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**FOR ADDITIONAL FIGURES, CALL:
A.J. Glauber at (510) 652-4500**

 **Levine·Fricke·Recon**
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

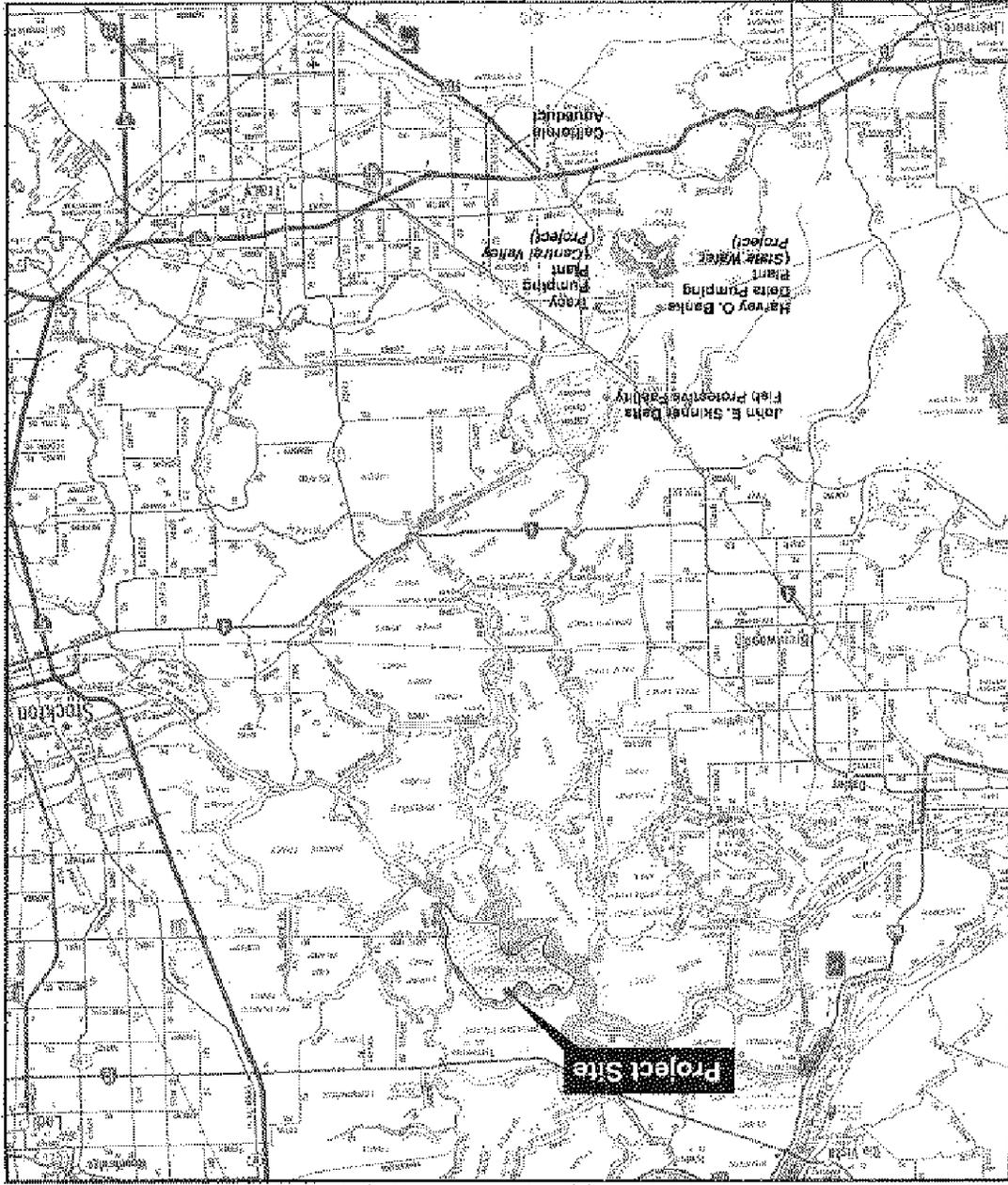
Levine-Fricke-Regan
Project No. P0247-97M

Figure 1

Site Location Map

Map Source: California State Automobile Association
Bay Area and River, 1979

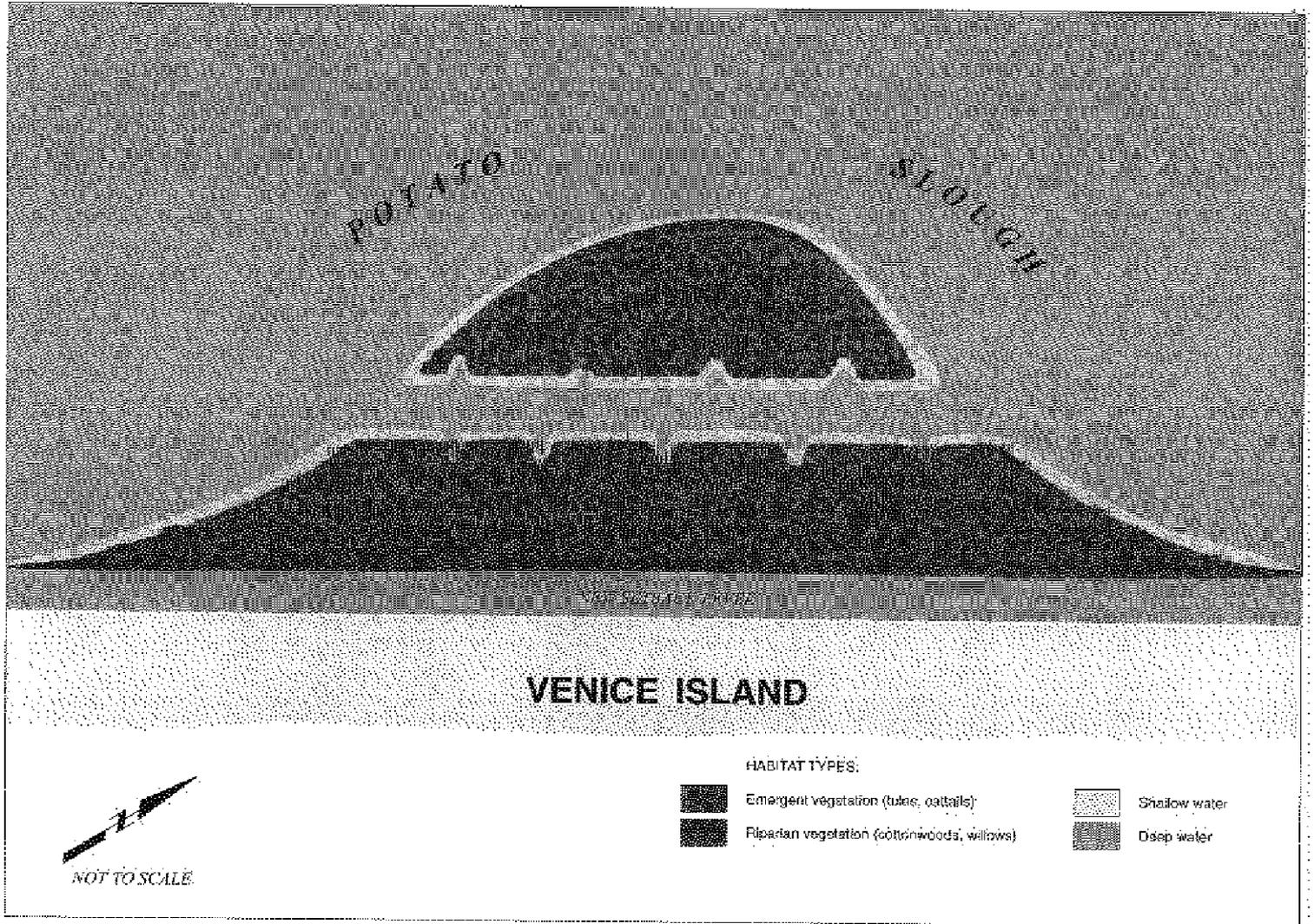
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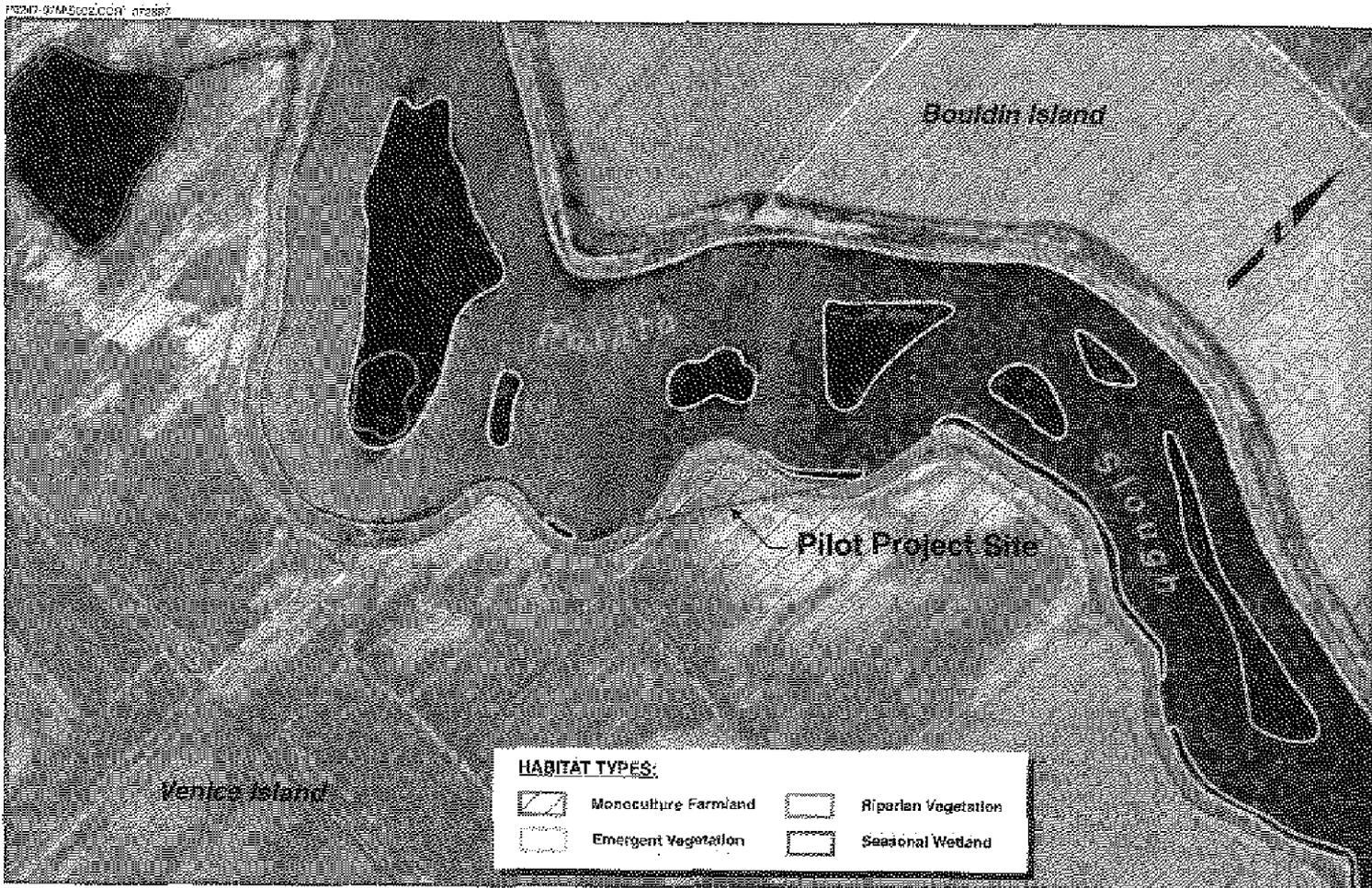
Project No. P0247-97M
P0247-97M-FR-CONS-001 1/2/97

Anticipated Ecological Habitats

Figure 3

1-003708

1-003709



Existing Ecological Habitats

1-003709

A. PROJECT TITLE Venice Island Potato Slough Habitat Creation Demonstration Project

B. APPLICANT/PRINCIPLE INVESTIGATOR Levine-Fricke-Recon (LFR)
1900 Powell Street, 12th Floor
Emeryville, California 94608
(510) 652-4500/FAX (510) 652-2246

C. TYPE OF ORGANIZATION & TAX STATUS LFR is a duly authorized corporation based in Emeryville, California

D. TAX IDENTIFICATION NUMBER & CONTRACTOR'S LICENSE NUMBER LFR's TIN is 04-2806712
LFR's contractor's license, Number 507465, is held by James D. Levine, P.E.

