

C1036

**E N T R I X**

Since 1984 - Environmental Excellence

**ENTRIX, Inc.**  
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Walnut Creek, CA 94596  
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0332304

July 2, 1998

Mr. Dick Daniels  
CALFED Bay-Delta Program Office  
1416 Ninth Street, Suite 1155  
Sacramento, California 95814

Re: Response to Proposal Solicitation Package for May 1998

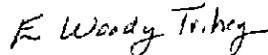
Dear Mr. Daniels:

We are pleased to submit this proposal entitled "Restoration and Enhancement of Sacramento Splittail Spawning Habitat and Anadromous Fish Passage in the Yolo Bypass" for potential funding through CALFED. This proposal is the result of recent analyses and subsequent discussions between Dr. Peter Moyle, Ted Sommers and ourselves over the continued risk of extinction for splittail, a particular concern of Dr. Moyle's. Splittail, while extremely resilient in response to good spawning conditions, are non-the-less, still at risk from extended periods of less than ideal spawning conditions. This project would use a managed manipulation of flood plain areas within the Yolo Bypass and regulated flows to alleviate stressors for splittail spawning and rearing during periods of poor spawning conditions. A second attribute of this project would help to eliminate an important barrier to upstream migrating salmon and steelhead in the Sacramento River system.

We would appreciate your thoughtful consideration of this proposal as it moves through the evaluation process. If there are any questions from any of the reviewers on the technical review panel or integration panel, I would encourage them to contact either of us by phone at (925) 935-9920.

Sincerely,

**ENTRIX, Inc.**



E. Woody Trihey  
Senior Consultant



Thomas L. Taylor  
Senior Aquatic Biologist

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L L L L

C1036

Attachment H

COVER SHEET (PAGE 1 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Restoration and Enhancement of Sacramento Splittail Spawning  
 Proposal Title: Habitat and Anadromous Fish Passage in the Yolo Bypass  
 Applicant Name: Woody Trihey, ENTRIX, Inc.  
 Mailing Address: 590 Ygnacio Valley Rd., Suite 200, Walnut Creek, CA 94596  
 Telephone: (925) 935-9920  
 Fax: (925) 935-5368

Amount of funding requested: \$ 57,876.00 for 1 years

Indicate the Topic for which you are applying (check only one box). Note that this is an important decision: see page    of the Proposal Solicitation Package for more information.

- Fish Passage Assessment
- Floodplain and Habitat Restoration
- Fish Harvest
- Watershed Planning/Implementation
- Fish Screen Evaluations - Alternatives and Biological Priorities
- Fish Passage Improvements
- Gravel Restoration
- Species Life History Studies
- Education

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Delta
- Suisun Marsh and Bay
- San Joaquin River Mainstem
- Landscape (entire Bay-Delta watershed)
- Sacramento Tributary: \_\_\_\_\_
- East Side Delta Tributary: \_\_\_\_\_
- San Joaquin Tributary: \_\_\_\_\_
- Other: \_\_\_\_\_
- North Bay: \_\_\_\_\_

Indicate the primary species which the proposal addresses (check no more than two boxes):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass

COVER SHEET (PAGE 2 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Indicate the type of applicant (check only one box):

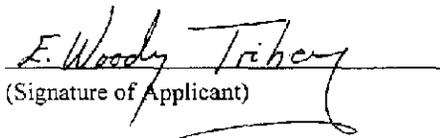
- |  |   |
|--|---|
| <input type="checkbox"/> State agency                    | <input type="checkbox"/> Federal agency                       |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit                           |
| <input type="checkbox"/> Local government/district       | <input type="checkbox"/> Private party                        |
| <input type="checkbox"/> University                      | <input checked="" type="checkbox"/> Other: <u>Corporation</u> |

Indicate the type of project (check only one box):

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/> Planning   | <input checked="" type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input type="checkbox"/> Education                 |
| <input type="checkbox"/> Research   |  |

By signing below, the applicant declares the following:

- (1) the truthfulness of all representations in their proposal;
- (2) the individual signing the form is entitled to submit the application on behalf of the applicant (if applicant is an entity or organization); and
- (3) the person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section II.K) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

  
(Signature of Applicant)

## II. EXECUTIVE SUMMARY

**Title:** Restoration and Enhancement of Sacramento Splittail Spawning Habitat and Anadromous Fish Passage in the Yolo Bypass

**Submitted By:** ENTRIX, Inc.

This proposal addresses the restoration and enhancement of habitat and improvements to fish passage to meet the needs of three species that are either under consideration for protection or are currently listed under the federal Endangered Species Act. These are the Sacramento splittail, a candidate species, identified as a CALFED primary priority species in the second-tier priority, and the proposed spring, fall and late-fall runs of Sacramento River chinook salmon, the Federally listed endangered winter run chinook and the Federally listed threatened steelhead, all of which are CALFED first-tier primary priority species. The proposal specifically addresses a design to provide splittail spawning habitat in the Yolo Bypass during drier water years and the design of a fish passage structure at the upstream end of the Bypass to provide uninterrupted passage for upstream migrating adult chinook salmon and steelhead. These objectives are consistent with CALFED near-term implementation strategy and high priority species and habitats.

