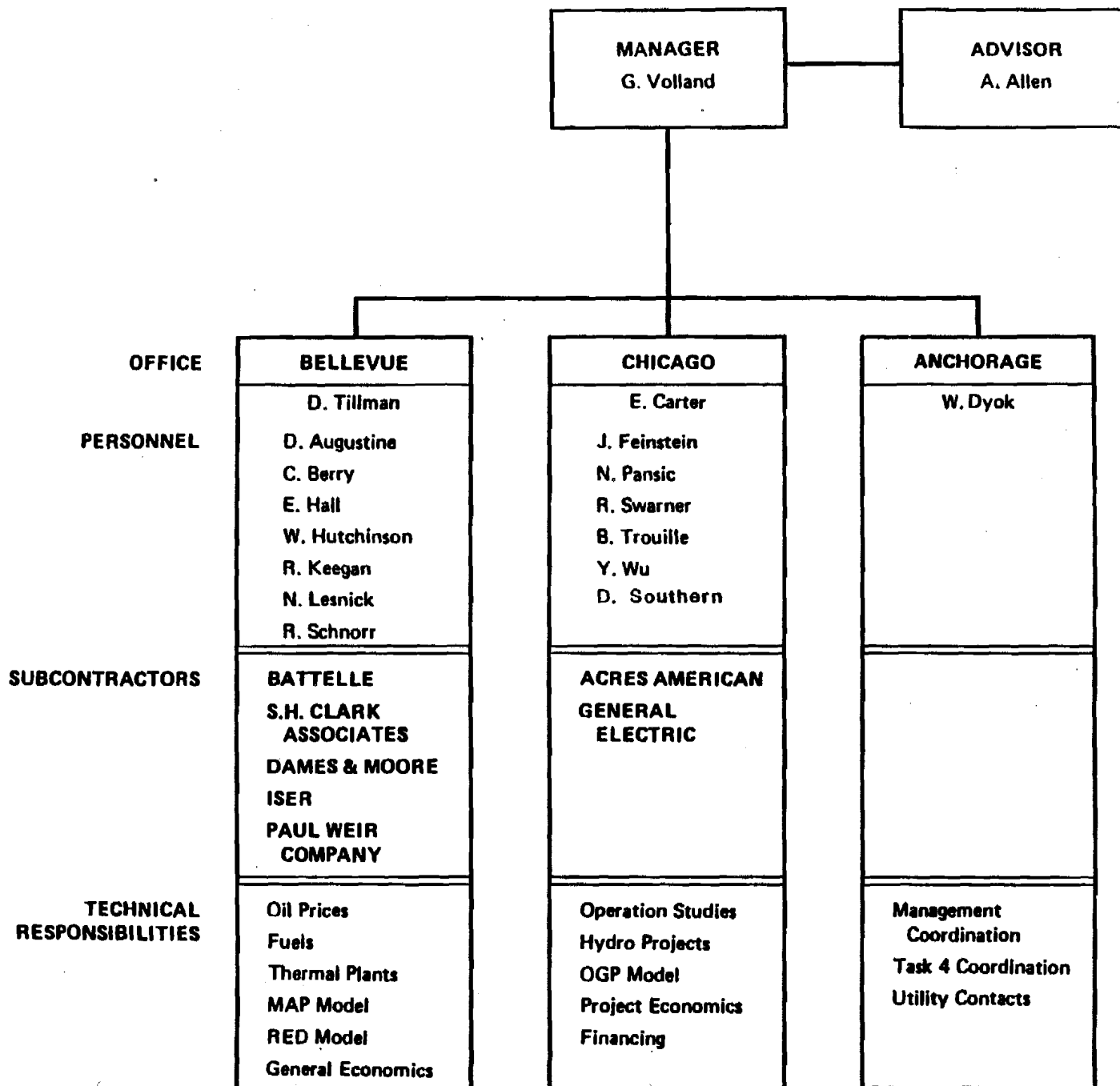
RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

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TASK 40	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TASK 40 TOTALS	252263	193022	157996	148678	176756	370785	411872	301910	105721	64150	146100	62068	2391321



July 1, 1984

TASK 40 - NEED FOR POWER

TASK 41
TRANSMISSION FACILITIES SITING & LICENSING

The purpose of Task 41 in FY85 is limited to the support of the FERC hearing process and the securing of power sales agreements.

Services

41-010-01 Prepare Cost Estimates for Alternatives

Prepare estimates on transmission system alternatives.

41-010-02 Report on Transmission System Alternatives

Define and report on transmission system alternatives.

41-010-08 Support FERC Requests for Information

Prepare written responses to FERC supplemental information requests. This will include both responses made by FERC in FY 1985 as well as responses which were supplied to FERC based on information submitted to FERC in FY 1984.

41-010-16 Provide Input to Brief Process

Provide input when requested to pre hearing activities such as preparation of direct testimony.

