Napa-Sonoma Marsh Restoration Project

Project Information

1. **Proposal Title:**

   Napa-Sonoma Marsh Restoration Project

2. **Proposal applicants:**

   Amy Hutzel, California State Coastal Conservancy
   Nadine Hitchcock, State Coastal Conservancy

3. **Corresponding Contact Person:**

   Amy Hutzel
   State Coastal Conservancy
   1330 Broadway, Suite 1100 Oakland, CA 94612
   510 286-4180
   ahutzel@scc.ca.gov

4. **Project Keywords:**

   Environmental Engineering
   Habitat Restoration, Wetland
   Wetlands, Tidal

5. **Type of project:**

   Implementation_Full

6. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

7. **Topic Area**:

   Shallow Water, Tidal and Marsh Habitat

8. **Type of applicant:**

   State Agency

9. **Location - GIS coordinates:**

   Latitude: 38.166

   Longitude: -122.310

   Datum:

Describe project location using information such as water bodies, river miles, road intersections, landmarks, and size in acres.

9,850 acres of wetlands and associated habitats within the former Cargill salt pond complex in the North Bay. The salt pond complex is located along the western bank of the lower Napa River, and is owned by the California Department of Fish and Game, and managed as part of the Napa River Unit of the Napa-Sonoma Marshes State Wildlife Area.

10. **Location - Ecozone:**

    2.2 Napa River, 2.3 Sonoma Creek

11. **Location - County:**

    Napa, Solano

12. **Location - City:**

    Does your project fall within a city jurisdiction?

    No

13. **Location - Tribal Lands:**

    Does your project fall on or adjacent to tribal lands?

    No

14. **Location - Congressional District:**

    #1 (Thompson), & #7 (Miller)

15. **Location:**

    California State Senate District Number: 2 - Chesbro

    California Assembly District Number: 7 - Wiggins

16. **How many years of funding are you requesting?**

    3

17. **Requested Funds:**
    a) Are your overhead rates different depending on whether funds are state or federal?

       No

       If no, list single overhead rate and total requested funds:

       Single Overhead Rate: 3%

       Total Requested Funds: $4,511,400

b) Do you have cost share partners already identified?

Yes

If yes, list partners and amount contributed by each:

State Coastal Conservancy $1,424,682

CA Dept. Fish and Game $561,710

U.S. Army Corps of Engineers $300,000

c) Do you have potential cost share partners?

Yes

If yes, list partners and amount contributed by each:

U.S. Army Corps of Engineers $1,300,000

d) Are you specifically seeking non-federal cost share funds through this solicitation?

Yes

If yes, list total non-federal funds requested:

up to $4,511,400

If the total non-federal cost share funds requested above does not match the total state funds requested in 17a, please explain the difference:

If only federal funds are available, they will be accepted.

18. **Is this proposal for next-phase funding of an ongoing project funded by CALFED?**

No

Have you previously received funding from CALFED for other projects not listed above?

Yes

If yes, identify project number(s), title(s) and CALFED program.

11332-0-J001 Introduced Spartina Eradication Project Ecosystem Restoration

19. **Is this proposal for next-phase funding of an ongoing project funded by CVPIA?**

    No

    Have you previously received funding from CVPIA for other projects not listed above?

    No

20. **Is this proposal for next-phase funding of an ongoing project funded by an entity other than CALFED or CVPIA?**

    Yes

    If yes, identify project number(s), title(s) and funding source.

1	**Napa River Salt Marsh Restoration Feasibility Study**	**State Coastal Conservancy, Sonoma County Water Agency, USACE, USFWS, CDFG**

Please list suggested reviewers for your proposal. (optional)

Peter Baye	**US Fish and Wildlife Service**	**707-562-3003**	**peter_baye@fws.gov**
Grant Davis	**The Bay Institute**	**415-506-0150**	**davis@bay.org**
Cynthia Patton	**Save The Bay**	**510-452-9261**	**cpatton@savesfbay.org**
Bryan Winton	**San Pablo Bay Nat. Wildlife Refuge**	**707-562-3000**	**bryan_winton@fws.gov**

21. **Comments:**

Environmental Compliance Checklist

Napa-Sonoma Marsh Restoration Project

1. **CEQA or NEPA Compliance**
   a) Will this project require compliance with CEQA?

      Yes
   b) Will this project require compliance with NEPA?

      Yes
   c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

2. **If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).** *If not applicable, put "None".*

   CEQA Lead Agency: State Coastal Conservancy
   NEPA Lead Agency (or co-lead:) US Army Corps of Engineers
   NEPA Co-Lead Agency (if applicable):

3. **Please check which type of CEQA/NEPA documentation is anticipated.**

   CEQA
   -Categorical Exemption
   -Negative Declaration or Mitigated Negative Declaration
   XEIR
   -none

   NEPA
   -Categorical Exclusion
   -Environmental Assessment/FONSI
   XEIS
   -none

   If you anticipate relying on either the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that you believe covers this project.

4. **CEQA/NEPA Process**
   a) Is the CEQA/NEPA process complete?

      No

      If the CEQA/NEPA process is not complete, please describe the dates for completing draft and/or final CEQA/NEPA documents.

