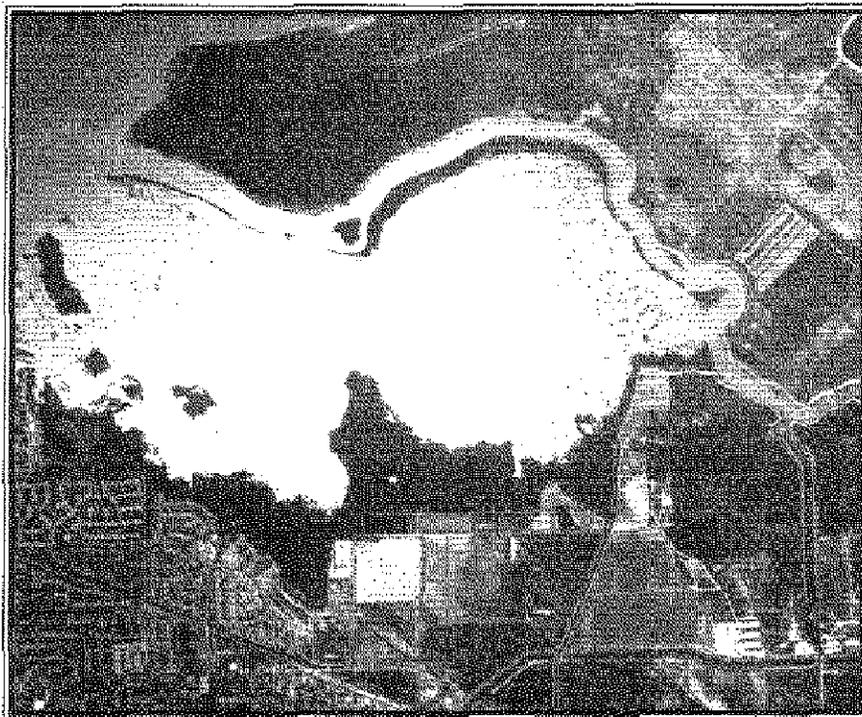


THE

1055

# DELTA SCIENCE CENTER

A T B I G B R E A K



A UNIQUE OPPORTUNITY FOR  
RESTORATION, RESEARCH & EDUCATION

MAY 1998 - ECOSYSTEM RESTORATION PROJECTS AND  
PROGRAMS - CALFED BAY-DELTA PROGRAM

FLOODPLAIN MANAGEMENT AND HABITAT RESTORATION

I - 0 1 0 1 9 0

I-010190

## Attachment H

## COVER SHEET (PAGE 1 of 2)

## May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

Proposal Title: A Unique Opportunity for Restoration, Research and Education-  
 Applicant Name: THE DELTA SCIENCE CENTER AT Big Break  
 Mailing Address: 86 Orchard Estates Drive, Walnut Creek, CA 94598  
 Telephone: 925-947-1473  
 Fax: 925-947-1473

Amount of funding requested: \$ 263,231 for .5 years

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

- |   |   |
|---|---|
| <input type="checkbox"/> Fish Passage Assessment  | <input type="checkbox"/> Fish Passage Improvements    |
| <input checked="" type="checkbox"/> Floodplain and Habitat Restoration                    | <input type="checkbox"/> Gravel Restoration           |
| <input type="checkbox"/> Fish Harvest   | <input type="checkbox"/> Species Life History Studies |
| <input type="checkbox"/> Watershed Planning/Implementation                                | <input type="checkbox"/> Education                    |
| <input type="checkbox"/> Fish Screen Evaluations - Alternatives and Biological Priorities |   |

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

- |   |   |
|---|---|
| <input type="checkbox"/> Sacramento River Mainstem              | <input type="checkbox"/> Sacramento Tributary: _____      |
| <input checked="" type="checkbox"/> Delta                       | <input type="checkbox"/> East Side Delta Tributary: _____ |
| <input type="checkbox"/> Suisun Marsh and Bay                   | <input type="checkbox"/> San Joaquin Tributary: _____     |
| <input type="checkbox"/> San Joaquin River Mainstem             | <input type="checkbox"/> Other: _____                     |
| <input type="checkbox"/> Landscape (entire Bay-Delta watershed) | <input type="checkbox"/> North Bay: _____                 |

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

- |  |   |
|--|---|
| <input type="checkbox"/> San Joaquin and East-side Delta tributaries fall-run chinook salmon |   |
| <input type="checkbox"/> Winter-run chinook salmon   | <input type="checkbox"/> Spring-run chinook salmon          |
| <input type="checkbox"/> Late-fall run chinook salmon  | <input checked="" type="checkbox"/> Fall-run chinook salmon |
| <input type="checkbox"/> Delta smelt   | <input type="checkbox"/> Longfin smelt                      |
| <input checked="" type="checkbox"/> Splittail  | <input type="checkbox"/> Steelhead trout                    |
| <input type="checkbox"/> Green sturgeon  | <input type="checkbox"/> Striped bass                       |
| <input type="checkbox"/> Migratory birds   |   |

COVER SHEET (PAGE 2 of 2)

May 1998 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION

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

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

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

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

By signing below, the applicant declares the following:

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

  
\_\_\_\_\_  
(Signature of Applicant)

## Executive Summary

**A. Project Title:** Big Break Restoration, Education, and Research Plan  
**Applicant Name:** Delta Science Center

**B. Project Description:** The goals of this project are threefold: 1) restore tidal marsh, riparian and floodplain habitat, and shallow water habitat on the south shore of Big Break; 2) answer basic research questions about the physical and biological affects of restoring shallow water habitats; and 3) educate the public about the importance of restoring the Bay Delta ecosystem.

The Delta Science Center site at the mouth of Marsh Creek on the southern edge of Big Break represents the single best tidal marsh habitat restoration opportunity in the entire Delta (Figure 1). At this one site, it is possible to restore at least six to eight hundred acres of tidal marsh and sloughs, shallow water, floodplain riparian forest, and seasonal wetlands adjacent to a large protected marsh and shallow water area, Big Break (Figure 4a). The location and physical attributes of the site offer unprecedented opportunities to create a demonstration project showcasing the Bay/Delta estuary and CALFED's efforts to restore it. Unlike many other potential tidal marsh restoration projects, this project involves virtually no adverse third party impacts or expensive engineering problems. Without prompt funding however, the enormous opportunities of this site could be permanently lost to the urban development that is rapidly expanding across east Contra Costa County (Figures 5 and 6).

**C. Approach/Tasks/Schedule:** This proposal seeks funds for Phase I to identify the opportunities and constraints for an integrated restoration, education, and research master plan for approximately 2,000 acres along the southern edge of Big Break. The south shore of Big Break encompasses several parcels and opportunities for access, education, research, and restoration. The master planning process will entail sorting through these various opportunities to develop an optimal combination and siting of restoration, education and research programs. We will complete the master planning process within 6 months of signing a contract and then will reapply to CALFED or other parties for acquisition and implementation funding.

Task Description	Schedule
<i>Phase I</i>	
1. Compile and Review Existing Information on Big Break	10/01 - 10/30 1998
2. Refine Goals and Objectives	11/01 - 11/15 1998
3. Opportunities and Constraints Analysis	11/15 - 12/30 1998
4. Develop Master Plan for South Shore of Big Break	01/10 - 01/30 1998
<i>Phase II</i>	
1. Acquisition, Design, and Permitting	1999 - 2001
<i>Phase III</i>	
1. Restoration Implementation	2001 - 2003
2. Science Center Construction	2001 - 2003
2. Monitoring	Long term

**D. Justification for Project and Funding by CALFED:** The site is on developable land between the rapidly urbanizing area of Oakley and high value shallow water habitat in Big Break. Surface elevations on the site range from a couple of feet below sea level to ten feet above sea level, but most of the site is between sea level and five feet NGVD rendering it optimal for inter-tidal marsh restoration (Figure 6). Without the project much of the site could be developed into subdivisions (Figure 5). Urban development of the site would most likely degrade the existing shallow water and tidal marsh habitat in Big Break.

The remarkable topographic and hydrologic diversity of the site provides an opportunity to both advance an exceptionally broad range of CALFED objectives and showcase the CALFED Bay-Delta restoration program in action.

**E. Budget Costs and Third Party Impacts:** This proposal is for Phase I only.

Phase I: Restoration, Education, Research Master Plan	\$263,231
Phase II: Land Acquisition, Design and Permitting	\$10 – \$25 million
Phase II: Implementation, Construction and Monitoring	\$10 – \$15 million

Unlike many other potential tidal marsh restoration projects, there are virtually no adverse third party impacts or expensive engineering problems. Most of the site is operated as a dairy by farmers who plan to sell to a developer or other parties in the near future. The remaining land is owned by the Iron House Sanitation District.

**F. Applicant Qualifications:** *Steve Barbata* is Executive Director of the Delta Science Center. He previously served as director of the regionally acclaimed Lindsey Wildlife Museum and has 25 years of experience in the design, building and funding of educational institutions. *Phillip Williams, Ph.D., P.E.*, of *Phillip Williams and Associates* has over twenty years experience in tidal marsh and riparian restoration planning and analysis. *William S. Wells* has over 20 years experience in the planning and design of educational institutions, with educational degrees in journalism and environmental design. *Dr. Charles Hanson* has served on the USFWS Native Fish Recovery Team and contributed directly to a number of fishery protection and enhancement programs involving USFWS, NMFS, USEPA, USBR, CDFandG, and other agencies. *Greg Thomas, David Fullerton, John Cain, and Mark Wolfe* will all participate in project planning, and NHI board members, *Luna Leopold, Ph.D.*, and *Peter Moyle, Ph.D.*, will provide advice on project direction. *John Cain M.L.A.*, who will oversee day to day management of the project, has a graduate degree in environmental planning and 8 years of experience in aquatic habitat restoration planning and research.