Directs

41-020-01 Travel and Living Expense

Includes two trips of one week duration associated with the above effort.

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Atlanta and Anchorage	2	7 days

41-020-04 Printing

Drawings and report reproductions required for the task activities.

RUN DATE 08/09/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

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TASK 41	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL LABOR	3704	4802	8404	3252	6509	5242	9783	3481	8232	9524	3252	3252	69437

TOTAL DIRECTS	3000	3500	3000	3500	3000	3500	2500	3500	3000	3500	3000	3000	38000

TASK 41 TOTALS	6704	8302	11404	6752	9509	8742	12283	6981	11232	13024	6252	6252	107437

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 41 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	0	0.00	0.00	0.00	0.00	0.00
Home Office Staff	959	27161.68	9232.30	26935.80	6107.53	69437.32
TOTAL STAFF	959	27161.68	9232.30	26935.80	6107.53	69437.32

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 41

107437

TOTAL SERVICES

69437

41-010-01	PREPARE COST ESTIMATES FOR ALTERNATIVES	64614	
41-010-02	REPORT ON TRANSMISSION SYSTEM ALTERNATIVES	4823	
41-010-08	SUPPORT FERC REQUESTS FOR INFORMATION	0	
41-010-16	PROVIDE INPUT TO BRIEF PROCESS	0	69437

TOTAL DIRECTS

38000

41-020-01	TRAVEL AND LIVING EXPENSES	30000	
41-020-04	PRINTING	8000	38000

RUN DATE 08/03/84

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 BUDGET FOR HARZA-EBASCO SUSITNA JOINT VENTURE

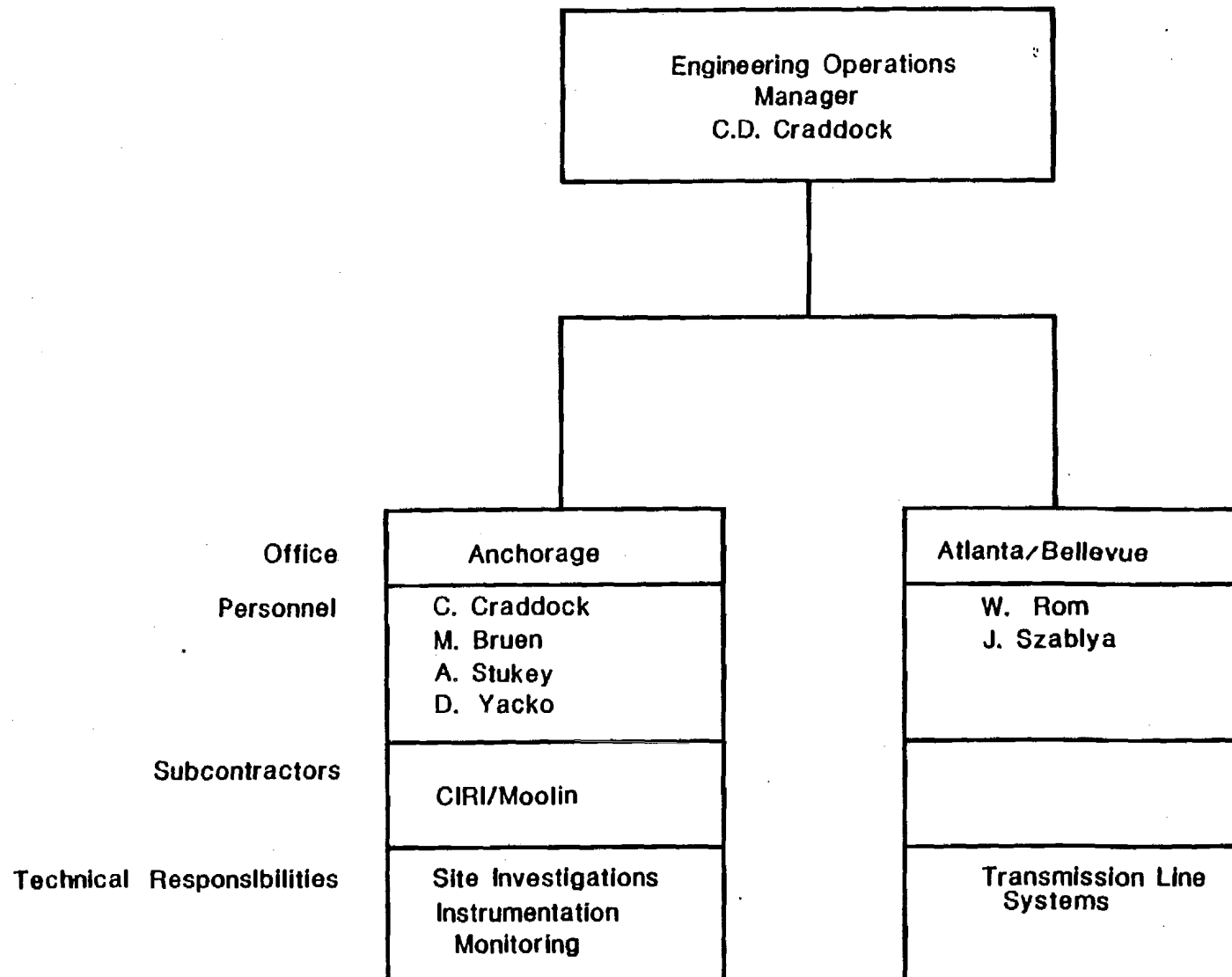
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TASK 41	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