This proposal develops a conceptual design for constructing splittail spawning habitat in the Yolo Bypass that can be utilized at managed flow during drier years. Such a diversion is a non-consumptive use of water since it simply passes water from the Sacramento River through the Bypass and should not impact existing users. The habitat would be designed to be inundated and function as splittail spawning habitat at low managed flows and to sustain its functionality at high flows. The successful use of such habitat would greatly improve spawning opportunities for splittail during drier years. The proposal also addresses an existing problem resulting from the lack of passage for upstream migrant salmonids at the Sacramento and Fremont weirs located upstream within the Bypass. Currently these weirs block passage for all runs of chinook salmon, as well as steelhead, when flows in the Bypass are high enough to attract adults. The passage structure(s) would contribute to greater migration success for salmonids using the Bypass during years when the Bypass provides flood relief for the Sacramento River

The feasibility study will also begin the process to address some corrective action for the three most significant stressors identified by CALFED for splittail. These include shallow areas important for spawning and rearing, floodplain/marsh plain changes that provide the primary spawning habitat (including improving on spawning habitat in the important Yolo Bypass at lower flows) and lack or shaded riverine aquatic habitat for rearing.

The proposed project represents Phase 1 of three phases that will need to be completed to provide increased splittail spawning habitat and anadromous fish passage in the Yolo Bypass. Phase 1 will result in conceptual design and analysis of feasibility of the project. Phase 2 will consist of detailed designs for the channel and structures deemed feasible in Phase 1. Phase 3 will consist of construction of the designs prepared in Phase 2.

The proposed project will be executed through seven major activities. The first activity is to coordinate with splittail experts regarding the availability of information on splittail spawning habitat requirements, channel and hydraulic characteristic information for the Yolo Bypass, and design drawings and characteristics for the existing weirs. The second activity consists of a hydrological analysis of flows through the Yolo Bypass and in the Sacramento River upstream of the Bypass. This will include a frequency analysis of both sets of flows. This analysis will identify the current availability of flow for inundation of out of channel habitats. We will also identify the extent to which flows are available for diversion to this channel during periods of lower flow. The third activity is to evaluate the extent of inundation that occurs at different flow levels and to compare these flows with flows known to result in successful splittail year-classes. We will use the US Army Corps of Engineers HEC2 model for this purpose. The fourth activity will be to evaluate modified low flow and out of channel flow channel/floodway geometries that could be used within the Bypass to provide suitable spawning habitat for splittail at lower flows. The result of the fourth task will be a conceptual design that would provide suitable spawning habitat at lower flows than are currently available. The fifth task would be to provide a preliminary design for an outlet works and other modifications at the Fremont Weir to provide the flows necessary for enhanced spawning habitat. The sixth task is to prepare the conceptual design for a fishway to provide passage for anadromous fish at the Weir. The seventh task is to prepare a report on the end product of this effort. This will include conceptual designs for low flow spawning habitat for splittail in the Yolo Bypass, an outlet works for releasing flow, and a fish passage structure. In addition to the conceptual designs, we will prepare an analysis of the feasibility and flow conditions under which these designs will operate. The project will complete tasks one through three by the end of 1998 and tasks four, five and six by the end of February 1999. A final report will be prepared by mid-April 1999.

The project is budgeted at \$57,876 for Phase 1. We are not requesting funding for Phases 2 or 3 at this time. We do not anticipate any third-party impacts from Phase 1 of this project. Any potential third-party impacts would be evaluated during Phase 2.

The project team is extremely well-qualified to perform this work. The team is led by Mr. Woody Trihey, a nationally-recognized expert in habitat and fish passage. Mr. Trihey will be assisted by Mr. Tom Taylor, an expert on fish habitat requirements and on restoration. Mr. Taylor has experience with splittail and with Central Valley Chinook salmon. He is also very knowledgeable about the Delta and has experience in both the Sacramento and San Joaquin rivers. Mr. Ron Kilmartin will be assisting with the modeling aspects of the HEC2 analysis. Mr. Kilmartin's experience includes over 30 years hydraulic modeling in both natural and engineered systems. The project team also includes Mr. Wayne Lifton. Mr. Lifton has worked on splittail and steelhead issues for the past decade. The project team will be assisted by the cooperation of the US Army Corps of Engineers - Sacramento. Representatives of the Corps will provide in-kind support with regards to hydraulic modeling of the Yolo Bypass, needed for design evaluation and feasibility analysis.

**III. TITLE PAGE**

**a. Title: Restoration and Enhancement of Sacramento Splittail Spawning  
Habitat and Anadromous Fish Passage in the Yolo Bypass**

**b. Submitted By:** **E. Woody Trihey and Thomas L. Taylor,**  
**Principal Investigators**

ENTRIX, Inc.  
Suite 200  
590 Ygnacio Valley Road  
Walnut Creek, CA 94596  
Telephone/Fax: (925)-935-9920/(925)-935-5368

**c. Company Type:** Private Type S Corporation

**d. Tax Identification Number:** 76-0265862

**e. Participants/Collaborators:**

Mr. Guy Lumsden: ENTRIX, Inc.

Mr. Wayne Lifton: ENTRIX, Inc.

Dr. Peter Moyle: U.C. Davis

Mr. Ted Sommers: Department of Water Resources

Dr. Eric Larson: U.C. Davis

Mr. Scott Stonestreet: U.S. Army Corps of  
Engineers, Sacramento District

#### **IV. PROJECT DESCRIPTION**

##### **a. Project Description and Approach**

The proposed project evaluates the feasibility and provides conceptual designs to accomplish two objectives. The first objective is to provide spawning habitat for Sacramento splittail in the Yolo Bypass that can be utilized during drier water years. Sacramento splittail currently utilize the Yolo Bypass when it is conveying flood waters during their spawning season. We intend to investigate the feasibility of contouring a portion of the Bypass and using controlled releases to provide spawning habitat during non-flood years. The second objective is to design a fish passage structure at the Fremont and Sacramento weirs upstream within the Yolo Bypass to allow the passage of anadromous fish into the Sacramento River. Splittail populations are maintained by opportunities for successful spawning during high flow events in which there is overbank flooding of vegetation. Today, such opportunities are only associated with high flow years resulting in inundation of floodways such as the Yolo or Sutter bypasses. Concerns have been expressed by native fish expert Dr. P. Moyle, that extended periods of low flows result in few successful spawning opportunities and could contribute to an increased risk of extinction for this species (Letter from Dr. Peter Moyle to Mr. Wayne White, June 22, 1998). The work proposed in this application is designed to increase the frequency of the potential for successful spawning by this species. The ultimate consequence of the proposed work would be a project that increases the ability of splittail to maintain population levels over time and consequently reduce risks to the continued existence of this species.