#### **G. Monitoring and Data Evaluation**

Future phases of this restoration project will be specifically designed to help answer basic research questions about the value of shallow water habitats and the efficacy of methods to restore shallow water habitat. During the first phase of the project, PWA and Hanson Environmental will develop a baseline monitoring plan as well as a draft study plan, including the identification of specific hypotheses to be tested.

#### **H. Local Support/Coordination with Other Programs/and Compatibility**

This project is organized and managed by the Delta Science Center, a non-profit 501C-3 organization. Numerous local groups, interests, and institutions are represented on the Board of the Delta Science Center, including Emerson Dairy, Contra Costa County, the East Bay Regional Park District, Contra Costa Water District, Contra Costa Community College District, Cal State Hayward, Pacific Gas and Electric, the Sierra Club, and the Audubon Society.

Research components of this project will be closely coordinated with IEP and CMARP. The project will not only achieve multiple CALFED restoration objectives, but also showcase the promise of Delta restoration at the Delta Science Center Educational facility.

### III. TITLE PAGE

- a. A UNIQUE OPPORTUNITY FOR RESTORATION, RESEARCH AND EDUCATION
- b. THE DELTA SCIENCE CENTER at Big Break  
Stephen Barbata, Executive Director  
86 Orchard Estates Drive  
Walnut Creek, CA 94598  
phone and fax: 925-947-1473
- c. Nonprofit public benefit corporation  
The East Bay Regional Park District is the fiscal agent for the DSC.
- d. Tax identification number: 23-7011877
- e. Participants are:

#### PROJECT OVERSIGHT

Stephen Barbata  
Executive Director  
The Delta Science Center  
86 Orchard Estate Drive  
Walnut Creek, CA 94598

#### TECHNICAL PARTNERS

Gregory A. Thomas: Technical Management and Planning  
Natural Heritage Institute  
114 Sansome Street, Suite 1200  
San Francisco, Ca 94702

Phillip Williams: Physical Restoration and Research Specialist  
Phillip Williams and Associates  
770 Tamalpais, Suite 401  
Corte Madera, Ca 94925

William S. Wells: Education Specialist  
William S. Wells Design  
506 Redhill Avenue  
San Anselmo, CA 94960

Charles Hanson, Ph.D.: Biological Restoration and Research Specialist  
Hanson Environmental Inc.  
132 Cottage Lane  
Walnut Creek, CA 94598

## Big Break Restoration, Education, and Research Plan

### I. Project Description

#### A. Project Description and Approach

##### Project Goal

The goal of the project is to: 1) restore tidal marsh, riparian habitat, and shallow water habitat on the south side of Big Break; 2) answer basic research questions about the physical and biological affects of restoring shallow water habitats; and 3) utilize the site to educate the public about the importance of restoring the Bay Delta ecosystem.

This proposal is for funding to complete Phase I of a long term restoration, education, and research program at Big Break. Phase I entails the development of a master plan for approximately 2,000 acres along the southern shore of Big Break. Phase II encompasses acquisition and design, and Phase III focuses on construction implementation and monitoring.

##### Background

The Delta Science Center (DSC) site at the mouth of Marsh Creek on the southern edge of Big Break represents the single best tidal marsh habitat restoration opportunity in the entire Delta (Figure 1). At this one site, it is possible to restore at least six to eight hundred acres of tidal marsh and sloughs, shallow water, floodplain riparian forest, and seasonal wetlands adjacent to a large protected marsh and shallow water area, Big Break. Its location in the western Delta separates it from other tidal marsh restoration projects sponsored by CALFED. Restoration at this site would create an essential buffer between existing native fish habitat at Big Break and the rapidly urbanizing area of Oakley in east Contra Costa County. Failure to restore this site could lead to the construction of subdivisions immediately adjacent to high quality existing tidal marsh and shallow water habitats in Big Break.

The location and physical attributes of the site offer unprecedented opportunities for educating the public about the Bay/Delta estuary and efforts to restore it. The site is actually at the Delta of Marsh Creek, a delta within the Delta, creating the potential to restore nearly the full range of native Delta habitats from shallow water habitat to cottonwood riparian habitat, agricultural wetlands, and potentially even inland dune scrub habitat. Furthermore the Contra Costa Canal and pumping plant are adjacent to the site, highlighting the importance of the Delta as a water supply resource. This delta microcosm presents a unique opportunity for showcasing the importance of the Bay-Delta and CALFED's efforts to restore it.

The location of the site at the interface of the urban Bay Area and the western Delta offers unparalleled access to the "natural Delta." The site is at the intersection of the major state highways that traverse the Delta, highways 4 and 12, and is dissected by the East Bay Regional Park District's regional bicycle and foot trail. The trail currently extends from Brentwood to Big Break along Marsh Creek and will ultimately connect Mt. Diablo State Park and the Bay Shore trail. The trail will allow the public to actually witness restoration as it unfolds. The new Pittsburgh BART station is less than 10 miles away and rail tracks used by Amtrack traverse the site.

The physical aspects of the site also provide unique opportunities for research on the physical and biological affects of shallow water habitat restoration. The physical diversity of the site facilitates research regarding the rate of marsh vegetation growth and soil accretion under multiple physical

conditions. The proximity of the site in the western Delta and at the terminus of Marsh creek creates a unique opportunity for studying the biological effects of tidal marsh restoration in this part of the Delta. Research efforts will be targeted at answering specific restoration design questions that can then be used in succeeding restoration projects within the Delta. Physical research issues would include: the role of wind wave action in limiting sedimentation and expansion of tule marsh; maximum water depths for colonization of emergent vegetation, rate of development of tidal channels within a restored marshplain, sustainability of restored distributary channels, and optimal sediment substrata for riparian trees. Biological research will focus on species utilization of shallow water habitat.

#### Phasing and Proposed Work

The DSC has divided the project into three phases: 1) master plan development; 2) acquisition, design, and permitting; and 3) implementation, construction, and monitoring.

This proposal seeks funds for Phase I to identify the opportunities and constraints for an integrated restoration, education, and research master plan for approximately 2,000 acres along the southern edge of Big Break. The south shore of Big Break encompasses several parcels and, accordingly, several opportunities for access, education, research, and restoration. The DSC would like to be in a position to immediately act on one of these opportunities, but we believe that this would be both premature and imprudent without first evaluating the larger range of opportunities and constraints for developing the optimum restoration, education, and research program at Big Break. The master planning process will entail sorting through these various opportunities to develop an optimal combination and siting of restoration, education, and research programs. We will complete the master planning process within 6 months of signing a contract and then will re-apply to CALFED or other parties for acquisition and implementation funding.

A master plan evaluating the full range of opportunities and constraints is necessary because significant natural and fiscal resources are at stake. The DSC wants to make sure that tidal and riparian marsh restoration is absolutely feasible before soliciting millions to purchase a parcel.<sup>1</sup> Furthermore, we want to make sure that siting the Delta Science Center facility does not compromise or preclude future restoration opportunities. The various parcels and opportunities are described below.

Cypress Corridor: The Cypress Corridor consists of approximately 1600 acres bordered by Cypress Road to the South, Marsh Creek to the West, Jersey Island Road to the East, and Big Break and Dutch Slough to the North. The land lies outside the Delta Primary Zone, within the LAFCO boundaries, and in the CCWD service area, making it potentially eligible for a major subdivision (Figure 5). It is owned by three large, agricultural landowners who are jointly considering developing it as a residential subdivision modeled on Discovery Bay. The elevation of the parcels range from approximately -5 to 5 NGVD. A number of experts who have visited the site agree that the area could be feasibly restored tidal marsh with minimal effort and no foreseeable third party impacts.

Stan Emerson, the owner of the parcel between Marsh Creek and Emerson Slough, is a member of the Delta Science Center Board of Directors. He is aware of this proposal and has verbally expressed his willingness to discuss acquisition and restoration opportunities as the project evolves (Figure 2).

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<sup>1</sup> Numerous experts who have visited the site during the last few months agree that restoration of tidal and riparian marsh appears to be optimal. No physical constraints or third party impacts have been identified.

- Ironhouse Sanitary District: The Ironhouse Sanitary District encompasses approximately 500 acres west of Marsh Creek. The land is leased to the Ironhouse Sanitary District by the State Lands Commission and is used for spreading secondary treated water from the nearby community of Oakley. The Ironhouse Sanitary District is represented on the Delta Science Center Board of Directors and has optioned the Delta Science Center a 99-year lease on 15 acres along Marsh Creek (Figure 1), but the Science Center is now uncertain about whether constructing a building and accompanying facilities would be the best use of the site. A number of expert biologists, hydrologists, and geomorphologists who have visited the site over the last several months have confirmed the unique opportunities for restoring tidal marsh and riparian forest on and around the site. Constructing a center and accompanying infrastructure on the site could actually preclude restoration.

Approximately 200 acres of the sanitation district lands on the mainland are utilized for sewage treatment ponds and facilities, and the remaining 300 acres are used for spreading treated water. These 300 acres could be managed to create much higher value seasonal or agricultural wetland habitat. Elevations on this 300-acre portion range from approximately 1-5 feet NGVD making it physically suitable for tidal marsh restoration.<sup>2</sup> The sanitation district plans to expand (or move) their operations to Jersey Island where they own the entire 3,200 acres. They have already constructed a large pipeline to Jersey Island and have received a test permit from the regional water quality control board.