LABOR 010													
41-010-01 PREPARE COST ESTIMATES FOR ALTERNATIVES													
2326	3252	6509	3252	6509	5242	9783	3481	8232	9524	3252	3252	64614	
41-010-02 REPORT ON TRANSMISSION SYSTEM ALTERNATIVES													
1378	1550	1895	0	0	0	0	0	0	0	0	0	4823	
41-010-08 SUPPORT FERC REQUESTS FOR INFORMATION													
0	0	0	0	0	0	0	0	0	0	0	0	0	
41-010-16 PROVIDE INPUT TO BRIEF PROCESS													
0	0	0	0	0	0	0	0	0	0	0	0	0	
LABOR 010 TOTALS													
3704	4802	8404	3252	6509	5242	9783	3481	8232	9524	3252	3252	69437	

DIRECTS													
41-020-01 TRAVEL AND LIVING EXPENSES													
2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	30000	
41-020-04 PRINTING													
500	1000	500	1000	500	1000	0	1000	500	1000	500	500	8000	
TOTAL DIRECTS													
3000	3500	3000	3500	3000	3500	2500	3500	3000	3500	3000	3000	38000	

TASK 41 TOTALS													
6704	8302	11404	6752	9509	8742	12283	6981	11232	13024	6252	6252	107437	



TASKS 3, 5, 7, 41 - ENGINEERING

TASK 42

HYDROLOGIC AND HYDRAULIC STUDIES

Task 42 will include the hydrologic and hydraulic analyses required to support assessments of project impacts on the aquatic ecosystem. Assessments of project impacts on the aquatic ecosystem will be required for the preparation of the Environmental Impact Assessment and for the negotiated settlement of the licensing process.

Services

42-010-01 Supervision & Coordination

Task 42 coordinators will work with personnel of the Aquatic Terrestrial and Socioeconomic Study Teams to ensure that hydrologic and hydraulic studies provide the necessary information for the FEIS, supplemental requests for information, and the settlement process. They also will provide technical review for work by Aquatic Study sub-contractors and for hydrologic and hydraulic studies by Task 42 personnel. The coordination function also ensures that hydrologic and hydraulic studies will be accomplished in a timely and efficient manner. This item includes budget for the above management and coordination functions. In addition it provides budget for the general level-of-effort for this task including: participation in coordination meetings of the aquatic studies team, participation in meetings and workshops with concerned state and federal agencies, preparation of investigation memoranda and work scopes, preparation of budgets, compilation of progress and status reports, computer support and word processing services in the home offices for reports and memoranda prepared for all subtasks of Task 42. Mr. E. J. Gemperline has the primary responsibi-

lity for coordination and supervision of Task 42. He will be assisted by Dr. B. H. Wang and Mr. Wayne Dyok, as necessary.

42-010-02 Reservoir Operation and Stream Hydraulics Study

This subtask includes three studies:

1. Reservoir operation study
2. Stream water surface profiles (steady state)
3. Water level fluctuations due to load following operation.

In conjunction with Task 40, Need-for-Power studies the reservoir operation study will be conducted to determine downstream releases based on forecasted power requirements, project operation rules and downstream requirements. Results of the study will be used as input to reservoir temperature and ice studies, instream hydraulic studies, instream temperature and ice studies and river sediment studies. Results from these studies will be required in the the FEIS and the settlement process. The scope of work will include provision of reservoir releases and water levels on a weekly average basis.

The objective of the stream water surface profiles study will be to develop stage-discharge relationships and discharge velocity relationships at locations downstream of the Chulitna-Susitna confluence where such relationships are needed for ice, sediment and temperature studies. The scope of work includes mathematical modeling of the reach between the Susitna-Chulitna confluence and the Sunshine Bridge. A report containing results of the study will be prepared.

The objective of the study of water level fluctuations is to estimate the time variation in water levels in the Middle and Lower Reaches resulting from load following operation of Watana Powerhouse. This

analysis will be carried out for release patterns suggested by the Need-for-Power (Task 40) and Environmental (Task 4) Study Groups to allow evaluation of environmental impacts.