The proposed project represents Phase 1 of three phases that will need to be completed to provide increased splittail spawning habitat and anadromous fish passage in the Yolo Bypass. Phase 1 will provide a conceptual design and analysis of feasibility of the project. Phase 2 will consist of detailed designs for the channel and structures deemed feasible in Phase 1. Phase 3 will consist of construction of the designs prepared in Phase 2.

##### **b. Proposed Scope of Work**

###### Task 1. Data Review and Coordination

This task involves review of available information and coordination of project activities. It also involves setting up a technical review committee of experts who will provide review of the design parameters and the feasibility portion of the study.

As part of this task, we will identify suitable spawning conditions from the literature, recent analyses of available data and discussions with experts such as Peter Moyle, Randy Baxter, and Ted Sommers.

Information regarding flows from relevant gaging stations will be obtained. These gages include Fremont Weir spill, Sacramento Weir spill, Yolo Bypass, Cache Creek, and

estimated inflow to the Bypass from Putah Creek. The US Army Corps of Engineers is currently developing a new hydraulic model of the Yolo Bypass using 1997 cross section data. In the process of developing this non steady flow model, a steady flow model (HEC-RAS) will be developed to confirm the reliability of the channel geometry surveys. Mr. Trihey will work closely with the Corps in developing and calibrating the HEC RAS model to ensure that it can provide the level of detail needed to be used for the conceptual design of splittail spawning habitat. Information regarding current land ownership, vegetation and soils. Design drawings for the Fremont and Sacramento weirs will be obtained from the Corps.

The Technical Review Committee for Sacramento splittail will include Peter Moyle (UC Davis), Ted Sommers (DWR) and Dr. Eric Larson.

### Task 2. Hydrological Evaluation

Years in which splittail spawning in the Bypass is known to have been good, fair or poor will be used to interpret the results of the hydrologic evaluation from a fisheries perspective and identify the timing, magnitude and duration of flow which appears to provide the best spawning conditions for splittail in the Yolo Bypass. Further analysis of the hydraulic record will identify the timing magnitude and duration of controlled releases to be made in the Yolo Bypass to augment hydrologic conditions for splittail spawning. Data for the period beginning with the construction and operation of Oroville Dam (past 30 years) from appropriate gaging stations (See Task 1) will be used to describe the timing and quantify the magnitude of flows in the Yolo Bypass during that time of year (February through May) when splittail are likely spawning. Frequency analyses will be performed to identify the magnitude and duration of spills from Fremont and Sacramento weirs that could provide sufficient water to inundate out of bank vegetation and support splittail spawning given the existing geometry of the Bypass.

Streamflow conditions in Cache Creek and Putah Creek, as well as the Sacramento River also will be included in the evaluation so that hydrologic conditions affecting inflow and outflow of the Bypass can be integrated into the hydraulic evaluation of flow conditions within the Bypass (Task 3).

### Task 3. Estimation of Flows needed for Out-of-Channel Spawning Conditions

Flows necessary to inundate out-of-channel habitats and thus provide for splittail spawning will be estimated for the existing channel geometry and alternatively, for potential modifications to the low flow channel. This information will be used in conjunction with the results of Task 2 to assist us in identifying the flows necessary to provide suitable spawning conditions in the existing and modified geometry of the Yolo Bypass during periods of lower flow when the existing channel does not flood sufficiently to provide good spawning conditions.

Flow depths and velocities will be estimated in the Yolo Bypass for existing and modified channel geometry and a range of hydrologic conditions. This analysis will be performed cooperatively with the Sacramento District by developing a HEC-RAS and UNET models of the Bypass. We would obtain a copy of that model, use it to determine flow depth and velocity in the existing geometry, then modify the geometry, gradient, and meander frequency in the model to simulate a constructed channel for splittail. Our revised model containing channel modifications to promote splittail would be returned to the Corps for their review and assessment of effects on flood control operations. The results of that assessment will be included in the feasibility section of the project report (Task 7).

The magnitude and frequency of controlled releases necessary to provide for splittail spawning within the existing geometry of the Yolo Bypass will be determined using both the new HEC-RAS model and the hydrological analysis of Task 2. These will be evaluated for both weirs. In addition, the magnitude and frequency of small spills augmented by controlled releases, and of controlled releases alone, needed to provide for splittail spawning in a constructed channel will be determined. The extent and location of potential habitat enhancement will in part depend on the selection of flow release point. and run various hydraulic scenarios to optimize flow conditions for splittail spawning.