E. TECHNICAL & FINANCIAL CONTACTS *Technical:* Roger D. Leventhal, P.E., *Financial:* Christine Donges, address/phone/fax same as above;
Technical: Douglas S. Lipton, Ph.D.
58 W. North Street, Ste 103, Healdsburg, CA 95448
(707) 433-2094/FAX (707) 422-2095

F. PARTICIPANTS/COLLABORATORS IN IMPLEMENTATION

California Rice Industry Assoc. (<i>Advisors</i>) 701 University Ave., #205, Sacramento, CA 95825-6708; Bob Herker (916) 929-3996/FAX (916) 458-5568	UC Student Farm (<i>Field Compost Study</i>) 1 Shields Avenue, Davis, CA 95616 Mark Van Horn (916) 752-7645/FAX (916) 752-7655
Allan Garcia (<i>Rice Grower</i>) 7772 Road 9, Orland, CA 95963 (916) 865-3865	Sonoma Compost Company (<i>Compost Advisors</i>) 550 Meacham Road, Petaluma, CA 94952 Will Bakx and Alan Siegel (707) 664-9113/FAX (707) 664-1943
Levine-Fricke Restoration (<i>Sed. Rehandling</i>) 1900 Powell Street, 12th Floor Emeryville, CA 94608-1827 (510) 652-4500/(510) 652-2246	Garcia and Associates (GANDA) (<i>Technical Advisor</i>) 3152 Paradise Dr., Tiburon, CA 94920 (415) 789-9242/FAX (415) 789-9245
	Kjeldsen, Sinnock & Associates (<i>Civil Eng./Surveying</i>) 1113 W. Fremont St., Stockton, CA 95201-0844 (209) 946-0208/FAX (209) 946-0276

G. RFP PROJECT GROUP TYPE(S) Group 1, Group 2, Group 3

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PROJECT TITLE AND APPLICANT NAME. *Venice Island Potato Slough Habitat Creation Demonstration Project (VIPSHC), Levine Fricke-Recon*

PROJECT DESCRIPTION AND PRIMARY BIOLOGICAL/ECOLOGICAL OBJECTIVES. VIPSHC works to mitigate conflicts between reductions in fish habitat and existing agricultural uses of Delta islands. VIPSHC combines creation of habitat for sensitive native fishes with raising elevations and stabilization of subsided Delta islands. In support of the goals of the CALFED Program, FILDIN Development Company (FDC) has agreed, for this project, to establish a conservation easement on a 7-acre parcel of land on Venice Island, which is owned by FDC (*see Letter of Intent*). The VIPSHC Project Team will use the site to demonstrate the creation of approximately 6 acres of new tidal perennial freshwater marsh and midchannel island habitat. The project design involves building a new setback levee and raising subsided lands using a combination of clean dredged sediment and rice straw—an agricultural by-product that previously has been disposed of by burning (which is undergoing increasing regulatory restrictions) or flooding harvested fields (which affects fresh water supplies for sensitive fish and urban users). The raising of subsided lands is necessary for restoring certain kinds of habitat because ground surface of agricultural islands in the area has subsided to depths more than 12 feet below mean lower low water. For spawning and rearing sensitive species of Delta fish, the subsided site must be raised to appropriate elevations. VIPSHC raises those elevations using an innovative rice-straw/clean dredged sediment mixture to approximate natural marsh soils. The VIPSHC habitat design includes grading the existing levee to create a midchannel island using existing nearby marshes as natural analogs during design and monitoring.

VIPSHC will provide spawning and rearing habitat for a variety of fish species, including delta smelt, longfin smelt, and Sacramento splittail. Increasing wetlands will also benefit avian populations of native waterfowl, shorebirds, and Swainson's hawks. VIPSHC will also act to improve water quality by re-establishing natural marsh processes that remove contaminants. By restoring habitat along the margins of a subsided Delta island, VIPSHC will demonstrate how to achieve maximum restoration benefits through effective co-existence of diverse land use interests. The methods used in VIPSHC will be adaptable to other sites throughout the region to aid in the long-term recovery of the Delta.

APPROACH/TASKS/SCHEDULE. The project consists of three phases: ecological design (Phase 1); habitat restoration (Phase 2); and post-restoration monitoring (Phase 3). During Phase 1, we will evaluate existing conditions and identify marsh analogs, and conduct field composting and laboratory studies to identify a clean dredged sediment/rice straw mixture that will provide suitable, stable substrate for restoration. We will prepare final design plans using results of those tests and studies, and obtain permits and contractor bids for construction. We anticipate Phase 1 can be completed within 19 months. We anticipate constructing the demonstration project at Venice Island, as described above, during Phase 2 within four months. We anticipate continuing Phase 3 post-restoration monitoring for five years to collect the data necessary to enhance the project design and document project success.

JUSTIFICATION FOR PROJECT AND FUNDING BY CALFED. Since the 1970s, fish and wildlife abundance and species diversity in the Bay-Delta have declined significantly. One primary cause for those declines is loss of habitat. To create wetlands habitat and suitable spawning/rearing habitat for many Delta fishes, VIPSHC must restore appropriate tidal inundation regimes, which are dependent upon ground surface elevations relative to water height. Most Delta islands have ground surface elevations significantly below appropriate elevations that would support spawning and rearing habitat for sensitive species of Delta fish. VIPSHC establishes tidal elevations in island margins without "filling in" existing Delta waterways, as might be the case with other projects that do not involve levee modifications and limited farmland reclamation. Thus, VIPSHC offers a way to integrate restoration with levee stabilization and allow for current land uses.

COSTS AND THIRD PARTY IMPACTS. Projects involving restoring elevations frequently experience higher costs for procurement, especially pilot-scale restoration projects using large amounts of bulk material such as dredged sediment and rice straw, because commercial processing facilities for rehandling and composting are not available. The VIPSHC would develop an approach that could be implemented in a cost-effective manner for more expansive restoration efforts in the Delta. VIPSHC offers agricultural rice growers in the near vicinity an alternative to burning or flooding fields to dispose of rice straw, and some of the composted rice straw could be used as a soil amendment by the growers. The loss of noncontiguous pockets of land along Delta waterway margins would have potential third-party impacts to the agricultural community. However, those impacts would be considerably smaller than proposals involving large-scale flooding of Delta islands, and may be more readily supported by landowners.

APPLICANT QUALIFICATIONS. LFR and the other participants/collaborators on the VIPSHC have been actively addressing restoration, land use, agriculture and water conservation, and related environmental issues in the Bay-Delta region for over a decade. Since 1983, LFR (the applicant) has been working in the region to solve difficult environmental problems, including working with leading experts to develop policies for sediment reuse for restoration (the Long Term Monitoring Strategy [LTMS]) and to implement effective ecological restoration strategies (e.g., Montezuma Wetlands Restoration Project, Port of Oakland's Martin Luther King Jr. Wetlands Restoration Project, East Bay Regional Park District's Oro Loma Marsh Enhancement Project, Port of San Francisco's Pier 98 Open Space Enhancement Project).

MONITORING AND DATA EVALUATION. We have a programmatic approach to data management that will facilitate adaptive management by evaluating VIPSHC's long-term benefits to priority species, effects on stressors, durability, and effects on water quality. An independent technical review panel will evaluate monitoring results to recommend possible project adjustments, and we will coordinate our program with the Interagency Ecological Program (IEP) to allow regional Bay-Delta data comparison.

LOCAL SUPPORT / COORDINATION WITH PROGRAMS / COMPATIBILITY WITH CALFED OBJECTIVES. **FILDIN Development Company**, a significant landowner in the area, has agreed to dedicate the project site as a conservation easement following construction. We have had discussions with the **local reclamation district** which voiced support for the project. The **California Rice Industry Association** has supplied contacts with area rice growers. **Allan Garcia**, who organically farms 1,000 acres of rice, will make rice straw available for the project, along with others. The **U.C. Davis Student Experimental Farm** has agreed to allow the use of its facilities for the field composting tests. Also, we will work with Mr. Garcia and **The Nature Conservancy (TNC)** early in the project to establish a larger-scale rice straw composting facility within TNC's Consumnes Preserve (Phase 2). Such a facility could also provide valuable "organic" soil amendments for rice growers within the Preserve, which would complement TNC's current efforts to transition its rice growing fields from conventional farming methods to organic methods. In addition, the LTMS is studying reuse options for dredged sediment. VIPSHC offers additional opportunities to evaluate clean dredged sediment reuse and rehandling operations to reduce salinity in sediments dredged from the more saline San Francisco Bay. We will use the Montezuma Wetlands Project's rehandling facility to evaluate and monitor the reuse of clean dredged sediment. Finally, VIPSHC creates fish habitat, increases structural stability of levees, and restores island margins while maintaining existing land uses. These achievements support the goals of the CALFED program Category III funding efforts by restoring ecological health, improving existing water management structures, and addressing conflicts between the need to enhance fish habitat and maintain agriculture within the Delta.

I-003713

Project Description

I-003713

A. PROJECT DESCRIPTION AND APPROACH. VIPSHC proposes to create 6 acres of habitat for sensitive native fishes in Potato Slough along the margins of Venice Island (Figures 1 and 2) using a 7-acre agricultural property to be dedicated as a conservation easement by FILDIN Development Company upon project completion (see *Letter of Intent*). We will relocate the existing flood protection levee "inboard," fill the subsided agricultural lands between the former levee location and its new inboard location, create a channel through the area, and then breach the existing levee in upstream and downstream locations to return tidal action to the area (Figure 3). In conjunction with breaching the levee, the other areas of the outboard (or existing) levee will be graded down to create a midchannel island and revegetated with riparian vegetation (e.g., willows and cottonwoods).

Because Venice Island has subsided to depths of 12 feet below mean lower low water, filling is required to achieve elevations appropriate to support both emergent and submergent vegetation critical to fish habitat creation (Figure 3). We propose to evaluate and develop combinations of rice straw (composted and uncomposted) and clean dredged sediment that can be used as fill material. We propose this combination because these materials are available in large quantities and the sediment/rice straw mixture may approximate natural Delta peaty marsh soils.

We will use field composting and laboratory studies to identify the combination of sediment and composted or uncomposted rice straw most closely approximating natural peaty marsh soils, while minimizing water quality impacts. We will use the results of the tests and studies to determine the optimum mixtures for evaluation during the demonstration project. Figure 5 provides a project flow chart of Phases 1 and 2.

In creating the channel through the habitat, we will use adjacent natural midchannel islands as analogs to design the surface and channel-bed elevations (Figures 3 and 4). We will design the channel and the levee breach to promote natural tidal exchange between Potato Slough and the created habitat, so that ambient main-channel temperatures are maintained within the created habitat, and fish entrapment does not occur. We will also create small backwater areas along the new channel to significantly increase habitat variability and habitat acreage because the vegetated channel edge is generally accepted to be prime habitat for the target native fishes¹.

B. LOCATION OF PROJECT. The project is located in San Joaquin County in the Sacramento-San Joaquin Delta watershed, along Potato Slough on Venice Island (Figures 1 and 2). We will conduct the composting field tests at the Student Experimental Farm at U.C. Davis, Davis, California, and the laboratory suitability studies in LFR's in-house laboratory in Emeryville, California. We will work with Allan Garcia and the Nature Conservancy to establish a rice straw composting facility within the Conservancy's Consumnes Preserve. Clean dredged sediment will be rehandled at the Montezuma Wetlands Restoration Project facilities.

C. EXPECTED BENEFITS.

Stressors. VIPSHC is designed to address floodplain and marshplain changes, channel form changes, water quality, undesirable species interactions, and land use.

Species. VIPSHC focuses on juvenile delta smelt (*Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleichthys*), and Sacramento splittail (*Pogonichthys macrolepidotus*), and fall-run chinook salmon juveniles (*Oncorhynchus tshawytscha*) outmigrating from the San Joaquin and Mokelumne rivers, among other sources². Outmigrating salmonids (primarily fry and some smolts) spend several months in shallow rearing habitat in the Delta, and have recently been documented in the San Joaquin River close to Potato Slough³. Delta smelt and long-fin smelt have been documented

in the San Joaquin River⁴ Sacramento splittail have been documented in the San Joaquin River, where spawning is likely to occur in reaches with shallow emergent vegetation⁵.

Ecosystem Benefits. VIPSHC will create 6 acres of spawning and rearing habitat for the target species identified above. Given the project's location relative to the San Joaquin and Mokelumne rivers and the primary water diversion pumps (e.g., CVP, SWP; see Figure 1), VIPSHC will provide what may be the final fish habitat opportunity in this reach of the Bay-Delta system⁶. In addition, upon completion, VIPSHC will address these identified stressors:

- **Floodplain and Marshplain Changes.** Levee construction throughout the Delta islands has physically isolated water sources from their natural flood and marshplains. VIPSHC will re-establish marshplain in lands currently supporting agriculture, thereby addressing hydrologic and physical isolation of floodplain and marshplain, and increasing floodplain and flood storage capacity.
- **Channel Form Changes.** VIPSHC will re-establish channel hydrogeomorphology and restore natural physical processes, including natural inundation cycles. Using nearby natural analogs to create the midchannel island and tidal perennial habitat, VIPSHC will increase emergent and submergent vegetation and riparian habitat along two perimeter levees. VIPSHC will demonstrate the viability of using set-back levees and habitat creation to increase channel meander and reduce pressure on levees.
- **Water Quality.** Because wetlands filter water⁷, VIPSHC wetlands should enhance reduction of ambient contaminant concentrations in Potato Slough.
- **Undesirable Species Interactions.** To enhance native species survival, we will implement eradication or control options for exotic species during Phase 3 monitoring.
- **Land Use.** VIPSHC will employ a conservation easement to change land use in perpetuity.

Expected secondary benefits include the creation of shallow water foraging habitat for shorebirds and waterfowl, and wetland and upland foraging and rearing habitat for native waterfowl and Swainson's hawks, which have been recently documented in the area⁸.

Third Party Benefits. VIPSHC will evaluate a beneficial reuse alternative for rice growers who now rely on burning or flooding fields to dispose of rice straw. VIPSHC will also provide research data on composting processes that produce the most stable rice straw compost. VIPSHC will also evaluate the beneficial reuse of clean dredged sediment and rehandling sediment from the more saline San Francisco Bay.