River stage fluctuations due to project operation will be determined using the dynamic wave routing model (DAMBRK) developed by Dr. D.L. Fread of the National Weather Service. The dynamic wave routing will be carried out in two sub-reaches, first from Devil Canyon to the confluence of the Susitna and Chulitna rivers and then from the confluence to Sunshine Station. The results of the analysis of the Middle Reach will provide the upstream boundary conditions for the Lower Reach. The initial conditions, downstream boundary conditions, and cross sectional and channel roughness data will be taken from previous steady state hydraulic studies. Upstream boundary conditions will be represented by the selected reservoir release pattern.

For reservoir releases less than 3,000 cfs the Muskingum method will be used instead of dynamic flood routing. This is because the DAMBRK model does not provide accurate results for flows less than this. The routing by the Muskingum method in the Lower Reach will be carried out by dividing the river reach between Devil Canyon and Sunshine Station into several subreaches. Previous routing studies for the Middle Reach are described in "Susitna Hydroelectric Project River Stage Fluctuations Resulting from Alternative Operation, Watana Development" February, 1984.

42-010-04 Reservoir Temperature/Ice/Turbidity Study

The reservoir temperature/ice/turbidity study will be made with the DYRESM model and will be used to examine the effects of the Watana and Devil Canyon Reservoirs on downstream water temperatures and water temperatures in the reservoir area. This information will be needed

for the examination of project impacts on the fisheries resources. Additionally, the reservoir temperature model will be expanded to include a turbidity/suspended sediment model. This will provide estimates of suspended sediment in the water released from the Watana and Devil Canyon reservoirs for use in the evaluation of enhancement of the mainstem as a habitat for chinook salmon.

The reservoir temperature/ice/turbidity model will be run as part of the negotiated settlement process. Suggested reservoir operations will be modeled in the reservoir operation study. The results will be input to the reservoir temperature/ice/turbidity study. The output of this study will provide input into the stream temperature and instream ice studies. A report will be prepared which documents results of the study.

42-010-09 Instream Ice Studies

The instream ice study will be used to assess potential project effects on the fishery resource due to ice cover formation and breakup. The instream ice studies can be broken down into:

1. Studies of the reach downstream of the Susitna-Chulitna confluence
2. Studies of the reach upstream of the Susitna-Chulitna confluence

The objectives of the study of Lower Reach ice processes will be to:

1. Make field observations of significant hydraulic parameters related to ice cover progression on the Lower Reach.

2. Refine the estimate of when the ice cover progression at the Susitna - Chulitna confluence begins.
3. Estimate the magnitude of staging with-project on the Lower River,

Empirical formulae will be applied to six cross sections representative of reaches of the Lower River to estimate ice cover thickness and water surface staging. Observations of thickness and staging during the 1984 freeze-up will provide data which can be used to refine the empirical formulae. Results of the analyses will be used to refine the estimate of the time required for ice cover progression to Talkeetna. Results will be analyzed by the aquatic study team to determine whether ice-related impacts to the Lower Reach habitats may be significant.

A report will be prepared and should be available by June 30, 1985.

The study of ice processes in the Middle Reach will have two components:

1. Operation of the instream ice model in support of environmental impact analyses and the negotiated settlement process, and
2. review of experience in operating hydroelectric facilities in northern climates in relation to effects on downstream ice processes.

Throughout the negotiated settlement process reservoir operating policies will be suggested. The reservoir operation, reservoir temperature and instream temperature models will be operated to provide the stream flows and temperatures which will be input to the instream ice model.

The instream ice model will then be operated to provide estimates of ice-related staging, ice thickness and ice cover progression for use in impact analyses. Additional operation of the ice model may be required if ice studies of the Lower Reach result in significant changes to estimates of progression of the ice front to the Chulitna-Susitna confluence.

A review of experience in operating hydroelectric facilities in northern climates will be carried out to

1. Support the use of a mathematical model for estimating ice-related impacts,
2. develop measures for estimating ice-related impacts resulting from fluctuating flows under an ice cover, and
3. evaluate experience in operating load following plants in northern climates in winter in order to develop methods for minimizing potential impacts.

The results of the review of experience will be used to modify the instream ice model, where appropriate, and to suggest possible winter operating regimes for the project. The results of the analyses will be documented in a report.

42-010-12 Slough - Groundwater Study

The purpose of this study will be to confirm the nature of aquifer materials in the vicinities of the slough and to quantify the degree hydraulic connection between the river and the groundwater aquifer. This knowledge could help to refine present estimates of the rates at

which changes in mainstem hydraulic or thermal conditions propagate through the ground to the sloughs.

Computations will be made to analyze:

1. The results of aquifer testing at Slough 9,
2. additional seepage meter data to be collected at selected sloughs, and
3. tributary runoff and groundwater underflow components of flow in Slough 9.

The results of the analyses will be compiled in a report.