      A consultant has been retained to complete a CEQA/NEPA document. Draft EIR/EIS complete June 2002. Final EIR/EIS complete December 2002.

b) If the CEQA/NEPA document has been completed, please list document name(s):

5. **Environmental Permitting and Approvals** (*If a permit is not required, leave both Required? and Obtained? check boxes blank.*)

LOCAL PERMITS AND APPROVALS

Conditional use permit

Variance

Subdivision Map Act

Grading Permit

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

STATE PERMITS AND APPROVALS

Scientific Collecting Permit

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification	Required
Coastal Development Permit	Required
Reclamation Board Approval	
Notification of DPC or BCDC	Required
Other	Required

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation	Required
ESA Compliance Section 10 Permit	Required
Rivers and Harbors Act	Required
CWA 404	Required

Other

PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land. Agency Name:	
Permission to access state land. Agency Name: CA Department of Fish and Game	Required, Obtained
Permission to access federal land. Agency Name:	
Permission to access private land. Landowner Name:	

6. **Comments.**

NPDES Permit will be required for the discharge of saline water to the Napa River. A water rights permit (Water Appropriation Permit) may be required from the State Water Resources Control Board.

Land Use Checklist

Napa-Sonoma Marsh Restoration Project

1. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

2. **Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?**

   No

3. **Do the actions in the proposal involve physical changes in the land use?**

   Yes

   If you answered yes to #3, please answer the following questions:

   a) How many acres of land will be subject to a land use change under the proposal?

      9,850

   b) Describe what changes will occur on the land involved in the proposal.

      former salt ponds will be restored to tidal wetlands

   c) List current and proposed land use, zoning and general plan designations of the area subject to a land use change under the proposal.

Category	Current	Proposed (if no change, specify "none")
Land Use	**former salt ponds**	**tidal marsh, managed deep water and shallow water ponds, muted tidal marsh**
Zoning	**none-land owned by state**	**none**
General Plan Designation	**not applicable - owned by state**	**none**

   d) Is the land currently under a Williamson Act contract?

      No

   e) Is the land mapped as Prime Farmland, Farmland of Statewide Importance, Unique Farmland or Farmland of Local Importance under the California Department of Conservation's Farmland Mapping and Monitoring Program?

      No

   f) Describe what entity or organization will manage the property and provide operations and maintenance services.

CA Department of Fish and Game

4. Comments.

Conflict of Interest Checklist

Napa-Sonoma Marsh Restoration Project

Please list below the full names and organizations of all individuals in the following categories:

- **Applicants listed in the proposal who wrote the proposal, will be performing the tasks listed in the proposal or who will benefit financially if the proposal is funded.**
- **Subcontractors listed in the proposal who will perform some tasks listed in the proposal and will benefit financially if the proposal is funded.**
- **Individuals not listed in the proposal who helped with proposal development, for example by reviewing drafts, or by providing critical suggestions or ideas contained within the proposal.**

The information provided on this form will be used to select appropriate and unbiased reviewers for your proposal.

Applicant(s):

Amy Hutzel, California State Coastal Conservancy
Nadine Hitchcock, State Coastal Conservancy

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

If yes, please list the name(s) and organization(s):

Chris Bowles, Bob Battalio, and Philip Williams	**Philip Williams & Associates, Inc.**
George Harris	**Hydroscience Engineers, Inc.**
John Takekawa and Dave Schoellhamer	**U.S. Geological Survey**
Susanne von Rosenberg	**Gaia Consulting, Inc.**

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

If yes, please list the name(s) and organization(s):

David Zweig	**Analytical Environmental Services**

Comments:

Budget Summary

Napa-Sonoma Marsh Restoration Project

Please provide a detailed budget for each year of requested funds, indicating on the form whether the indirect costs are based on the Federal overhead rate, State overhead rate, or are independent of fund source.

Independent of Fund Source

Year 1												
Task No.	Task Description	Direct Labor Hours	Salary *(per year)*	Benefits *(per year)*	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
1	Project Management	0	0	0	0	0	80000	0	0	80000.0	2400	82400.00
2	Preliminary Engineering	0	0	0	0	0	200000	0	0	200000.0	6000	206000.00
3	Collection of Baseline Data	0	0	0	0	0	150000	0	0	150000.0	4500	154500.00
4	Plans and Specifications	0	0	0	0	0	100000	0	0	100000.0	3000	103000.00
5	Permitting	0	0	0	0	0	100000	0	0	100000.0	3000	103000.00
6	Construction	0	0	0	0	0	0	0	0	0.0		0.00
7	Monitoring	0	0	0	0	0	0	0	0	0.0		0.00
		0	0.00	0.00	0.00	0.00	630000.00	0.00	0.00	630000.00	18900.00	648900.00

Year 2												
Task No.	Task Description	Direct Labor Hours	Salary *(per year)*	Benefits *(per year)*	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
1	Project Management	0	0	0	0	0	80000	0	0	80000.0	2400	82400.00
2	Preliminary Engineering	0	0	0	0	0	0	0	0	0.0	0	0.00
3	Baseline Data Collection	0	0	0	0	0	100000	0	0	100000.0	3000	103000.00
4	Plans and Specifications	0	0	0	0	0	150000	0	0	150000.0	4500	154500.00
5	Permitting	0	0	0	0	0	100000	0	0	100000.0	3000	103000.00
6	Construction	0	0	0	0	0	0	0	0	0.0	0	0.00
7	Monitoring	0	0	0	0	0	0	0	0	0.0	0	0.00
		0	0.00	0.00	0.00	0.00	430000.00	0.00	0.00	430000.00	12900.00	442900.00

Year 3												
Task No.	Task Description	Direct Labor Hours	Salary *(per year)*	Benefits *(per year)*	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
1	Project Management	0	0	0	0	0	80000	0	0	80000.0	2400	82400.00
2	Preliminary Engineering	0	0	0	0	0	0	0	0	0.0		0.00
3	Baseline Data Collection	0	0	0	0	0	0	0	0	0.0		0.00
4	Plans and Specifications	0	0	0	0	0	0	0	0	0.0	0	0.00
5	Permitting	0	0	0	0	0	40000	0	0	40000.0	1200	41200.00
6	Construction	0	0	0	0	0	3000000	0	0	3000000.0	90000	3090000.00
7	Monitoring	0	0	0	0	0	200000	0	0	200000.0	6000	206000.00
		0	0.00	0.00	0.00	0.00	3320000.00	0.00	0.00	3320000.00	99600.00	3419600.00