- Marsh Creek: Marsh Creek flows between Emerson Dairy and the Ironhouse Sanitary District (Figure 2). Currently, the creek is confined to an unvegetated, trapezoidal flood control channel. Numerous experts who visited the site agreed that floodplain and riparian corridor along Marsh Creek could be restored by removing the levees and letting natural processes take over. Agreements would have to be secured with the Ironhouse Sanitary District and Emerson Dairy before creek restoration could take place. Restoring Marsh Creek and adjacent lands could create a unique mosaic of seasonal and tidal marsh dissected by a creek and cottonwood/willow riparian corridor.
- EBRPD's Big Break: The EBRPD currently owns the eastern half of Big Break and is in the process of acquiring the western half (Figure 2). These lands include the tidal marsh fringe along the southern shore. EBRPD has constructed a trail along the shore between Big Break and Brentwood along Marsh Creek and plans to extend it to Mt. Diablo State Park and the Bay Shore trail. The EBRPD is represented on the board of The Delta Science Center is very supportive of this proposal.
- Big Break Marina: The Big Break Marina is situated on approximately 350 acres of relatively open land owned by DuPont and has been for sale, off and on, for a few years. The Marina is a potentially promising Science Center site because it has pre-existing facilities and boat access. Little Big Break, owned by DuPont, could serve as an excellent laboratory for field and educational programs. The surrounding shoreline could be restored or enhanced to seasonal or tidal marsh.

Although the south shore of Big Break offers unprecedented opportunities for restoration, education, and research, integrating these three programs will be a challenge. Constructing an education facility with boat access in the middle of a restored tidal marsh could compromise the quality of the restored marsh. On the other hand, prohibiting human access and education programs in the restored marsh

<sup>2</sup> According to NOAA tide measurements at Jersey Island, mean higher high water on Jersey Island is 3 feet NGVD and highest observed water during year of measurement was 5 feet.

would squander one of the best opportunities to educate the public about restoration and the value of the Bay-Delta ecosystem. A research program can best inform the education component of the project if the research component is integrated into the project from the very beginning. Integrating the research and restoration component prior to the design phase of the project will allow us to specifically design the restoration project to help answer key research questions such as the value of shallow water habitats. A combined restoration project and field experiment will create a unique opportunity for educating the public about the scientific method and its invaluable role in ecosystem restoration and management.

The DSC needs CALFED funds to help evaluate how to optimize the opportunities described above. We will produce a final document that: 1) analyzes specific opportunities and constraints for restoring tidal marsh and other target habitats along Big Break, 2) identifies and ranks various alternatives for combining education facilities and restoration areas, and 3) lays out a prioritized plan of action for project implementation.

## **B. Proposed Scope of Work**

### Phase I: Develop a Master Plan

1. Inventory and analyze alternatives for habitat restoration and education along the southern shore of Big Break from the Antioch Bridge to Jersey Island Road.
2. Identify opportunities and constraints to restore tidal marsh and other native habitats on the Cypress Corridor, Ironhouse Sanitary District lands, EBRPD lands, and DuPont Big Break Marina lands.
3. Identify opportunities and constraints for siting educational and research facilities in conjunction with restored areas on Cypress Corridor lands, Ironhouse Sanitary District lands, and Big Break Marina.
4. In coordination with the IEP and CMARP, initiate an adaptive management research program at Big Break to answer critical physical and biological questions regarding restoration of shallow water habitat. Develop a baseline monitoring plan and a draft study plan, including the identification of specific hypotheses to be tested. Coordinate with Interagency Ecological Program to integrate science center research into larger agency research effort.

Phase II: Acquisition, Design, and Permitting

Phase III: Implementation, Construction, and Monitoring

## **C. Location and/or Geographic Boundaries of the Project**

The geographic boundaries of the project are Antioch Bridge on the west, Jersey Island Road on the east, Big Break and Dutch Slough on the north, and the Contra Costa Canal and Southern Pacific Railroad Tracts on the South (Figure 1).

## **D. Expected Benefits**

The project will restore 300 – 1,000 acres of freshwater tidal marsh. This will reduce stressors associated with past marshplain changes identified in the PSP as the highest priority stressors for all primary species except Green Sturgeon.

The project will also restore 50-75 acres of floodplain riparian habitat. This will reduce stressors associated with channel form and floodplain changes - also identified in the PSP as the highest priority stressors for several primary species, including all runs of salmon, delta smelt, steelhead, and splittail. The project will also create thousands of feet of shaded riverine aquatic habitat along Marsh Creek Emerson Slough, and Dutch Slough.

The project will create of 200-300 acres of seasonal wetland and aquatic habitats associated with the future flooding of Marsh Creek and the management of the Ironhouse Sanitary District lands. This will benefit several species of migratory birds, including Swainsons' Hawk, California Black Rail, Virginia Rail, and Greater Sandhill Crane.

The project will create an important buffer between Big Break and the rapidly urbanizing area of Oakley (Figure 6). This will prevent future degradation of water quality, a medium priority stressor associated with several priority species.

#### **E. Background and Ecological/Biological/Technical Justification**

The site is on developable land between the rapidly urbanizing area of Oakley and the high value shallow water habitat in Big Break. Surface elevations on the site range from a couple of feet below sea level to ten feet above sea level, but most of the site is between sea level and five feet NGVD rendering it optimal for intertidal marsh restoration. Without the project much of the site could be developed into subdivisions (Figure 5). Urban development of the site would jeopardize the existing shallow water and tidal marsh habitat in Big Break. Drainage from a new sub-division would degrade water quality, and uncontrolled human and domestic animal intrusion onto Big Break would degrade conditions for terrestrial species.

The remarkable topographic and hydrologic diversity of the site provides an opportunity to advance an exceptionally broad range of CALFED objectives within the planning area (Figure 4a). The project will advance the following CALFED habitat and process objectives listed below:

- Restoration of Natural Floodplain and Flood Processes (ERPP pg. 40) associated with lower Marsh Creek;
- Restoration or enhancement of Bay-Delta Aquatic Foodweb (ERPP pg. 55) due to increased primary production and feeding in restored tidal perennial aquatic habitat;
- Restoration of Tidal Perennial Aquatic Habitat (ERPP pg. 80) associated with tidal marsh and shallow water habitat restoration;
- Enhancement of Nontidal Perennial Aquatic Habitat (ERPP 83) associated with Ironhouse Sanitary District Ponds;
- Restoration and enhancement of Delta Sloughs (ERPP 86) associated with Emerson Slough and Dutch Slough;
- Restoration of Seasonal Wetlands (ERPP pg.102) on perimeter of restored tidal marsh habitat;
- Restoration of Riparian and Riverine Aquatic Habitats (pg. 106) along Marsh Creek and on breached levees along Emerson Slough and Dutch slough;
- Potential restoration of Inland Dune Scrub Habitat (pg. 113) on relict dune features in the Cypress Corridor;

- Potential restoration of perennial Grassland (ERPP pg. 116) associated with uplands bordering marsh restoration sites;
- Potential enhancement of Fresh Emergent Wetland (ERPP pg. 98) associated with existing sanitary district ponds.

Progress toward these habitat and natural process objectives will benefit a number of CALFED species objectives. In addition to the numerous priority fish species identified in the previous benefits section, the project will benefit western pond turtle (ERPP, pg 227), California black rail (ERPP pg 236), and the legless lizard - which are already present on the site - and potentially giant garter snake. Depending on project design, the project could also benefit greater sandhill crane, shorebird and wading bird guilds, waterfowl, and Swainsons' Hawk, all of which currently use the sight.

The project will advance the objective of the AFRP by restoring tidal marsh and other estuarine habitats that have been identified, at least in other estuaries, as important rearing areas for juvenile anadromous fish.

#### **F. Monitoring and Data Evaluation**

The implementation phase of this restoration project will be specifically designed to help answer basic research questions about the value of shallow water habitats and the efficacy of methods to restore shallow water habitat. During this phase of the project, PWA and Hanson Environmental will develop a baseline monitoring plan as well as a draft study plan, including the identification of specific hypotheses to be tested.

During Phase II of the project, Hanson Environmental and PWA will implement the baseline monitoring program, design hypothesis based studies, and develop a monitoring plan to evaluate project performance.

#### **G. Implementability**

This proposal is for funds to develop a plan and will therefore not require NEPA or CEQA analysis.

This project is organized and supported by local interests. It will be managed by the Delta Science Center, a non-profit 501C-3 organization. Numerous local groups, interests, and institutions are represented on the Board of the Delta Science Center, including: Emerson Dairy, Contra Costa County, the East Bay Regional Park District, Contra Costa Water District, Contra Costa Community College District, Cal State Hayward, Pacific Gas and Electric, the Sierra Club, and Audubon Society. Other local interests, including Brentwood City Officials, enthusiastically support the project. If funded, the project applicants will actively seek out other members of the community for participation and input on the project.

The Delta Science Center currently works with many local schools and intends to actively integrate local teachers and students into a related proposal, the Marsh Creek Watershed Stewardship Program. Local teachers will receive special training on data collection and evaluation from experts at EBRPD, SFEI, and NHI.

#### IV. Cost and Schedule to Implement Proposed Project

##### A. Budget Costs

This proposal is for Phase I funding only. A detailed accounting of Phase I tasks and costs is attached in Table IV-1. A summary and rough cost estimate for subsequent phases is outlined below.