42-010-17 General FERC Process Support

This task includes responding to FERC requests for supplemental information, Agency requests, review of the Draft Environmental Impact Statement and review of the Final Environmental Impact Statement.

42-010-21 Lower River Hydrologic Study

The most basic physical change in the Lower River resulting from Susitna Project operation will be in streamflow. Altered streamflow and reduced peak flood discharges may impact Lower River morphology, riparian vegetation, immigrating salmon and stream navigability. The purpose of this task is to define natural and with project flow duration and flood frequency relationships for key locations in the Lower River. This information will be used in evaluating impacts on the aquatic environment.

Studies undertaken in FY84 will define the flow duration and flood frequency relationships for Case C. As other project operation scenarios are defined the flow duration and flood frequency curves will be reviewed and refined. This item provides budget for limited review and refinement of flow duration and flood frequency curves and revision of a report.

42-010-22 Sedimentation Study at Sunshine Gage

The purpose of this task is to estimate with project suspended sediment concentrations at the Sunshine stream gaging station. This information will be used to estimate turbidity levels in the Lower River. Juvenile and resident salmonids utilizing riverine habitats will be affected by the level of turbidity in the river, and fish populations may be adversely affected if the turbidity levels are too high.

This task was begun in FY84 and a draft report was prepared. This item includes budget for finalization of that report.

42-010-23 Lower River Sediment Study

The objective of this study is to evaluate sedimentation processes in the Lower Reach of the Susitna River. The study reach is from Sunshine gage upstream to the Chulitna-Susitna confluence. The study will be carried out in two parts. In the first part of the study empirical formulae will be used to evaluate aggradation and degradation. Results of this analysis should be available by December, 1984. The second part of the study will include development and application of a mathematical model to evaluate sediment processes in the reach between Sunshine gage and the Susitna-Chulitna confluence. An expert consultant will be retained who will provide a mathematical model and advise in its use. Cross sectional surveys of the Lower Reach upstream of

Sunshine Bridge will be obtained for use in the analysis. A draft report of preliminary results will be provided by June 30, 1985.

42-010-24 FERC Hearing Process

This task includes participation of five key personnel in the FERC Hearing Process for the period March, 1985 through June, 1985. This includes participation in the pre-hearing conference, preparation of discovery requests, preparation of information requested by intervenors, and preparation of testimony.

42-010-25 Stream Channel Stability Analyses

The objective of this study will be to:

1. Define sedimentation process at selected locations in the mainstem, side channel and sloughs under natural conditions,
2. estimate potential degradation/aggradation under with-project conditions at the entrances and in the selected side channels and sloughs, and in the mainstem at selected locations; and
3. estimate discharge rates required to flush out fine sediment likely to be deposited in the side channels and sloughs.

The analyses will be performed for the selected side channels and sloughs and for selected locations in the mainstem to:

1. Evaluate sedimentation processes, that is, scouring and deposition, under the natural flow regime,

2. determine discharge rates at which the mainstem flows are likely to overtop the entrances at the heads of sloughs and side channels under natural and with-project conditions,
3. estimate discharge rates for the sloughs and side channels at which their beds will be unstable and also the rates to flush out fine sediment deposits; and
4. estimate potential aggradation near the entrances of the sloughs and side channels under with-project conditions.

Directs

42-020-01 Travel and Temporary Living Expenses

Hydrologic and hydraulic studies will be carried out in the home offices, primarily in Chicago. This will require trips between the home offices and Anchorage for coordination and data gathering purposes. Additionally, trips will be required for participation in the FERC hearing process, and for reviewing experience in winter operation of hydroelectric projects in northern climates. The following trips between the home office and Anchorage have been budgeted:

<u>Between</u>	<u>Estimated Number</u>	<u>Estimated Duration Each</u>
Chicago and Anchorage	26	7
Denver and Anchorage	3	7
Anchorage and Chicago	4	7
Chicago and Montreal	2	6

Chicago and Vancouver	2	6
Anchorage and Washington, D.C.	2	7
Chicago and Washington, D.C.	4	6

42-020-02 Relocation

The cost associated with demobilizing one family from Anchorage to Chicago and the monthly costs of property management and storage.

42-020-03 Computer Charges

The hydrologic and hydraulic (environmental related) studies will include operation of several mathematical models using electronic computers.

As part of the negotiated settlement process the reservoir operation studies will be carried out on a weekly basis for input to reservoir temperature studies.

The reservoir temperature model (DYRESM) will also be run as part of the negotiated settlement process. Production runs will be made as necessary to provide information required for settlement.

The instream ice model will also be run during the settlement process. Productions runs of this model will be for the same conditions as the reservoir temperature model.

Steady state water surface profiles in the reach of the river between the Chulitna-Susitna confluence and the Sunshine Bridge will be computed using the U.S. Army Corps of Engineers program HEC-2.

Water level fluctuations resulting from load following operation of Watana dam will be computed using the National Weather Service Model DAMBRK.