Grand Total=4511400.00

Comments.
CalFed funds will be matched with staff time and funds from the U.S. Army Corps of Engineers, California Coastal Conservancy, and the Department of Fish and Game. The Conservancy will let all contracts listed in this grant proposal and will assist with project management and permitting. Ducks Unlimited will assist with putting the project out to bid and hiring and overseeing the contractor. Fish and Game will continue to manage the site, assist with monitoring and maintnenance, and assist with construction management. The U.S. Army Corps of Engineers will provide Quality Control for engineering and construction tasks and provide project management for the overall restoration project. YEAR 1 Engineering Design will be completed by Philip Williams and Associates and Ducks Unlimited. Permitting will be undertaken by Hydroscience, Inc. and GAIA Consulting, Inc. Project Management will be done by GAIA Consulting, Inc. in collaboration with the Corps, DFG, and the Conservancy. Baseline Data will be collected and analyzed by U.S. Geological Survey. YEAR 2 Construction Drawings and Specifications will be completed by Ducks Unlimited. Project Management will be done by GAIA Consulting, Inc. in collaboration with the Corps, DFG, and the Conservancy. Baseline Data will be collected and analyzed by U.S. Geological Survey. YEAR 3 Construction Management will be conducted by Ducks Unlimited in collaboration with DFG. Post-Project Monitoring will be conducted by a team of biologists and hydrologists from USGS.

Budget Justification

Napa-Sonoma Marsh Restoration Project

Direct Labor Hours. Provide estimated hours proposed for each individual.

none

Salary. Provide estimated rate of compensation proposed for each individual.

none

Benefits. Provide the overall benefit rate applicable to each category of employee proposed in the project.

none

Travel. Provide purpose and estimate costs for all non-local travel.

none

Supplies & Expendables. Indicate separately the amounts proposed for office, laboratory, computing, and field supplies.

none

Services or Consultants. Identify the specific tasks for which these services would be used. Estimate amount of time required and the hourly or daily rate.

All tasks funded by this grant will be condducted by consultants, including other agencies (such as USGS) that will work as consultants to the Coastal Conservancy. Detailed proposals will be obtained from the consultants using standard State contracting procedures. As part of the consulting contracts, standard billing rates for personnel will be provided. Estimates in this application have been based on rates ranging from $50/hr to $130/hr.

Equipment. Identify non-expendable personal property having a useful life of more than one (1) year and an acquisition cost of more than $5,000 per unit. If fabrication of equipment is proposed, list parts and materials required for each, and show costs separately from the other items.

none

Project Management. Describe the specific costs associated with insuring accomplishment of a specific project, such as inspection of work in progress, validation of costs, report preparation, giving presentatons, reponse to project specific questions and necessary costs directly associated with specific project oversight.

$80,000 per year has been allocated to hiring various consultants to provide project management functions, specifically consultant contract negotiation and oversight, peer review, report preparation and presentations. Conservancy project management will be provided using other funding.

Other Direct Costs. Provide any other direct costs not already covered.

none

Indirect Costs. Explain what is encompassed in the overhead rate (indirect costs). Overhead should include costs associated with general office requirements such as rent, phones, furniture, general office staff, etc., generally distributed by a predetermined percentage (or surcharge) of specific costs.

The Conservancy requests a 3% of the consultant costs identified in the application to help cover the administrative costs associated with processing and managing the consultant and construction contracts.

Executive Summary

Napa-Sonoma Marsh Restoration Project

The California Coastal Conservancy, in association with the U.S. Army Corps of Engineers and other agencies, is implementing a project to restore nearly 9,850 acres of wetlands and associated habitats within the former Cargill salt pond complex in the North Bay. The salt pond complex is located along the western bank of the lower Napa River, and is owned by the California Department of Fish and Game, and managed as part of the Napa River Unit of the Napa-Sonoma Marshes State Wildlife Area. Funding for some of the initial phases of the project has already been secured. Calfed funding is currently being sought for the following activities: a) Preliminary engineering design for water control structures b) Preparation of construction drawings (plans and specifications) for water control structures c) Construction of water control structures d) Monitoring and baseline data collection e) Permitting f) Project Management and Coordination Water control structures would consist of channels, pipelines, pump stations, levees, and sluice gates that would be used to manage the flow of water into, out of, and between the ponds, thereby allowing DFG to manage and eventually decrease salt concentrations, allowing for the eventual restoration of the salt ponds to a mosaic of wildlife habitat, including tidal marsh, managed tidal marsh, deep-water and shallow-water ponds, and managed salt ponds.

Proposal

California State Coastal Conservancy

Napa-Sonoma Marsh Restoration Project

Amy Hutzel, California State Coastal Conservancy
Nadine Hitchcock, State Coastal Conservancy

CALFED Bay-Delta Program
August 2001 Ecosystem Restoration Programs and Projects
Proposal For Napa-Sonoma Marsh Restoration Project

Submitted By: California Coastal Conservancy

A. Project Description

The California Coastal Conservancy and the California Department of Fish and Game (DFG), in association with the U.S. Army Corps of Engineers (Corps) and other agencies, is implementing a project to restore nearly 9,850 acres of wetlands and associated habitats within the former Cargill salt pond complex in the North Bay. The salt pond complex is located along the western edge of the lower Napa River, is owned by DFG, and is managed as part of the Napa River Unit of the Napa-Sonoma Marshes State Wildlife Area. The ponds are shown in Figures 1-10 (attached).