#### Task 4. Proposed Channel Modifications

Alternative channel geometries (shapes and elevations) to provide hydraulic conditions suitable for splittail spawning under different flow conditions will be evaluated. This will help to identify suitable locations of inundation zones within proposed managed flow spawning areas particularly along the eastern toe drain of the Bypass. Alternative Channel gradients, cross sections shape and dimensions and potential floodplain elevations will be evaluated. Sites will be selected and their elevations determined such that spawning habitats would exist under flow conditions determined in Task 3 rather than a single controlled flow. Overbank flow sites for splittail spawning will be examined with Manning's n values appropriate for the vegetative cover associated with splittail spawning habitat. Vegetation cover types appropriate to the proposed soil and hydrological conditions will be examined. Channel location, planform, alignment and cross-section will be considered for both channel stability and the amount of habitat that could potentially be made available.

#### Task 5. Outlet Works

Once flow requirements have been identified to provide for splittail spawning in a constructed channel, consideration will be given to outlet control and segregation of spawning flows from agricultural return flows that may be of an undesirable temperature, salinity or quality. Outlet structures will be evaluated for the appropriate weir or both weirs, if deemed appropriate. The basic nature, size and cost of recommended structures will be determined.

#### Task 6. Fish Passage Structure

A fish passage structure will be selected for the Fremont Weir to allow the upstream passage of salmon and steelhead from the Yolo Bypass into the Sacramento River under a range of flow conditions. The design process will not occur until Phase 2, however, the type and general configuration of the passage structure will be identified in Phase 1. The range of flows under which the structure will need to operate will be identified using results of Tasks 1 and 2. Passage characteristics of the target species and operational characteristics of the Weir will also be considered in structure selection. A duplicate process will be used to select a passage structure for the Sacramento Weir.

#### Task 7. Conceptual Design Report

The project report will provide the following four principal products. The first product is a flow analysis of existing flow frequencies and durations within the Yolo Bypass. The analysis also will provide an estimate of the availability of additional flows for use within the Bypass for each of the major sources of potential inflow. The second product is a hydraulic analysis of the potential availability of inundated floodplain splittail spawning habitat under existing flow conditions, for alternative flow releases with the existing channel geometry and for alternative channel configurations. A conceptual channel design will be described. The third product includes an examination the feasibility of providing additional splittail spawning habitat under lower flow conditions. The fourth set of products includes conceptual designs for outlet structures to provide additional flow to the Yolo Bypass will be described. Conceptual designs for fish passage structures at the Sacramento and Fremont weirs will be provided and the feasibility of providing anadromous fish passage over the range of available flows including those proposed for enhanced splittail spawning.

#### **c. Location**

The location of the proposed project consists of the Yolo Bypass from its outlet to the Sacramento River upstream to the Sacramento and Fremont weirs.

#### **d. Expected Benefits**

The work proposed would provide the first phase of a potential solution addressing CALFED Near Term Implementation Strategies for Priority Habitats and Priority Species. The Priority Habitat is Seasonal wetland and aquatic and the priority species include 1<sup>st</sup> tier species of winter run chinook salmon, spring run chinook salmon and steelhead trout. Splittail are 2<sup>nd</sup> tier priority species and are also addressed in this proposal. Seasonal flooding of inundation areas would occur under a managed flow regime during drier periods. This approach would address three stressors ranked HIGH for splittail. This proposal would also address a migration barrier at the upstream end of the Yolo Bypass. Migration barriers were ranked HIGH for winter run chinook under Alteration of Flows. This same stressor would also be operating on spring run chinook

salmon and steelhead. Secondary benefits to Delta smelt and migratory birds would likely result from implementation of Phase 3 of this proposal.

**e. Background and Ecological/Biological/Technical Justification**

Opportunities for successful splittail spawning and recruitment are only associated with high flow years when inundation of floodways such as the Yolo or Sutter bypasses occur. Concerns have been expressed by native fish expert Dr. P. Moyle, that extended periods of low flows result in few successful spawning opportunities and could contribute to an increased risk of extinction for this species (Letter from Dr. Peter Moyle to Mr. Wayne White, June 22, 1998). The work proposed in this application is designed to directly address Dr. Moyle's concern and to increase the frequency of the potential for successful spawning by this species. If successful, the ultimate consequence of the proposed work would be a project that greatly increases the ability of splittail to maintain population levels over time and consequently reduce risks to the continued existence of this species.

The proposal also addresses an existing problem of lack of passage for upstream migrant salmonids at the Sacramento and Fremont weirs located upstream within the Bypass. Currently these weirs potentially block passage for chinook salmon, as well as steelhead primarily when flows in the Bypass are high enough to attract adults. The passage structure(s) would contribute to greater migration success for salmonids using the Bypass as a migratory route during years when the Bypass provides flood relief for the Sacramento River. The objectives of this proposal are consistent with the CALFED ERPP, the Central Valley Project Improvement Act, the Anadromous Fish Restoration Plan, and California's Central Valley Salmon and Steelhead Restoration Plan.

The basis for this proposal is clearly within the intent of the CALFED ERPP. The CALFED ERPP notes that ..."floodplains and flood processes provide important seasonal habitat for fish and wildlife" (ERPP Vol. 1, page 40). The implementation objectives noted on page 45 include general targets to restore health to floodplains and flood processes: conserving and expanding floodplains of Central Valley rivers and Bay-Delta, promoting flood detention in flood basins increasing the frequency of inundation of vegetated floodplains and increasing the acreage and connectivity of natural habitat areas within active floodplains of rivers and estuaries.

This phase of the project proposes to produce a conceptual design and evaluate the feasibility to increase the amount and extent of floodplains (ERPP Page 45, right hand column) currently existing in the Yolo Bypass at lower flows.

This feasibility study is consistent with the approaches identified in the ERPP by using an existing floodway, with modifications to channel configuration and vegetation management and will increase the amount of wetland habitat and frequency of flooding in an existing floodway and will cost no additional water.

