

FI-250

JUL 21 1997

LONG TERM MANAGEMENT STRATEGY



July 18, 1997

Lester Snow
 Executive Director
 CALFED Bay Delta Program
 1416 Ninth Street, Suite 1155
 Sacramento, CA 95814

Dear Mr. Snow:

The undersigned State and Federal agencies are working on the Long Term Management Strategy (LTMS) for dredged material in the San Francisco Bay Region. Two project proposals submitted in response to the Category III Request for Proposals (RFP), the *Learning Laboratory for Restoring Subsidized Land* and the *Hamilton Army Airfield Wetlands Restoration Projects*, meet both CALFED and LTMS goals.

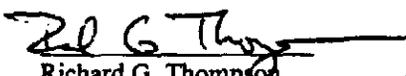
Both of these projects will benefit CALFED priority habitats and priority species, including anadromous fish and migratory birds, through ecosystem restoration. Both projects use dredged material for beneficial uses and fulfill the LTMS goal of maximizing the use of dredged material as a resource. Reducing the amount of dredged material disposed in the Estuary is critical to reducing the impacts to anadromous fish that use the Bay/Delta. Both projects also have multiple partners and opportunities for cost-sharing including cost sharing for use of dredged material.

In particular, the Hamilton project will provide for the restoration of up to 2500 acres of seasonal and tidal wetlands combined. It is an important project to the LTMS agencies in that LTMS needs an upland site as soon as possible and it has a huge capacity for dredged material. If we do not act now, we will lose this restoration opportunity due to the end of the Base Realignment and Closure (BRAC) process. In addition, if the Bel Marin Keys property is to be included in this project, it must be purchased as soon as possible.

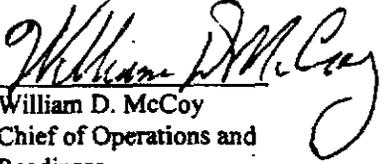
The Learning Laboratory Project will show how island restoration can optimally benefit from the use of dredged material, will promote the use of dredged material normally disposed of in the Delta and potentially at the Suisun Bay Disposal Site, will provide an invaluable lesson in understanding what can be done to restore Delta Islands.

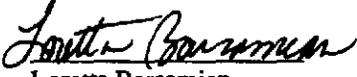
We believe that both of these projects will greatly benefit CALFED and LTMS goals bringing even greater benefits to the environment. We thank you for your consideration.

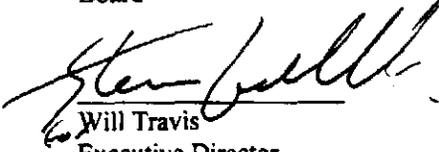
Sincerely,

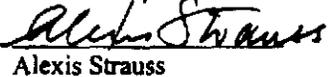

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FI-250

DEPARTMENT OF WATER RESOURCES

CENTRAL DISTRICT
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DWR WAREHOUSE

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JUL 28 1997

Mr. Lester Snow
CALFED
1416 Ninth Street, Suite 1155
Sacramento, California 95814

Dear Mr. Snow:

Submittal of Phase I Category III Proposal

Attached for consideration is a robust Phase I, Category III proposal which addresses issues critical to the long-term plans for the Delta. Any long-term plans for the Delta which do not address the subsided central and western Delta islands would be incomplete. Furthermore, this proposed course of action is essential, since doing nothing and allowing subsidence to continue is unacceptable. We simply must find a way to restore the heart of the Delta to its critical place in the ecosystem and to protect the water supply for millions of Californians.

This bold proposal is backed by an extremely competent team and has a high degree of support, cost-sharing, collaboration, coordination, and leveraging. We have tried to make the proposal as comprehensive as possible. However, if there are components that CALFED would like to defer, we can refine the scope to meet your needs.

We hope you find this bold restoration opportunity as exciting as we do. If you have any questions regarding the attached submittal, please call me at 227-7567. Thank you in advance for your consideration.

Sincerely,

Curt Schmutte, Chief
Flood Protection and Geographic
Information Branch

Enclosure

cc: (see attached list.)

cc: Greg Thomas, NHI
Bob MacArthur, NHC
Larry Smith, USGS
Steve Deverel
Phil Williams, PWA
Ed Littrell, DFG
Harry Seraydarian, EPA
Janet Whitlock. EPA
Brent Gilbert
Chris Neudeck, KSN
Ed Winkler, MWD

Phase I, 1997 Category III Proposal

I. Executive Summary

Project Title: A Learning Laboratory for Restoring Subsidized Lands in the Delta: Phase I

Applicants: Department of Water Resources Natural Heritage Institute
U.S. Geological Survey Philip Williams and Associates Ltd.
Northwest Hydraulic Consultants, Inc. Steve Deverel, Ph.D

Project Groups: This project contains activities and provides significant deliverables in all three project groups: Group 1, Group 2, and Group 3.

Description and Primary Ecological Benefits: This Phase 1 proposal is for funds to design and construct three large restoration pilot projects totaling 600 acres on Twitchell Island, acquire Bradford Island, and develop plans for 1,000 acres of additional restoration pilot projects on Bradford Island (Figure 1). Most importantly, the learning laboratory will yield data through monitoring and research and identify techniques that enable CALFED to develop a broad-scale, long-term habitat restoration program for the Delta. In the long term, this project will create approximately 1,000 acres of *tidal perennial aquatic habitat* (freshwater) and 600 acres of *mid channel island, shaded riverine, and non-tidal perennial aquatic habitats*. During the next three years, the project will significantly increase the percentage of these habitat types in the Western Delta (see Figure 2). It will also reduce the adverse impacts of *levees and improper dredged spoil disposal* - ecosystem stressors identified by CALFED.

Approach/Tasks/Schedule: Any long-term plans for the Delta that do not address the subsidized Central and Western Delta Islands would be incomplete since doing nothing or continuing down the present path is unacceptable. Therefore, projects like those proposed herein must find a way to restore the heart of the Delta to its critical place in the ecosystem while protecting and enhancing water quality and supply for millions of Californians.

This proposal seeks immediate funding for the first phase of a longer-term project to develop a field scale learning laboratory to design, test, analyze, implement, and monitor the most promising subsidence reversal techniques and to determine where and how they can best be replicated elsewhere in the Delta. **The goal of this project is to develop technical design recommendations for a broader, long-range, cost effective and environmentally sound Delta island restoration program.** This goal will be achieved by testing the three most promising island surface building techniques currently known: 1) cultivating tules and other wetland vegetation to accelerate peat formation, 2) reusing clean dredge materials, and 3) capturing and depositing natural sediment loads passing through the delta. Wherever possible, study plot designs will maximize the enhancement and restoration of CALFED habitat targets.

Phase I: Tasks/Schedule

- Pre-construction research and data collection 10/97 - 10/00
of Bradford and Twitchell Island restoration projects.
- Comply with CEQA requirements and obtain permitting. 10/97 - 05/98
- Analysis and design project components. 12/97 - 01/99
- Acquire Bradford Island. 05/98 - 05/99
- Construct Twitchell Island restoration pilot projects. 03/99 - 08/99
- Document results and distribute program reports 10/97 - 10/00

Phase II: Tasks

- Complete Bradford Island project designs.
- Construct Bradford Island restoration pilot projects.
- Monitor Twitchell and Bradford Island restoration pilot projects, document and distribute results.

Justification for Project Funding by CALFED: CALFED should fund this project because it will advance three of CALFED's four stated objectives. It will 1) directly create target habitats and benefit target species, as well as provide information necessary for broad scale restoration of these targets in the Delta; 2) develop subsidence reversal technology necessary to eliminate the long-term risk of catastrophic levee failure in the Delta; and 3) identify information and procedures necessary to simultaneously restore tidal perennial aquatic habitat and protect water quality for all beneficial uses.

Budget Costs and Third Part Impacts: This application requests approximately \$12.9 million in CALFED funds, matched by \$2.5 million from the applicants. The costs of major project components are divided as follows: land acquisition, \$5.5 million; project planning, analysis and design, \$1.4 million; project construction, \$4.1 million; research and monitoring, \$2.1 million; and reporting and technology transfer \$0.27 million. Table IV-I details the estimated costs for this project.