Funding for some of the initial phases of the project has already been secured. Both a feasibility study and CEQA/NEPA documentation are currently being prepared using funding from the Conservancy, DFG, and the Corps. Calfed funding is currently being sought for the following activities:

Task 1	Project Management and Coordination.
Task 2	Preliminary engineering design for water control structures and related infrastructure for Ponds 3, 4 and 5.
Task 3	Collection of baseline water quality and avian and aquatic species data.
Task 4	Preparation of construction drawings (plans and specifications) for water control structures and water conveyance systems for Ponds 3, 4, and 5.
Task 5	Permitting.
Task 6	Construction of water control structures, conveyance systems, and related infrastructure for Ponds 3, 4, and 5.
Task 7	Post-project monitoring of water quality and avian and aquatic species data.

Water control structures (pipes, combination gates, and weirs) would be used to manage the flow of water into, out of, and between the ponds, thereby allowing DFG to manage and eventually decrease salt concentrations in the ponds. These water control structures will dramatically improve the pond habitat in the short term and are the first major phase in the implementation of a large-scale restoration of the former commercial salt ponds to a mosaic of tidal marsh, managed marsh, and deepwater and shallow-water ponds.

1. Problem

An estimated 85 percent of the historic tidal marshes in the San Francisco Bay-Delta Estuary have been filled or significantly altered over the past two centuries. The San Pablo Bay's diked baylands provide an opportunity for large-scale restoration of tidal marsh, and

over the last decade, state and federal resource and regulatory agencies have purchased a number of properties within the Napa-Sonoma Marsh Complex, with the intent to restore much of the land to tidal marsh.

The entire Napa-Sonoma Marsh Complex is spread over an area of approximately 40,000 acres. It includes more than nine miles of shoreline between the Napa River and Tolay Creek in Sonoma County. Its northern boundary is the upper limit of the historic tidelands. Most of the former tidal wetlands have been converted to salt ponds or diked hay fields or grazing lands.

Although the marsh complex is degraded, it provides habitat for a number of threatened or endangered species including the California clapper rail, California black rail, salt marsh harvest mouse, San Pablo song sparrow, Central California steelhead trout, Sacramento River winter-run chinook salmon, Sacramento splittail (fish), Delta smelt (fish), and Mason's lilaeopsis (plant). It also provides habitat for large populations of migratory waterfowl and shorebirds, and for aquatic invertebrates, including Dungeness crabs.

The Napa Salt Marsh was first diked-off from the San Pablo Bay during the 1850's for hay production and cattle grazing. Much of the land was later converted to salt ponds, for salt production by the solar evaporation of bay water. In the early 1990's, the Cargill Salt Company ceased the production of salt and sold 9,850 acres of evaporator ponds and associated remnant sloughs and wetlands on the west side of the Napa River to the State of California.

The salt ponds contain various concentrations and types of salts. Some of the inactive salt ponds provide, or once provided, significant habitat for fish and wildlife, while the salinity levels in others exceed that which is beneficial to wildlife.

The project area contains 12 ponds formerly used in the salt production process. The salt production process consisted of taking in sea water at the southern edge of the pond system, allowing evaporation to occur, and then moving the brine to the next pond in the series for further concentration. During the dry season, the salinity of the seawater in San Pablo Bay is approximately 30 to 32 parts per thousand (ppt). It was concentrated to a salinity of approximately 350 ppt for salt (sodium chloride) harvest. The actual harvest of salt occurred in the crystallizer ponds on the east side of the Napa river, which are still owned by Cargill and are not part of the study area.

The 12 ponds in the Napa River Unit are numbered sequentially from the southern ponds to the northern ponds. Figure 10 shows the locations of the ponds. Higher-numbered ponds were located on the east side of the river, and are not part of the project area. Ponds 1, 1A, 2, and 2A are currently functioning habitat, and are referred to as the lower ponds. Ponds 1 and 1A are muted tidal marsh, Pond 2 is a managed deep water pond, and Pond 2A has been restored to tidal marsh. Pond 2A is fully connected to the existing slough system. Ponds 1 and 1A are accessible by land. Levee repair and all other maintenance and monitoring functions for Pond 2 have to occur by boat. No maintenance is required for Pond 2A.

Ponds 3, 4, 5, 6, and 6A are referred to as the middle ponds. Target salinities during the salt production process ranged as high as 120 ppt in Pond 6A; the maximum salinity for

Ponds 6 and 6A was 260 ppt. Ponds 3, 4, and 5 are most vulnerable to levee breaches, due to their location immediately adjacent to the Napa River. Levee repair and all other maintenance and monitoring functions for the all of the middle ponds have to occur by boat.

The northern ponds contained the highest salinity levels and are also referred to as the hypersaline ponds. Pond 7A had a target salinity of 190 ppt, and a maximum salinity of 295 ppt. The salinity target and maximum for Pond 8 were 340 and 395 ppt, respectively. Pond 7 was the bittern pond. (Many mineral salts other than sodium chloride (including Fe_2O_3, $CaCO_3$, $CaSO_4$, $MgSO_4$, $MgCl_2$, KCl, NaBr, and MgBr) are present in sea water, at much lower concentrations than sodium chloride. Some of these minerals precipitate out before the sodium chloride, and remained in the ponds where they precipitated. Some salts have greater solubility than sodium chloride, and remain in solution after the sodium chloride is harvested. The solution remaining after the sodium chloride is harvested is known as bittern. Ponds 7, 7A, and 8 have land-based access.

Water transfers within the pond system occur through a combination of pumps, tide gates, valves, siphons, and canals, all of which require on-going maintenance.

The annual evaporative water loss from the salt ponds exceeds the amount of water replaced by annual rainfall. Without active water management, the salt ponds would become increasingly saline and turn into seasonally wet salt flats, resulting in the loss of most of their present habitat value for waterbirds and other wildlife species.