Streambed aggradation or degradation in the reach between the Susitna-Chulitna confluence and the Sunshine bridge will be computed using a state-of-the art model such as the U.S. Army Corps of Engineers model HEC-6 or models developed by Simons and Lei, Inc., H.W. Sten, or J.F. Kennedy.

42-020-06 Miscellaneous

This item will cover such things as report printing film, aerial photos (from USGS EROS data center) and other items which are necessary but not covered under specific budgets.

Subcontracts

42-103-01 Reservoir Temperature/Ice Consultant

Dr. Paul Hamblin of the Canadian Center for Inland Waters will be retained to provide consultation on the model for reservoir thermal behavior and to provide the turbidity subroutine. The model will be used in studies providing input to the FEIS and settlement process.

42-113-01 Instream Ice Process Study

Mr. Darryl Calkins of the U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory will be retained to provide consultation on the model of instream ice processes. The model will be used in studies providing input to the FEIS and the settlement process.

42-183-01 Sediment Consultant

An expert consultant will be retained to provide a state-of-the-art model for streambed sediment processes and to advise in its use.

42-163-01 Glacier Data Reduction

Dr. Will Harrison will be retained to reduce field data on glaciers collected in 1982-1983 and to provide an interpretive report.

42-173-01 Streamflow Forecasting

An expert in streamflow forecasting will be retained to advise on the possibility of developing long term and short term streamflow forecasting models and to begin development if the result is favorable. The expert will be expected to work with R&M consultants and Dr. Harrison to determine how best to utilize glacier data and the type of meteorological, hydrological, and glaciological data collection programs necessary.

42-143-01 Subcontractor Handling Fee

A handling fee equal to 2 percent of subcontract costs.

04-016-43 Glacier Studies

The glaciated portions of the Susitna River Basin upstream of Gold Creek play a significant role in the hydrology of the area. The drainage area upstream of the Denali and MacLaren gages comprises 19.9 percent of the basin above Gold Creek, yet contributes 39 percent of the average annual flow (License Application p. E-2-12).

Glaciers act as reservoirs collecting snow and ice in the winter and releasing melt water to the stream in the summer. The rate at which glaciers store water, melt and contribute to streamflow depends on the climate. Periodic changes in climate may have significant effects on glacier wasting and, thus, on inflow to the project.

Although there is no reliable mechanism for predicting glacier wasting during project life, due to the importance of the glaciated region to Susitna River streamflow it may be beneficial to conduct a monitoring program. The purpose of this program would be to determine the current physical glacier characteristics and periodic changes in relation to climate. Records of this type might provide insights into glacier performance and data which would be useful for project operation.

The objective of this task would be the preparation of a plan for glacial monitoring which would specify how such a program would benefit project operation. A base line monitoring program would be initiated if review of the monitoring program plan was favorable.

Work would consist of three items:

1. Preparation of a plan for glacier monitoring including an assessment of its usefulness for project operation,
2. Review of the plan, and
3. Confirmation of the base line monitoring program already in place.

There would be two deliverables:

1. A report on the proposed glacial monitoring program.
2. A report of the data collected during FY85.

RUN DATE 08/09/84

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TASK 42	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

TOTAL LABOR	84347	97496	82813	74293	82999	72341	76405	62564	78089	58409	57263	60735	887754

TOTAL DIRECTS	23200	23200	25300	24400	24400	24400	24400	16540	16540	12100	12100	35600	262180

TOTAL SUBCONTRACTORS	7650	7650	7648	17646	17650	17644	17646	17646	17338	13260	13260	13258	168296

TASK 42 TOTALS	115197	128346	115761	116339	125049	114385	118451	96750	111967	83769	82623	109593	1318230

08/08/84

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Labor Costs

TASK 42 SALARY BREAKDOWN

	Budgeted Hours	Salaries	Fringe Benefits	Overhead	Fee	Total
Dedicated Staff	2186	53076.08	18034.50	34844.84	10055.60	116011.02
Home Office Staff	15449	302159.59	102691.78	299585.49	67305.83	771742.69
TOTAL STAFF	17635	355235.67	120726.28	334430.33	77361.43	887753.71

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

TASK 42

1318230

TOTAL SERVICES

887754

42-010-01	SUPERV. & COORD.	165057	
42-010-02	RESERVIOR OPERATION & STREAM HYDRAULIC STUDIES	100117	
42-010-04	RESERVIOR TEMPERATURE STUDIES	110943	
42-010-09	INSTREAM ICE STUDIES	167995	
42-010-12	SLOUGH - GROUNDWATER STUDY	69120	
42-010-17	GENERAL FERC PROCESS SUPPORT	49512	
42-010-21	LOWER RIVER HYDROLOGIC STUDY	13909	
42-010-22	SEDIMENTATION STUDY AT SUNSHINE GAGE	15561	
42-010-23	LOWER RIVER SEDIMENT STUDY	64431	
42-010-24	FERC HEARING PROCESS	112775	
42-010-25	STREAM CHANNEL STABILITY ANALYSIS	18334	887754