Benefits to Other Ecosystem Restoration Programs. VIPSHC will provide a clean dredged sediment/rice straw mixture that can be used effectively as fill material to create wetland habitat throughout much of the Bay-Delta system. This effort reduces effects to air quality associated with burning rice straw and relieves ongoing pressure to dispose of dredged sediment in San Francisco Bay or the ocean. In addition, VIPSHC supports research into the use of other agricultural by-products as fill for wetlands habitat creation.

Benefits to CALFED Non-Ecosystem Objectives. Existing Delta levees could fail during a large seismic event. Current methods for levee stabilization are expensive, and by working in aquatic areas,

may be damaging to existing biota. VIPSHC will evaluate using fill placement (for wetland creation) in non-wetlands area to bolster levees, thus reducing hydrostatic pressure and wave-generated erosion.

D. BACKGROUND AND BIOLOGICAL/TECHNICAL JUSTIFICATION. Native fish populations in the Bay-Delta are rapidly declining because of habitat alterations that have dramatically reduced critical spawning and rearing habitat for special status species, such as the delta smelt and Sacramento splittail⁹. Many habitat alterations occurred during flood control levee construction to create islands to accommodate other land uses, primarily agriculture (Figure 4). Although flooding of Delta islands would restore natural processes to the area, the high yield of agricultural products from the region makes this option impractical. Therefore, it is important to develop wetlands restoration designs that can provide valuable habitat along island margins, while still supporting other land uses.

As described previously, VIPSHC involves moving the existing levee inboard, filling the area between the current levee location and its new inboard location and constructing a channel to establish the fish and wetland habitat, and then breaching the levee to restore tidal action to the restoration area. Each step is critical to project success and offers advantages over other alternatives. Moving the levee inboard reclaims a limited area of farmland to create valuable tidal perennial aquatic and midchannel island habitats, preserves agricultural land uses, and creates a levee setback that relieves pressure on the levee and increases the floodplain. The planned restoration area establishes appropriate elevations for prime Delta fish spawning and rearing habitat without "filling in" existing Delta waterways, as might be the case with other projects that do not involve reclamation. We have proposed a rice straw/clean dredged sediment mixture as fill material to (a) develop a new material suitable for this and other restoration efforts, (b) research the use and effect of organic materials in restoration, (c) develop optimum processes for producing the most natural peat-like material, and (d) establish an alternative to rice straw burning for area rice growers. Increasing the acreage of prime habitat by creating small backwater areas along the channel through the restoration area maximizes potential benefits of the project design without affecting levee stability or land uses in other areas of the island (see Figures 3 and 4). Grading and revegetating the outer levee with riparian plant species creates a more complex ecosystem, again maximizing restoration efforts. Thus, VIPSHC offers the opportunity for enduring habitat restoration to co-exist with current land uses, which likely will continue in the Delta.

We believe that Potato Slough is an excellent location for fish restoration project because the slough connects the Mokelumne and San Joaquin rivers, areas known to support spawning and rearing delta smelt, longfin smelt and Sacramento splittail. We believe that creating appropriate habitat in Potato Slough will attract the target fish populations because habitat in those rivers is limited. We believe the fish populations can be maintained in this area because VIPSHC's design is based on natural nearby marshes, with the added benefit of fill materials that will approximate peaty soils so that an enduring habitat will be achieved.

Status. LFR has developed the project strategy, discussed the project with interested parties, evaluated costs and benefits, and had the conceptual design reviewed by fish habitat experts. The outcome of the rice-straw/clean dredged sediment studies is a critical component of the project as planned. Our approach will evaluate and develop the best sediment/rice straw mixture that approximates natural peat soils in the Delta.

Supporting Documents. LFR has completed preliminary design for the proposed restoration project, including approximate costs for final design, implementation and long-term monitoring.

E. SCOPE OF WORK. Our scope of work consists of 11 technical tasks to be conducted in three phases. Phase 1 Ecological Design consists of site characterization; field composting and laboratory studies to identify a clean dredged sediment/rice straw mixture that will provide suitable, stable substrate for restoration; preparation of the preliminary demonstration project design; permitting; preparation of final plans and specifications; and bidding. Phase 2 Habitat Restoration consists of sediment rehandling, rice-straw composting, setback levee construction, fill placement, breaching and grading of the outer levee, revegetation, and construction management. Phase 3 Post-Restoration Monitoring consists of long-term monitoring to document project progress, implement modifications as needed, and demonstrate project success.

In addition, we will complete ongoing administrative tasks to facilitate project progress and ensure project success and conformance with contract documents. We will submit progress reports to CALFED on a monthly basis. The technical tasks are described below.

PHASE 1 ECOLOGICAL DESIGN

Task 1: Site Characterization. We will evaluate existing biological, physical, and chemical conditions at the VIPSHC site to determine baseline conditions (Figure 6). We will complete a 1:100 scale topographic survey of the site and a natural reference marsh, and a hydrographic survey of the adjacent slough bed elevations. We will perform a tidal reckoning analysis to determine the site-specific tidal datum and use those datum to establish the elevations appropriate to support target species and habitats. We will also collect key biological and hydraulic information at the site and the reference site, including flow velocity, stage height, current direction, and sedimentation rate, for use in project design. During this effort, we will evaluate aerial photographs of the area to assess erosion/accretion of existing Delta features. We will present the results of this task in the Final Ecological Report (see Task 4).

Task 2: Field Composting Study. We will conduct field composting studies to develop optimum composting procedures for turning rice straw into the most "peat-like" material (Figure 7). To effectively mimic large-scale composting operations, we will conduct the test using 100 cubic yards of rice straw formed into windrows about 5 feet high. Because we need to reduce the high carbon/nitrogen ratio of the rice straw (~100:1), we will divide the windrow into sections of equal volume to test several treatment options, including nitrogen-enriched food processing wastes (from canneries and/or breweries), agricultural manures, commercial NPK fertilizer, and microbial inoculants/enzymes (from rice field soil and/or commercial sources). We will conduct the tests at the U.C. Davis Student Experimental Farm under the guidance of Sonoma Composting Company (SCC), using techniques currently employed at SCC's 50,000 cubic yards per year commercial facility. In addition to evaluating the "finished" condition of the compost using standard parameters of temperature, soluble nutrients, bulk density, and visual conditions, we will leach the compost with a dilute alkaline solution (commonly used in soil chemical extractions) to assess the "availability" (i.e., stability) of organic carbon in the composted rice straw. We will present the results of this task in the Final Ecological Report (see Task 4).

Task 3: Laboratory Water Quality Study. We will conduct laboratory "leaching" tests at our in-house laboratory in Emeryville, California, to evaluate the potential for rice straw/sediment mixtures to affect water quality compared to three peat soil samples from natural marshes near the Venice Island site. While the best measures of water quality impacts will be obtained from monitoring the VIPSHC under real hydraulic conditions (see Task 10), these laboratory tests will allow us to conservatively assess potential impacts to water quality and to design optimum combinations of rice

straw (composted or uncomposted) and clean dredged sediment for testing in the VIPSHC. We will test combinations of composted and uncomposted rice straw and clean dredged sediment in batch leaching tests. We will analyze the water for the water quality parameters listed in Table 1. Based on the results of those batch leaching tests, we will further evaluate four combinations that produce minimum water quality impacts using a "tidal simulation" (TS) test (developed by USACE Waterways Experiment Station¹⁰). The TS test reproduces tidal action by pumping water from the test system (aquarium) and by gravity feeding water into the system at set time intervals to mimic the natural schedule of the tides. We will also evaluate geotechnical properties of the combinations to identify those appropriate for stabilization. We will present the results of this task in the Final Ecological Report (see Task 4).

Task 4: Final Ecological Design Report. We will summarize the ecological and engineering design in a Final Ecological Design report for review by CALFED representatives and our technical review panel, which will consist of recognized authorities, agency personnel, and local interested parties. The report will include detailed cost estimates, design specifications, a construction schedule, and a draft monitoring plan. We anticipate finalizing this draft monitoring plan along with the plans and specifications.

We have prepared a preliminary engineering design for the demonstration project. Descriptions and associated costs for the pre-construction engineering and ecological design elements of the demonstration project are provided in Table 2. Figures 8 and 9 show a cross-section and a plan view, respectively, of the VIPSHC.

Task 5: Construction Plans and Specifications. We will prepare construction-ready plans and specifications, including materials suitable for bidding the project. We will also oversee the bidding, evaluation of bids and make a recommendation for award of the contract to a qualified contractor. The lowest qualified bids will be submitted to CALFED as the funding basis for Phase 2 of the project. We have already evaluated earthwork quantities using specific materials and sources; construction methods and equipment; costs; and schedule. Those evaluations and the associated costs are presented in Table 2; these are preliminary engineering cost estimates (+ 35%).

Task 6: Permitting. LFR will obtain all necessary permits (Table 3). Deliverables for this task include permit applications and supporting documentation needed to obtain the permits.

PHASE 2: HABITAT RESTORATION

Task 7: Construction. Construction will include all tasks for direct project implementation, including composting, rehandling, creating the setback flood control levee, raising elevations of subsided lands using the preferred rice straw/sediment mixture, revegetation, and levee breaching.

Task 8: Construction Management. We will provide construction management services during this phase to ensure quality and adherence to contract documents, schedule, and budget constraints. We will use field notes to document site activities performed under Task 7.

PHASE 3: POST RESTORATION MONITORING

Task 9: Biological Monitoring. We will implement biological monitoring to evaluate VIPSHC's benefits to priority species and its effects on biological stressors. As shown in Figure 6, we will focus on factors such as fish presence, abundance and composition, vegetation, and invertebrate support. We will conduct quarterly sampling and report results to the Technical Review Panel and CALFED on an annual basis for five years. As illustrated, we will apply an adaptive approach to allow us to modify management of the restored site to maximize enduring restoration efforts.

Task 10: Water Quality Monitoring. To evaluate water quality in the newly created habitat, we will collect surface water and subsurface water samples by installing hydropunch probes at different locations and elevations to evaluate the effects of tidal inundation within the restored marsh. We will analyze the samples for the water quality parameters listed in Table 1. We will conduct quarterly sampling and report results to the Technical Review Panel and CALFED on an annual basis for five years.

Task 11: Geotechnical and Physical Monitoring. We will also monitor the physical properties of the created habitat to assess sedimentation, levee stabilization, and hydraulics. We will conduct quarterly sampling and report results to the Technical Review Panel and CALFED on an annual basis for five years.

F. MONITORING AND DATA EVALUATION

We will coordinate data concerning the ecological aspects of habitat restoration in the Delta system with the Interagency Ecological Program monitoring to enable regional comparison. In addition, VIPSHC will provide valuable research data on reuse options for clean dredged sediment and organic materials, specifically rice straw. VIPSHC also will assess limited reclamation of farms lands and the filling of that farmland to achieve appropriate elevations for habitat restoration. Finally, VIPSHC will provide data concerning alternatives for increasing floodplains in the region and levee stabilization methods. We will maintain a user friendly database of those data throughout the life of the project. The database will be structured to allow efficient data recovery and analysis, plotting, graphing, tabulation, and calculation.

In consultation with CALFED, we will assemble a technical review panel of recognized experts, agency personnel, and local interested parties to evaluate project progress and conduct independent third-party review of project deliverables. As appropriate, the review panel will recommend modifications to the project to assist in fine tuning the management strategy, to maximize the potential for success in the long-term, both for the project, and similar projects in the future.

G. IMPLEMENTABILITY

VIPSHC will comply with all laws and regulations existent during execution of the project. The field study composting activities at the UC Davis Student Experimental Farm do not require permits. We have the consent of the VIPSHC site owner to allow use of the site for the demonstration project and creation of a conservation easement upon project completion. With the assistance of Allan Garcia and The Nature Conservancy, we have identified a source for the rice straw materials and a location for conducting the full-scale composting operation. We have completed preliminary design and costing efforts. Our restoration design has been reviewed and favorably received by authorities on Delta fish. We have initiated dialog with the myriad of interested parties in the Delta, and we will conduct further community outreach as the project progresses to address the needs of the local community.

Endnotes (excluded from page count)

- ¹ R. Baxter, California Department of Fish and Game. Personal communication, July 1997.
- ² U.S. Fish & Wildlife Service (USFWS). 1997. *Abundance and Survival of Juvenile Chinook Salmon in the Sacramento-San Joaquin Estuary, 1994 Annual Progress Report*. April 1997; USFWS. 1995. *Volume III: Working Paper on Restoration Needs*. "Habitat Restoration Actions to Double the Natural Productions of Anadromous Fish in the Central Valley California."; L. Meng and D.B. Moyle. 1995. *Status of Splittail in the Sacramento-San Joaquin Estuary*. Transactions of the American Fisheries Society. 124:538-549; L. Meng. Personal communication, July 1997; P.B. Moyle, B. Herbold, D.E. Stevens, and L.W. Miller. 1992. *Life history and status of the delta smelt in the Sacramento-San Joaquin estuary, California*. Transactions of the American Fisheries Society 121: 67-77; B. Herbold. Personal communication, July 1997; San Francisco Estuary Project. 1992. *Status and trends report on the aquatic resources in the San Francisco Estuary*. Prepared under cooperative agreement #CE009519-01-1 with the Environmental Protection Agency
- ³ U.S. Fish & Wildlife Service (USFWS). 1997. *Abundance and Survival of Juvenile Chinook Salmon in the Sacramento-San Joaquin Estuary, 1994 Annual Progress Report*. April 1997
- ⁴ B. Herbold. Personal communication, 1997. U.S. Fish and Wildlife Collection Data. 1996.
- ⁵ L. Meng. Personal communication, June 1997.
- ⁶ R. Baxter, California Department of Fish and Game. Personal communication, July 1997
- ⁷ W.J. Mitsch and J.G. Gosselink 1993. *Wetlands*. 2nd Edition. Van Nostrand Reinhold, New York City, New York.
- ⁸ S.K. Herzog. 1996. "Wintering Swainson's Hawks in California's Sacramento-San Joaquin Delta." *The Condor*. 98:876-879.
- ⁹ Moyle P.B., B. Herbold, D.E. Stevens, and L.W. Miller. 1992. *Life history and status of the delta smelt in the Sacramento-San Joaquin estuary, California*. Transactions of the American Fisheries Society 121: 67-77; L. Meng and D.B. Moyle. 1995. *Status of Splittail in the Sacramento-San Joaquin Estuary*. Transactions of the American Fisheries Society. 124:538-549; L. Meng. Personal communication, July 1997
- ¹⁰ Simmers, J.W., R.G. Rhatt, S.H. Kay, and B.L. Folsom, Jr. 1989. Synthesis of the results of the field verification program wetland disposal alternative. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS. Tech. Rep. D-89-2.