As a result of limited funding, deteriorating infrastructure, and high power costs, some ponds cannot receive make-up water until the infrastructure is repaired or the volume of water pumped can be increased. This has resulted in several ponds drying out completely during the past several years. Ponds 4 and 5, which formerly provided valuable wildlife habitat provide virtually zero habitat at this time. A similar situation occurred with Ponds 6 and 6A last year. Once the ponds dry out, or the concentration of the salt in the brine increases significantly, infrastructure problems result. The siphons that are used to move water between ponds become filled with the highly concentrated brine from the pond that is drying out, and the brine prevents fresh water from entering the siphon. Thus, even once fresh water becomes available, it cannot enter the high saline ponds. This condition is known as salt block.

The inactive salt ponds are a potential threat to the ecology of the North Bay due to the presence of large quantities and high concentrations of residual salts. Although these highly concentrated salts are not considered “toxic”, their uncontrolled release would be very detrimental to the aquatic environment. Fish kills can occur at salinity concentrations of greater than 70 ppt. Preliminary modeling has shown that this concentration would be exceeded in local areas as a result of levee breach-related discharges from most the middle and all of the upper ponds. Levee breaches in the higher salinity ponds are less likely, but could result in widespread salinity concentrations exceeding 70 ppt. Bittern salts pose a special concern. Bittern salts are toxic to aquatic life in their concentrated form, and would require 100:1 dilution for a safe discharge.

There is a risk of an uncontrolled release of concentrated salts due to a levee failure if the salts are not removed in the near future.

I. Preliminary Habitat Restoration Goals

Overarching Goals

- Restore a mosaic of diverse habitats that will benefit a broad range of fish, wildlife, and plant species, including endangered and threatened species, fish and other aquatic species, and migratory shorebirds and waterfowl.
- Restore natural, self-sustaining systems that can adjust to naturally occurring changes in physical processes, with minimum ongoing intervention.
- Implement habitat restoration using adaptive management techniques.
- Recognize constraints, which are a driver in determining restoration objectives.
- Evaluate the restoration from a regional perspective, as not all regional objectives can be addressed within the project boundaries.
- Protect special status species, to the extent possible, during the restoration process.
- Restore habitats within the Napa-Sonoma Marshes that will change over time due to inherent dynamic characteristics of the estuarine system (in terms of seasonal as well as longer-term changes).
- Phase the restoration within the project site and time the restoration in relationship with restoration projects throughout the Napa-Sonoma Marshes, particularly Cullinan Ranch and Skagg's Island, to reduce negative impacts (such as erosion of existing marshes and unintended breaching of levees) resulting from excessive changes in the tidal prism.
- Accelerate the speed of habitat restoration by conducting salinity reduction of the former salt ponds as quickly and safely as possible.
- Meet as many of the goals and objectives of the *Baylands Ecosystem Habitat Goals Report* as feasible, focusing on how this project's goals and objectives fit within the entire North Bay Region (see Regional Goals below and Regional Objectives on p.3).

Regional Goals for the North Bay

As stated in the *Baylands Ecosystem Habitat Goals Report,* (p. 97):

> "The overall goal for the North Bay is to restore large areas of tidal marsh and to enhance seasonal wetlands. Some of the inactive salt ponds should be managed to maximize their habitat functions for shorebirds and waterfowl, and others should be restored to tidal marsh. Tributary streams and riparian vegetation should be protected and enhanced, and shallow subtidal habitats (including eelgrass beds in the southern extent of this subregion) should be preserved or restored.
>
> "Tidal marsh restoration should occur in a band along the bayshore, extending well into the watersheds of the subregion's three major tributaries – Napa River, Sonoma Creek, and Petaluma River. Seasonal wetlands should be improved in the areas that are currently managed as agricultural baylands. All remaining seasonal wetlands in the uplands adjacent to the Baylands should be protected and enhanced.

> "In much of this subregion, achieving the Goals will depend on the willingness of farmers to convert agricultural Baylands to tidal marsh and to allow the remaining areas to be managed as seasonal pond habitat.
>
> "… In total, the Goals for the North Bay subregion call for increasing the area of tidal marsh from the existing 16,000 acres to approximately 38,000 acres, and creating about 17,000 acres of diked wetlands managed to optimize their seasonal wetland function."

Project Site Goals

These goals for the Napa River Unit of the Napa Sonoma Marsh State Wildlife Area were developed based upon the overarching goals for the project and the regional goals from the *Baylands Ecosystem Goals Report*.

- In a phased approach, restore large patches of tidal marsh that support a wide variety of fish, wildlife, and plants, including:
  a) special status mammals and water birds, specifically the salt marsh harvest mouse, California clapper rail, and black rail;
  b) endangered fish, specifically Delta smelt, Sacramento splittail, steelhead trout, and Chinook salmon, and other fish species; and
  c) aquatic animals, including the Dungeness Crab, and other benthic and planktonic invertebrates.
- Ensure connections between the patches of tidal marsh (within the project site and with adjacent sites) to enable the movement of small mammals, marsh-dependent birds, and fish and aquatic species.
- Restore tidal marsh in a band along the Napa River to maximize benefits for fish and other aquatic animals.
- Manage water depths of ponds to maximize wildlife habitat diversity, with shallow-water areas for migratory and resident shorebirds and dabbling ducks and deep-water areas for diving benthivores.
- Manage salinity levels in ponds to support a rich diversity of biota.
- Break up unneeded levees to create refuges for roosting and nesting shorebirds.
- Manage invasive plant species, as feasible.