TOTAL DIRECTS

262180

42-020-01	TRAVEL AND LIVING EXPENSES	69600	
42-020-02	RELOCATION	25300	
42-020-03	COMPUTER CHARGES	162480	
42-020-06	MISCELLANEOUS	4800	262180

TOTAL SUBCONTRACTORS

168296

42-103-01	RESERVIOR TEMP/ICE CONSULTANT	15000	15000
42-113-01	INSTREAM ICE CONSULTANT	25000	25000
42-143-01	SUBCONTRACTOR HANDLING FEE	3296	3296
42-163-01	GLAICER DATA REDUCTION	25000	25000
42-173-01	STREAMFLOW FORCASTING	50000	50000

Alaska Power Authority
Harza-Ebasco Susitna Joint Venture
Fiscal Year 1985: Cost Summary

42-183-01 SEDIMENT CONSULTANT

50000

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TASK 42	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
LABOR 010													
42-010-01 SUPERV. & COORD.	12900	16659	12900	13325	16234	12475	12475	13325	16659	13325	13325	11455	165057
42-010-02 RESERVIOR OPERATION & STREAM HYDRAULIC STUDIES	4264	5143	4264	8779	10425	8056	8056	9230	11915	9230	9230	11525	100117
42-010-04 RESERVIOR TEMPERATURE STUDIES	15259	17527	15259	15701	17509	14853	14835	0	0	0	0	0	110943
42-010-09 INSTREAM ICE STUDIES	19275	24449	18974	19564	21672	21061	20178	18634	4188	0	0	0	167995
42-010-12 SLOUGH - GROUNDWATER STUDY	7259	8522	7259	7259	8522	7259	7259	7259	8522	0	0	0	69120
42-010-17 GENERAL FERC PROCESS SUPPORT	6189	6189	6189	6189	6189	6189	6189	6189	0	0	0	0	49512
42-010-21 LOWER RIVER HYDROLOGIC STUDY	4290	5329	4290	0	0	0	0	0	0	0	0	0	13909
42-010-22 SEDIMENTATION STUDY AT SUNSHINE GAGE	5187	5187	5187	0	0	0	0	0	0	0	0	0	15561
42-010-23 LOWER RIVER SEDIMENT STUDY	3476	2448	2448	3476	2448	2448	7413	7927	8482	7927	7413	8525	64431
42-010-24 FERC HEARING PROCESS	0	0	0	0	0	0	0	0	28323	27927	27295	29230	112775
42-010-25 STREAM CHANNEL STABILITY ANALYSIS	6248	6043	6043	0	0	0	0	0	0	0	0	0	18334
LABOR 010 TOTALS	84347	97496	82813	74293	82999	72341	76405	62564	78089	58409	57263	60735	887754
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
DIRECTS													
42-020-01 TRAVEL AND LIVING EXPENSES	5800	5800	5800	5800	5800	5800	5800	5800	5800	5800	5800	5800	69600
42-020-02 RELOCATION	150	150	150	150	150	150	150	150	150	150	150	23650	25300
42-020-03 COMPUTER CHARGES	16850	16850	18950	18050	18050	18050	18050	10190	10190	5750	5750	5750	162480

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TASK 42	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

DIRECTS													
42-020-06 MISCELLANEOUS	400	400	400	400	400	400	400	400	400	400	400	400	4800

TOTAL DIRECTS	23200	23200	25300	24400	24400	24400	24400	16540	16540	12100	12100	35600	262180

SUBCONTRACTOR 103													
42-103-01 RESERVIOR TEMP/ICE CONSULTANT	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	15000

SUBCONTRACTOR 103 TOTALS	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	15000

SUBCONTRACTOR 113													
42-113-01 INSTREAM ICE CONSULTANT	2083	2083	2083	2083	2087	2083	2083	2083	2083	2083	2083	2083	25000