1-003721

Cost of Service

1-003721

As demonstrated throughout this proposal, VIPSHC meets the requirements of the CALFED Category III funding program with regard to addressing restoration of habitat for endangered Delta fish species. In addition, the conceptual plan has been completed and has the support of the site owner and been well received by authorities on sensitive Delta fish habitat.

We must conduct portions of the work during specific seasons (e.g., when fish spawn; when tidal elevations are relatively low). As a result, we anticipate that the schedule of work, excluding monitoring, will extend over a period of approximately two years (Figure 10). Therefore, we anticipate negotiating funding to occur in harmony with that schedule, allowing sufficient lead time to complete contractual arrangements and effectively mobilize specific project phases. More specifically, the tasks in Phase 1 are scheduled for completion, and therefore require funding in toto, within a 19-month period beginning in December 1997. Phase 2 is expected to begin in July 1999 and continue until October 1999. Phase 3 will begin in November 1999 and continue for a five-year period. We anticipate providing CALFED with monthly invoices documenting work activities and expenditures.

Cost Table. As requested in the RFP, we show the total Direct Labor Hours associated with each task. The Direct Salary Hourly Rate shows the average for all staff levels, including principal, project management, technical and professional staff, field personnel and editing and graphics, and includes fringe benefits at 29%. The Overhead Labor Hourly Rates include General Administrative expenses and fees. The Fully Burdened Rates combine the Direct Salary and Benefits rates and the Overhead Labor Rates. The Estimated Total for the Proposed Demonstration Project reflects all aspects of the proposed scope of work and is based on a preliminary design and estimate of probable construction costs.

We are requesting the total amount shown to be funded by CALFED under this initiative. In kind contributions, which are not shown in the attached table, include the following:

- Proposed project team labor rates are calculated at cost for LFR. This represents an approximate average discount of 20% off our standard commercial rates. Based on the projected level of effort, the total value of this discount is approximately \$90,000.
- LFR coordinate with local landowners, the Venice Island Reclamation District, The Nature Conservancy, and local rice growers to gain support and promote local involvement in the project at no cost. These efforts will vary during the course of the project and are estimated at a total value of \$25,000.
- LFR proposes to provide all field equipment for the project at no cost to the project. Additionally, all travel and subsistence costs also are being contributed to the project. Together, these costs are valued at approximately \$35,000.
- The LFR project team also will contribute the land at no cost to the project through FILDIN Development Company. This contribution is valued at \$50,000.
- The California Rice Industry Association have verbally committed to contributing \$11,000 of in-kind services either in terms of cash contribution to the project cost or support services.
- Dredging and transport of sediment to be funded under Corps of Engineers Bay Dredging Project, with an approximate in-kind contribution of \$1 million.

COSTS & SCHEDULE

(2-page limit)

Phase & Task Description	Direct Labor Hours	Direct Salary & Benefits		Overhead Labor (General Admin & fee)		Fully Burdened Rates	Service Contracts	Material & Acquisition Contracts	Miscellaneous & Other Direct Costs	Total
		Hrly Rate	Total \$\$\$	Hrly Rate	Total \$\$\$					
<i>Phase 1 Ecological Design</i>										
1. Site Characterization	363	33.50	12,160	56.50	20,510	90.00			8,000	40,670
2. Field Composting Study	110	40.34	4,438	54.66	6,012	95.00			12,000	22,450
3. Laboratory Water Quality Study	388	34.24	13,285	48.21	18,705	82.45			22,100	57,090
4. Final Ecological Design Report	1,500	32.79	49,185	44.36	66,540	77.15			--	115,725
5. Construction Plans & Specifications	1,121	33.59	37,654	50.70	56,835	84.29				94,489
6. Permitting	930	31.78	29,555	42.47	39,497	74.25			5,000	74,052
Phase 1 Total										401,476
<i>Phase 2 Habitat Restoration</i>										
7. Construction	0						4,008,000			4,008,000
8. Construction Management	1,444	32.33	46,685	47.84	69,080	80.17				115,765
Phase 2 Total										4,123,765
<i>Phase 3 Post-Restoration Monitoring</i>										
9. Biological Monitoring	616	32.25	19,866	44.02	27,116	76.27			6,000	52,982
10. Water Quality Monitoring	212	31.68	6,717	41.82	8,865	73.50			25,000	40,582
11. Geotech/Physical Monitoring	128	36.30	4,646	45.45	5,818	81.75			2,000	12,464
Phase 3 Total										106,028
ESTIMATED TOTAL FOR THE PROPOSED DEMONSTRATION PROJECT										4,623,269

Qualifications

I-003724

I-003724

PLANNED ORGANIZATION, STAFF & RESOURCES

Figure 11 provides an organization chart for the LFR team. As show, the LFR Team blends ecology and engineering with experience working in the Bay-Delta region. Team member have completed some of the largest and most complex restoration efforts in the Bay-Delta region, successfully restoring dynamic ecosystems (*see bio sketches that follow*). In addition to the resources identified in the organization chart, LFR employees over 400 professionals with experience in all phases of environmental resource management, regulatory negotiation, and environmental remediation. The VIPSCH team can draw upon this multi-disciplinary breadth of expertise as necessary to comprehensively address project issues or related matters.

TECHNICAL, ADMINISTRATIVE, AND PROJECT MANAGEMENT

VIPSHC integrates biology/ecology with engineering. As a result, Douglas S. Lipton, Ph.D., and Roger D. Leventhal, P.E., will provide joint leadership of the technical aspects of VIPSHC. Dr. Lipton and Mr. Leventhal have previously worked together in similar roles on a number of other successful restoration efforts. They will draw upon the resources available from the project's collaborating participants described below (*see Nature and Extent of Collaborating Participants*) and will work with Rachel Bonnefil, Regulatory Specialist; J. Scott Seyfried, R.P.S.S., Soil Scientist; A.J. Glauber, Environmental Scientist; Kirk Lenington, Biologist; Maya Khosla, Fisheries Biologist; Christopher Nardi, G.E., Geotechnical Engineer; Mary Alice Keeler and Rick Mitellie, Design Engineers; and additional engineers, hydrogeologists/geologists, and environmental scientists as necessary to ensure superior technical project performance. Table 4 provides a summary of the qualifications, experience, and past performances for these project team members.

Christine Donges, Contract Manager, will be responsible for administering contractual issues with CALFED. Ms. Donges will ensure that financial recordkeeping and reporting comply with CALFED Category III Funding requirements (*see Table 4 for her qualifications*).

To ensure consistency throughout the life of the project, Mr. Leventhal will assume the role of project manager to coordinate the day-to-day functions related to schedule and budget adherence, preparation and delivery of deliverables, personnel coordination, and overall project performance. An experienced LFR Project Assistant will work with Mr. Leventhal to accomplish administrative management, including scheduling meetings, distributing meeting agenda, recording and distributing meeting notes, compiling and preparing deliverables, cost tracking and expenditures monitoring, and other tasks as necessary.

BIO SKETCHES/QUALIFICATIONS/EXPERIENCE/PAST PERFORMANCE

Douglas S. Lipton, *Ph.D. Soil Chemistry, 1991; M.S. Soil Science, 1983; B.A. Environmental Biology, 1980; B.A. Molecular Biology, 1980*. Dr. Lipton established Levine-Fricke-Recon's Ecological Services Group, which directs ecological restoration projects and conducts a wide variety of laboratory treatability studies that evaluate chemical and biological remediation technologies for restoring contaminated soils, sediments, and groundwater. Dr. Lipton directed some of the largest ecological restoration projects in the Bay-Delta region, including the 2,000-acre Montezuma Wetlands Restoration Project and the recently completed Oro Loma Marsh Enhancement Project, which has been called a "model" restoration by the San Francisco Joint Bay Venture. Through his association with these projects, Dr. Lipton has acquired extensive experience integrating ecology with engineering, and has built strong working relationships with local, state, and federal permitting and resource agencies. His past project experience also includes directing the Port of Oakland's Martin

Luther King Jr. Wetlands Restoration Project, managing the revegetation and closure of a Superfund site in California's Central Valley, and directing research at a facility dedicated to dredging and composting agricultural wastes. Dr. Lipton currently participates in the LTMS and leads a panel of technical experts working for the California Regional Water Quality Control Board. That panel is providing oversight of efforts by Bay Area refineries to develop new technologies to reduce selenium concentrations in process water before discharged to Bay waters.

Roger D. Leventhal, P.E. (*California, 42467*), *M.S. Civil Engineering, Hydraulics and Water Resources, 1985; B.A. Geology (Geochemistry Emphasis), 1983*. Mr. Leventhal has acquired unique experience in ecological restoration/environmental engineering projects as the project manager or lead engineer for Levine-Fricke-Recon's major wetlands and shoreline restoration projects in the Bay Area and Sacramento River Delta. His academic background in hydraulics and water resources coupled with practical experience in applied engineering principles have proven to be invaluable assets to Levine-Fricke-Recon's many successes in the environmental field. He has evaluated design alternatives, successfully negotiated permitting, prepared plans and specifications and supervised field construction of some of the largest and most successful restoration projects on the West Coast. Through his project involvements, Mr. Leventhal has demonstrated expertise in analysis and design of tidal channels, and in tidal reckoning analysis. In addition, Mr. Leventhal has demonstrated his ability to manage multiple interdisciplinary teams in conducting civil and engineering design projects and completing projects within complex regulatory framework. His past project experience includes project manager/lead design engineer for the wetlands restoration and landfill closure project at Pier 98 in San Francisco, engineering project manager for the Montezuma Wetlands Project, and engineering project manager for the Oro Loma Marsh Enhancement Project.

NATURE AND EXTENT OF COLLABORATING PARTICIPANTS

FILDIN Development Company, a significant landowner in the area, has agreed to dedicate the project site as a conservation easement upon completion of the VIPSHC Demonstration Project.

Sonoma Compost Company (SCC) will provide guidance during composting of the rice straw. Established in 1985, SCC receives an average of 150 tons of yard waste per day and through its dealer network, markets over 50,000 cubic yards of compost and mulch annually throughout Northern California. SCC has worked closely with the California Integrated Waste Management Board to establish meaningful and realistic regulations for compost facilities, and has taken the lead in setting up workshops to assist local regulators in interpreting and implementing state regulations.

The **UC Davis Student Experimental Farm** will supply a site for composting and UC students will participate in the study under the direction of SCC.

The **California Rice Industry Association** will provide continuing liaison with agribusiness in the Delta and Central Valley.

Allan Garcia, who organically farms 1,000 acres of rice, will make rice straw available for the project and will work with us to develop the composting facility on his ranch.

The **Nature Conservancy (TNC)** has agreed to work with the team early in the project to establish a rice straw composting facility within TNC's Consumnes Preserve. This composting facility could also provide valuable "organic" soil amendments for rice growers within the Preserve, which would complement TNC's current efforts to transition its rice growing fields from conventional farming methods to organic methods.

Kjeldsen, Sinnock & Associates (KSA) will assist with final engineering design and land surveying operations. KSA has provided civil engineering and land surveying services at Venice Island for over 10 years, and is very familiar with construction on the island. Mr. Ken Kjeldsen, president of KSA, is the Bureau of Reclamation's current District Engineer for Venice Island.

Garcia & Associates (GANDA) will work with the project team to further develop and implement the conceptual restoration plan. GANDA provides specific expertise in aquatic and terrestrial ecology and natural resources policy and planning applications. GANDA is a Minority-Owned Business Enterprise (MBE) that has designed and completed fish population, water quality, and habitat studies in streams, rivers, lakes, and reservoirs in the Delta, as well as in Alaska, Arizona, Idaho, Montana, Nevada, and Washington. GANDA has developed computer models to assess impacts of projects on species populations and ecosystems.

Randy Baxter and **Paul Richel** of the **California Department of Fish and Game** and **Josh Collins, Ph.D.**, of the **San Francisco Estuary Institute**, have agreed to participate on a Technical Advisory Panel. Mr. Baxter and Mr. Richel are fisheries biologist who specialize in native Delta fishes. Dr. Collins has conducted studies in ecology, geomorphology, and land use to conserve plant, mammal, bird, and invertebrate populations and communities in marine, riverine, lacustrine, montane, and other terrestrial environments for the government and regulated industry. He also has produced guidelines sponsored by government to help translate science into public policy for ecological health of undeveloped lands. We will identify additional Technical Advisory Panel members in cooperation with CALFED and local area interested parties.