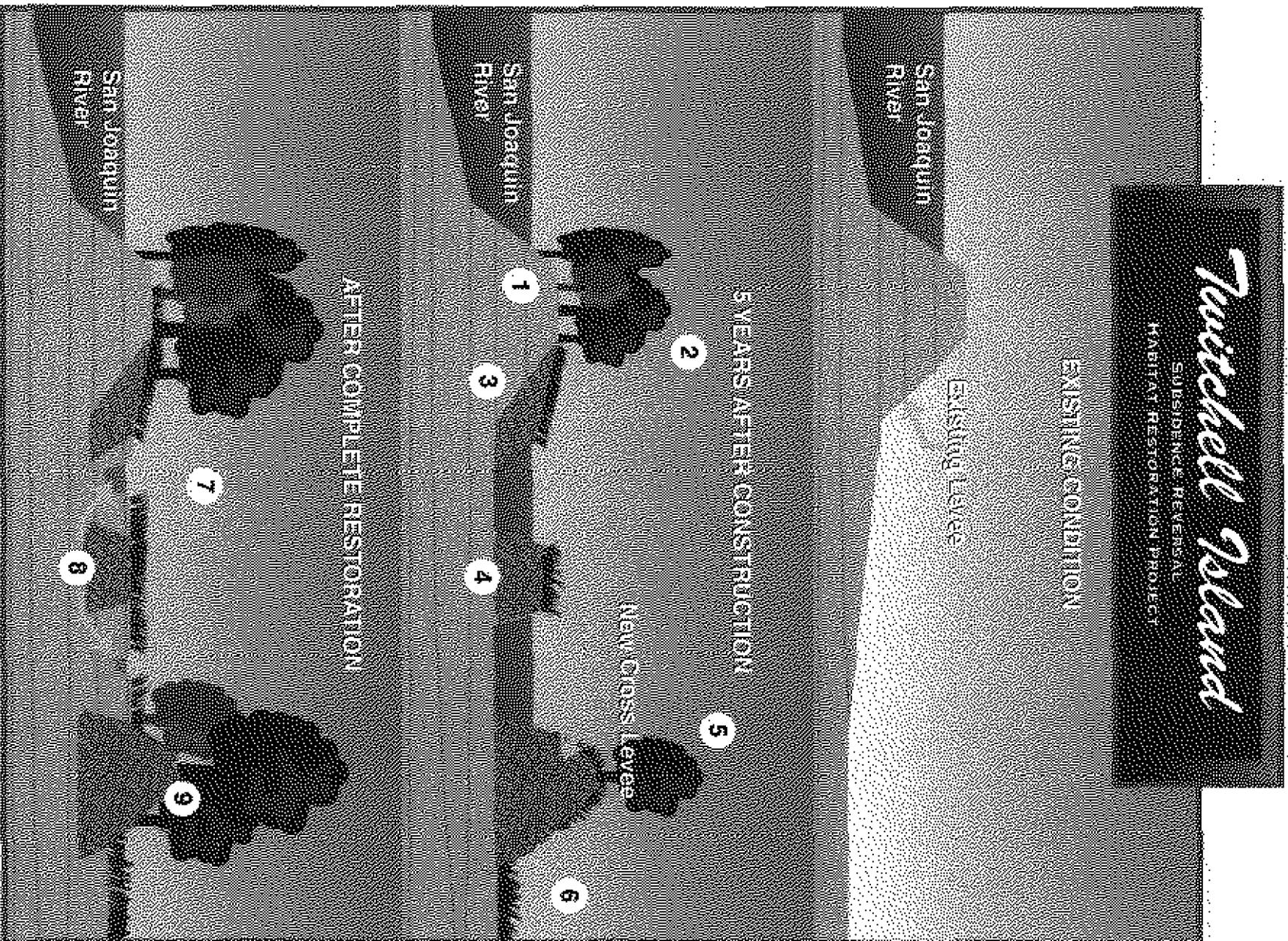
The project will not create any foreseeable, adverse third party impacts.

Applicant Qualifications: The interdisciplinary team is comprised of leading experts in the fields of engineering, applied hydrology and geomorphology, wetlands restoration, chemistry, and natural resources planning and conservation. DWR engineers, biologists, and land agents have multiple years of experience with levee construction and habitat restoration in the Delta. USGS scientists and Steve Deverel have been researching the causes of subsidence and soil and water chemistry in the Delta for nearly two decades. Philip Williams and Associates have designed over 400 wetland and restoration projects, and Northwest Hydraulic Consultants has completed more than 3,000 river and estuary hydrodynamic, sediment transport, and geomorphic assessment and design projects. The Natural Heritage Institute lawyers and scientists have many years of experience facilitating public/private partnerships and identifying creative solutions to environmental problems based on the best technical information.

Monitoring and Data Evaluation: Both biological and physical monitoring are an integral part of the learning laboratory. The learning laboratory will not only monitor the degree to which specific CALFED targets are achieved, but will also evaluate the efficacy and broader applicability of the various subsidence and habitat restoration techniques.

Local Support/Coordination with other Programs/Compatibility with CALFED objectives: Bradford Island landowners who have been contacted expressed enthusiasm for the project. The project is also supported by the State Water Contractors, USACE, SWRCB, RWQCB, BCDC, EPA, the Nature Conservancy and the UC Davis Public Service Research Program. Ed Littrell of the Department of Fish & Game, the State's lead agency on habitat design, will collaborate on all biological restoration activities. It is compatible with all CALFED objectives and will be coordinated with other habitat restoration projects in the Western Delta.

Figure 1



Note: See key for numbered items

KEY FOR FIGURE 1

REFERENCE #	ACTION	BENEFIT
1	Breach existing levee in at least two places.	Remove ecosystem stressors associated with levee and restore tidal circulation to 500 acres of subsided marsh plane.
2	Plant existing breached levee with riparian vegetation.	Re-vegetation creates shaded riverine aquatic for multiple target fish species and riparian habitat for neo-tropical migratory bird guild.
3	Beneficially reuse dredge materials (from Suisun Marsh or Delta) by placing them adjacent to existing levee to raise island surface elevation. Plant with wetland vegetation.	Breaches transform existing levee into mid-channel shoal and island habitat. Beneficial reuse of dredge material creates tidal perennial aquatic habitat (freshwater) for Delta smelt, Splittail, Chinook salmon, and other target species and reduces stresses associated with current dredge disposal practices.
4	Beneficially reuse dredge material to create island berm in the newly flooded area.	Same as item 3 plus island berm accelerates natural sediment deposition by reducing wave action. Provides nesting island habitat for waterfowl guild.
5	Create a new cross levee and plant with riparian and tidal wetland vegetation.	Beneficially reuses dredge material and creates riparian and tidal perennial aquatic habitat for multiple target species.
6	Create a 60 acre subsidence reversal/habitat experimental restoration plot.	Creates non-tidal perennial aquatic habitat for waterfowl guild.
7	Over long-term, natural deposition of sediment raises island surface to sea level.	Creates 500 acres of fully restored tidal perennial aquatic habitat. Risk of catastrophic levee failure eliminated.
8	Tidal action forms a network of Delta sloughs.	Creates critical habitat for Delta smelt and Splittail and other target species.
9	Long-term tule growth restores island surface elevation to sea level.	Allows future Delta farming or additional tidal perennial aquatic habitat restoration.

II. Title Page

Project Title: A Learning Laboratory for Restoring Subsidied Lands in the Delta: Phase I

Applicants: Department of Water Resources Natural Heritage Institute
U.S. Geological Survey Philip Williams and Associates, Ltd.
Northwest Hydraulic Consultants, Inc. Steve Deverel, Ph.D.

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III-A. Project Description and Approach

Under all conceivable CALFED alternatives, the future of the Delta will involve some combination of restored tidal perennial aquatic habitat, agriculture, and water supply conveyance features. Halting subsidence and restoring island surface elevations closer to sea level would render all of these uses more stable and secure, but this is a daunting challenge because of the magnitude of subsidence on many Delta Islands and the lack of proven subsidence reversal methods. An early investment is necessary to develop and test restoration methods that can inform and guide a workable Delta island restoration program.

This proposal seeks immediate funding for the first phase of a longer-term project to develop a field scale learning laboratory to test the most promising subsidence reversal techniques and to determine where and how they can best be replicated elsewhere in the Delta. Project activities and deliverables fall in all three project groups (1,2, and 3) identified in the RFP. Under the second phase of this project, information generated from the learning laboratory will be integrated with a complementary Delta-wide assessment of sediment transport and supply to identify where physical conditions in the Delta are most favorable for a broad scale subsidence reversal program.¹

The goal of this project is to develop technical design recommendations for a broader, long-range, cost effective and environmentally sound Delta island restoration program in a manner that beneficially re-uses dredged material. To achieve this goal, an interdisciplinary team of engineers, biologists, geomorphologists, hydrologists, and chemists from the public and private sectors will design and implement several large experimental restoration plots and monitor the relative costs, habitat benefits, surface accretion rates, and water quality impacts of various subsidence reversal techniques. This effort will not only create target habitat and benefit target species, but more importantly, it will generate information necessary for CALFED to maximize its return on future Delta restoration investments.

This initial proposal is for funds to construct three large restoration pilot projects totaling 600 acres on Twitchell Island, acquire Bradford Island, and develop plans for 1,000 acres of additional restoration pilot projects on Bradford Island (Figures 1 and 2). The USGS and DWR have identified portions of Twitchell and Bradford Islands in the Western Delta as ideal locations for testing island surface building and habitat restoration techniques because of their proximity to natural and dredged sediment supplies. DWR currently owns 90% of Twitchell Island, and Bradford Island is privately owned but not farmed.