Phase I: Restoration, Education, Research Master Plan	\$263,231
Phase II: Land Acquisition, Design and Permitting	\$10 - \$25 million
Phase II: Implementation, Construction and Monitoring	\$10 - \$15 million
<b>Total</b>	<b>\$20 - \$40 million</b>

The EBRPD has offered to prepare a GIS base map and land use map for this project. The estimated value of this in kind service is approximately \$2,500.

The DSC needs CALFED funds to help evaluate how to optimize the opportunities described above. We will produce a final document that: 1) analyzes specific opportunities and constraints for restoring tidal marsh and other target habitats along Big Break, 2) identifies and ranks various alternatives for combining education facilities and restoration areas, and 3) lays out a prioritized plan of action for project implementation. Without CALFED funding, the enormous opportunities of this site could be permanently lost to urban development that is rapidly expanding in east Contra Costa County.

The DSC is aggressively seeking funding for all phases of this project and expects that a large portion of the final project will be funded by private and non-CALFED funders.

##### B. Schedule Milestones

Task Description	Schedule
<i>Phase I</i>	
1. Compile and Review Existing Information on Big Break	10/01 - 10/30 1998
2. Refine Goals and Objectives	11/01 - 11/15 1998
3. Opportunities and Constraints Analysis	11/15 - 12/30 1998
4. Develop Master Plan for South Shore of Big Break	01/10 - 01/30 1998
<i>Phase II</i>	
1. Acquisition, Design, and Permitting	1999 - 2001
<i>Phase III</i>	
1. Restoration Implementation	2001 - 2003
2. Science Center Construction	2001 - 2003
3. Monitoring	Long term

##### C. Third Party Impacts

Unlike many other potential tidal marsh restoration projects, this effort involves virtually no adverse third party impacts or expensive engineering problems. Most of the site is operated as a dairy by

farmers who plan to sell to a developer or other parties in the near future. The remaining land is owned by the Ironhouse Sanitary District.

## V. Applicant Qualifications

Although relatively new, the *Delta Science Center* has a well-established reputation in East Contra Costa County. Multiple regional organizations and agencies are represented on the Board, and DSC has developed a strong program working with local schools. *Stephen Barbata* serves as the Executive Director. Mr. Barbata would serve as fiscal agent and project director for this project. He brings twenty-five years of experience in the design, building and funding of educational institutions. In his roles as Project Manager/Director and Executive Director, he successfully developed the Coyote Point Museum for Environmental Education in San Mateo; *Communities and Ecosystems*, the permanent natural sciences galleries of the Oakland Museum; *Wild California*, a major renovation of the North American Hall at the California Academy of Sciences; and, most recently, the Lindsay Museum in Walnut Creek, where he was also responsible for the successful completion of its \$8 million capital campaign.

*Greg Thomas* is a specialist in natural resources law and management institutions and the CEO of the *Natural Heritage Institute*, a non-profit environmental law and technical consulting firm. Mr. Thomas has extensive experience in managing multi-disciplinary teams. The *NHI* will serve as a special consultant to DSC and provide project management and planning services. He will be assisted in the day to day management of the project by *David Fullerton*, *John Cain*, and *Mark Wolfe*. Mr. Fullerton has two graduate degrees in science and many years of experience working toward sound management and restoration of water resources. Mr. Cain has a graduate degree in environmental planning from UC Berkeley and has over eight years of research and management experience in the realm of aquatic habitat restoration. Mark Wolfe holds graduate degrees in law and city and regional planning, and will assist in the planning components of the project.

*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.

*Hanson Environmental, Inc.* has provided environmental consulting services, specializing in fishery issues, to industrial, governmental, and municipal clients since 1991. The firm provides services encompassing a range of specialized senior-level consulting applications involving emphasis in environmental regulatory compliance, resource management, and expert witness testimony. The firm also provides field sample collection and analysis related to fisheries and water quality issues. The organization and operations of Hanson Environmental, Inc. are based on a management philosophy

which emphasizes a high professional standard of performance, excellent long-term client relationships, and consistent delivery on technical, schedule, and budget commitments.

Hanson Environmental consultants are primarily applied scientists with an emphasis in aquatic (fishery) biology and quantitative science. Our areas of expertise are: *Dr. Charles Hanson* has served on the USFWS Native Fish Recovery Team and contributed directly to a number of fishery protection and enhancement programs involving USFWS, NMFS, USEPA, USBR, CDFandG, and other agencies.

*Bill Wells of William S. Wells* has over 20 years' experience in the planning and design of educational institutions, with educational degrees in journalism and environmental design. Planning clients include the California Historical Society, the National Maritime Museum, Rancho los Alamitos and the Telluride Historical Society. Design projects include the Coyote Point Museum for Environmental Education, the Alexander Lindsay Museum, the Oakland Museum halls of California History and Natural Science, the Humphrey Forum in Minneapolis, the Nicollet County Historical Society in Saint Peter, Minn. And the Hayden Planetarium in New York.

The DSC also plans to contract with *Ron Lutsko, jr.* and *Montgomery Watson*. Ron Lutsko is a widely acclaimed and honored landscape designer respected for his knowledge of California botany and horticulture. He will assist with the schematic access design and advise on restoration of native plant communities. Montgomery Watson is the wastewater treatment firm of record for the Ironhouse Sanitary District and will advise on the use of reclaimed water in habitat restoration.

#### **VI. Compliance with standard terms and conditions**

The terms and conditions are agreeable to the applicant. Required forms are attached.

**Table IV-1, Cost Breakdown for Phase 1, Category 3 - Big Break Restoration Project**  
**Project Totals Summary Sheet 1**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General Administration and Fee), \$	Labor Subtotal by Task, dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost \$
<b>Phase 1: Draft Master Plan</b>								
<b>Gather and Review Existing Information</b>								
a. Physical conditions information and data	116	4006	5482	9497	0	0	500	9997
b. Present and past land use information	30	1440	360	1800	0	0	0	1800
c. Educational content spectrum, audience, and programs	140	6600	1400	7000	1000	0	250	8250
d. review physical and biological research needs (coordinate w/EP, CMARP)	40	2313	1975	2360	0	0	0	2360
<b>Refine goals and objectives</b>								
a. Physical restoration objectives	100	4365	3660	8245	0	0	100	8345
b. Biological restoration objectives	40	1921	480	2400	0	0	0	2400
c. Education objectives	160	10003	1680	8400	1000	0	250	9650
d. Research objectives	40	1920	480	2400	0	0	0	2400
i. Physical	60	2465	3380	5845	0	0	0	5845
ii. Biological	120	4500	2580	7080	0	0	0	7080
<b>Opportunities and Constraints Analysis and Report</b>								
a. Physical restoration analysis	252	8155	11181	19336	25000	0	5000	49336
i. Topography, bathymetry, and future water surface elevations	0	0	0	0	0	0	0	0
ii. Hydrology, flood control, sediment transport.	0	0	0	0	0	0	0	0
iii. Wind and wave erosion	0	0	0	0	0	0	0	0
Educational program and infrastructure analysis: audience evaluation; human and financial resource evaluation; potential educational sites and public access; analysis of potential third party impacts; content priorities; potential interpretive methods, media, and programs	260	10400	2600	13000	6500	0	500	20000
c. Identify research opportunities	40	2313	1975	4288	0	0	0	4288
d. Characterization of third party impacts and evaluation of potential mitigation actions	20	960	240	1200	0	0	0	1200
e. Habitat uses for reclaimed water	0	0	0	0	10000	0	0	10000
f. (GIS) spatial analysis and mapping	40	1920	480	2400	1000	0	0	3400
g. Real-estate appraisals								0
<b>f. Develop a Draft Master Plan for South Shore of Big Break</b>								
a. Identify and rank potential restoration sites	100	2733	1695	4329	0	0	200	4529
b. Identify and rank potential sites for education facilities.	40	1600	400	2000	0	0	2500	4500
c. develop access and infrastructure schematics	40	1600	400	2000	15000	0	2500	19500
d. Identify core educational content areas, media, and programs.	130	5200	1300	6500	0	0	2500	9000
e. Develop an implementation plan	80	3693	1835	5529	0	0	0	5529
f. Describe monitoring research program	225	11920	4820	16840	0	0	2500	19340
g. Write a technical report describing master plan and supporting data.	140	16400	20257	36657	0	0	0	36657
h. Write a popular report to educate the public and solicit funding from private and public sources.	165	9640	2785	9425	0	0	0	9425
i. Project Team coordination	140	6720	1680	8400	0	0	0	8400
<b>Total Costs - With No Cost Sharing</b>	<b>2516</b>	<b>\$121,808</b>	<b>\$73,336</b>	<b>\$186,931</b>				<b>\$263,231</b>
<b>Total Costs - With Cost Sharing</b>								