Tim Krantz, Ph.D., and **Mark Reisner** will serve as additional resources. Dr. Krantz is Professor of Geography at the University of the Redlands in Redlands, California, and an experienced environmental consultants who blends experience as an ecologists with over 15 years of service as a public planner with the San Bernardino Planning Commission. Mr. Reisner will liaison with CALFED personnel to foster dialogue with the myriad of interested parties involved in restoration of the Bay-Delta region. Mr. Reisner, author of *Cadillac Desert*, is an authority on water issues within the American West, especially within the California. As such, he has an in-depth understanding of the regulatory and political framework within which CALFED must operate and the goals of the Category III funding program, and how VIPSHC can best meet those needs.

Potential Conflicts of Interest. To LFR's knowledge, we have no conflicts of interest with the actions or intentions of the CALFED Category III Funding as of the date of this proposal.

References

<i>Oro Loma Marsh Enhancement Project</i>	<i>Pier 98 Landfill Closure & Open Space Enhancement</i>	<i>Martin Luther King Jr. Wetlands Restoration Project</i>
East Bay Regional Park Dist.	San Francisco Port Authority	Port of Oakland
2950 Peralta Oaks Court	Ferry Building, Suite 300	530 Water Street
Oakland, CA 94605	San Francisco, CA 94111	Oakland, CA 94607
Joe DiDonato (510) 635-0135	Carol Bach (415) 274-0508	Jody Zaitlin (510) 272-1100

1-003728

TERMS & CONDITIONS
and Forms

1-003728

STANDARD TERMS & CONDITIONS

(1-page limit)

The LFR Team agrees to comply with the standard terms and conditions as provided with the RFP.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

LEVINE·FRICKE·RECON, INC.

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass, or allow harassment against any employee or application for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME

James D. Levine, P.E.

DATE EXECUTED

July 24, 1997

EXECUTED IN THE COUNTY OF

Alameda

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE

President

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

LEVINE·FRICKE·RECON, INC.

Agreement No. _____

Exhibit _____

**STANDARD CLAUSES –
SMALL BUSINESS PREFERENCE AND CONTRACTOR IDENTIFICATION NUMBER**

NOTICE TO ALL BIDDERS:

Section 14835, et. seq. of the California Government Code requires that a five percent preference be given to bidders who qualify as a small business. The rules and regulations of this law, including the definition of a small business for the delivery of service, are contained in Title 2, California Code of Regulations, Section 1896, et. seq. A copy of the regulations is available upon request. Questions regarding the preference approval process should be directed to the Office of Small and Minority Business at (916) 322-5060. To claim the small business preference, you must submit a copy of your certification approval letter with your bid.

Are you claiming preference as a small business?

_____ Yes* No

*Attach a copy of your certification letter.

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TABLE 1: Laboratory Analysis Methods for Phase 1 Composting Studies and Phase 3 Long-Term Monitoring

Analytes	Method
TTLIC CAM 17 Metals	EPA Method 6010/7000
Dissolved Oxygen	SM 4500G
Oxidation/Reduction	ASTM D1498-76
pH	EPA Method 9040
Organochlorine Pesticides	EPA Method 8080
Organophosphorous Pesticides	EPA Method 8140
Chlorinated Herbicides	EPA Method 8150
Biological Oxygen Demand	EPA Method 405.1
Chemical Oxygen Demand	EPA Method 410.4
Anions (Chloride, Sulfate, Nitrogen)	EPA Method 300
Alkalinity	EPA Method 310.1
TDS	EPA Method 160.1
Hardness	SM 23408
Conductivity	EPA Method 120.1
TTLIC Cam 17 Metals	EPA Method 6010/7000
Dissolved Oxygen	SM 4500G
Oxidation/Reduction	ASTM D1498-76
pH	EPA Method 9040
Organochlorine Pesticide	EPA Method 8080
Organophosphorous Pesticides	EPA Method 8140
Chlorinated Herbicides	EPA Method 8150
Biological Oxygen Demand	EPA Method 405.1
Chemical Oxygen Demand	EPA Method 410.4
Anions (Chloride, Sulfate, Nitrogen)	EPA Method 300
Alkalinity	EPA Method 310.1
TDS	EPA Method 160.1
Hardness	SM 23408
Conductivity	EPA Method 120.1
Methane	EPA Method 8015M

**TABLE 2: Preliminary Construction Cost Estimate Venice Island Potato Slough
Demonstration Project, July 25, 1997**

Line	Description	Quantity	Units ¹	Unit Cost	Total Cost
1	<i>Direct Capital Costs</i>				
2	General				
3	mobilization and demobilization	1	ls	\$10,000	\$10,000
4	clear and grub project, stockpile and staging areas	7.0	acre	\$1,500	\$10,500
5	set up project office, operations	1	ls	\$40,000	\$40,000
6	cost to lease land	1	ls	\$8,000	\$8,000
7	relocate utilities	1	ls	\$50,000	\$50,000
8	Post construction survey	1	ls	\$10,000	\$10,000
9					
10	Lowering of Existing Levee				
11	clear and grub existing levee	2	acre	\$1,500.00	\$3,000
12	removal of existing rip rap	1,525	lf	\$100.00	\$152,500
13	excavate and place levee fill in habitat area	21,860	cy	\$3.00	\$65,580
14	riparian and emergent vegetation	1	ls	\$50,000.00	\$50,000
15	breach construction	1	ls	\$25,000.00	\$25,000
16					
17					
18	Construction of New Levee				
19	foundation prep				
20	excavate trench (12' deep, 1:1 slopes)	1,450	lf	\$20.00	\$29,000
21	place geotextile for base of new levee	1,450	lf	\$160.00	\$232,000
22	install levee monitoring equipment	1	ls	\$20,000	\$20,000
23	supply levee and trench fill material				
24	dredge and barge to rehandling facility	160,500	cy	n/c	\$0
25	off load at rehandling facility	160,500	cy	\$3.00	\$481,500
26	dry, scarify and stockpile for loading	160,500	cy	\$3.00	\$481,500
27	load onto deck barge	160,500	cy	\$1.50	\$240,750
28	barge material to Venice	160,500	cy	\$2.50	\$401,250
29	off load, stockpile material at Venice	160,500	cy	\$1.50	\$240,750
30	construct new levee (haul, dump, compact)	160,500	cy	\$2.50	\$401,250
31	relocate existing irrigation ditches	1,450	lf	\$2.00	\$2,900
32	placement of rip-rap on new levee	5,500	tons	\$70.00	\$385,000

**TABLE 2: Preliminary Construction Cost Estimate Venice Island Potato Slough
Demonstration Project, July 25, 1997**

Line	Description	Quantity	Units ¹	Unit Cost	Total Cost
33					
34	Habitat Area Construction				
35	supply baled rice straw to Venice				
36	bale rice straw	650	acres	\$70.00	\$45,500
37	pickup bales from field, stack along road	750	tons	\$12.00	\$9,000
38	load bales, truck to Port, unload, load to barge	750	tons	\$16.00	\$12,000
39	barge material to Venice	750	tons	\$21.00	\$15,750
40	unload bales at Venice, stockpile	750	tons	\$15.00	\$11,250
41	composting of rice straw				
42	field preparation	1	ls	\$5,000	\$5,000
43	compost rice straw (place, mix, rotate)	1,200	tons	\$30.00	\$36,000
44	load compost, truck to Port, unload, load to barge	1,200	tons	\$16.00	\$19,200
45	barge material to Venice	1,200	tons	\$21.00	\$25,200
47	unload compost from barge, stockpile on Venice	1,200	tons	\$15.00	\$18,000
48	supply dredged material to mix with rice straw	15,000	cy	\$11.50	\$172,500
49	place fill mixture (haul, windrow, mix, grade)	26,000	cy	\$3.50	\$91,000
50	supply and place sand fill material	36,500	cy	\$6.00	\$219,000
51					
52	Total Direct Capital Costs:				\$4,009,880
53					
54	<i>Indirect Capital Costs</i>				
55					
56	construction management	1	ls	\$350,000	\$350,000
57	permitting	1	ls	\$100,000	\$100,000
58					
59	Total Indirect Capital Costs:				\$450,000
60	Total Direct and Indirect Capital Costs				\$4,459,880

¹ ls = lump sum

lf = linear foot

cy = cubic yard

n/c = assume no charge

TABLE 3: Permit Requirements

Agency	Required Action	Approximate Processing Time
CEQA/NEPA	Negative Declaration/Finding of No Significant Impact	3 months
U.S. Army Corps of Engineers	Section 404 (Clean Water Act)/10 (Rivers & Harbors Act) Permit	4 months
Central Valley Regional Water Quality Control Board	NPDES Permit/Waste Discharge Requirements; Water Quality Certification	1 to 3 months
State Lands Commission	Permit/Lease	4 to 6 months
California Dept. of Fish & Game	Streambed Alteration Agreement	2 months
National Marine Fisheries Service/ U.S. Fish & Wildlife Service	Section 7 (Endangered Species Act) consultation initiated by COE as part of Section 404/10 permit process	5 months
State Dept. of Water Resources/Delta Levee Flood Control Program	Reviews project for potential impacts to State Water Project facilities, and/or any work done through AB 360 program	2 months
State Reclamation Board	Reviews projects with potential to restrict flows, alter flood stage, etc.	2 months
Local Reclamation District	Reviews any levee/flood control work	2 months

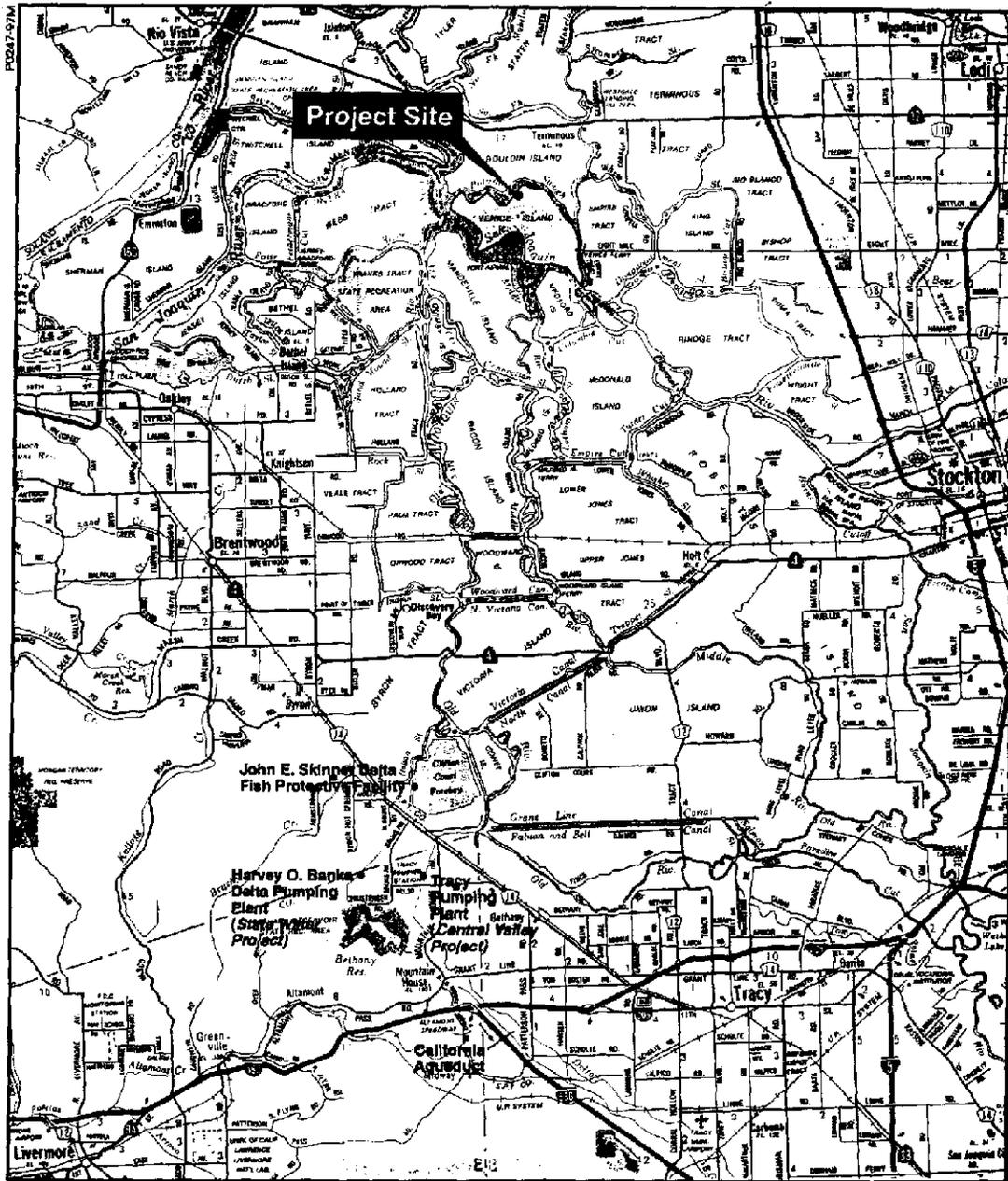
TABLE 4: Summary of Personnel Qualifications, Experience and Past Performance