2. Justification

Construction of this project would create the largest restored wetland on the West Coast of the United States. It would also achieve many of the goals and objectives outlined in the *Baylands Ecosystem Habitat Goals Report* and the U.S. Environmental Protection Agency's *San Francisco Estuary Project Comprehensive Conservation and Management Plan* and serve as a model for the restoration of thousands of acres of the South Bay salt ponds, currently owned by Cargill, Inc.

The public acquisition of the former salt pond system in the Napa Marsh provides an opportunity to restore tidal salt marsh and related habitats on an unprecedented scale within the San Francisco Bay system. The Napa Marsh occupies a key position on the

Pacific Flyway, a major migratory route used annually by waterfowl and other birds. The Napa Marsh also provides habitat for a number of threatened or endangered species, some of which are endemic to the region. The restoration of 6,700 acres of inactive salt ponds to productive wetland habitat, and the resulting restoration of nearly 3,150 acres of associated remnant sloughs and wetlands, would be a project of national significance.

Restoration of tidal action to the former Napa Marsh salt ponds would provide a significant increase in the area of shallow water and marsh habitat available to native fish populations. Given the scarcity of this type of habitat, restoration of shallow water habitat would provide important areas for spawning and rearing. The endangered Delta smelt and Sacramento splittail would be expected to particularly benefit from the restoration of tidal habitat in the Napa Marsh.

Tidal marsh restoration in Ponds 3, 4, and 5 will provide the following:

- A large area of contiguous tidal marsh (3,045 to 4,254 acres of former salt ponds, combined with the existing acres of tidal marsh and sloughs, including Pond 2A) for a diversity of fish and wildlife, including threatened and endangered species (salt marsh harvest mouse, California clapper rail, and black rail).
- A greater variety of slough channel sizes, a large increase in slough habitat, and greater connections between the San Pablo Bay/Napa River and the tidal salt marsh which will benefit estuarine fish, including listed species (Delta smelt, Sacramento splittail, steelhead trout, and Chinook salmon) and other aquatic species, such as the Dungeness crab.
- A natural, self-sustaining system that can adjust to naturally-occurring changes in physical processes, with minimum ongoing intervention.
- Large tracts of tidal marsh that extend up the Napa River that allow fish and wildlife species to adjust to changes in salinity that occur seasonally and over longer periods due to variations in precipitation.
- Increased tidal prism that will scour slough channels, eventually creating large tidal channels, benefiting fish and diving waterfowl.
- Improved tidal circulation throughout the system, improving water quality.
- Greatly increased production of organic detritus by tidal marshes, increasing the ecological productivity of the San Pablo Bay.

Pond 2 will continue to be managed as 781 acres of deep-water habitat for diving waterfowl.

Ponds 7 and 7A (592 acres) will be managed as ponds for higher salinity and associated biota, providing habitat for dabbling waterfowl and shorebirds.

Pond 8 (102 acres) will be managed as an intake pond for salinity reduction of the system, using a new culvert and fish screens being installed this summer. Eventually, Pond 8 will be restored to damped tidal marsh, providing habitat for marsh species and dabbling ducks.

Ponds 1 and 1A will remain as 882 acres of muted tidal pond, connected to San Pablo Bay, providing habitat for shorebirds and dabbling ducks.

3. Approach

Proposed Project

Calfed funding is being sought to restore Ponds 3, 4, and 5 to tidal action through the installation of water control structures at key locations. The water control structures will allow water to enter and exit the ponds from the Napa River. Tidal flows to the ponds will be restored, and salt will be flushed from the ponds at a controlled rate. The water control structures will allow adaptive management of the ponds. Eventually, levee breaches will replace the water control structures, allowing full tidal action to Ponds 3, 4, and 5. The following water control structures are proposed:

1. **Pond 5 Inlet.** An inlet from the Napa River to Pond 5 will be constructed immediately south of Coon Island. The inlet will consist two 200-foot lengths of 48-inch diameter plastic pipeline, with combination gates on each end. Fish screens will be mounted on the Napa River end of the pipeline.
2. **Pond 5 to Pond 4 Connector.** This connector would consist of a 150-foot length of 48-inch diameter plastic pipeline penetrating the levee between Ponds 5 and 4. Combination gates will be fitted on each end of the pipeline.
3. **Pond 4 to Pond 3 Siphon.** The existing siphon between Ponds 4 and 3 will be refurbished. The existing siphon under South Slough is non-functional and must be repaired.
4. **Pond 3 and 4 Inlets.** Inlets from the Napa River to Ponds 3 and 4 will be constructed. The inlets will each consist of twin 200-foot length of 48-inch diameter plastic pipeline, with combination gates on each end. Fish screens will be mounted on the Napa River side of the pipelines.
5. **Pond 3 Outlet.** An outlet from Pond 3 to the Napa River will be constructed to release saline water. The outlet will consist of two 200-foot length of 48-inch diameter plastic pipeline, with combination gates on each end. The river side of the outlet may require an extension into the river with a diffuser on it.

The water control structures will be anchored in place with steel "H" piles. Fish screen will be stainless steel, and will be fitted with solar-powered cleaning devices. The cleaning devices will use either compressed air or a wiper to remove debris from the screens.

The combination gates mounted on each end of the control structures will consist of a flap gate and a slide gate. They will be operated manually to control flows into, out of, and between the ponds. Due to the inaccessibility of the control structure locations, some construction will have to be performed by barge-mounted equipment.

Task 1 – Project Management

One or more consultants will be retained by the Conservancy to assist with the management of the project. The project managers will oversee work by other

consultants, prepare required reports, make presentations, and report project progress to Conservancy staff and other participating agencies.