SUBCONTRACTOR 113 TOTALS	2083	2083	2083	2083	2087	2083	2083	2083	2083	2083	2083	2083	25000

SUBCONTRACTOR 143													
42-143-01 SUBCONTRACTOR HANDLING FEE	150	150	149	346	346	345	346	346	339	260	260	259	3296

SUBCONTRACTOR 143 TOTALS	150	150	149	346	346	345	346	346	339	260	260	259	3296

SUBCONTRACTOR 163													
42-163-01 GLAICER DATA REDUCTION	0	0	0	4200	4200	4200	4200	4200	4000	0	0	0	25000

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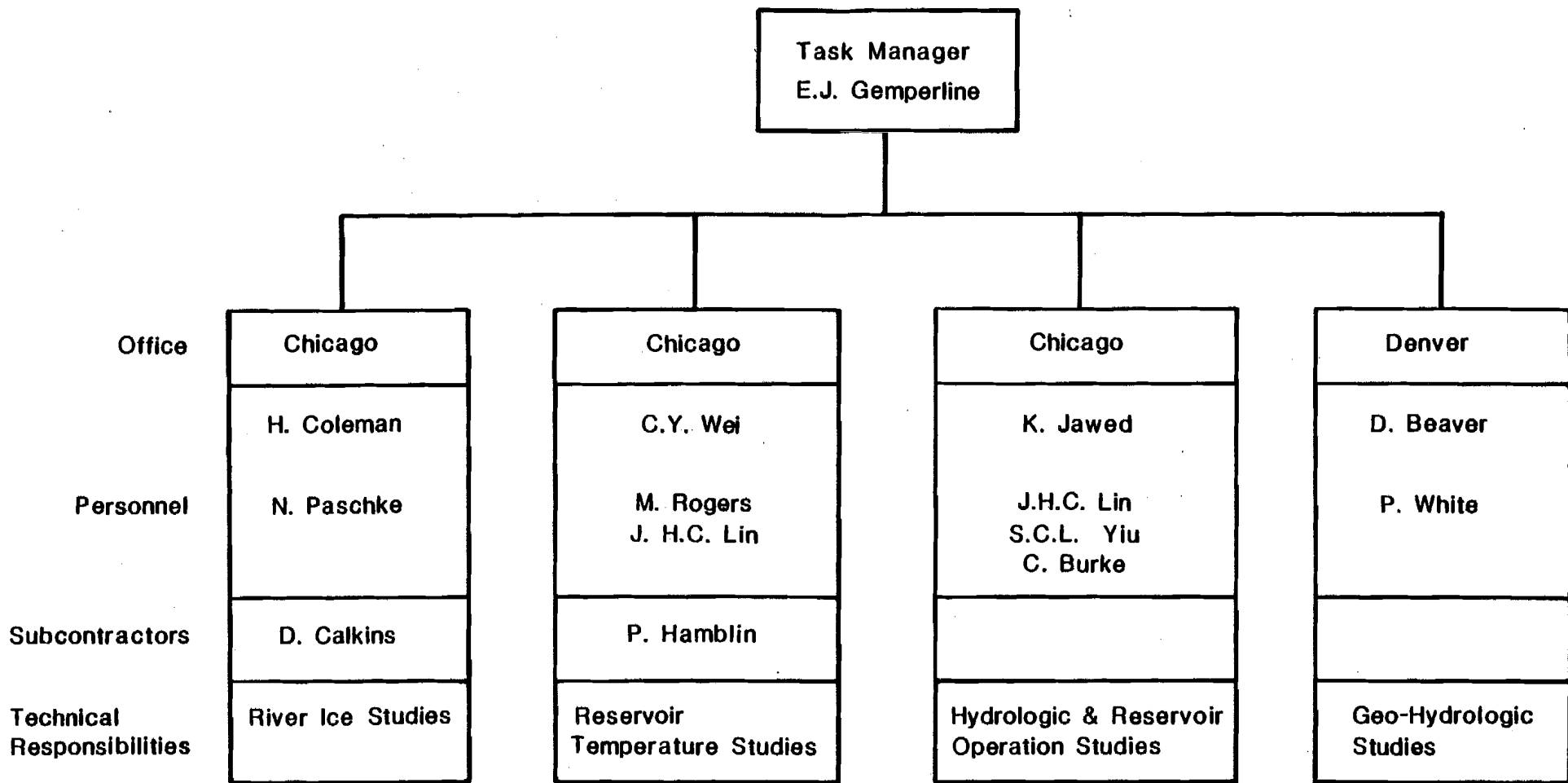
TASK 42	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL

SUBCONTRACTOR 163 TOTALS	0	0	0	4200	4200	4200	4200	4200	4000	0	0	0	25000

SUBCONTRACTOR 173													
42-173-01 STREAMFLOW FORECASTING	0	0	0	5600	5600	5600	5600	5600	5500	5500	5500	5500	50000
SUBCONTRACTOR 173 TOTALS	0	0	0	5600	5600	5600	5600	5600	5500	5500	5500	5500	50000

SUBCONTRACTOR 183													
42-183-01 SEDIMENT CONSULTANT	4167	4167	4166	4167	4167	4166	4167	4167	4166	4167	4167	4166	50000
SUBCONTRACTOR 183 TOTALS	4167	4167	4166	4167	4167	4166	4167	4167	4166	4167	4167	4166	50000

TASK 42 TOTALS	115197	128346	115761	116339	125049	114385	118451	96750	111967	83769	82623	109593	1318230



July 1, 1984

TASK 42 - HYDRAULIC AND HYDROLOGIC STUDIES