Individual	Degrees	Experience	Past Performance
Christine Donges Contracts Manager	B.A., Economics and Business Administration	Contract and subcontract administration, business management of projects jointly funded by federal and/or state agencies, and management of project cost accounting processes, procedures, and protocols. Vice President, Northwestern Region (National Officer), National Contract Managers Association	<ul style="list-style-type: none"> Ten-year \$170 million US EPA cost-plus-award-fee contract Two-year ID/IQ contract with the Navy Public Works Center
Rachel Bonnefil Permitting Specialist	B.A. Environmental Studies, 1991	Former employee of BCDC. Environmental review of dredging projects and major policies. Dredged materials reuse	<ul style="list-style-type: none"> Montezuma Wetlands Project Oro Loma Marsh Enhancement Project San Francisco Bay Regional Wetland Ecosystem Goals Project
J. Scott Seyfried, R.P.S.S. Soil Scientist	M.S. Water Science, 1987; B.A. Physical Geography, 1983	Fate and transport of organic and inorganic chemicals in the subsurface, soil and water chemistry, risk assessment and bioremediation of soil and groundwater	<ul style="list-style-type: none"> Marley Way Marsh Restoration Project Montezuma Wetlands Project Biological Damage Assessment, Donner Oil Spill, Donner, CA
A.J. Glauber Environmental Scientist	B.A. Environmental Science, 1993	Ecological and toxicological assessment of terrestrial and aquatic ecosystems; wetlands delineation and assessment; planning, permitting, and design of restoration projects; and quantitative ecological data analysis	<ul style="list-style-type: none"> Montezuma Wetlands Project Oro Loma Marsh Enhancement Project Pier 98 Landfill Closure & Open Space Enhancement Project
Kirk Lennington Biologist	B.A. Environmental Studies/Biology, 1993	Vertebrate and plant biology; GIS; species identification and monitoring; biological damage assessment and monitoring; reference site identification and assessment; tidal reckoning; permitting	<ul style="list-style-type: none"> Biological Effects Monitoring, Valdez Oil Spill, Prince William Sound, AK Martin Luther King Jr. Wetlands Restoration Project
Maya Khosla Fisheries Biologist	M.S. Environmental Biology, 1994; M.S. Chemistry, 1988; B.S. Chemistry, 1985	Study of the long-term effects of contaminants on fish biochemistry, physiology, populations and communities; field and laboratory assessments, habitat assessments and suitability studies on endangered salmonids; ecological restoration and ecotoxicology	<ul style="list-style-type: none"> Biological Damage Assessment, Donner Oil Spill, Donner, CA Marsh Restoration, Parr Boulevard, Richmond, CA
Christopher Nardi, G.E., Geotechnical Engineer	M.S. Geotechnical Engineering, 1981; B.S. Civil Engineering, 1978	Geotechnical, hazardous waste, & civil engineering for levees, dams, embankments, & related earth structures; wetlands designs; landslides; low- to mid-rise structures, R&D buildings, & office and industrial parks; & residential areas	<ul style="list-style-type: none"> Martin Luther King Jr. Wetlands Restoration Project Montezuma Wetlands Project
Mary Alice Keeler Design Engineer	B.S. Civil Engineering, 1992	Engineering design for wetland restoration, landfill closure and roadway improvement projects; AutoCADD and Softdesk; quantity takeoffs; construction cost estimates	<ul style="list-style-type: none"> Martin Luther King Jr. Wetlands Restoration Project Pier 98 Landfill Closure & Open Space Enhancement Project
Rick Milelli Design Engineer	B.S. Environmental Engineering, 1992	Demography & geologic/hydrogeologic conditions; investigation and remediation; regulatory negotiations; permitting, compliance monitoring, and reporting.	<ul style="list-style-type: none"> Walnut Creek Desilting Project