Task 2 - Preliminary Engineering Design for water control structures and related infrastructure for Ponds 3, 4 and 5.
Engineers with Ducks Unlimited, Inc., who have overseen the design and construction management of a water control structure on Pond 8 this year, and hydrologists and engineers with Philip Williams and Associates, Inc., who have developed a hydrologic model of the Napa Marsh and are analyzing salinity reduction alternatives, will be retained by the Coastal Conservancy to develop preliminary design plans for the water control structures and associated facilities. The preliminary design effort will consist of the following:

a) conduct topographic survey of the construction area
b) select exact water control structure locations
c) prepare scaled plan view and elevation view drawings of pipeline alignments
d) make recommendations regarding construction materials and equipment to be used
e) make recommendation regarding sizing of facilities

The preliminary engineering design effort will result in the production of 30% design drawings.

Task 3 - Collection of baseline water quality and avian and aquatic species data.
Biologists and hydrologists with the U.S. Geological Survey will collect baseline water quality, macroinvertebrate, avian, and fisheries data at the following locations:

- Napa River at Pond 5 Inlet,
- Pond 5,
- Pond 4
- Pond 3
- Napa River at Pond 3 Inlet
- Napa River at Pond 3 Outlet

This baseline data will be used as a basis for monitoring impacts to the Napa River and the Ponds that will result from project implementation.

Task 4 - Preparation of construction drawings (plans and specifications) for water control structures and water conveyance systems for Ponds 3, 4, and 5.
After the approval of the preliminary engineering design, engineers with Ducks Unlimited will develop detailed plans and specifications for the project suitable to go out to bid. The engineer will prepare 50%, 80%, 95%, and Final design submittals.

Task 5 – Permitting.
Hydroscience, Inc. and GAIA Consulting, Inc. will be retained to prepare the following permit applications:

1) NPDES Permit
2) State Water Resources Control Board Appropriative Water Rights Permit
3) Section 404 Permit
4) BCDC Development Permit
5) Section 7 Consultation

Task 6 - Construction of water control structures, conveyance systems, and related infrastructure for Ponds 3, 4, and 5.
After approval, the Plans and Specifications will be put out to bid. A contractor will be selected to construct the project.

Task 7 – Construction phase and post-construction monitoring of water quality and avian and aquatic species data.
Biologists and hydrologists with the U.S. Geological Survey will collect water quality, macroinvertebrate, avian, and fisheries data. This data will be used to assess impacts (both beneficial and adverse) to the Napa River and the ponds that result from project implementation.

Monitoring will be conducted in project Ponds 3-5 and compared with Ponds 1, 2, 2a, and 7. Ponds will be overlayed with 250 m Universal Transverse Mercator (UTM) grids (6.25 ha cells), and all integrated samples will be located within this grid. Grid selection will follow a top-down trophic level process (Matveev 1995, Posey *et al.* 1995). Results from waterbird surveys will be used to select 10 grids to sample (or random grids if bird use is not evident) quarterly during the fall (Sep-Nov), winter (Dec-Feb), spring (Mar-May), and summer (Jun-Aug). Samples within ponds will be treated as repeated measures in analyses examining temporal variation or combined into means for seasonal analyses.

Primary and secondary productivity. Four 0.5-l water samples will be collected quarterly from each sample site within each pond for chlorophyll *a* and nutrient (Nitrogen and Phosphorus) analyses. Chlorophyll *a* will be determined spectrophotometrically after correction for turbidity (Wetzel and Likens 1991). Soluble reactive phosphorus will be determined with ammonium molybdate, and total phosphorus will be determined from after digestion with H_2SO_4 (Wetzel and Likens 1991). Nitrogen analyses will follow standard methods (Clesceri *et al.* 1989). Triplicate integrated-water-column samples for zooplankton will also be collected and identified with keys (Pennak 1989) under a stereomicroscope.

Invertebrates. Invertebrates will be sampled in the water column by "D-Ring" net sweeps and in the benthos with Eckman grab samples. Ten sweep and ten grab samples will be taken in each pond (60 of each sample each month); sweep sampling will consist of 3 "S" sweeps per sample, and each benthic sample will be a composite of 5 cores. Biomass (dry weight) and diversity of invertebrates will be measured on a seasonal basis.

Contaminants. Resource agencies (CDFG, SFBRWQCB, USFWS) have expressed concern about bioaccumulation of elemental contaminants by predators in these ponds.

A set of 5 samples per each type (sweep, grab) will be collected. Samples will be sieved, grouped according to sample location and by pond, double-bagged in sterile whirl packs, and then frozen. Samples from the month of maximum migratory bird use will be analyzed each year for chemical residues (2 samples per pond x 7 ponds x 2 years = 28 samples). Contaminant analyses will include inductively coupled plasma emission spectroscopy, graphite furnace atomic absorption spectroscopy, and cold vapor atomic absorption.

Fish. Fish species assemblages will be surveyed quarterly. Multiple sampling gear types will be used to assess distribution and relative abundance of juvenile and adult fishes, with special emphasis on small species likely to occur in the study area (e.g., rainwater killifish, *Lucania parva*; topsmelt, *Atherinops affinis*; yellowfin goby, *Acanthogobius flavimanus*)(LES 1992). Captured fish will be identified to species with taxonomic keys and counted, then the first 25 of each species will be measured for standard length (to the nearest mm) and weight (damp-dry biomass to the nearest 0.1 g). Relative weight (W_r), a measure of body condition, will be computed from the formula, $W_r = W / W_s X 100$, where W is the actual weight of the fish and W_s is a standard weight (Wege and Anderson 1978; Anderson 1980). Twenty-five individuals from selected species will be analyzed for stomach contents.

Waterbirds. Surveys will be conducted quarterly or bimonthly following current protocols (Takekawa et al. 2001). Locations of flocks will be mapped on the grid overlay, and displayed in GIS maps. Trends will be examined by comparing data from before and after installation of the water control structures. Use of areas of different depths will be determined by creating square kilometer sample grids in sections of ponds. Water depth and foraging preferences will be examined with grids of poles painted different colors each 4 cm (Collazo et al., *in review*).