The feasibility study will also begin the process to address some corrective action for the three most significant stressors identified by CALFED for splittail. These include

shallow areas important for spawning and rearing, floodplain/marsh plain changes that provide the primary spawning habitat (including improving on spawning habitat in the important Yolo Bypass at lower flows) and lack of shaded riverine aquatic habitat for rearing.

**f. Monitoring and Data Evaluation**

No new data is proposed to be collected and no monitoring would occur under Phase I. Data collection would occur under Phases II and III and monitoring would occur under Phase III. We are only requesting funding for Phase I at this time.

**g. Implementability**

Phase 1 of this project does not include the implementation of the project design. Issues related to implementation will be specifically addressed with Phase 2 of the project.

## V. COSTS AND SCHEDULE

### a. Budget Costs

The full proposed cost of Phase 1 of this project is being sought from CALFED. The need for funding is based on the goals of this project being specific to CALFED priority objectives and the lack of suitable funding from other sources.

The accompanying budget represents costs for Phase 1 Conceptual Design and Feasibility. Phases 2 and 3 would include design and construction, respectively. Costs for Phase 2 can not be appropriately estimated until the completion of Phase 1. Phase 1 will determine the appropriate design concepts and the feasibility of implementing them. Phase 2 will include the detailed design and costing for construction of the habitat enhancement measures and fish passage. Construction costs cannot be estimated until Phase 2. Cost estimates for Phases 2 and 3 are therefore not included. Contingency costs are not necessary for the Phase 1 work and therefore, none are requested.

In-kind support is being provided by the U.S. Army Corps of Engineers-Sacramento District in the form of labor and technical assistance. Additional in-kind support is being provided by participants in the Technical Review Committee. These participants include personnel from U.C. Davis and the Department of Water Resources.

No subcontractor labor is proposed for the Phase 1 project and therefore, no bid procedures for subcontractor work are provided.

The required breakdown of costs is presented below in Table 1. Phase 1 Project Budget.

**Table 1. Phase 1 Project Budget.**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General, Admin. and fee)	Service Contracts	Material and Acquisition Contracts	Miscellaneous and other Direct Costs	Total Cost
Task 1	84	\$5,207	\$5,055	N/A	N/A	\$1,350	\$11,612
Task 2	24	\$1,578	\$802	N/A	N/A	\$0	\$2,380
Task 3	44	\$3,983	\$837	N/A	N/A	\$1,000	\$5,820
Task 4	106	\$6,889	\$3,491	N/A	N/A	\$1,000	\$11,380
Task 5	23	\$1,780	\$600	N/A	N/A	\$270	\$2,650
Task 6	27	\$1,859	\$721	N/A	N/A	\$270	\$2,850
Task 7	172	\$12,282	\$7,452	N/A	N/A	\$1,300	\$21,034
<b>TOTAL:</b>							<b>\$57,726</b>

**b. Schedule Milestones**

The schedule milestones consisting of the seven tasks and required quarterly reports are shown in the following table. This schedule is predicated upon successful completion of a contract by October 1998.

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Dec 31, 1998	X	X	X				
Jan 10, 1999	1 <sup>st</sup> Quarterly Report						
Feb 15, 1999				X	X	X	
April 10, 1999	2 <sup>nd</sup> Quarterly Report						
April 15, 1999							X

**c. Third-Party Impacts**

Third party impacts would be assessed in Phase II.

## VI. STATEMENT OF QUALIFICATIONS

### Project Organization

The ENTRIX project team is extremely well-qualified to perform this work. The organization of the project team is shown in Figure 1. The team is led by Mr. E. Woody Trihey, Project Manager, a nationally-recognized expert in habitat restoration and fish passage. Mr. Trihey will be assisted with regards to biological requirements by Mr. Thomas Taylor, an expert on fish habitat requirements and on restoration. Mr. Ron Kilmartin, Hydraulic Engineer, will assist Mr. Trihey with Hydraulic structures design and modeling. A technical review committee will be coordinated by Mr. Wayne Lifton to provide technical oversight. Members of the Technical Review Committee include Dr. Peter Moyle (UC Davis), Dr. Eric Larson (UC Davis), and Mr. Ted Sommers (DWR).

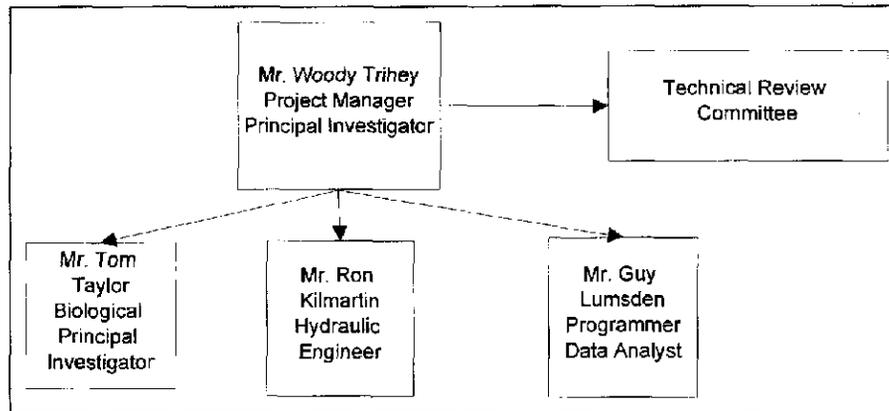


Figure 1. Project Organization.