Figure 1

1 - 0 0 3 7 3 8

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0 4 MILES

Map Source: California State Automobile Association
Bay Area and River, 1979

VENICE ISLAND

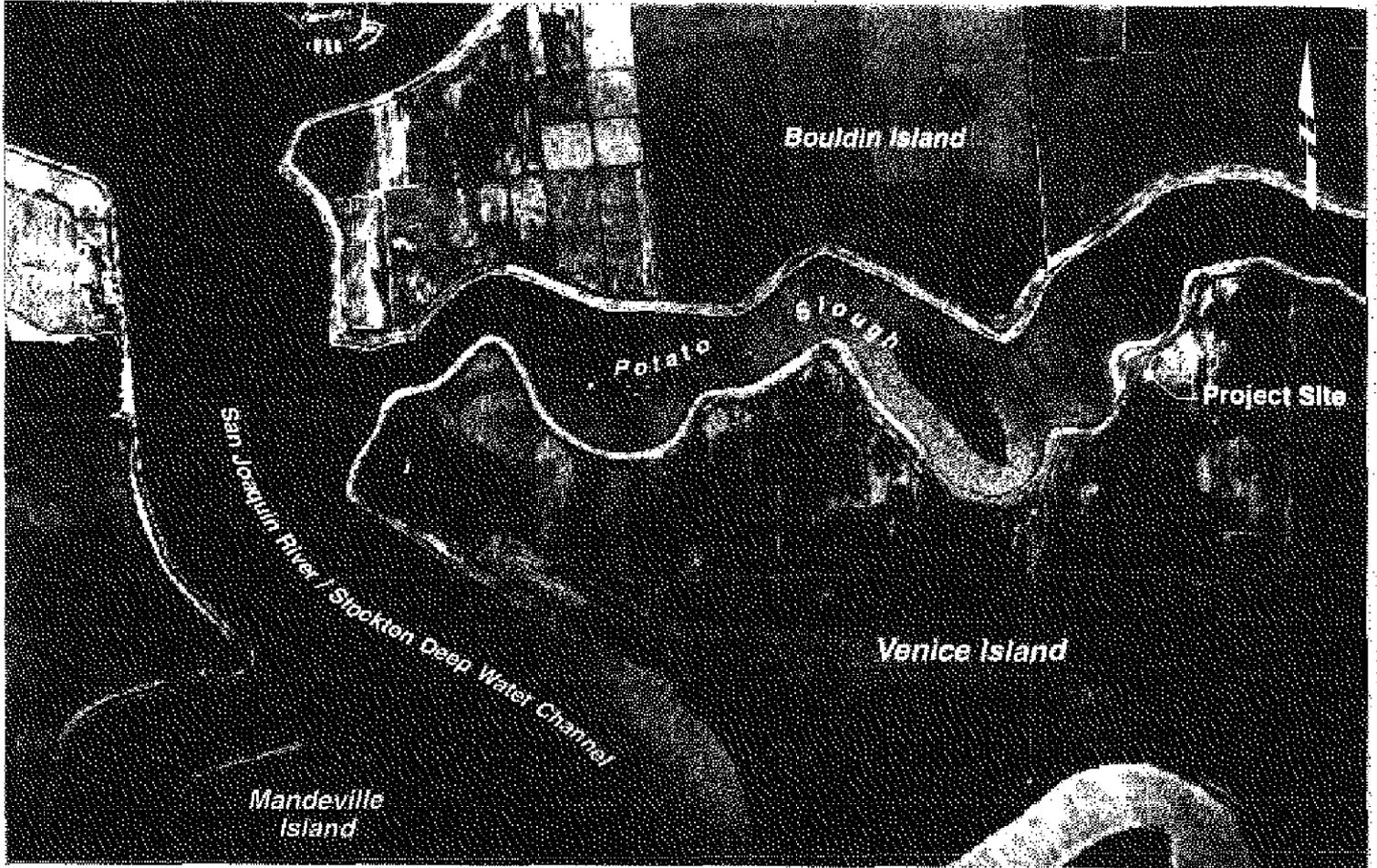
Site Location Map

Levine-Fricke-Recon

Figure 1

Project No. P0247-97M

P0247-97M-0011.DWG 01/26/97



Site Vicinity Map

Lavine-Fricke-Recon

Project No. P0247-97M

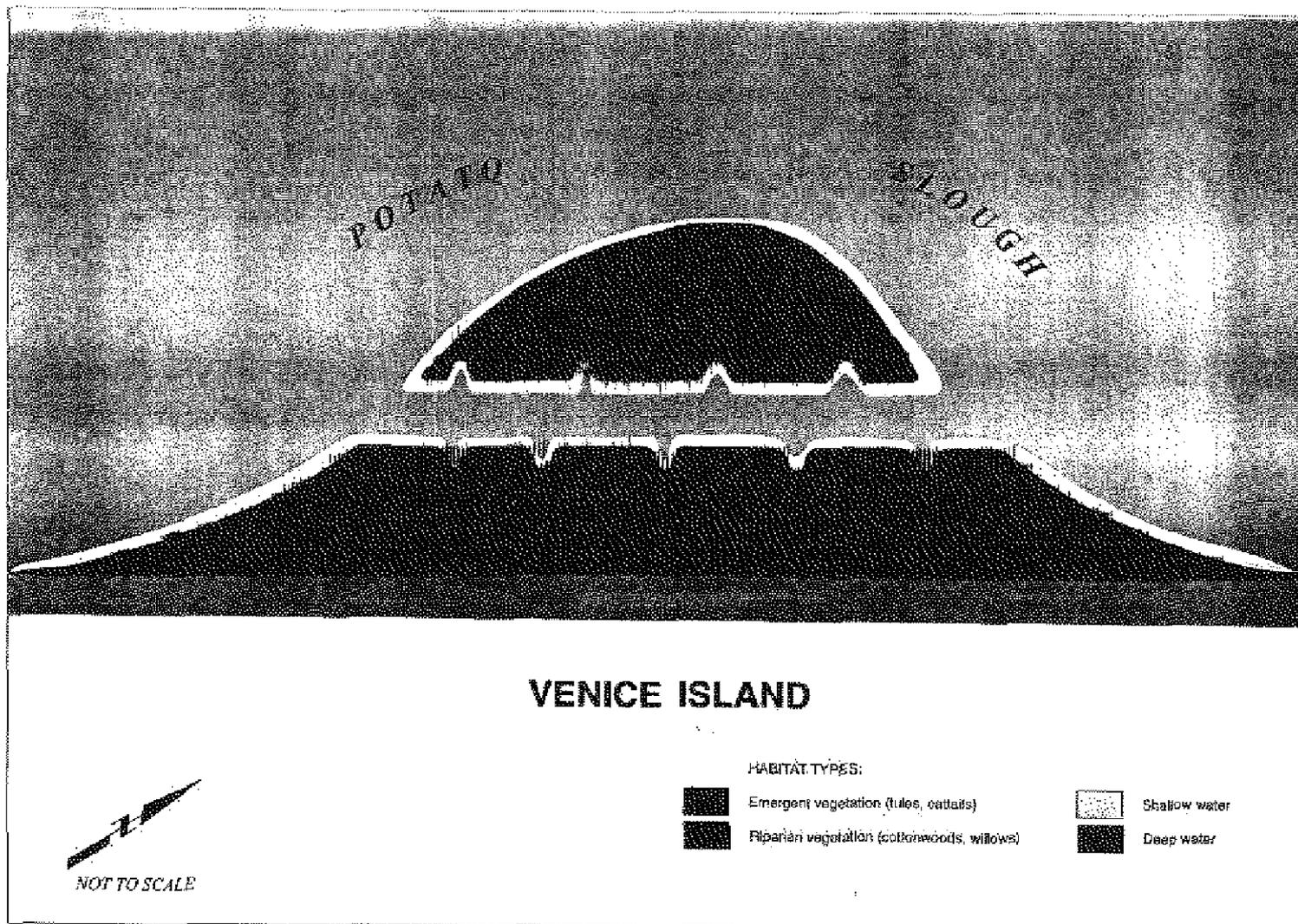
Venice Island Proposal

Figure 2

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Levine-Fricke-Recon

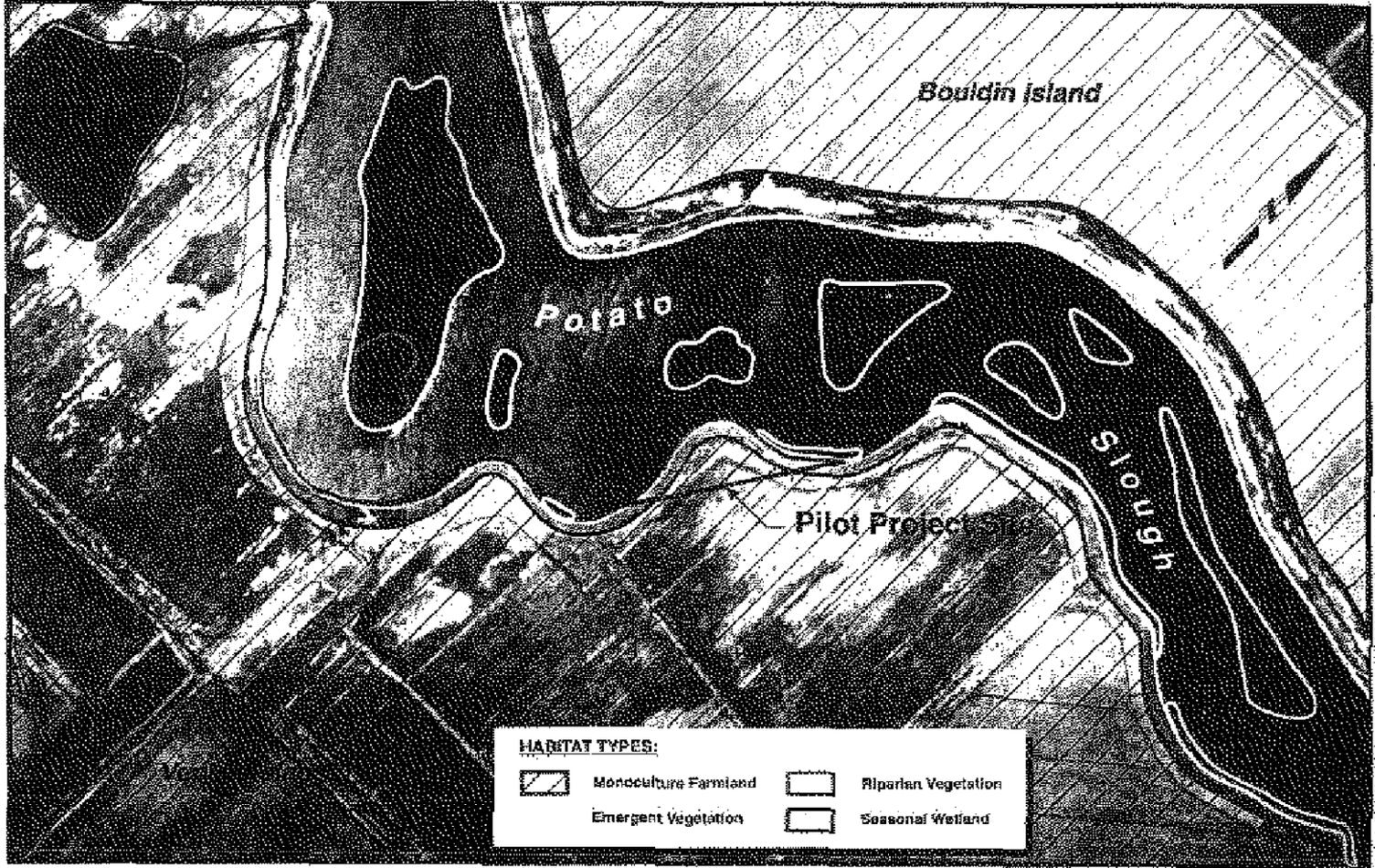
Project No. PG247-97M

PG247-97M-ECOLOGICAL-CORR-072497

Anticipated Ecological Habitats

Figure 3

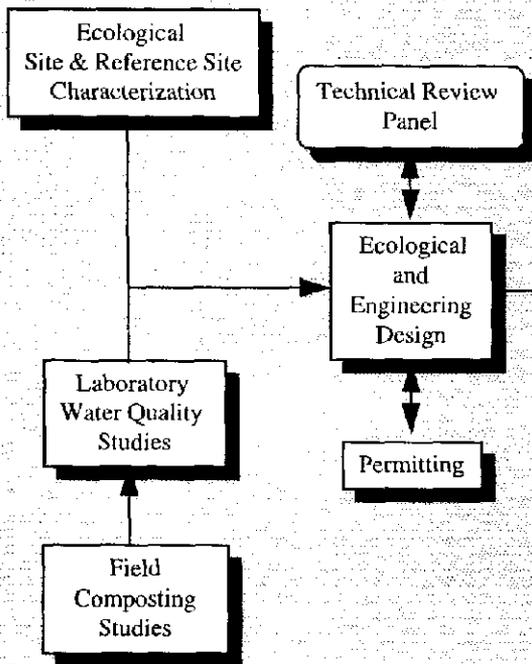
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Existing Ecological Habitats

Phase 1

Ecological Design



Phase 2

Habitat Restoration

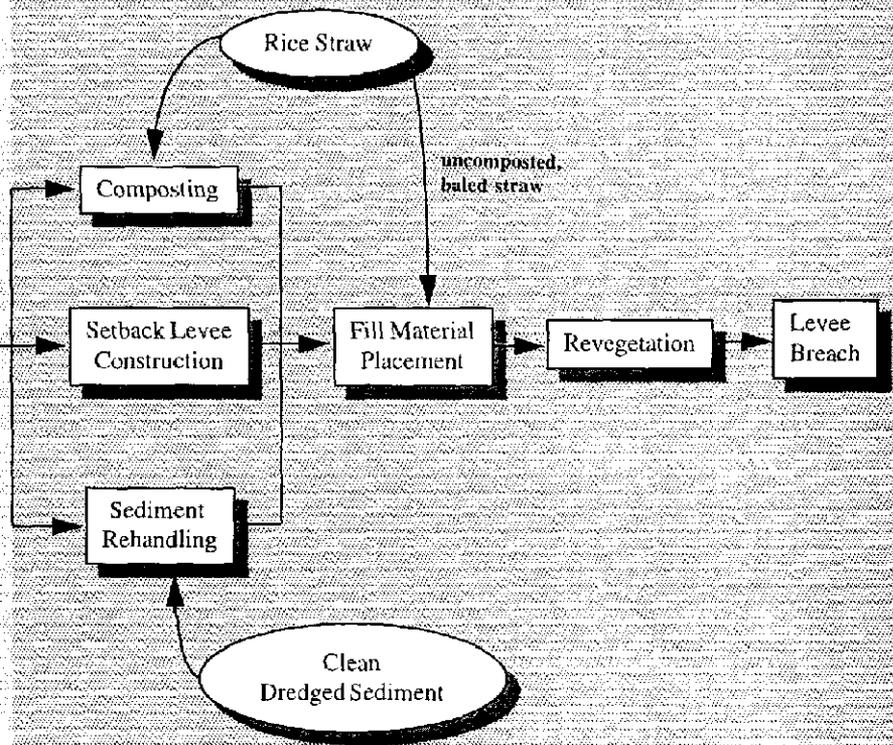


FIGURE 5: Phase 1 and 2 Flow Chart

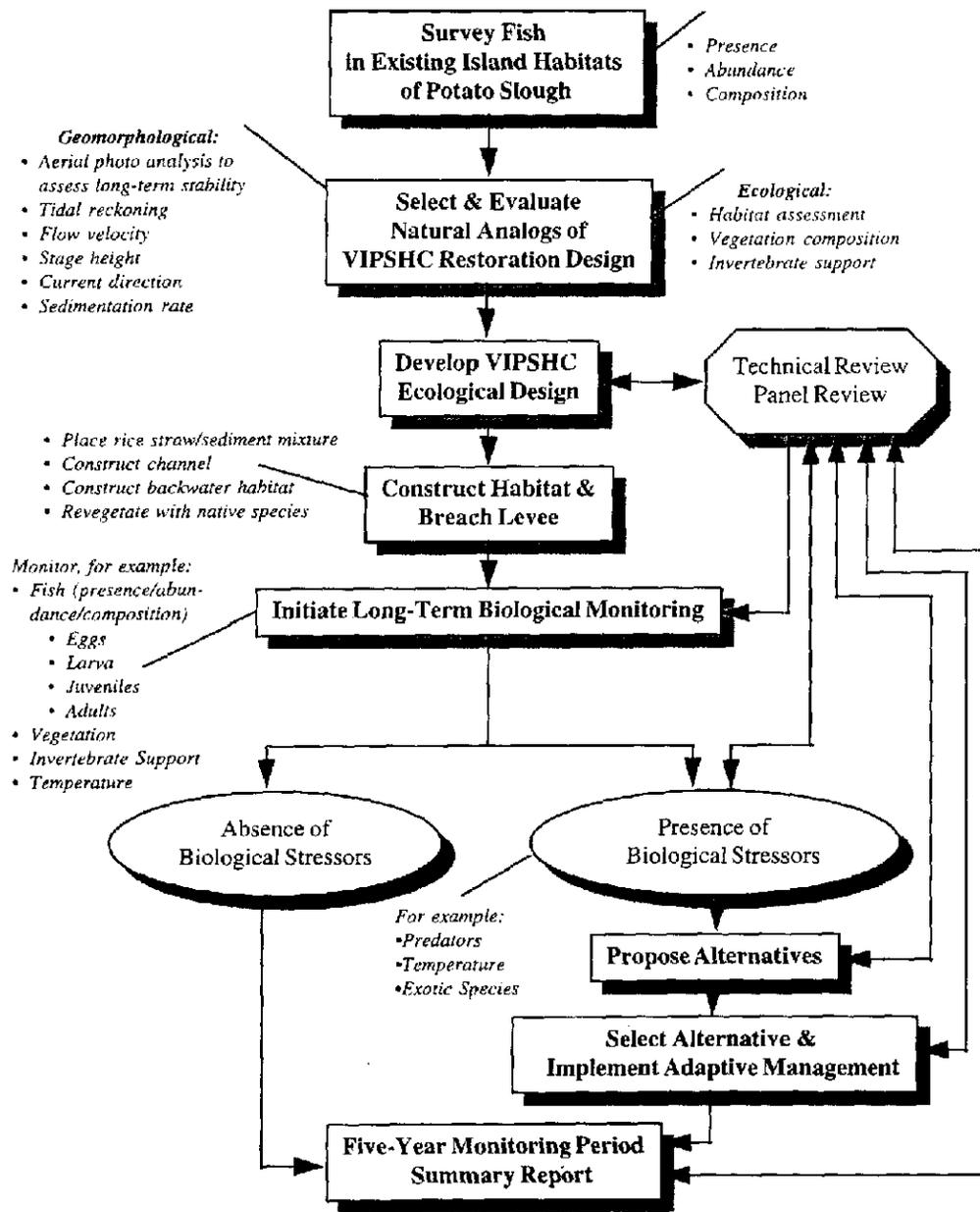


FIGURE 6: Adaptive Management Framework for Ecological Design of Venice Island/Potato Slough Habitat Creation Demonstration Project

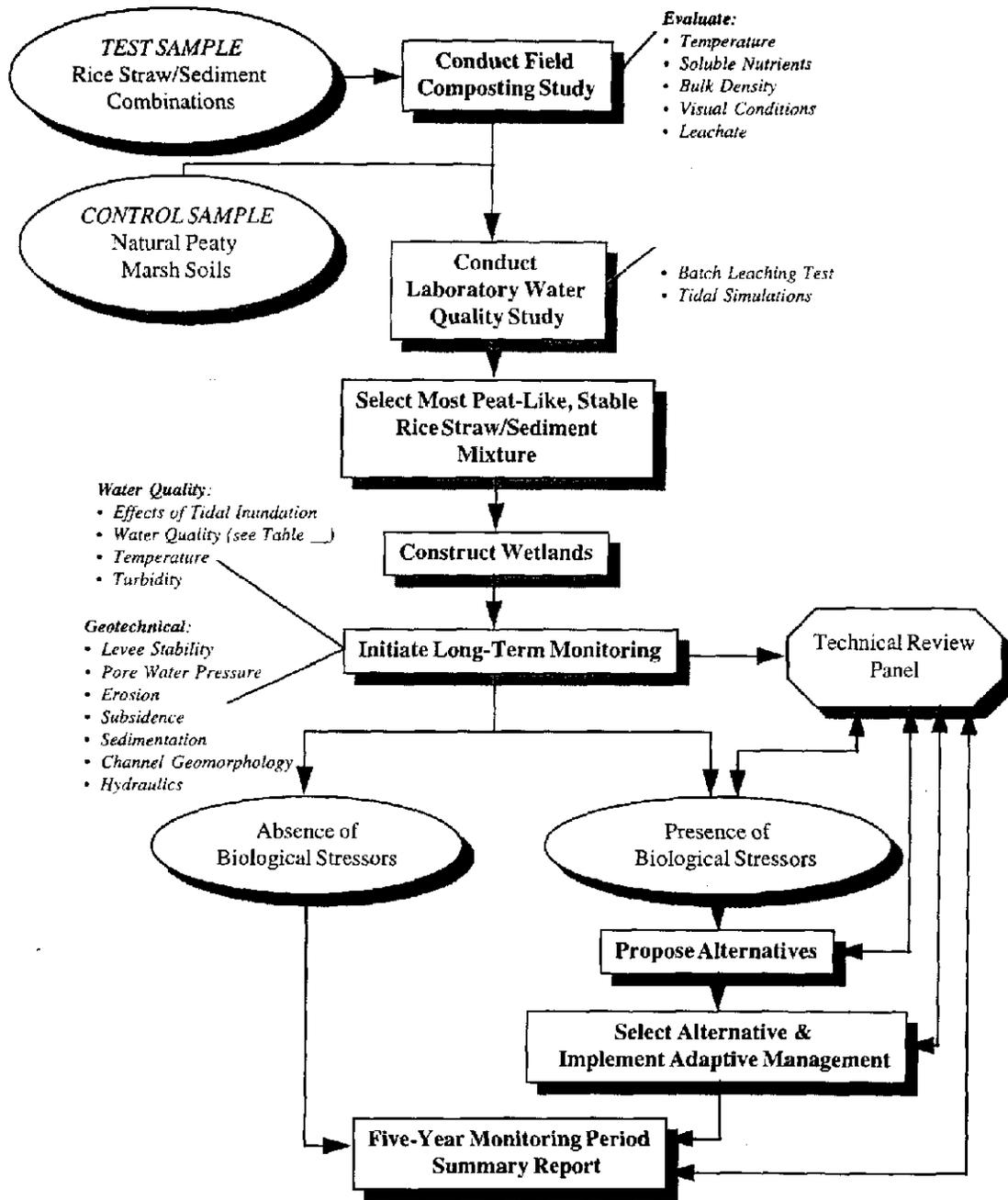
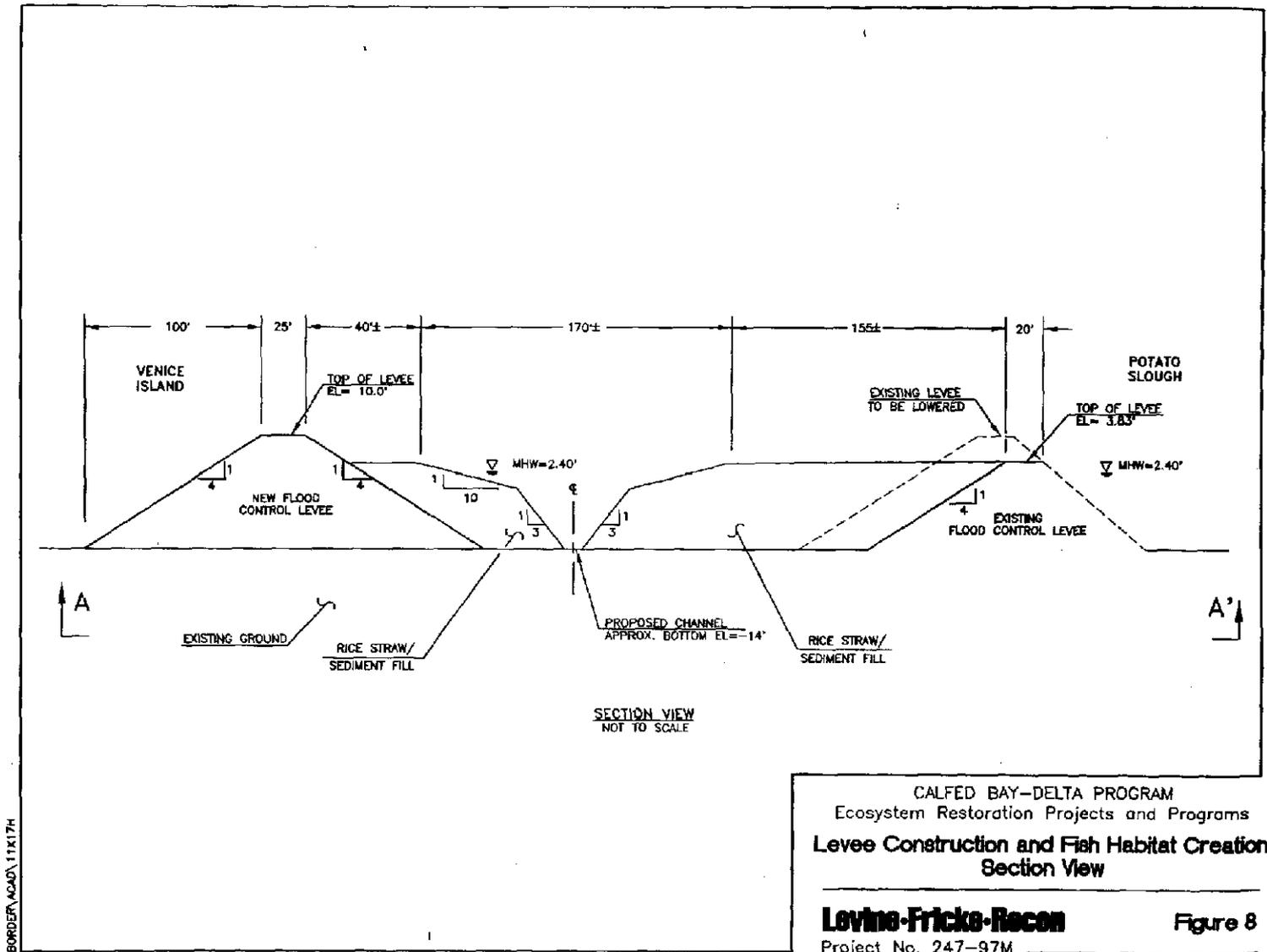