**Table IV-1, Cost Breakdown for Phase 1, Category 3 - Big Break Restoration Project  
William S. Wells Design Summary Sheet 1**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General Administration & Fee), \$	Labor Subtotal by Task, dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost \$
<b>Phase 1: Draft Master Plan</b>								
<b>1. Gather and Review Existing Information data</b>								
b. Present and past land use information								
c. Educational content spectrum, audience, and programs	140	\$5,600	\$1,400	\$7,000	\$1,000		\$250	\$8,250
d. Review physical and biological research needs								
<b>2. Refine goals and objectives</b>								
a. Physical restoration objectives								
b. Biological restoration objectives								
c. Education objectives	120	\$4,800	\$1,200	\$6,000	\$1,000		\$250	\$7,250
d. Research objectives								
i. Physical								
ii. Biological								
<b>3. Opportunities and Constraints Analysis and Report</b>								
a. Physical restoration analysis								
i. Topography, bathymetry, and future water surface elevations								
ii. Hydrology, flood control, sediment transport.								
iii. Wind and wave erosion								
b. Educational program and infrastructure analysis: audience evaluation; human and financial resource evaluation; potential educational sites and public access; analysis of potential third party impacts; content priorities; potential interpretive methods, media, and programs	260	\$10,400	\$2,600	\$13,000	\$6,500		\$500	\$20,000
c. Identify research opportunities								
d. Characterization of third party impacts and evaluation of potential mitigation actions								
e. Integrate results into final report								
f. Habitat uses for reclaimed water								
<b>4. Develop a Draft Master Plan for South Shore of Big Break</b>								
a. Identify and rank potential restoration sites								
b. Identify and rank potential sites for education facilities.								
c. Develop access and infrastructure schematics								
d. Identify core educational content areas, media, and programs.								
e. Develop an implementation plan								
f. Describe research program	130	\$5,200	\$1,300	\$6,500			\$2,500	\$9,000
g. Write a technical report describing master plan and supporting data.								
h. Write a popular report to educate the public and solicit funding from private and public sources.								
<b>Total</b>	<b>650</b>	<b>\$26,000</b>	<b>\$6,500</b>	<b>\$32,500</b>	<b>\$8,500</b>	<b>\$0</b>	<b>\$3,500</b>	<b>\$44,500</b>

**Table IV-1, Cost Breakdown for Phase 1, Category 3 - Big Break Restoration Project  
Hanson Environmental Summary Sheet 2**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General Administration and Fee), \$	Labor Subtotal by Task, dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost \$
<b>Phase 1: Draft Master Plan</b>								
<b>1. Gather and Review Existing Information</b>								\$0
a. Physical conditions information and data								\$0
b. Present and past land use information								\$0
c. Educational content spectrum, audience, and programs								\$0
d. review physical and biological research needs (coordinate w/IEP, GMARP)	20	\$1,500	\$860	\$2,360				\$2,360
<b>2. Refine goals and objectives</b>								\$0
a. Physical restoration objectives								\$0
b. Biological restoration objectives								\$0
c. Education objectives								\$0
d. Research objectives								\$0
i. Physical								\$0
ii. Biological	60	\$4,500	\$2,580	\$7,080				\$7,080
<b>3. Opportunities and Constraints Analysis and Report</b>								\$0
a. Physical restoration analysis								\$0
i. Topography, bathymetry, and future water surface elevations								\$0
ii. Hydrology, flood control, sediment transport.								\$0
iii. Wind and wave erosion								\$0
b. Educational program and infrastructure analysis: audience evaluation; human and financial resource evaluation; potential educational sites and public access; analysis of potential third party impacts; content priorities; potential interpretive methods, media, and programs								\$0
c. Identify research opportunities	20	\$1,500	\$860	\$2,360				\$2,360
d. Characterization of third party impacts and evaluation of potential mitigation actions								\$0
e. Habitat uses for reclaimed water								\$0
f. (GIS) spatial analysis and mapping								\$0
g. Real-estate appraisals								\$0
<b>4. Develop a Draft Master Plan for South Shore of Big Break</b>								\$0
a. Identify and rank potential restoration sites								\$0
b. Identify and rank potential sites for education facilities.								\$0
c. develop access and infrastructure schematics								\$0
d. Identify core educational content areas, media, and programs.								\$0
e. Develop an implementation plan								\$0
f. Describe monitoring research program	30	\$8,000	\$3,440	\$9,440				\$9,440
g. (GIS) spatial analysis and mapping								\$0
h. Write a technical report describing master plan and supporting data.								\$0
i. Write a popular report to educate the public and solicit funding from private and public sources.								\$0
<b>5. Project Team coordination</b>								\$0
<b>Total Costs - With No Cost Sharing</b>	<b>180</b>	<b>\$13,500</b>	<b>\$7,740</b>	<b>\$21,240</b>				<b>\$21,240</b>
<b>Total Costs - With Cost Sharing</b>								

**Table IV-1, Cost Breakdown for Phase 1, Category 3 - Big Break Restoration Project**  
**PWA Summary Sheet 3**

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General Administration and Fee), \$	Labor Subtotal by Task, dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost \$
<b>Phase 1: Draft Master Plan</b>								
<b>1. Gather and Review Existing Information</b>								
a. Physical conditions information and data	116	\$4,005	\$5,492	\$9,497			\$500	\$9,997
b. Present and past land use information								
c. Educational content spectrum, audience, and programs								
d. review physical and biological research needs (coordinate w/IEP, GMARIP)	20	\$813.45	\$1,115					
<b>2. Refine goals and objectives</b>								
a. Physical restoration objectives	60	\$2,485	\$3,380	\$5,845			\$100	\$5,945
b. Biological restoration objectives		0.7292899						
c. Education objectives		\$3,283						
<b>d. Research objectives</b>								
i. Physical	60	\$2,485	\$3,380	\$5,845				
ii. Biological	60							
<b>3. Opportunities and Constraints Analysis and Report</b>								
<b>a. Physical restoration analysis</b>								
i. Topography, bathymetry, and future water surface elevations	252	\$8,155	\$11,181	\$19,336	\$25,000		\$5,000	\$49,336
ii. Hydrology, flood control, sediment transport.								\$0
iii. Wind and wave erosion								\$0
<b>b. Educational program and infrastructure analysis: audience evaluation; human and financial resource evaluation; potential educational sites and public access; analysis of potential third party impacts; content priorities; potential interpretive methods, media, and programs</b>								
c. Identify research opportunities	20	\$813	\$1,115	\$1,929				\$1,929
d. Characterization of third party impacts and evaluation of potential mitigation actions								\$0
e. Habitat uses for reclaimed water								\$0
f. (GIS) spatial analysis and mapping								\$0
g. Real-estate appraisals								\$0
<b>4. Develop a Draft Master Plan for South Shore of Big Break</b>								
a. Identify and rank potential restoration sites	20	\$813	\$1,115	\$1,929			\$200	\$2,129
b. Identify and rank potential sites for education facilities.								\$0
c. develop access and infrastructure schematics								\$0
d. Identify core educational content areas, media, and programs.								\$0
e. Develop an implementation plan	20	\$813	\$1,115	\$1,929				\$1,929
f. Describe monitoring research program								\$0
g. (GIS) spatial analysis and mapping								\$0
h. Write a technical report describing master plan and supporting data.	110	\$14,960	\$19,897	\$34,857				\$34,857
i. Write a popular report to educate the public and solicit funding from private and public sources.	25	\$3,400	\$1,225	\$4,625				\$4,625
<b>5. Project Team coordination</b>								
<b>Total Costs - With No Cost Sharing</b>	<b>783</b>	<b>\$41,885</b>	<b>\$49,016</b>	<b>\$85,791</b>				<b>\$110,746</b>
<b>Total Costs - With Cost Sharing</b>								

Table IV-1. Cost Breakdown for Phase 1, Category 3 - Big Break Restoration Project  
Delta Science Center Summary Sheet 4

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General Administration and Fee), \$	Labor Subtotal by Task, dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost \$
<b>Phase 1: Draft Master Plan</b>								
1. Gather and Review Existing Information			0	0	0			0
a. Physical conditions information and data			0	0	0			0
b. Present and past land use information			0	0	0			0
c. Educational content spectrum, audience, and programs			0	0	0			0
d. Review physical and biological research needs (coordinate w/IEP, CMARP)			0	0	0			0
2. Refine goals and objectives			0	0	0			0
a. Physical restoration objectives	20	960	240	1200				1200
b. Biological restoration objectives	20	960	240	1200				1200
c. Education objectives	20	960	240	1200				1200
d. Research objectives	20	960	240	1200				1200
i. Physical		0	0	0				0
ii. Biological		0	0	0				0
3. Opportunities and Constraints Analysis and Report			0	0	0			0
a. Physical restoration analysis			0	0	0			0
i. Topography, bathymetry, and future water surface elevations			0	0	0			0
ii. Hydrology, flood control, sediment transport			0	0	0			0
iii. Wind and wave erosion			0	0	0			0
b. Educational program and Infrastructure analysis: audience evaluation; human and financial resource evaluation; potential educational sites and public access; analysis of potential third party impacts; content priorities; potential interpretive methods, media, and programs		0	0	0				0
c. Identify research opportunities		0	0	0				0
d. Characterization of third party impacts and evaluation of potential mitigation actions		0	0	0				0
e. Habitat uses for reclaimed water		0	0	0	\$10,000			\$10,000
f. (GIS) spatial analysis and mapping								
g. Real-estate appraisals		0	0	0				0
4. Develop a Draft Master Plan for South Shore of Big Break		0	0	0				0
a. Identify and rank potential restoration sites		0	0	0				0
b. Identify and rank potential sites for education facilities		0	0	0				0
c. develop access and infrastructure schematics		0	0	0	15,000	0		15000
d. Identify core educational content areas, media, and programs		0	0	0				0
e. Develop an implementation plan		0	0	0				0
f. Describe monitoring research program		0	0	0				0
g. Write a technical report describing master plan and supporting data		0	0	0				0
h. Write a popular report to educate the public and solicit funding from private and public sources		0	0	0				0
5. Project Team coordination	80	2880	720	3600				3600
<b>Total Costs - With No Cost Sharing</b>	<b>140</b>	<b>6720</b>	<b>1680</b>	<b>5400</b>				<b>8400</b>
<b>Total Costs - With Cost Sharing</b>		0	0	0				