Many factors favor investigating large scale island building and tidal marsh restoration in the Central and Western Delta to complement marsh restoration along the Delta's periphery.

- Tidal perennial aquatic habitat restoration in the Western and Central Delta will achieve the broadest range of ecosystem benefits by restoring the full range of environmental gradients naturally found in an estuarine system as well as establishing essential habitat continuity between Central Valley rivers and San Francisco Bay. Restricting ecosystem restoration to the northern and eastern margin of the Delta is both unnecessary and ecologically unsound.

¹ Phase II of this project is described in an inquiry proposal titled "A learning laboratory for restoring subsided land in the Delta: Phase II" and USGS sediment supply and transport study described in a Cat. III proposal titled "Sedimentation in the Delta."

- Levee failure in the Central and Western Delta could have severe consequences for water quality, agriculture, and wildlife throughout the Delta. Restoration of island elevations eliminates this risk and the associated long-term levee maintenance costs.
- Restoration of significantly subsided islands in the Western and Central Delta is socially and economically feasible, because these islands are the least agriculturally viable and may therefore have the highest concentration of willing sellers.
- Bradford and Twitchell Islands are ideally located for beneficially reusing dredged material and capturing natural sediment loads as they move through the San Joaquin River.

This project will test, individually and in combination, the three most promising island surface building techniques: 1) cultivating tules and other wetland vegetation to accelerate peat formation, 2) re-using clean dredge materials from Delta channels, and 3) capturing and depositing natural sediment loads passing through the delta. The learning laboratory project will divide portions of Twitchell and Bradford Island into several large experimental plots to test the efficacy, applicability, and potentially adverse impacts of various combinations of these techniques. Wherever possible, study plot designs will maximize the enhancement and restoration of CALFED habitat targets.

Preliminary field experiments by the USGS and DWR demonstrate that permanent shallow flooding combined with tule growth reverses subsidence. Monocultures of tules, however, do not provide significant habitat benefits. This project will test the potential for simultaneously reversing subsidence as well as creating mosaics of upland, wetland, and open water habitat types.

CALFED has identified disposal of dredge materials on subsided islands as a promising method of restoring soil elevations, but there is not enough dredged material for large scale island surface building. This project will test a variety of techniques to maximize land accretion and sediment deposition with relatively small quantities of dredged materials. It will test the potential to enhance biomass accumulation (peat development) by spreading both thin and thick layers of dredge materials on cultivated tule fields. Thin layers of sediment deposition (1-3 inches) would mimic historical deposition patterns and stabilize biomass accretions. Thicker sediment caps would decrease microbial oxidation of underlying peat, the primary cause of subsidence, and could be used to create upland habitat features within the tule marsh.

This project will develop and test techniques designed to capture and accelerate on-island deposition of sediments currently transported through the Delta. Depending on the local sediment transport and topographic conditions, the project will flood some plots periodically with sediment laden flood waters or frequently with controlled or natural tidal circulation. Analysis of permanently flooded islands such as Frank's Tract suggests that sediment deposition on flooded islands is retarded by persistent wave action. This project will attempt to accelerate sediment deposition in flooded areas by configuring dredge spoils and other acceptable fill into a network of berms, peninsulas, and islands designed to reduce wave action. These berms will be planted with wetland and riparian vegetation to increase sediment accretion and maximize fish and wildlife habitat.

Cultivating tules, reusing dredge materials, and capturing sediments are promising yet largely untested methods of reversing subsidence and restoring perennial tidal aquatic habitat, with potentially adverse impacts. The use of dredged material on Delta islands could compact

underlying peat soils and thus counteract island surface building efforts. Conversion of unsaturated peat soils to wetlands at least temporarily increases the release of dissolved organic carbons (DOC), and this may increase concentrations of trihalomethane (THM) precursors and other disinfectant by-product precursors (DBP)(Deverel and Rojstaczer, 1996). Restoring large scale tidal circulation on multiple subsided islands could alter salinity levels throughout the Delta. The learning laboratory will identify, characterize and develop practical solutions for these potential problems, so that CALFED can avoid or minimize these problems in its long range restoration plan.

Phase I project components include:

- **Baseline Data Collection and Project Design Feasibility Assessments:** Assess the hydrology, tidal circulation, wave action, water quality parameters, geomorphic, and fluvial processes affecting the Twitchell and Bradford Island region of the Delta. Assess proposed alternative designs with numerical models and other analytical tools. Refine initial conceptual plans and construction cost estimates accordingly.
- **Initial Water Quality, Biomass Accretion, and Beneficial Reuse Studies:** Construct and monitor approximately 100 acres of subsidence reversal studies on the landward side of the Twitchell Island levees. Create a 60 acre mosaic of wetland habitat types and spread thin layers and thicker caps of dredge spoils on portions of the 60 acre parcel. Measure changes in land surface elevation, concentrations of DOC and THM precursors in groundwater and drainage water, and wildlife utilization in the different wetland habitat types. Conduct laboratory analyses and construct a 40 acre controlled experimental plot to assess the effects of residence time, ground water velocity, and water management techniques on the concentration of disinfectant by-product precursors (DBP) in peat soils and island drain discharges.
- **Twitchell Island Restoration:** Two alternative approaches for restoring island surface elevations and habitat on the southeast portion of Twitchell Island are being evaluated. Alternative A will entail constructing a full size interior levee across the southern side of Twitchell Island, breaching the existing exterior levee, and restoring 500 acres to tidal circulation. Breaches in the existing levees will be specifically designed to capture bed load sediment, and a network of berms will be constructed in the newly flooded area to decrease wave action and thus accelerate deposition of suspended sediment. The new levee, existing levee, and berm network will be planted with wetland and riparian vegetation to create target habitats and accelerate sediment deposition. Alternative B will defer full construction of a more expensive full-size cross levee by constructing a smaller expandable cross levee and controlling tidal flow onto the restoration plots with controlled siphons through the existing levee. The siphons will be designed to mimic tidal fluctuation and transport bed load from the river channel onto the subsided restoration plot. As the subsided surface accretes, the cross levee will be incrementally raised to prevent flooding of the remainder of Twitchell Island. Alternative B is less expensive but may provide less interim habitat benefits. Both alternatives are promising and will be eventually tested on either Bradford or Twitchell.
- **Acquire Bradford Island from willing sellers:** Remnant, linear sand dunes on Bradford Island create an opportunity to cost effectively construct a series of experimental plots separated by cross levees. Bradford consists of 2,000 acres of unfarmed land. In 1993 DWR appraised its value at approximately \$4,000,000, or about \$2,000 an acre. This first phase project will purchase Bradford Island.

- **Design Plans for Bradford Island:** Develop design and study plans for approximately 1,000 additional acres of island surface building and perennial tidal wetland restoration on Bradford Island for implementation in a future phase (see inquiry proposal "A learning laboratory for restoring subsided land in the Delta": Phase II).
- **Convene an international symposium:** In addition to the circulation of public information documents and semi-annual reports by the study team, the Public Service Research Program at U.C. Davis is exploring the possibility of convening an international symposium on restoration of subsided lands for the spring of 1998. Such a symposium will provide both this project and the larger CALFED program with critical information on a variety of topics. The project team will help convene and actively participate in this symposium.

Phase II activities are described in the companion Inquiry Proposal and include subsidence reversal and restoration experiments on Bradford Island, continuation of the restoration work on Twitchell Island, monitoring and evaluation, and translating results into recommendations for broader scale and long term restoration initiatives in the Delta. Additional funding will also be sought for focused research on the processes controlling release of DOC and DBP precursors. We plan to apply for Phase II, Category III funding during the next proposal cycle.

III-B. Location and Geographic Boundaries of Project

Twitchell Island is in southwestern Sacramento County and Bradford Island is in northeastern Contra Costa County. Both islands are located on the San Joaquin river near its confluence with the Sacramento River (Figure 2).

III-C. Expected Benefits

The project will eventually create approximately 1,000 acres of *tidal perennial aquatic habitat* and 500 acres of *mid channel island, shaded riverine, and non-tidal perennial aquatic habitats* (Figure 1). In the interim as island surfaces are being restored, restoration pilot projects will support varying amounts of these target habitats depending on the techniques used. Restoration of these habitats will directly benefit the following target species identified in the RFP and ERPP: *Delta smelt, Sacramento Splittail, all runs of Chinook salmon, waterfowl, shore and wading bird guild, and the neotropical bird guild*. The project will also reduce the local adverse impacts of *levees, and improper dredge spoil disposal* - both are ecosystem stressors identified by CALFED. Most important, the learning laboratory will yield data and identify techniques that will enable CALFED to develop a broad-scale, long-term habitat restoration program for the Delta.