FIGURE 7: Adaptive Management Framework for Selecting & Evaluating Rice Straw/Sediment Mixtures as Habitat Creation Material

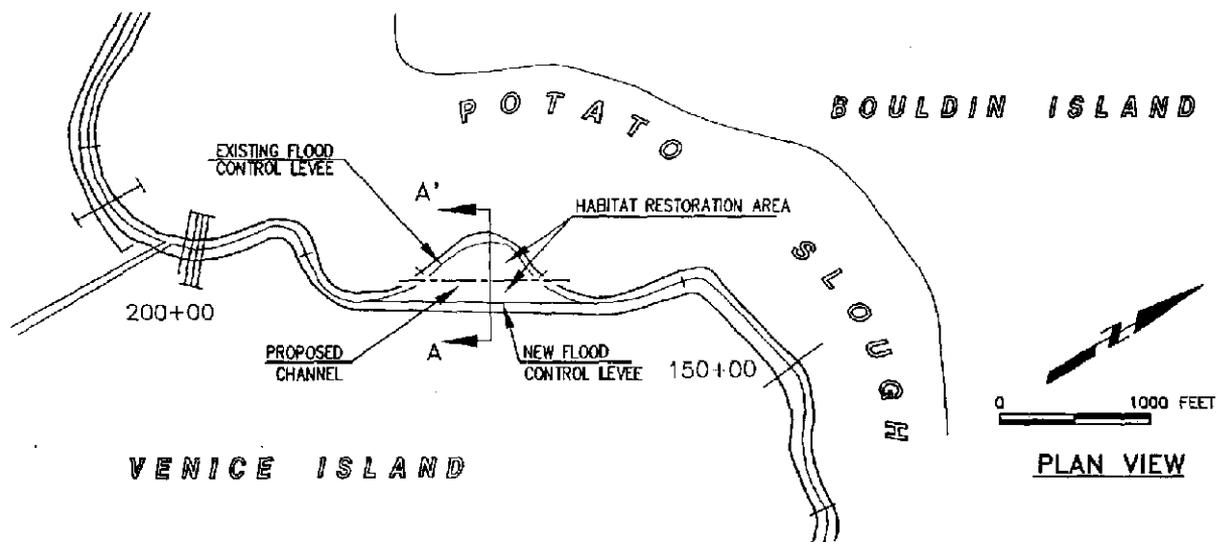
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CALFED BAY-DELTA PROGRAM
Ecosystem Restoration Projects and Programs
**Levee Construction and Fish Habitat Creation
Plan View**

Levine-Fricke-Recon

Figure 9

Project No. 247-97M

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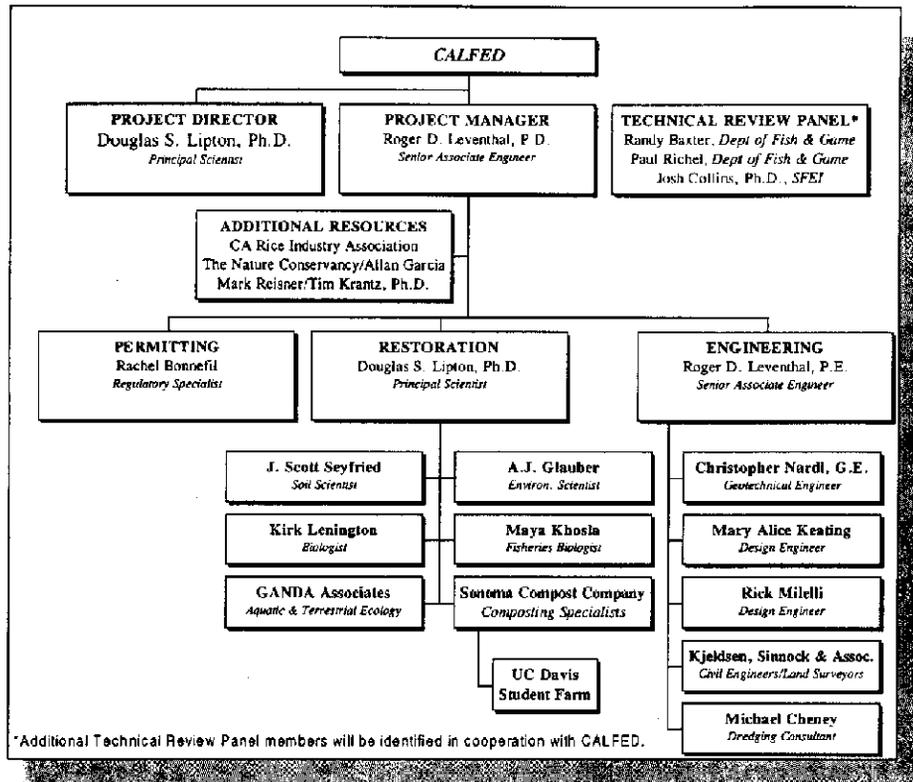
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Task & Description	1997	1998												1999											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 Site Characterization	█	█	█	█	█	█																			
2 Field Composting Study						█	█	█	█																
3 Laboratory Water Quality Study										█	█	█	█												
4 Final Ecological Design Report										█	█	█	█	█											
5 Construction Plans and Specifications															█	█	█	█	█						
6 Permitting														█	█	█	█	█	█	█					
7 Construction																					█	█	█	█	
8 Construction Management																					█	█	█	█	
9 Biological Monitoring																								█	█
10 Water Quality Monitoring																									█
11 Geotechnical & Physical Monitoring																									█

This schedule is dependent upon the presence of appropriate environmental conditions.

FIGURE 10: Proposed Schedule

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The LFR Team blends ecology with engineering and experience working in the Bay-Delta region to successfully complete large, complex restoration efforts involving dynamic ecosystems.

FIGURE 11: Team Organization

I-003750

LETTER OF INTENT

I-003750

July 24, 1997

LF P0247-97J

Mr. J. Philip DiNapoli
FILDIN Development Company
99 Alameda Blvd., Suite 565
San Jose, CA 95113

Subject: Letter of Intent and Teaming Agreement for the Venice Island (Potato Slough) Habitat Creation Demonstration Project, in Response to the Category III Ecosystem Restoration Projects and Programs Request for Proposal (RFP), CALFED BAY-DELTA PROGRAM

Dear Phil:

This letter serves to formalize our intent and teaming agreement for the subject RFP and to outline the development of a business partnership between Levine-Fricke-Recon Inc. (LFR) and FILDIN Development Company (FDC) in pursuit of opportunities under the Category III Ecosystem Restoration Projects and Programs initiative as proposed by the CALFED BAY-DELTA Program.

As we discussed, it is agreed that LFR and FDC will team on an exclusive basis as a business partnership working together to implement the *Venice Island (Potato Slough) Habitat Creation Demonstration Project* in response to the CALFED RFP. In order to qualify for Category III, a variety of conditions, including establishing a conservation easement must be met.

If the LFR/FDC project team's proposal is selected for Category III funding, FDC will be responsible for the following required items:

- granting, under a perpetual conservation easement, development rights for the approximate 6 acre project site onto which a portion of Potato Slough will be realigned. These lands are currently owned and managed by FILDIN Development Company.
- granting access rights to the designated project area during the demonstration project implementation and monitoring phases.
- providing a designated staging area, as required, during the demonstration project implementation Phase II - Construction.

While FDC will contribute the land, LFR contributions include preparation of the engineering preliminary and final design, permitting, construction oversight, and consulting services for the

project on an at cost basis. All FDC costs related to title transfer and associated management fees shall be included as a project cost covered by Category III funds.

This letter agreement is valid throughout the bid period for the subject RFP. If the LFR team is awarded a contract, a separate contract agreement shall be developed between LFR and FDC stipulating the details of the scope of work, areas of responsibility and other contractual conditions for execution of the project.

The teaming parties will work closely together and exchange business and technical information, as necessary. For this reason the parties agree to assist each other with obtaining relevant and pertinent information specific to the above identified business opportunity. Each party will assist the other, as necessary, and will put forth its best efforts in obtaining the identified business opportunity.

Each party shall support the proposal effort by submitting to LFR its technical, cost and management portions of the proposal, as required by the RFP, or as requested by the client.

Nothing contained herein is intended to preclude either party from independently submitting proposals or performing work related to another CALFED solicitation. The parties agree that no legal relationship of any kind exists as a result of this Agreement other than the covenants expressly contained herein. Neither party shall have the authority to create any obligations for the other except to the extent stated herein.

FDC and LFR agree that each will hold exchanged proprietary information confidential in the same manner as it holds its own proprietary information of like kind. All proprietary information exchanged between the parties shall be labeled "Confidential". Disclosures of such information shall be restricted to the Client and those individuals who are involved in the preparation of the proposal.

If you are in agreement, please sign both copies of the attached Approval and Acceptance page of this letter and return them to Levine-Fricke-Recon Inc. LFR will forward a fully executed copy for your records once all parties have signed the agreement.

We look forward to working with your organization and are confident that our teaming efforts will be mutually beneficial to each firm. If you have any questions please do not hesitate to call me or Roger Leventhal at 510 652-4500.

Sincerely,



Frank Lorincz
Senior Associate

APPROVAL AND ACCEPTANCE

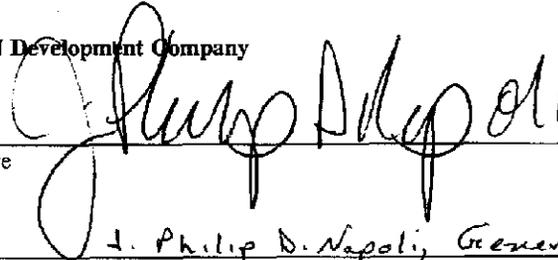
July 25, 1997

P0247-97I

Approval and acceptance of this Teaming Agreement are acknowledged by the signatures of duly authorized representatives of FILDIN Development Company and Levine-Fricke-Recon Inc.

FILDIN Development Company

Signature



Date

7/28/97

J. Philip D. Napoli, General Partner
(Please print name and title)

Levine-Fricke-Recon Inc.

James D. Levine, P.E., President

Date

7/28/96