Table IV-1, Cost Breakdown for Phase 1, Category 3 - Big Break Restoration Project  
*NHI Summary Sheet 5*

Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor (General Administration and Fee), \$	Labor Subtotal by Task, dollars	Service Contracts, Dollars	Material and Acquisition Contracts, Dollars	Miscellaneous and Other Direct Costs, Dollars	Total Cost, \$
Phase 1: Draft Master Plan		\$0	\$0	\$0				\$0
1. Gather and Review Existing Information		\$0	\$0	\$0				\$0
a. Physical conditions information and data		\$0	\$0	\$0				\$0
b. Present and past land use information	30	\$1,440	\$360	\$1,800				\$1,800
c. Educational content spectrum, audience, and programs		\$0	\$0	\$0				\$0
d. review physical and biological research needs (coordinate with EP, CMARP)		\$0	\$0	\$0				\$0
2. Refine goals and objectives		\$0	\$0	\$0				\$0
a. Physical restoration objectives	20	\$960	\$240	\$1,200				\$1,200
b. Biological restoration objectives	20	\$960	\$240	\$1,200				\$1,200
c. Education objectives	20	\$960	\$240	\$1,200				\$1,200
d. Research objectives	20	\$960	\$240	\$1,200				\$1,200
i. Physical		\$0	\$0	\$0				\$0
ii. Biological		\$0	\$0	\$0				\$0
3. Opportunities and Constraints Analysis and Report		\$0	\$0	\$0				\$0
a. Physical restoration analysis		\$0	\$0	\$0				\$0
i. Topography, bathymetry, and future water surface elevations		\$0	\$0	\$0				\$0
ii. Hydrology, flood control, sediment transport.		\$0	\$0	\$0				\$0
iii. Wind and wave erosion		\$0	\$0	\$0				\$0
b. Educational program and infrastructure analysis: audience evaluation; human and financial resource evaluation; potential educational sites and public access; analysis of potential third party impacts; content priorities; potential interpretive methods, media, and programs		\$0	\$0	\$0				\$0
c. Identify research opportunities		\$0	\$0	\$0				\$0
d. Characterization of third party impacts and evaluation of potential mitigation actions	20	\$960	\$240	\$1,200				\$1,200
e. Habitat uses for reclaimed water		\$0	\$0	\$0				\$0
f. GIS spatial analysis and mapping	40	\$1,920	\$480	\$2,400	\$1,000			\$3,400
g. Real-estate appraisals	20	\$960	\$240	\$1,200	\$10,000			\$11,200
4. Develop a Draft Master Plan for South Shore of Big Break		\$0	\$0	\$0				\$0
a. identify and rank potential restoration sites	40	\$1,920	\$480	\$2,400				\$2,400
b. identify and rank potential sites for education facilities.		\$0	\$0	\$0				\$0
c. develop access and infrastructure schematics		\$0	\$0	\$0				\$0
d. identify core educational content areas, media, and programs.		\$0	\$0	\$0				\$0
e. Develop an implementation plan	60	\$2,880	\$720	\$3,600				\$3,600
f. Describe monitoring research program	15	\$720	\$180	\$900				\$900
g. Write a technical report describing master plan and supporting data.	30	\$1,440	\$360	\$1,800				\$1,800
h. Write a popular report to educate the public and solicit funding from private and public sources.	80	\$3,840	\$960	\$4,800				\$4,800
5. Project Team coordination	80	\$3,840	\$960	\$4,800				\$4,800
<b>Total Costs - With No Cost Sharing</b>	<b>495</b>	<b>\$23,760</b>	<b>\$5,940</b>	<b>\$29,700</b>				<b>\$29,700</b>
<b>Total Costs - With Cost Sharing</b>								

Agreement No. \_\_\_\_\_

Exhibit \_\_\_\_\_

**STANDARD CLAUSES— SERVICE & CONSULTANT SERVICE CONTRACTS FOR \$5,000 & OVER WITH NONPUBLIC ENTITIES**

**Workers' Compensation Clause.** Contractor affirms that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to insure against liability for workers' compensation and to provide self insurance in accordance with the provisions of that Code, and Contractor affirms that it will comply with such provisions before commencing the performance of the work under this contract.

**Claims Dispute Clause.** Any claim that Contractor may have regarding the performance of this agreement including, but not limited to, claims for additional compensation or extension of time, shall be submitted to the Director, Department of Water Resources, within thirty days of its accrual. State and Contractor shall then attempt to negotiate a resolution of such claim and process an amendment to this agreement to implement the terms of any such resolution.

**National Labor Relations Board Clause.** In accordance with Public Contract Code Section 10296, Contractor declares under penalty of perjury that no more than one final, unappealable finding of contempt of court by a federal court has been issued against the contractor within the immediately preceding two-year period because of Contractor's failure to comply with an order of a federal court which orders Contractor to comply with an order of the National Labor Relations Board.

**Nondiscrimination Clause.** During the performance of this contract, the recipient, contractor and its subcontractors shall not deny the contractor's benefits to any person on the basis of religion, color, ethnic group identification, sex, age, physical or mental disability, nor shall they discriminate unlawfully against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical handicap, mental disability, medical condition, marital status, age (over 40), or sex. Contractor shall insure that the valuation and treatment of employees and applicants for employment are free of such discrimination. Contractor shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12900 et seq.), the regulations promulgated thereunder (California Administrative Code, Title 2, Sections 7285.0 et seq.), the provisions of Article 9.5, Chapter 1, Part 1, Division 3, Title 2 of the Government Code (Government Code Sections 11135 - 11139.5), and the regulations or standards adopted by the awarding State agency to implement such article. Contractor or recipient shall permit access by representatives of the Department of Fair Employment and Housing and the Awarding State agency upon reasonable notice at any time during the normal business hours, in no case less than 24 hours notice, to such of its books, records, accounts, other sources of information and its facilities as said Department or Agency shall require to ascertain compliance with this clause. Recipient, contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. The Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the contract.

**Statement of Compliance.** The contractor's signature affixed hereon and dated shall constitute a certification under penalty of perjury under the laws of the State of California that the Contractor has, unless exempted, complied with the nondiscrimination program requirements of Government Code Section 12990 and Title 2, California Code of Regulations, Section 8103.

**Performance Evaluation.** Contractor's performance under this contract will be evaluated after completion. The evaluation will be filed with the Department of General Services.

**Availability of Funds.** Work to be performed under this contract is subject to availability of funds through the State's normal budget process.

**Audit Clause.** The contracting parties shall be subject to the examination and audit of the Auditor General for a period of three years after final payment under the contract. (Government Code Section 10532).

**Reimbursement Clause.** If applicable, travel and per diem expenses to be reimbursed under this contract shall be at the same rates the State provides for unrepresented employees in accordance with the provisions of Title 2, Chapter 3, of the California Code of Regulations. Contractor's designated headquarters for the purpose of computing such expenses shall be: \_\_\_\_\_.

86 Orchard Estates Drive  
Walnut Creek, CA 94598

**Drug-Free Workplace Certification.** By signing this contract, the contractor or grantee hereby certifies under penalty of perjury under the laws of the State of California that the contractor or grantee will comply with the requirements of the Drug-Free Workplace Act of 1990 (Government Code Section 8350 et seq.) and will provide a drug free workplace by taking the following actions:

1. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations, as required by Government Code Section 8355(a).
2. Establish a Drug-Free Awareness Program as required by Government Code Section 8355(b), to inform employees of all of the following:
  - (a) The dangers of drug abuse in the workplace,
  - (b) The person's or organization's policy of maintaining a drug-free workplace,
  - (c) Any available counseling, rehabilitation and employee assistance programs, and
  - (d) Penalties that may be imposed upon employees for drug abuse violations.
3. Provide, as required by Government Code Section 8355(c), that every employee who works on the proposed contract or grant:
  - (a) Will receive a copy of the company's drug-free policy statement, and
  - (b) Will agree to abide by the terms of the company's statement as a condition of employment on the contract or grant.

Failure to comply with these requirements may result in suspension of payments under the contract or termination of the contract or both and the contractor or grantee may be ineligible for award of any future contracts if the department determines that any of the following has occurred: (1) the contractor or grantee has made false certification, or (2) violates the certification by failing to carry out the requirements as noted above.

**Priority Hiring Considerations.** For contracts in excess of \$200,000, the contractor shall give priority consideration in filling vacancies in positions funded by the contract to qualified recipients of aid under Welfare and Institutions Code Section 11200. (Public Contract Code Section 10353).

The Delta Science Center understands and can comply with all standard clauses.