The project will create a number of third party benefits and achieve non-ecosystem CALFED objectives. Restoring tidal marsh habitat and otherwise rebuilding island surface elevations on subsided lands will reduce the long-term costs of levee maintenance and the risk of catastrophic levee failure during seismic or hydrologic events. Water quality research and monitoring components will provide information necessary for CALFED to both restore tidal perennial aquatic habitat and protect water quality and supply for all beneficial uses. Beneficial reuse of dredged spoils from Suisun Bay and Delta channels will reduce the economic and environmental costs associated with current maintenance dredging and dredged spoil disposal practices. Finally, breaching existing levees will provide incremental flood control benefits by increasing flood plain storage capacity.

III-D. Background and Biological/Technical Justification

The current levees, new interior cross levees, and a network of berms constructed of recycled dredged material will be graded above sea level and planted with riparian and tidal marsh vegetation to create shaded riverine aquatic and tidal perennial aquatic habitats. Where levees are breached they will become mid-channel island habitat. Restoration plots landward of the levee will provide non-tidal perennial aquatic habitat.

Restoration of tidal perennial aquatic habitat will greatly expand spawning and nursery habitat for *Delta smelt* near the center of their current spawning activity around Bradford Island (DFG 1995, from Wang, 1991). Shallow water tidal marsh will also provide excellent forage and cover habitat for all populations of *chinook salmon* that pass through the San Joaquin River on their way to the ocean, including Sacramento River runs that are diverted at Georgiana Slough and the Delta Cross Channel. Wetland, island, and riparian habitats will directly benefit *waterfowl*, *neo-tropical songbirds*, *wading birds* and *shore birds*.

The long-term agricultural, ecological, and water supply future of the Delta is dependent on halting subsidence and restoring island elevations. This project will develop and test various subsidence reversal techniques to determine which approaches are most effective. We believe that pilot project implementation and monitoring are the most direct and cost-effective means of reaching this goal. In addition, this project's approach of utilizing and accelerating natural processes to restore Delta islands to self sustaining tidal marsh is the most economic and durable, long-term solution to island subsidence in the Delta.

III-E. Proposed Scope of Work

Section III-A describes the proposed project and approach. The table below lists the primary tasks, proposed milestone dates and project deliverables.

Tasks	Dates	Deliverable
1. Conduct water quality and other research	10/97 - 10/00	3 annual reports
2. Establish baseline conditions.	10/97 - 08/98	Summary of baseline conditions report
3. Complete CEQA requirements	10/97 - 05/98	Environmental Impact Report (EIR)
4. Obtain permits	04/97 - 12/98	Permits
5. Acquire Bradford Island	05/98 - 05/99	Fee title to Bradford Island
6. Perform feasibility analyses	01/98 - 01/99	Alternatives report
7. Select alternative and complete final designs	08/98 - 03/99	Construction plans and specifications
8. Implement project	03/99 - 08/99	Implementation report with photos
9. Project Coordination and administration	10/97 - 10/00	Semi-annual financial reports
10. Monitoring	06/98 - 10/00	3 annual reports and technical appendices
11. Reporting	10/97 - 10/00	See reports above

III-F. Monitoring and Data Evaluation

The project will include both physical and biological monitoring approaches to insure that the project achieves both physical and biological targets. The project will avoid the pitfalls of site specific biological monitoring by coordinating with the Delta-wide, Interagency Ecological Program's monitoring efforts (partially described in an inquiry proposal submitted by IEP staff).

The monitoring program will focus on measuring and evaluating the following processes and parameters: 1) hydrologic and tidal processes, 2) island surface accretion, 3) water quality changes, 4) sediment transport and deposition, 5) wave action and attenuation, and 6) potential geomorphic changes to channels and properties adjacent to the project area, 7) species habitat utilization, and 8) changes in target habitat areas. Changes in island surface elevation resulting from various subsidence reversal approaches will be measured and evaluated according to the cost and rate of island surface accretion. Two sets of water quality studies will be conducted. One set will measure releases of dissolved organic carbon and trihalomethanes. The other water quality monitoring component will model and, if possible, measure changes in the tidal prism and salinity levels caused by restoring island areas to tidal circulation. The location and rate of sediment transport and deposition in the San Joaquin River and the restored tidal area on Twitchell Island will be measured to determine how well the project captures bed load passing through the river. Wave action and attenuation will be measured in different locations to identify ideal configurations of berms necessary to reduce wave action and provide levee stability. Biological monitoring will be conducted by DWR and IEP and will evaluate changes in area of target habitats over time, survey plant species richness and occurrence of exotic plants, and conduct surveys of habitat utilization by macro invertebrates, target fish species, and avian fauna.

- *The biological/ecological success of the project will be evaluated by: 1) the rate of land accretion, 2) utilization by target fish and wildlife, and 3) the area and rates of target habitats created.*

III-G. Implementability

DWR purchased most of Twitchell Island and neighboring Sherman Island with revenue from the State Water Contractors for the express purpose of habitat restoration. The State Water Contractors Association has assured DWR management that they fully support this project. The USACE, SWRCB, RWQCB, BCDC, and EPA as well as the UC Davis Public Service Research Program also support this project (see letters of endorsement). The Central Delta Water Agency has stated that they do not object to acquisition and conversion of Bradford Island.

Bradford Island is privately owned, but many Bradford Island properties are currently for sale, and several Bradford landowners have endorsed this project (see attached letter). Bradford Island is not currently farmed and landowners are struggling to service a \$1,000,000 debt associated with past levee repairs. Other neighboring islands, Jersey Island and Webb Tract, are owned by the Ironhouse Sanitation District and Delta Wetlands Inc. respectively. This project is compatible with the current and planned uses of those islands.

DWR, the lead agency, intends to conduct an EIR before project construction. The CEQA impacts and alternatives analysis will be conducted simultaneously with the project feasibility and alternative assessment. No designated critical habitat for state or federally listed or candidate *terrestrial* species has been identified on Bradford or Twitchell Island. The Project is consistent with both the Delta Protection Act and associated Resource Management Plan.

Since late 1996 NHI has conducted an outreach campaign in the delta to solicit local opinion on the future of the Delta. NHI and other project applicants will continue to work with Delta Landowners and will invite them to serve on the project advisory committee.

IV. Costs and Schedule to Implement Proposed Project

IV-A. Budget Costs

This application requests \$12.9 million in CALFED funds, matched by \$2.5 million from the applicants. The costs of the project components are divided as follows: land acquisition, \$5.5 million; project planning, analysis and design, \$1.4 million; project construction, \$4.1 million; research and monitoring, \$2.1 million; and reporting and technology transfer, \$0.27 million. A detailed breakdown of the project costs is presented in Table IV-1.

The Department of Water Resources will provide \$2.5 million cost share for land and labor costs. In addition, DWR will continue to finance levee maintenance costs on Bradford and Twitchell Island under the SB 34/AB 360 program. Contribution of 600 acres on Twitchell Island accounts for 1.5 million of DWR's cost share. This land was originally purchased with revenues from the state water contractors, and they will formally request CALFED to credit these costs to their share of CALFED restoration costs.

This project heavily leverages additional state and federal funds and programs. The substantial beneficial re-use benefits of the project qualify it for assistance from the U.S. Army Corps of Engineers (ACE). The long term management strategy (LTMS) program (for dredged spoil disposal) is seeking to beneficially reuse 40% of all dredged materials, and this project will help LTMS achieve this goal. Section 204 of the Water Resources Development Act authorizes the ACE to provide a 75% federal cost share for all upland beneficial reuse projects. To the extent that this project will both beneficially re-use dredged material and advance techniques for expanding upland beneficial re-use in the Delta, it is eligible for cost sharing with the Corps of Engineers. DWR is currently seeking section 204 funding for upland re-use projects in the Delta, and this project is a potential candidate for those funds. Furthermore, the In-Channel Restoration Committee of the San Francisco Estuary Project will provide a broad array of institutional support.

The project will rely on the technical services of the Inter Agency Ecological Program (IEP) and DFG, Region II for biological monitoring and design assistance. IEP maintains the expertise and equipment to perform all the necessary aquatic and benthic monitoring which will be needed for this project. Since DWR is an integral part of the IEP, and IEP is submitting a Category III proposal for monitoring CALFED restoration projects, a partnership with IEP is a natural component of this project.

IV-B. Schedule Milestones

The table below summarizes the key tasks, schedule milestones and deliverables for this project. DWR will handle all disbursements and will make monthly payments according to percent completion for each task.

Tasks	Dates	Deliverable
1. Conduct water quality and other research	10/97 - 10/00	3 annual reports
2. Establish baseline conditions.	10/97 - 08/98	Baseline condition report
3. Complete CEQA requirements	10/97 - 05/98	Environmental Impact Report
4. Obtain permits	04/97 - 12/98	Permits
5. Acquire Bradford Island	05/98 - 05/99	Fee title to Bradford Island
6. Perform alternative feasibility analyses	01/98 - 01/99	Alternatives report

7. Complete final design	08/98 - 03/99	Construction plans and specifications
8. Implement project	03/99 - 08/99	Implementation report with photos
9. Project coordination and administration	10/97 - 10/00	Semi-annual financial reports
10. Monitoring	06/98 - 10/00	3 annual reports
11. Reporting	10/97 - 10/00	See Reports Above

IV-C. Third Party Impacts

No foreseeable, adverse third party impacts have been identified.