### Key Project Personnel

**Mr. E. Woody Trihey, Project Manager**, is a registered professional engineer in Idaho, Alaska, Utah, and Colorado. He has extensive expertise and experience in instream flow investigation, fish passage, aquatic habitat restoration, hydrology and river engineering studies. Mr. Trihey is a hydraulic engineer with 20 years of technical experience, specializing in quantifying the response of fish habitat to river processes. He has developed and applied scientific methods to describe the effects of changes in streamflow, stream temperature, sediment transport and river ice on aquatic habitat. He has worked in the restoration of riverine and wetland habitats, completing conceptual and detailed design, feasibility analyses, supervising construction, and participating in training courses and workshops. Mr. Trihey has evaluated passage conditions for salmonids in broad spectrum of stream types, and has utilized a wide range of approaches for improving passage conditions. Mr. Trihey has directed some of the largest instream flow assessments

conducted in North America and has conducted engineering analyses to evaluate sediment transport and its relation to channel stability and habitat conditions, as a component of large watershed management planning studies. Mr. Trihey has appeared as an expert witness on several occasions to explain the effects of stream flow patterns, water allocation discussions or water project operations on river processes and fish habitats.

**Mr. Thomas L. Taylor, Biological Principal Investigator**, has over 20 years experience in the management and restoration of aquatic resources. He has worked as a consultant to state and federal resource agencies, local governments, electric utilities, industry, water purveyors, and environmental advocates. Mr. Taylor's understanding of resource and regulatory issues is enhanced by his 15 years as an employee of the California departments of Fish and Game and Parks and Recreation. His experience in the Sacramento-San Joaquin Delta spans twenty years and includes life history assessments of splittail and delta smelt. Mr. Taylor has also worked in the Delta conducting studies on nearshore habitat associations of resident fishes. He has addressed fish passage issues for trout in eastern Sierra streams and also worked to correct passage issues at dams for salmon and steelhead in coastal streams. His experience includes aquatic habitat assessments, aquatic habitat and wetland restoration planning, implementation and monitoring, conducting quantitative fish population surveys and conducting multi-year monitoring programs. Mr. Taylor qualifications include a long standing interest in the physical aquatic habitat needs of native fishes and in the management of native fishes.

**Mr. Ron Kilmartin, Hydraulic Engineer**, will be assisting with hydraulic modeling and hydraulic structure design. Mr. Kilmartin is a Civil Engineer registered in California with 26 years of experience in large engineering firms including Bechtel, Harza, Morrison-Knudsen, as well as more than 14 years in private practice. He has considerable experience and expertise in hydrologic and hydraulic modeling of rivers, reservoirs, and urban storm drainage. He is an expert in the application of computer models to simulate hydrologic and hydraulic conditions in both natural and man-made systems. He is highly proficient with such models as HEC-2, HECRAS, SMS, HYDRAIN, FESWMS, PC SWMM, SEWERCAT, and HEC-1. Mr. Kilmartin has assisted Mr. Trihey on previous restoration projects including the application of a flood terrace concept to Napa Creek. He is currently assisting Mr. Trihey in evaluating restoration concepts on the lower Truckee River.

**Mr. Guy Lumsden, Programmer and Data Analyst**, will assist Mr. Trihey as ENTRIX Data Manager located in Walnut Creek. He will be responsible for processing the hydrological data for the various gaging stations and running the appropriate analytical routines. Mr. Lumsden has previously managed many large databases, including fisheries, hydrology, meteorology, and water temperature data. Mr. Lumsden has been responsible for operating, maintaining, calibrating, and downloading data from temperature recorders, meteorological stations, and stream gages as part of the numerous water-related studies he has participated in over the past 14 years. Studies for SCE have included those at Big Creek No. 4, Big Creek, Stevenson Creek, and the Lower Tule Project. A trained programmer, he is familiar with the unique data formats used by

USGS and NCDC. He has developed an extensive library of programs to deal with the data types and formats that will be used for this project.

**Mr. Wayne Lifton, Review Coordinator**, has 25 years of experience and has worked on splittail, salmon and steelhead issues for the past decade. Mr. Lifton will coordinate the technical review committee and review of project products. Mr. Lifton has considerable experience in regard to fishery issues in the Central Valley. Mr. Lifton has participated in the Bay-Delta hearings as an expert witness on fisheries and water quality issues related to the SWP and CVP. As part of his work, Mr. Lifton was responsible for advising clients on fishery issues and participating in interagency groups including the Five-Agency Salmon Team, the Delta Salmon Team, the San Joaquin Salmon Team among others. As part of his work with the San Joaquin Salmon Team, Mr. Lifton was a co-author of its submission to the SWRCB. Mr. Lifton has also monitored Article VII negotiations and has been responsible for review of CEQA documents related to proposed projects. Mr. Lifton has reviewed the status and biology of the delta smelt, longfin smelt, splittail and assisted in a review of information related to the biology of the winter-run chinook salmon and has conducted analyses related to the success of splittail recruitment in relation to flow. Mr. Lifton was also responsible for a review of the effect of thermal power plants in the Delta and the effect of these plants on fisheries. Mr. Lifton presented testimony in this review before the California Energy Commission. Mr. Lifton has assisted the US Army Corps of Engineers in its review of environmental documentation for the following projects DWR's North Delta Project, DWR and the Interim South Delta Water Management Plan, and DWR's Los Banos Grande Project. Mr. Lifton worked on evaluating the potential impacts of the proposed ISDP and helped plan mitigation measures. As part of that work, Mr. Lifton utilized many of the modeling tools available for upstream and Delta fisheries and was responsible for developing new assessment approaches.