NONDISCRIMINATION COMPLIANCE STATEMENT

ITEM 7

ANY NAME

THE DELTA SCIENCE CENTER At Big Break

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

Stephen Barbata

EXECUTED

June 30, 1998

EXECUTED IN THE COUNTY OF

Contra Costa

PROSPECTIVE CONTRACTOR'S SIGNATURE

*Stephen Barbata*

PROSPECTIVE CONTRACTOR'S TITLE

Executive Director

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

THE DELTA SCIENCE CENTER At Big Break

Agreement No. \_\_\_\_\_

Exhibit \_\_\_\_\_

NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY  
BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS

STATE OF CALIFORNIA )  
 )ss  
COUNTY OF Contra Costa )

STEPHEN BARBATA , being first duly sworn, deposes and  
(name)

says that he or she is EXECUTIVE DIRECTOR of  
(position title)

THE DELTA SCIENCE CENTER AT BIG BREAK ,  
(the bidder)

the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

DATED: June 30, 1998

By Stephen Barbata  
(person signing for bidder)

Subscribed and sworn to before me on  
JUNE 30, 1998  
Deborah J. Reynolds  
(Notary Public)



(Notarial Seal)

**1 LITTLE BIG BREAK**  
Protected lagoon similar to Big Break. Potential site for Delta Science Center programs and restorations

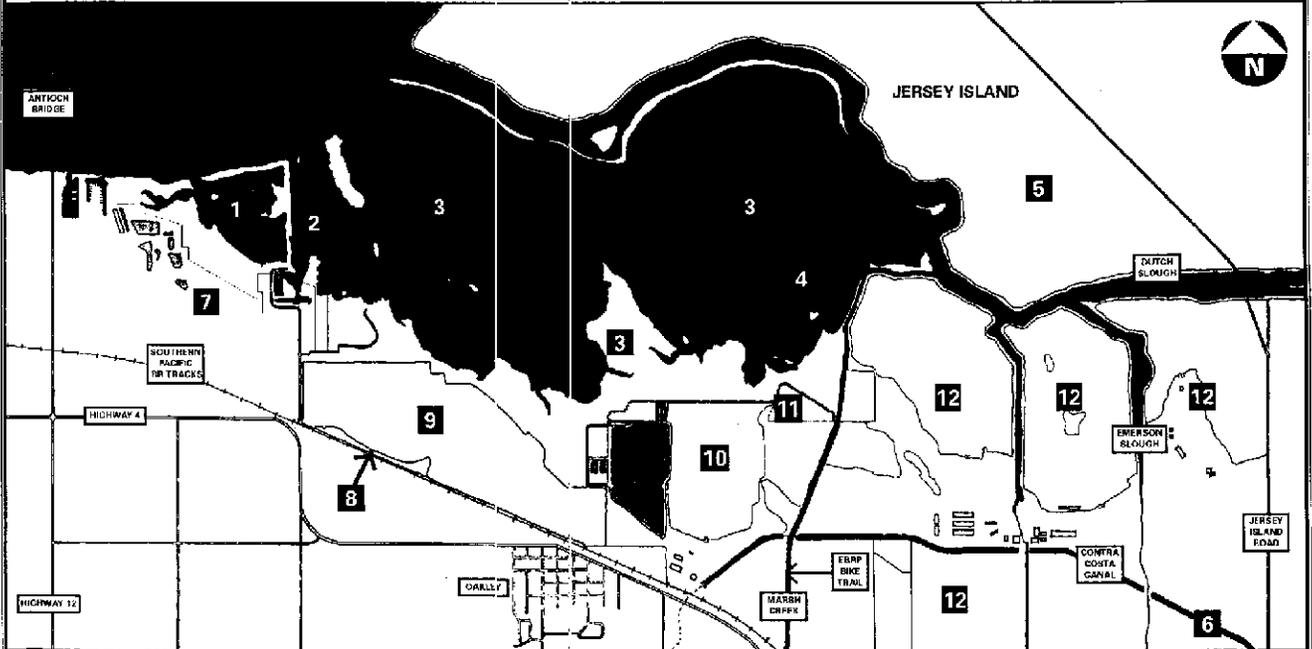
**2 BIG BREAK MARINA**  
Owned by Dupont, deep water access, commercial boat slip rentals, potential site of Delta Science Center open water programs & research

**3 EAST BAY REGIONAL PARKS PROPERTY, OWNED & OPTIONED**  
Protected shallow water habitat and tidal wetlands

**4 MARSH CREEK**  
Drains East Mount Diablo water shed through Morgan Territory to the Western Delta

**5 JERSEY ISLAND**  
Owned by Ironhouse Sanitary District for the disposal of wastewater

**6 CONTRA COSTA CANAL**  
Source of Delta water for 400,000 Contra Costa residents



**7 DUPONT**  
Site of manufacturing plant, tidal marsh, open space and agricultural lands

**8 LEGLESS LIZARD PROTECTED HABITAT**  
Indicative of local restoration possibilities

**9 URBANIZATION**  
Existing subdivisions, businesses and new construction in progress

**10 IRONHOUSE SANITARY DISTRICT**  
Settling ponds, grazing land and seasonal wetlands which attract a diversity of wildlife

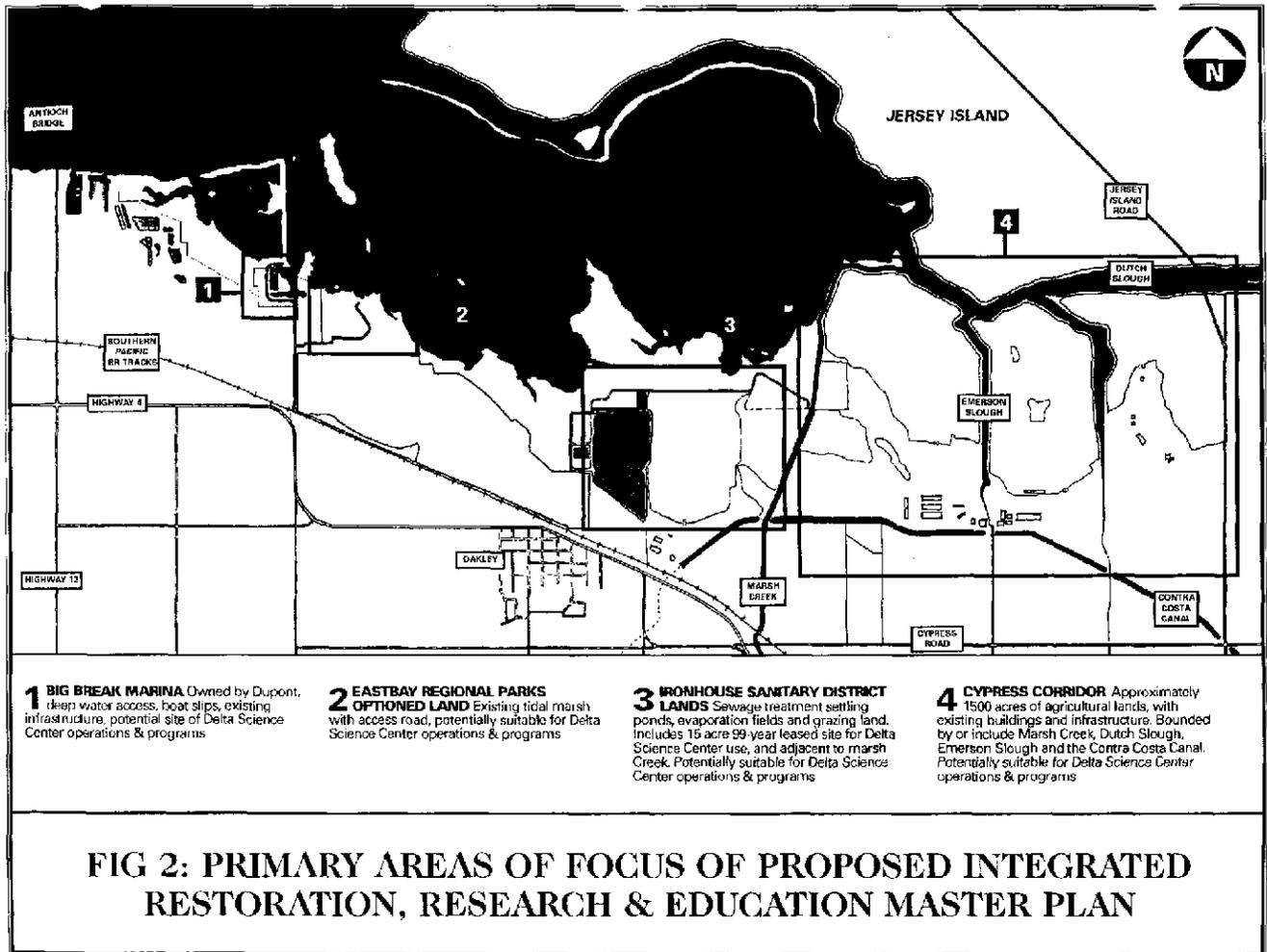
**11 15 ACRE SITE**  
Set aside on 99-year lease for Delta Science Center use