V. Applicant Qualifications

A special joint venture partnership consisting of state, federal, and non-profit organizations will manage all phases of this project. DWR staff will assume the role of lead agency and will acquire land, obtain permits, hire subcontractors, and manage physical construction. DWR staff will also monitor water quality effects in the tidally-influenced areas. USGS staff will oversee water quality, biomass accretion, beneficial reuse monitoring and other research components of the project. NHI will coordinate the management committee and the advisory council, interface with other related or complementary Delta restoration projects, write annual reports for a broad audience, and integrate project results into a package of recommendations for Delta restoration. The Nature Conservancy will offer its considerable expertise in the field of ecosystem restoration but is not an applicant and will not participate financially in the project.

Chairmanship of the management council will rotate among the partners on an (approximately) annual basis. Management decisions will be made by consensus. A memorandum of understanding will be executed among the partners delineating governance, fiscal management, roles, and responsibilities. The contractual point of contact and fiscal agent for this project will be the Department of Water Resources.

An advisory panel consisting of representatives from the Delta Protection Commission, Delta landowners, Department of Fish and Game, U.S. Fish and Wildlife Service, Interagency Ecological Program, EPA, LTMS, and other interested parties will be established to review restoration and monitoring plans and increase coordination with other related programs. The qualifications of principal project managers and team leaders are summarized below.

Curt Schmutte is a Supervising Engineer and Program Manager with DWR and will supervise the project for the lead agency. He previously led the System Integrity component of the CALFED program and has implemented difficult Delta levee, habitat, and barrier projects. As program manager he was responsible for successfully developing the vision, plan, organization, process and schedule for CALFED Levee and Channel Technical Team. As manager of DWR's SB 34/AB 360 program, he has managed over \$30 million in Delta levee improvement projects including difficult mitigation elements. Mr. Schmutte has also managed subsidence studies and pilot projects with the LTMS program to study the viability of using San Francisco Bay dredged material on Delta levees. His project success has involved: (1) budgeting; (2) directing and coordinating engineering/environmental consultants, contractors, and numerous Departmental staff; (3) maintaining project schedules; (4) obtaining all necessary project permits and environmental documentation (CEQA, ESA, Sections 404 and 401, Waste Discharge Requirements, Section 1600 Stream bed Alteration agreements, monitoring programs, and

SMARA plans); (5) presentations to water agencies, management, and the public; (6) extensive public presentations. He is currently managing two category III habitat development/restoration projects: the Lower Sacramento River Project and the Sherman Island Project.

Steve Deverel, Ph.D. is a consulting hydrologist with 17 years of research experience in the Delta. As a doctoral candidate at the U.C. Davis he studied the chemical and physical processes affecting groundwater and soil salinity in the Delta. After receiving a Ph.D. in 1983, he worked as a Research Chemist at the U.S. Geological Survey until 1991 where he defined the chemical and physical process affecting subsidence and oxidation of peat soils. As Assistant District Chief for California at the USGS, from 1991-1994, he planned and directed research on the effects of wetland management practices on carbon fluxes and land-surface elevation changes in Delta peat soils. From 1994 to the present, Dr. Deverel has provided consulting services to DWR on subsidence mitigation in the Delta.

Roger Fujii, Ph.D. will coordinate certain aspects of the water quality studies for the USGS (directed by Steve Deverel) focusing on dissolved organic carbon and trihalomethane formation potential. Fujii has conducted applied geochemical research for the USGS since 1984 and is currently the project chief for the USGS Drinking Water Initiative study of the Sacramento-San Joaquin River Delta, which focuses on drinking water quality issues related to DOC and THMs. The water-quality study team also includes other international experts on organic geochemistry and aquatic humic substances.

Lauren Hastings, Ph.D. of the USGS will lead the subsidence reversal studies (directed by Steve Deverel) focusing on carbon mass balance and land-surface elevation changes. Dr. Hastings received her Ph.D. in soil chemistry from U.C. Davis in 1995. Since then she has planned and managed cooperative subsidence mitigation projects on Twitchell Island for the USGS and DWR.

Philip Williams & Associates, Ltd. (PWA), Philip B. Williams, Ph.D., P.E., President PWA has completed over 400 wetland restoration plans and analysis of tidal, seasonal, and riparian wetlands and has conducted long-term monitoring of several tidal wetland restoration sites in the San Francisco Bay Estuary in the past 10 years. PWA's design experience includes the recently completed Sonoma Baylands Tidal Wetland restoration project. PWA is part of a team with the University of Washington that received CALFED funding to conduct hydrologic monitoring and analysis to predict the evolution of ecological functions of restored Delta wetlands and has assessed breached-dike restoration potential for juvenile Pacific Salmon habitat in two estuaries in Oregon. Dr. Williams has pioneered practical technical analysis of tidal marsh restoration and management, coastal wetland hydrology and hydraulics, flood and riparian management, reservoir operation, harbor maintenance dredging, watershed sediment yield, groundwater management, and the impacts of climate change.

Northwest Hydraulic Consultants, Inc. (NHC) is an internationally known engineering consulting company specializing in the areas of river engineering, hydraulics, sedimentation, fluvial geomorphology, flood control, surface water hydrology, and river, estuary and wetland restoration design and assessment studies. NHC has completed more than 3,000 consulting assignments in these areas since the company was founded in 1972. NHC's specialized capabilities in river and wetland restoration is demonstrated by their past and present roles with DWR and others in Delta Island and shallow water habitat restoration projects, such as the

Sherman Island Project. NHC's services in these areas are complemented by state-of-the-art field assessment, mapping and computer modeling capabilities and modern hydraulic modeling (physical modeling) facilities. **Robert MacArthur, Ph.D., P.E.** and **Edward Wallace, P.E.** (Principals with NHC) will lead the engineering assessment, modeling and design activities. MacArthur and Wallace have extensive experience with similar projects in the Delta and elsewhere in California.

Greg Thomas is a specialist in natural resources law and management institutions and the CEO of **NHI**, a non-profit environmental law and technical consulting firm. Thomas has extensive experience devising cooperative solutions to water management problems in California including supervision of technical staff. He will be assisted by **David Fullerton** and **John Cain**, NHI scientists with several years experience in the field of water resources management and environmental restoration.

VI. Compliance with standard terms and conditions

See Attachments A

VII. Project Support Letters

See Attachments B

TABLE IV-1

**Cost Breakdown for Phase I, Category III
Twitchell and Bradford Island Restoration Projects**

Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
Project Totals Summary Sheet

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1 - Category 3 Project - Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l	7068	170253	170436	340689			159294	499.983
b. Water Quality Issues, including THM	17973	450003	450186	900189	75000	86000	351294	1412.483
2. Establish Baseline Conditions								
a. Gather and assess information	664	27925	31472	59397			5535	64.932
b. Develop topographic & bathymetric data & maps	620	32361	37086	69447	275000		13185	357.632
c. Develop baseline conditions	3627	133411	175200	308611	25000		53484	387.095
3. Complete CEQA Requirements								
a. Conduct impact assessments	620	29884	36337	66221			3707	69.928
b. Prepare EIR	146	6664	8152	14816	200000		951	215.767
4. Obtain Permits	256	12993	26864	39857	45000		710	85.567
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal	84	4200	10800	15000				15.000
b. Negotiate and prepare contracts	140	7000	18000	25000				25.000
c. Purchase Twitchell Project Site & Bradford Island						5500000		5500.000
6. Perform feasibility design analyses								
a. Geotechnical	44	2297	2632	4929	200000		355	205.284
b. Estuarine hydrodynamics	1440	73520	85468	158988			19150	178.138
c. Sediment transport processes	1570	80306	93244	173550			28995	202.545
d. Assess reuse of dredged mat'l	1160	58088	146393	204481			323	204.804
e. Perform feasibility design assessments	720	37580	43068	80648			25675	106.323
f. Conduct local site monitoring for design	300	15351	27571	42922			2350	45.272
7. Select alternative & complete final designs								
a. Complete final designs	807	35362	45764	81126	45000		5135	131.261
b. Prepare plans and specifications	1910	98373	113759	212132	87500		23801	323.433
8. Implement Project								
a. Prepare bid docs and select contractor	258	13098	26983	40081	25000		726	65.807
b. Construct Twitchell Is. Project	200	10439	11963	22402	130000	3850000	1613	4004.015
c. Initiate Project O & M	40	2088	2393	4481			323	4.804
9. Project coordination and administration								
a. DWR management & administration	840	42000	108000	150000				150.000
b. Management committee activities	332	19079	14453	33532			4790	38.322
c. Inter-ag'cy, LTMS & CalFed coordination	304	16463	19478	35941			3468	39.409
d. Disseminate public information, Tech Transfer	230	12691	11562	24253			4775	29.028
e. Plan Phase 2 projects for Twitchell & Bradford	610	30584	40572	71156			4394	75.550
10. Monitoring								
a. Design project monitoring program	226	10111	12123	22234			745	22.979
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)	268	13435	33357	46792			129	46.921
i-b. Benthic and aquatic monitoring	16	835	957	1792			129	1.921
ii. fluvial processes	2480	80909	126533	207442			38879	246.321
iii. Beneficial reuse of dredged mat'l's	1704	85253	217436	302689			194	302.883
iv. Water quality	248	12453	30236	42689			194	42.883
11. Reporting								
a. Interim reporting	918	44205	40543	84748			7675	92.423
b. Draft & Final Project summary reports	978	43281	58366	101647			34250	135.897
c. Conference & symposium proceedings	306	17020	16932	33952			6175	40.127
Total Hrs	49,107	\$1,729,515	\$2,294,319	\$4,023,834	\$1,107,500	\$9,436,000	\$802,403	\$15,369,737
Total Costs - With NO COST SHARING								\$15,369,737
Total Costs - WITH COST SHARING								\$12,883,737

**Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
NHI Summary Sheet 1**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1 - Category 3 Project: Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l								
b. Water Quality Issues, including THM								
2. Establish Baseline Conditions								
a. Gather and assess information								
b. Develop topographic & bathymetric data & maps								
c. Develop baseline conditions								
3. Complete CEQA Requirements								
a. Conduct impact assessments								
b. Prepare EIR								
4. Obtain Permits								
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal								
b. Negotiate and prepare contracts								
c. Purchase Twitchell Project Site & Bradford Island								
6. Perform feasibility design analyses								
a. Geotechnical								
b. Estuarine hydrodynamics								
c. Sediment transport processes								
d. Assess reuse of dredged mat'l								
e. Perform feasibility design assessments								
f. Conduct local site monitoring for design								
7. Select alternative & complete final designs								
a. Complete final designs								
b. Prepare plans and specifications								
8. Implement Project								
a. Prepare bid docs and select contractor								
b. Construct Twitchell Is. Project								
c. Initiate Project O & M								
9. Project coordination and administration								
a. DWR management & administration								
b. Management committee activities	240	14400	5100	19500			4500	24
c. Inter-ag'cy, LTMS & CalFed coordination	100	6000	1500	7500			2500	10
d. Disseminate public information, Tech Transfer	100	6000	1500	7500			2500	10
e. Plan Phase 2 projects for Twitchell & Bradford	100	6000	1500	7500			2500	10
10. Monitoring								
a. Design project monitoring program								
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)								
i-b. Benthic and aquatic monitoring								
ii. fluvial processes								
iii. Beneficial reuse of dredged mat'ls								
iv. Water quality								
11. Reporting								
a. Interim reporting	300	18000	7500	25500			4500	30
b. Draft & Final Project summary reports								
c. Conference & symposium proceedings	150	9000	3750	12750			2250	15
Totals	Total Hrs 990	\$59,400	\$20,850	\$80,250			\$18,750	Total Dollars \$99,000

**Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
S. Deverel Summary Sheet 2**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1 - Category 3 Project; Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l	780	39000	39000	78000			14100	92.100
b. Water Quality Issues, including THM	2418	78750	78750	157500	75000	86000	16100	334.600
2. Establish Baseline Conditions								
a. Gather and assess information	330	12870	12870	25740				25.740
b. Develop topographic & bathymetric data & maps								
c. Develop baseline conditions	460	19320	19320	38640				38.640
3. Complete CEQA Requirements								
a. Conduct impact assessments								
b. Prepare EIR								
4. Obtain Permits								
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal								
b. Negotiate and prepare contracts								
c. Purchase Twitchell Project Site & Bradford Island								
6. Perform feasibility design analyses								
a. Geotechnical								
b. Estuarine hydrodynamics								
c. Sediment transport processes								
d. Assess reuse of dredged mat'l								
e. Perform feasibility design assessments								
f. Conduct local site monitoring for design								
7. Select alternative & complete final designs								
a. Complete final designs								
b. Prepare plans and specifications								
8. Implement Project								
a. Prepare bid docs and select contractor								
b. Construct Twitchell Is. Project								
c. Initiate Project O & M								
9. Project coordination and administration								
a. DWR management & administration								
b. Management committee activities								
c. Inter-ag'cy, LTMS & CalFed coordination								
d. Disseminate public information, Tech Transfer								
e. Plan Phase 2 projects for Twitchell & Bradford	40	2000	2000	4000				4.000
10. Monitoring								
a. Design project monitoring program	50	2500	2500	5000				5.000
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)								
i-b. Benthic and aquatic monitoring								
ii. fluvial processes								
iii. Beneficial reuse of dredged mat'l's								
iv. Water quality								
11. Reporting								
a. Interim reporting	330	12870	12870	25740				25.740
b. Draft & Final Project summary reports	450	18900	18900	37800				37.800
c. Conference & symposium proceedings								
Totals	Total Hrs 4,858	\$186,210	\$186,210	\$372,420	\$75,000	\$86,000	\$30,200	Total Dollars \$563,620

Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
DWR Summary Sheet 3

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1 - Category 3 Project: Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l								
b. Water Quality Issues, including THM								
2. Establish Baseline Conditions								
a. Gather and assess information								265
b. Develop topographic & bathymetric data & maps					265000			265
c. Develop baseline conditions					10000			10
3. Complete CEQA Requirements								
a. Conduct impact assessments								
b. Prepare EIR					200000			200
4. Obtain Permits	168	8400	21600	30000	45000			75
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal	84	4200	10800	15000				15
b. Negotiate and prepare contracts	140	7000	18000	25000				25
c. Purchase Twitchell Project Site & Bradford Island						5500000		5500
6. Perform feasibility design analyses								
a. Geotechnical					200000			200
b. Estuarine hydrodynamics								
c. Sediment transport processes								
d. Assess reuse of dredged mat'l	1120	56000	144000	200000				200
e. Perform feasibility design assessments								
f. Conduct local site monitoring for design	140	7000	18000	25000				25
7. Select alternative & complete final designs								
a. Complete final designs					45000			45
b. Prepare plans and specifications					87500			87.5
8. Implement Project								
a. Prepare bid docs and select contractor	168	8400	21600	30000	25000			55
b. Construct Twitchell Is. Project					130000	3850000		3980
c. Initiate Project O & M								
9. Project coordination and administration								
a. DWR management & administration	840	42000	108000	150000				150
b. Management committee activities	58	2800	7200	10000				10
c. Inter-ag'cy, LTMS & CalFed coordination	84	4200	10800	15000				15
d. Disseminate public information, Tech Transfer	34	1680	4320	6000				6
e. Plan Phase 2 projects for Twitchell & Bradford	140	7000	18000	25000				25
10. Monitoring								
a. Design project monitoring program								
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)	252	12600	32400	45000				45
i-b. Benthic and aquatic monitoring								
ii. fluvial processes	140	7000	18000	25000				25
iii. Beneficial reuse of dredged mat'l's	1680	84000	216000	300000				300
iv. Water quality	224	11200	28800	40000				40
11. Reporting								
a. Interim reporting	58	2800	7200	10000				10
b. Draft & Final Project summary reports	140	7000	18000	25000			25000	50
c. Conference & symposium proceedings	58	2800	7200	10000				10
Total Costs	Total Hrs 5,522	\$276,080	\$709,920	\$986,000	\$1,007,600	\$9,350,000	\$25,000	Total Dollars \$11,368,500
Total Costs - Less DWR Contributions, in brackets				(\$886,000)		(\$1,500,000)		\$8,982,500
				Total DWR Contributions =	\$2,486,000			

Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
USGS Summary Sheet 4

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1 - Category 3 Project: Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l	6264	130000	130000	260000			145000	405
b. Water Quality Issues, including THM	15531	370000	370000	740000			335000	1075
2. Establish Baseline Conditions								
a. Gather and assess information								
b. Develop topographic & bathymetric data & maps								
c. Develop baseline conditions	2220	67645	101354	168999			33709	202.708
3. Complete CEQA Requirements								
a. Conduct impact assessments								
b. Prepare EIR								
4. Obtain Permits								
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal								
b. Negotiate and prepare contracts								
c. Purchase Twitchell Project Site & Bradford Island								
6. Perform feasibility design analyses								
a. Geotechnical								
b. Estuarine hydrodynamics								
c. Sediment transport processes								
d. Assess reuse of dredged mat'l								
e. Perform feasibility design assessments								
f. Conduct local site monitoring for design								
7. Select alternative & complete final designs								
a. Complete final designs								
b. Prepare plans and specifications								
8. Implement Project								
a. Prepare bid docs and select contractor								
b. Construct Twitchell Is. Project								
c. Initiate Project O & M								
9. Project coordination and administration								
a. DWR management & administration								
b. Management committee activities								
c. Inter-ag'cy, LTMS & CalFed coordination								
d. Disseminate public information, Tech Transfer								
e. Plan Phase 2 projects for Twitchell & Bradford								
10. Monitoring								
a. Design project monitoring program								
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)								
i-b. Benthic and aquatic monitoring								
ii. fluvial processes	2220	67646	101355	169001			33709	202.71
iii. Beneficial reuse of dredged mat'l's								
iv. Water quality								
11. Reporting								
a. Interim reporting								
b. Draft & Final Project summary reports								
c. Conference & symposium proceedings								
Totals	Total Hrs 26,235	\$635,291	\$702,709	\$1,338,000			\$547,418	Total Dollars \$1,885,418

Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
NHC Summary Sheet 5

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1 - Category 3 Project: Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l	24	1253	1436	2689			194	2.883
b. Water Quality Issues, including THM	24	1253	1436	2689			194	2.883
2. Establish Baseline Conditions								
a. Gather and assess information	190	9917	11365	21282			5035	26.317
b. Develop topographic & bathymetric data & maps	620	32361	37086	69447			13185	82.632
c. Develop baseline conditions	795	41495	47554	89049			15950	104.999
3. Complete CEQA Requirements								
a. Conduct impact assessments	420	21922	25123	47045			3367	50.432
b. Prepare EIR	90	4698	5383	10081			726	10.807
4. Obtain Permits	88	4593	5264	9857			710	10.567
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal								
b. Negotiate and prepare contracts								
c. Purchase Twitchell Project Site & Bradford Island								
6. Perform feasibility design analyses								
a. Geotechnical	44	2297	2632	4929			355	5.284
b. Estuarine hydrodynamics (num. & phys. modeling)	1320	68897	78957	147854			18950	166.804
c. Sediment transport processes (num & phys modeling)	1450	75683	86733	162416			28795	191.211
d. Assess reuse of dredged mat'l	40	2088	2393	4481			323	4.804
e. Perform feasibility design assessments(num & Phys mo	720	37580	43068	80648			25675	106.323
f. Conduct local site monitoring for design	160	8351	9571	17922			2350	20.272
7. Select alternative & complete final designs								
a. Complete final designs	295	15398	17646	33044			3635	36.679
b. Prepare plans and specifications	1810	94473	108267	202740			22301	225.041
8. Implement Project								
a. Prepare bid docs and select contractor	90	4698	5383	10081			726	10.807
b. Construct Twitchell Is. Project (Construction Review)	200	10439	11963	22402			1613	24.015
c. Initiate Project O & M (review O&M docs)	40	2088	2393	4481			323	4.804
9. Project coordination and administration								
a. DWR management & administration								
b. Management committee activities	36	1879	2153	4032			290	4.322
c. Inter-ag'cy, LTMS & Califed coordination	120	6263	7178	13441			968	14.409
d. Disseminate public information, Tech Transfer	96	5011	5742	10753			2275	13.028
e. Plan Phase 2 projects for Twitchell & Bradford	210	10961	12561	23522			1694	25.216
10. Monitoring								
a. Design project monitoring program	80	4176	4785	8961			645	9.606
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)	16	835	957	1792			129	1.921
i-b. Benthic and aquatic monitoring	16	835	957	1792			129	1.921
ii. fluvial processes	120	6263	7178	13441			5170	18.611
iii. Beneficial reuse of dredged mat'ls	24	1253	1436	2689			194	2.883
iv. Water quality	24	1253	1436	2689			194	2.883
11. Reporting								
a. Interim reporting	136	7099	8135	15234			2975	18.209
b. Draft & Final Project summary reports	220	11483	13160	24643			8750	33.393
c. Conference & symposium proceedings	100	5220	5982	11202			3925	15.127
Totals	9,618	\$502,012	\$575,312	\$1,077,328			\$171,765	\$1,249,093

Table IV-1, Cost Breakdown for Phase 1, Category 3 - Twitchell & Bradford Island Restoration Projects
PWA Summary Sheet 6

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits, Dollars	Overhead Labor (General Admin and Fee), \$	Labor Subtotal by Task, Dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$1000
Phase 1, Category 3 Project: Proposed Tasks								
1. Research								
a. Biomass accretion & beneficial reuse of dredged mat'l								
b. Water Quality Issues, including THM								
2. Establish Baseline Conditions								
a. Gather and assess information	144	5138	7237	12375			500	12.875
b. Develop topographic & bathymetric data & maps					10000			10
c. Develop baseline conditions	152	4951	6972	11923	15000		3825	30.748
3. Complete CEQA Requirements								
a. Conduct impact assessments	200	7962	11214	19176			320	19.496
b. Prepare EIR	56	1966	2769	4735			225	4.96
4. Obtain Permits								
5. Acquire Twitchell & Bradford Island Project Sites								
a. Appraisal								
b. Negotiate and prepare contracts								
c. Purchase Twitchell Project Site & Bradford Island								
6. Perform feasibility design analyses								
a. Geotechnical								
b. Estuarine hydrodynamics	120	4623	6511	11134			200	11.334
c. Sediment transport processes	120	4623	6511	11134			200	11.334
d. Assess reuse of dredged mat'l								
e. Perform feasibility design assessments								
f. Conduct local site monitoring for design								
7. Select alternative & complete final designs								
a. Complete final designs	512	19964	28118	48082			1500	49.582
b. Prepare plans and specifications	100	3900	5492	9392			1500	10.892
8. Implement Project								
a. Prepare bid docs and select contractor								
b. Construct Twitchell Is. Project								
c. Initiate Project O & M								
9. Project coordination and administration								
a. DWR management & administration								
b. Management committee activities								
c. Inter-ag'cy, LTMS & CalFed coordination								
d. Disseminate public information, Tech Transfer								
e. Plan Phase 2 projects for Twitchell & Bradford	120	4623	6511	11134			200	11.334
10. Monitoring								
a. Design project monitoring program	96	3435	4838	8273			100	8.373
b. Implement monitoring program								
i-a. Biological monitoring (terrestrial)								
i-b. Benthic and aquatic monitoring								
ii. fluvial processes								
iii. Beneficial reuse of dredged mat'l's								
iv. Water quality								
11. Reporting								
a. Interim reporting	96	3436	4838	8274			200	8.474
b. Draft & Final Project summary reports	168	5898	8306	14204			500	14.704
c. Conference & symposium proceedings								
Totals	Total Hrs 1,884.00	\$70,519	\$99,317	\$169,836	\$25,000		\$9,270	Total Dollars \$204,105

ATTACHMENTS A

Compliance with Standard Terms and Conditions

Item

NONDISCRIMINATION COMPLIANCE STATEMENT

Natural Heritage Institute

COMPANY NAME

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 applicant 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 described 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.

Gregory A. Thomas

OFFICIAL'S NAME

July 25, 1997

DATE EXECUTED

San Francisco
EXECUTED IN THE COUNTY OF

PROSPECTIVE CONTRACTOR'S SIGNATURE

President

PROSPECTIVE CONTRACTOR'S TITLE

Natural Heritage Institute

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

Steven J. Devereel

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 applicant 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 described 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

Steven J. Devereel

DATE EXECUTED

7-24-97

EXECUTED IN THE COUNTY OF

Yolo

PROSPECTIVE CONTRACTOR'S SIGNATURE

[Handwritten Signature]

PROSPECTIVE CONTRACTOR'S TITLE

Principal

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Steven J. Devereel

**1. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS
PHILIP WILLIAMS & ASSOCIATES, LTD.**

The required terms and conditions for a Service Contract have been reviewed. The following forms are attached:

- Item 8, Non Discrimination Compliance Statement
- Item 12, Small Business Preference Statement.

We request consideration of the following deviations from the Attachment D Terms & Conditions:

Section 8. Rights in Data: Whereas data and information obtained or received under contract shall be in the public domain, PWA would not be able to disclose or permit use of proprietary software subject to licensing or copyright restrictions. In addition, we wish to limit our liability for misuse or inappropriate use of PWA generated materials for purposes outside the contract given the fact such information will be in the public domain. Therefore, we request the following language to be added to this section: "Proprietary computer software and its applications, unless expressly developed as a work product for use by the Client as part of the scope of services, remains the property of PWA or the software developer. Further, reports, recommendations and other materials resulting from PWA's efforts are intended solely for purposes of this Agreement; any reuse or modification by Client or others for purposes outside this agreement without PWA's written permission shall be at the user's sole risk."

Section 9. Indemnification: PWA requests to limit the indemnification to claims or losses resulting from our negligent performance. Further, we will request that PWA is indemnified and held harmless from claims or losses resulting from the negligent acts or omissions of other parties not under our control.

Section 11. In the event of termination for default, it is customary that the maximum costs applied to a Contractor be limited to the total contract amount. Under the current language a contractor could have unlimited liability which is not insurable nor appropriate (i.e., a Contractor could be asked to pay the State \$100,000 to hire someone else to complete a contract originally executed for \$20,000.)