The project team will be assisted by the US Army Corps of Engineers - Sacramento District. Representatives of the Corps will provide in-kind support with regards to hydraulic modeling of the Yolo Bypass needed for design evaluation and feasibility analysis. Specifically, Mr. **Scott Stonestreet, hydraulic engineer** with the U.S. Army Corps of Engineers Sacramento District will assist with the HECRAS and UNET models and the evaluation of feasibility. Mr. Stonestreet has responsibility for the development and operation of the HECRAS and UNET models of the Yolo Bypass for the Corps.

**VII. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS**

## U.S. Department of the Interior

**Certifications Regarding Debarment, Suspension and  
Other Responsibility Matters, Drug-Free Workplace  
Requirements and Lobbying**

Persons signing this form should refer to the regulations referenced below for complete instructions:

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. See below for language to be used or use this form for certification and sign. (See Appendix A of Subpart D of 43 CFR Part 12.)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions - (See Appendix B of Subpart D of 43 CFR Part 12.)

Certification Regarding Drug-Free Workplace Requirements - Alternate I. (Grantees Other Than Individuals) and Alternate II. (Grantees Who are Individuals) - (See Appendix C of Subpart D of 43 CFR Part 12)

Signature on this form provides for compliance with certification requirements under 43 CFR Parts 12 and 18. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of the Interior determines to award the covered transaction, grant, cooperative agreement or loan.

---

**PART A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions**

---

*CHECK  IF THIS CERTIFICATION IS FOR A PRIMARY COVERED TRANSACTION AND IS APPLICABLE*

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency;
  - (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
  - (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

---

**PART B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions**

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*CHECK  IF THIS CERTIFICATION IS FOR A LOWER TIER COVERED TRANSACTION AND IS APPLICABLE*

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

DE-2010  
June 1996  
(This form replaces DE-1963, DE-1964,  
DE-1966, DE-1969 and DE-1972)

~~PART C: Certification Regarding Drug-Free Workplace Requirements~~

~~CHECK  IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL~~

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or continue to provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing an ongoing drug-free awareness program to inform employees about--
  - (1) The dangers of drug abuse in the workplace;
  - (2) The grantee's policy of maintaining a drug-free workplace;
  - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
  - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --
  - (1) Abide by the terms of the statement; and
  - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
- (e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;
- (f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted --
  - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
  - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a) (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Check  if there are workplaces on file that are not identified here.

~~PART D: Certification Regarding Drug-Free Workplace Requirements~~

~~CHECK  IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL~~

Alternate II. (Grantees Who Are Individuals)

- (a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant;
- (b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

DI-2010  
June 1985  
(This form replaces DI-1953, DI-1954,  
DI-1955, DI-1956 and DI-1957)

Figure 1  
Standard Form 424

OMB Approval No 0348-0043

**APPLICATION FOR  
FEDERAL ASSISTANCE**

1. TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction <input type="checkbox"/> Non-Construction		2. DATE SUBMITTED 7/2/98	Applicant Identifier N/A										
3. DATE RECEIVED BY STATE N/A		State Application Identifier N/A											
4. DATE RECEIVED BY FEDERAL AGENCY		Federal Identifier											
5. APPLICANT INFORMATION													
Legal Name: <i>ENTRIX, INC.</i>		Organizational Unit											
Address (give city, county, state, and zip code):  <i>Contra Costa County, CA 94596</i>		Name and telephone number of person to be contacted on matters involving this application (give area code)											
6. EMPLOYER IDENTIFICATION NUMBER (EIN): <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td>7</td><td>6</td><td>-</td><td>0</td><td>2</td><td>6</td><td>5</td><td>8</td><td>6</td><td>2</td></tr></table>		7	6	-	0	2	6	5	8	6	2	7. TYPE OF APPLICANT: (enter appropriate letter in box) <span style="border: 1px solid black; padding: 2px;">M</span>	
7	6	-	0	2	6	5	8	6	2				
8. TYPE OF APPLICATION:  <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision  If Revision, enter appropriate letter(s) in box(es) <input type="checkbox"/> <input type="checkbox"/>  A. Increase Award    B. Decrease Award    C. Increase Duration D. Decrease Duration    Other (specify): _____		A. State B. County C. Municipal D. Township E. Interstate F. Intermunicipal G. Special District  H. Independent School Dist. I. State Controlled Institution of Higher Learning J. Private University K. Indian Tribe L. Individual M. Profit Organization N. Other (Specify) _____											
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:  TITLE: <i>N/A</i>		9. NAME OF FEDERAL AGENCY:  <i>US Fish and Wildlife Service</i>											
12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.):  <i>Contra Costa, Sacramento and San Joaquin Counties</i>		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:											
13. PROPOSED PROJECT		14. CONGRESSIONAL DISTRICTS OF:											
Start Date <i>7/99</i>	Ending Date <i>12/99</i>	a. Applicant <i>10</i>	b. Project										
15. ESTIMATED FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?											
a. Federal	\$ <i>57,876</i> .00	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:  DATE _____											
b. Applicant	\$ .00	b. NO. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW											
c. State	\$ .00	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes    If Yes, attach an explanation <input checked="" type="checkbox"/> No											
d. Local	\$ .00												
e. Other	\$ .00												
f. Program Income	\$ .00												
g. TOTAL	\$ <i>57,876</i> .00												
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.													
a. Type Name of Authorized Representative <i>Valerie Clark</i>		b. Title <i>West Coast Regional Manager</i>											
c. Telephone Number <i>(925) 935-9920</i>		e. Date Signed <i>July 1, 1998</i>											
d. Signature of Authorized Representative <i>Valerie Clark</i>													

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Authorized for Local Reproduction