**12 CYPRESS CORRIDOR**  
Approximately 1500 acres scheduled for development by three landowners.

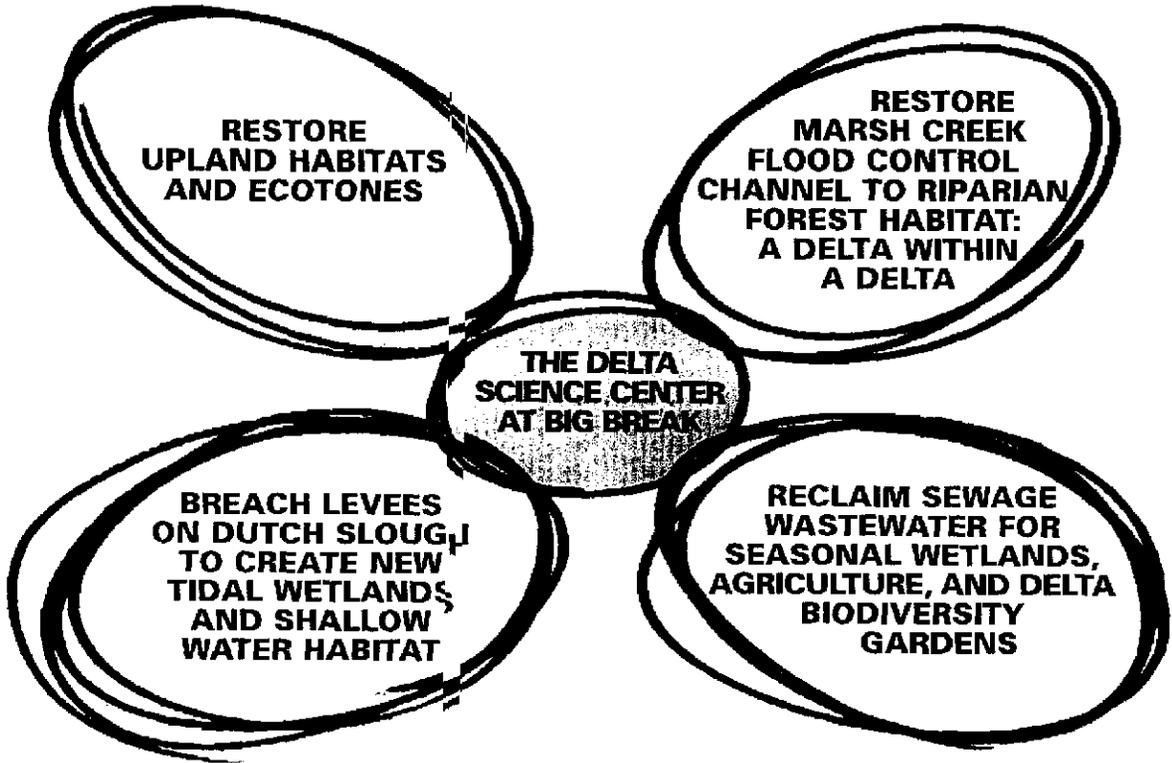
**FIG 1: EXISTING CONDITIONS AT BIG BREAK & VICINITY**

I-010215

I-010215



1-010217



**FIG 3a: RESTORATION POSSIBILITIES FOR BIG BREAK MASTER PLANNING**

1-010217

1-010218

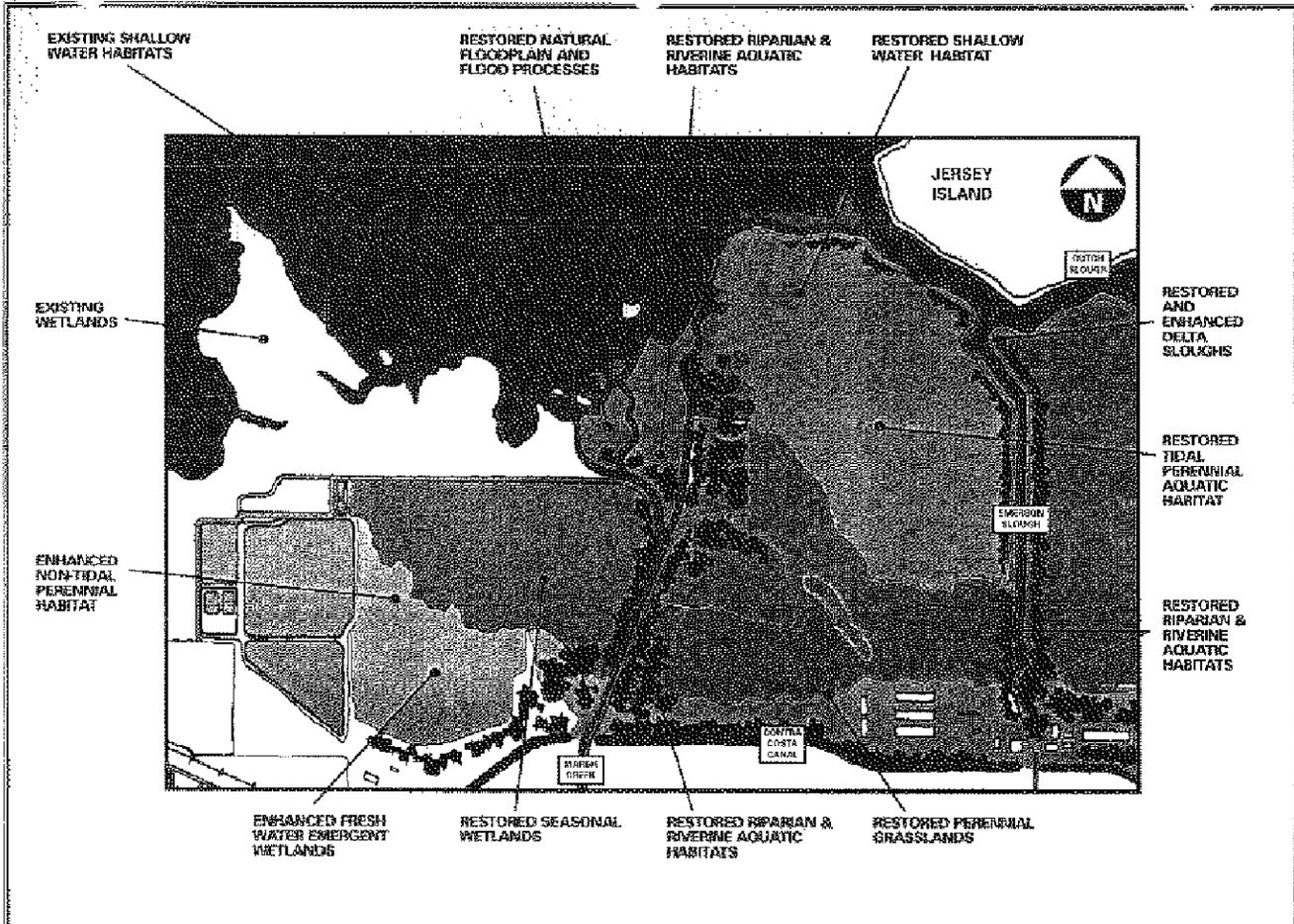
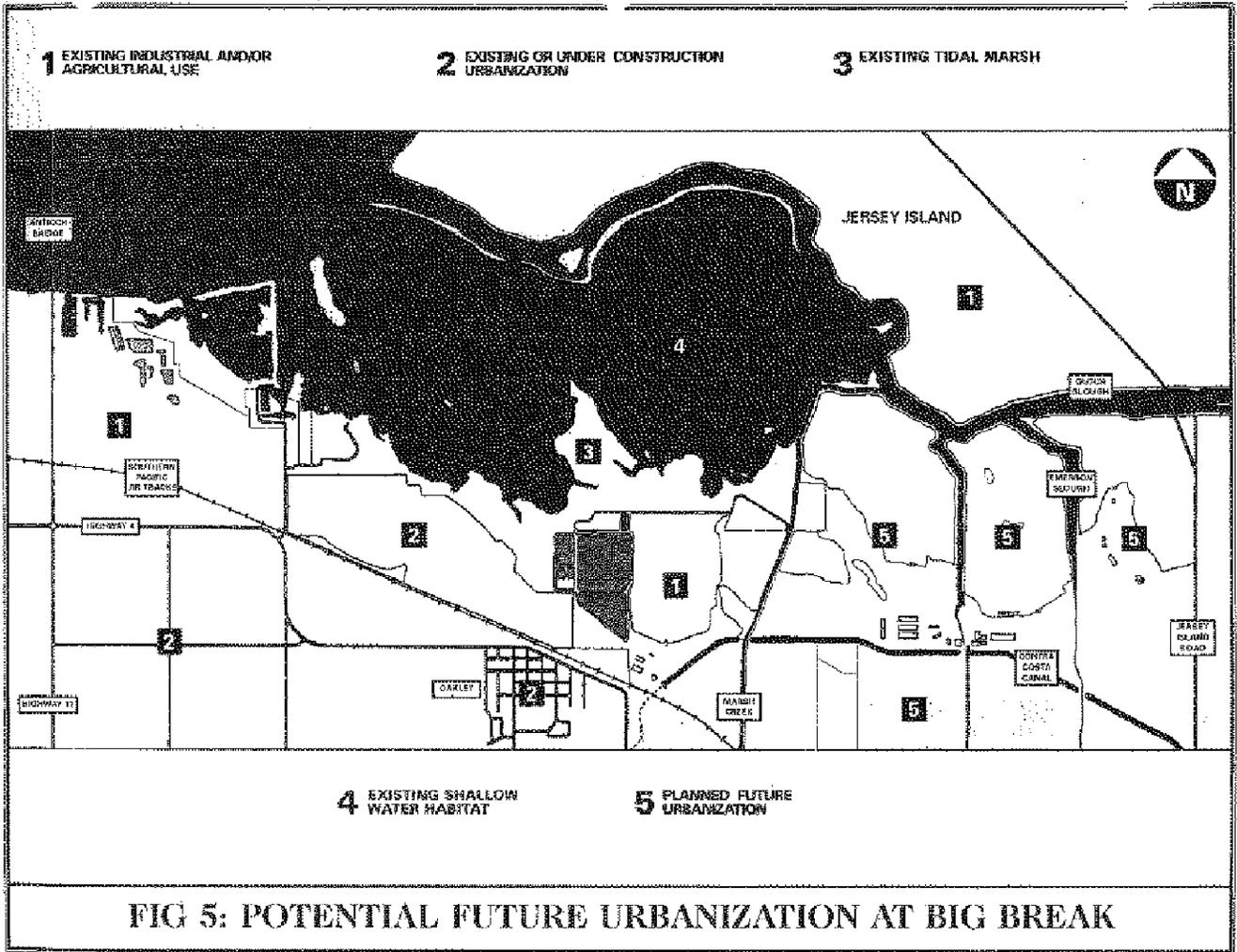


FIG 4a: POTENTIAL BIG BREAK TIDAL MARSH RESTORATION COMPONENTS

1-010218

1-010219



1-010219