Section 12. We request the substitute language for this section to read: "Without the written consent of the other party, neither the State nor the Contractor may assign this agreement in whole or in part."

In Attachment "D1: Standard Clauses", PWA will request the following modifications:

Termination Clause: Delete "The State" in sentence 1 and substitute "Either party" may terminate this contract without cause upon 30 days' advance written notice.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

PHILIP WILLIAMS & ASSOCIATES, Ltd.

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 applicant 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 described 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

JEFFREY P. HALTNER

DATE EXECUTED

7/22/97

EXECUTED IN THE COUNTY OF

SAN FRANCISCO

PROSPECTIVE CONTRACTOR'S SIGNATURE



PROSPECTIVE CONTRACTOR'S TITLE

PRINCIPAL

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

PHILIP WILLIAMS & ASSOCIATES, LTD.

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 within this law, including the definition of a small business for the delivery of services, 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 approval letter.

Northwest Hydraulic Consultants, Inc.

1. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

The required terms and conditions for a Service Contract have been reviewed. The following forms are attached:

- Item 8, Non Discrimination Compliance Statement
- Item 12, Small Business Preference Statement

Northwest Hydraulic Consultants, Inc (nhc) requests consideration of the following deviations from the Attachment D Terms & Conditions:

Section 8. Rights in Data: Whereas data and information obtained or received under contract shall be in the public domain, nhc would not be able to disclose or permit use of proprietary software subject to licensing or copyright restrictions. In addition, we wish to limit our liability for misuse or inappropriate use of nhc generated materials for purposes outside the contract given the fact such information will be in the public domain. Therefore, we request the following language to be added to this section: "Proprietary computer software and its applications, unless expressly developed as work product for use by the Client as part of the scope of services, remains the property of nhc or the software developer. Further, reports, recommendations and other materials resulting from nhc's efforts are intended solely for purposes of this Agreement; any reuse of, or modification by Client or others for purposes outside this agreement without nhc's written permission shall be at the user's sole risk."

Section 9. Indemnification: nhc requests to limit the indemnification to claims or losses resulting from our negligent performance. Further, we will request that nhc is indemnified and held harmless from claims or losses resulting from negligent acts or omissions of other parties not under our control.

Section 11. In the event of termination for default, it is customary that the maximum costs applied to a Contractor be limited to the total contract amount. Under the current language a contract could have unlimited liability which is not insurable nor appropriate (i.e., a Contractor could be asked to pay the State \$100,000 to hire someone else to complete a contract originally executed for \$20,000.)

Section 12. We request the substitute language for this section to read: "Without the written consent of the other party, neither the State nor the Contractor may assign this agreement in whole or in part."

In attachment "D1: Standard Clauses" nhc will request the following modifications:

Termination Clause: Delete "The State" in sentence 1 and substitute "Either party" may terminate this contract without cause upon 30 days' advance written notice.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

Northwest Hydraulic Consultants, 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 applicant 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 described 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

Robert C. MacArthur

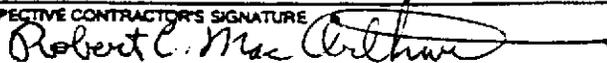
DATE EXECUTED

7-23-97

EXECUTED IN THE COUNTY OF

Yolo

PROSPECTIVE CONTRACTOR'S SIGNATURE



PROSPECTIVE CONTRACTOR'S TITLE

Principal

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Northwest Hydraulic Consultants, 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* X No

*Attach a copy of your certification approval letter.

NORTHWEST HYDRAULIC CONSULTANTS INC
3950 Industrial Blvd., Suite 100C
West Sacramento, CA 95691-3430

Robert C. MacArthur
Principal

ATTACHMENTS B

Project Support Letters

LONG TERM MANAGEMENT STRATEGY



July 18, 1997

Lester Snow
Executive Director
CALFED Bay Delta Program
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Dear Mr. Snow:

The undersigned State and Federal agencies are working on the Long Term Management Strategy (LTMS) for dredged material in the San Francisco Bay Region. Two project proposals submitted in response to the Category III Request for Proposals (RFP), the *Learning Laboratory for Restoring Subsidized Land* and the *Hamilton Army Airfield Wetlands Restoration Projects*, meet both CALFED and LTMS goals.

Both of these projects will benefit CALFED priority habitats and priority species, including anadromous fish and migratory birds, through ecosystem restoration. Both projects use dredged material for beneficial uses and fulfill the LTMS goal of maximizing the use of dredged material as a resource. Reducing the amount of dredged material disposed in the Estuary is critical to reducing the impacts to anadromous fish that use the Bay/Delta. Both projects also have multiple partners and opportunities for cost-sharing including cost sharing for use of dredged material.

In particular, the Hamilton project will provide for the restoration of up to 2500 acres of seasonal and tidal wetlands combined. It is an important project to the LTMS agencies in that LTMS needs an upland site as soon as possible and it has a huge capacity for dredged material. If we do not act now, we will lose this restoration opportunity due to the end of the Base Realignment and Closure (BRAC) process. In addition, if the Bel Marin Keys property is to be included in this project, it must be purchased as soon as possible.

The Learning Laboratory Project will show how island restoration can optimally benefit from the use of dredged material, will promote the use of dredged material normally disposed of in the Delta and potentially at the Suisun Bay Disposal Site, will provide an invaluable lesson in understanding what can be done to restore Delta Islands.

We believe that both of these projects will greatly benefit CALFED and LTMS goals bringing even greater benefits to the environment. We thank you for your consideration.

Sincerely,

Richard G. Thompson
Lt. Col., U.S. Army
District Engineer
U.S. Army Engineer District

for

Walt Pettit
Executive Director
State Water Resources Control
Board

William D. McCoy
Chief of Operations and
Readiness
South Pacific Division
U.S. Army Corps of Engineers

Loretta Barsamian
Executive Officer
Regional Water Quality Control
Board

Will Travis
Executive Director
San Francisco Bay Conservation
and Development Commission

Alexis Strauss
Acting Director, Water Division
U.S. Environmental Protection
Agency

UNIVERSITY OF CALIFORNIA, DAVIS

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

DIRECTOR
PUBLIC SERVICE RESEARCH PROGRAM
(916) 752-7823
FAX: (916) 752-7748

DAVIS, CALIFORNIA 95616-8688

July 25, 1997

Lester Snow
Executive Director
CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Dear Lester:

I am writing to express strong support for the proposal being submitted for CALFED Category III funding by the Natural Heritage Institute and others: "A Learning Laboratory for Restoring Subsidized Land in the Delta."

We believe this is an extremely important issue in the overall context of ecosystem restoration in the Bay-Delta. A research briefing on Flood/Water Management and Ecological Restoration was presented last month as an element of the Memorandum of Understanding between the Resources Agency and UC Davis. Participants included CALFED's Dick Daniel, Mary Selkirk, Chair of the Ecosystem Restoration Workgroup, and a number of other knowledgeable and experienced individuals. The issue of restoring subsidized land received a great deal of emphasis in the discussion at this briefing.

We are particularly interested in the elements of the proposal which deal with an international symposium. We believe there may be a great deal to learn from colleagues who are dealing with similar issues in other parts of the country and the world. Several of us at UC Davis have been exploring the idea of an international symposium on tidal fresh water marsh restoration and we would welcome the opportunity to work with the Natural Heritage Institute and others in presenting such a symposium.

Best regards,

A handwritten signature in cursive script that reads "Dennis".

Dennis Pendleton
Director
Public Service Research Program

7/24/97

Mr. Curt Schmutte
Department of Water Resources
3251 "S" Street
Sacramento, CA 95816

Dear Curt,

I have recently learned of the State's interest in the acquisition of Bradford Island involving the use of Category 3 funds for environmental restoration of the Delta.

Due to the fact that the existence of Bradford Island is recognized as not only critical to the quality of the State's water, but also to the integrity of the present Delta ecosystem, it is logical that the island should revert to public ownership.

Over the past twenty years, we have witnessed the degradation of Bradford Island due to the financial constraints borne by the District. Presently, the State is heavily involved with it's assistance maintaining the levees. It appears that one of the best options the reclamation district may have is to encourage urban development on the island in order to enhance it's tax base. As a landowner, I do not look favorably to that future, as the costs will be beyond the means of the larger parcels to bear unless they also wish to develop their property.

With this in mind I have taken the liberty, at short notice, to contact several of the parcel owners on the island as to their interest in the acquisition of their land by the state for environmental restoration. As of this point, approximately one third of the island is excited about the concept and are willing to entertain an offer with the understanding that land will revert to the restoration of fisheries, the aquatic habitat and restoration of the Delta environment. I have positive feelings that given more time and had the balance of the principal property owners been contacted, they too would also be equally enthused.

Sincerely,



Brent Gilbert
BG/bg