Standard Form 424 (REV. 4-82)  
Prescribed by OMB Circular A-102

**PART E: Certification Regarding Lobbying**  
**Certification for Contracts, Grants, Loans, and Cooperative Agreements**

*CHECK  IF CERTIFICATION IS FOR THE AWARD OF ANY OF THE FOLLOWING AND THE AMOUNT EXCEEDS \$100,000: A FEDERAL GRANT OR COOPERATIVE AGREEMENT; SUBCONTRACT, OR SUBGRANT UNDER THE GRANT OR COOPERATIVE AGREEMENT.*

*CHECK  IF CERTIFICATION IS FOR THE AWARD OF A FEDERAL LOAN EXCEEDING THE AMOUNT OF \$150,000, OR A SUBGRANT OR SUBCONTRACT EXCEEDING \$100,000, UNDER THE LOAN.*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

As the authorized certifying official, I hereby certify that the above specified certifications are true.

*Valerie Clark*

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

*Valerie Clark, West Coast Regional Manager*

TYPED NAME AND TITLE

*July 1, 1998*

DATE

DI-2010  
June 1986  
(This form replaces DI-1963, DI-1964,  
DI-1966, DI-1968 and DI-1983)

Standard Form 424A (cont'd.)

SECTION C: NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.	\$	\$	\$	\$	
9.					
10.					
11.					
12. TOTAL (sum of lines 8 - 11)	\$	\$	\$	\$	
SECTION D: FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 57,900	\$ 19,800	\$ 29,600	\$ 8,500	\$
14. NonFederal					
15. TOTAL (sum of lines 13 and 14)	\$ 57,900	\$ 19,800	\$ 29,600	\$ 8,500	\$
SECTION E: BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (Years)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$	\$	\$	\$	
SECTION F: OTHER BUDGET INFORMATION					
21. Direct Charges:		22. Indirect Charges:			
23. Remarks:					

1-009663

1-009663

Figure 3  
Standard Form 424B

OMB Approval No 0348-0040

ASSURANCES — NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET, SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

**NOTE:** Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U. S. C. §4728-4763) relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C. F. R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U. S. C. §1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U. S. C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U. S. C. §6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P. L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

Figure 2  
Standard Form 424A (cont'd.)

INSTRUCTIONS FOR THE SF-424A (continued)

narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.

**Section C. Non-Federal Resources**

Lines 8-11 Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

Column (a) - Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

Column (b) - Enter the contribution to be made by the applicant.

Column (c) - Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

Column (d) - Enter the amount of cash and in-kind contributions to be made from all other sources.

Column (e) - Enter totals of Columns (b), (c), and (d).

Line 12—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

**Section D. Forecasted Cash Needs**

Line 13 - Enter the amount of cash needed by quarter from the grantor agency during the first year.

Line 14 - Enter the amount of cash from all other sources needed by quarter during the first year.

Line 15 - Enter the totals of amounts on Lines 13 and 14.

**Section E. Budget Estimates of Federal Funds Needed for Balance of the Project**

Lines 16-19 - Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

Line 20 - Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

**Section F. Other Budget Information**

Line 21 - Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

Line 22 - Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Line 23 - Provide any other explanations or comments deemed necessary.

**Figure 3**  
**Standard Form 424B (cont'd.)**

- 9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a - 7), the Copeland Act (40 U.S.C. §§276c and 18 U. S. C. §§374), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally assisted construction subagreements.
- 10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
- 11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clear Air Act of 1955, as amended (42 U.S.C. §§ 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended, (P.L. 93-203).
- 12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
- 13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).
- 14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
- 15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
- 16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§ 4801 et seq.) which prohibits the use of lead based paint in construction or rehabilitation of residence structures.
- 17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act of 1984 or OMB Circular No. A-133, Audits of Institutions of Higher Learning and other Non-profit Institutions.
- 18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL		TITLE	
<i>Valerie Clark</i>		West Coast Regional Manager	
APPLICANT ORGANIZATION		DATE SUBMITTED	
ENTRIX, Inc.		July 2, 1998	

Standard Form 424B (Rev. 4/92) back

Figure 4  
Standard Form 424C

<b>BUDGET INFORMATION — Construction Programs</b>			
OMB Approval No. 03-48 00-11			
NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case you will be notified			
COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Column a-b)
1. Administrative and legal expenses	\$ .00	\$ .00	\$ .00
2. Land, structures, rights-of-way, appraisals, etc.	\$ .00	\$ .00	\$ .00
3. Relocation expenses and payments	\$ .00	\$ .00	\$ .00
4. Architectural and engineering fees	\$ .00	\$ .00	\$ .00
5. Other architectural and engineering fees	\$ .00	\$ .00	\$ .00
6. Project inspection fees	\$ .00	\$ .00	\$ .00
7. Site work	\$ .00	\$ .00	\$ .00
8. Demolition and removal	\$ .00	\$ .00	\$ .00
9. Construction	\$ .00	\$ .00	\$ .00
10. Equipment	\$ .00	\$ .00	\$ .00
11. Miscellaneous	\$ .00	\$ .00	\$ .00
12. SUBTOTAL (sum of lines 1-11)	\$ .00	\$ .00	\$ .00
13. Contingencies	\$ .00	\$ .00	\$ .00
14. SUBTOTAL	\$ .00	\$ .00	\$ .00
15. Project (program) income	\$ .00	\$ .00	\$ .00
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ .00	\$ .00	\$ .00
<b>FEDERAL FUNDING</b>			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share). Enter the resulting Federal share.	Enter eligible costs from line 16c. Multiply X ____%		\$ .00

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