4. Feasibility

The project is feasible from an economic, engineering, political, legal, environmental, and regulatory standpoint. No "fatal flaws" have been identified that will prevent full implementation of the project. The project garners widespread support among the public, environmental and scientific communities, and regulators. The project is currently midway through its implementation (land has been purchased, and a feasibility study and EIR/EIS are underway), and the only barrier to continued project implementation is the availability of funding for future phases. This Calfed application addresses the funding constraint.

Fundamental to plan formulation is an understanding of constraints which affect the process. Constraints for this project include applicable laws, regulations and policies; physical (site-related) constraints; engineering constraints; potential and existing projects affecting the project area. Project constraints include the following:

- Implementation of ecosystem restoration must not have a significant adverse impact on the water quality of the Napa River or San Pablo Bay. This includes the following specific constraints:
  1. Effluent discharge limitations (for salinity, dissolved oxygen, temperature, nutrient load, heavy metals, and other criteria)
  2. Mixing zone restrictions around discharge location(s)
  3. Nutrient, DO, and heavy metals content of recycled water relative to pond water, and temperature differential
- Implementation of ecosystem restoration must minimize impacts to the existing habitat and sensitive species in the area. This includes:
  1. Entrainment of organisms in discharges and diversions
  2. Loss of existing habitat in the ponds/loss of existing food sources (e.g., brine shrimp) during salinity reduction
  3. Salinity constraints on "downgradient" ponds
  4. Protection periods for listed species including salmonids, Delta Smelt, Clapper Rail, Sacramento Split-Tail, and Long-fin Smelt (e.g., salmonids: April – June)
  5. Constraints on construction noise within 250 feet of clapper rail habitat (Feb 1 to Aug 31)
  6. Erosion of existing marshes along sloughs (short term loss of endangered species habitat)
  7. Permit conditions/ability to obtain permits (e.g., NPDES)
- Implementation of ecosystem restoration must not adversely affect operation of the existing Napa River navigation channel.
- Physical constraints on the design include the following:
  1. Solution rate of precipitated salts/metals
  2. Ability to adequately resolubilize precipitated compounds
  3. Presence of other metals and organic chemicals in sediments and levees
  4. Change in tidal prism with opening of ponds (i.e., rate at which ponds can be opened)
  5. Siltation rates in ponds opened up to tidal action/sediment budget for ponds
  6. Access – most ponds are on islands not accessible by land-based construction equipment or water craft (water levels in sloughs are too low most of the time)
  7. Conditions of existing levees
  8. Locations of water intake and discharge points
  9. Existing bathymetry/topography
  10. Evaporation rate/salt load of intake water
  11. Seismic risk (liquefaction, amplification of ground shaking)
  12. Highway 37
  13. Erosion of sloughs leading to levee erosion; erosion of levees leading to impacts on adjacent properties, erosion around power line piers
- Impacts from the project to near-by restoration projects and vice-versa, including Sonoma Creek Flood Control Project, Cullinan Ranch, Skaggs Island, and Guadalcanal.

As part of the feasibility study and CEQA/NEPA processes, mitigation will be developed to address these constraints. These constraints have been considered by the Conservancy,

DFG, and the Corps in evaluating the feasibility of the project, and the project has been deemed feasible.

5. Performance Measures

Performance of the project will be measured through the data collection and analysis program briefly described above in Tasks 3 and 7. Water quality and biological data will be collected before and after project implementation. The project will be considered successful if salinity levels in the ponds drop, and the abundance of key indicator species (such as certain macroinvertibrate, fish, and bird species) increases. Using sound scientific methods, data will be presented in the monitoring report that will provide a quantitative measure of project performance.

6. Data Handling and Storage

Baseline and post-project data, collected by the U.S. Geological Survey, will be primarily handled and stored by USGS. Electronic and hard copies of the data will be provided to the Conservancy and DFG for their files. Monitoring results will be made accessible on U.S. Geological Survey's web site (http://sfbay.wr.usgs.gov/access/saltponds/index.html), and on the Napa-Sonoma Marsh Restoration web site, which is being created now and will be maintained by the Conservancy (http://www.Napa-Sonoma-Marsh.org).

7. Expected Products/Outcomes

The end result of the Calfed-funded project will be the successful construction of water control structures leading to conversion of salt ponds and degraded ponds to valuable habitat. A series of work products will lead up to this end result, including the following:

1. Baseline data report
2. Preliminary design report
3. Plans and specifications (bid documents)
4. Permit applications an supporting technical documentation
5. Monitoring reports.

8. Work Schedule

Task	Start Date	End Date
Restoration Feasibility Study* (Corps)	January, 1998	December, 2002
Napa-Sonoma Marsh EIR/EIS* (Jones and Stokes)	August, 2001	December, 2002
Collection of Baseline Data (USGS)	September, 2002	September, 2004
Preliminary Engineering Design (PWA and DU)	September, 2002	July, 2003
Permitting (Hydroscience and GAIA)	January, 2003	January, 2004
Plans and Specifications (DU)	August, 2003	April, 2004
Construction Bids (DU)	April, 2004	July, 2004
Construction (Contractor)	August, 2004	December, 2004
Post-Project Monitoring (USGS)	September, 2004	September, 2005

* these tasks are not part of the funding request from CALFED

B. Applicability to CALFED ERP and Science Goals and Implementation Plan and CVPIA Priorities

1. ERP, Science Program and CVPIA Priorities

As described above in Section 2, Justification, the project is clearly consistent with the ERP, Science Program, and CVPIA Priorities. Specifically, the project is consistent with the following ERP priorities:

Multi-Regional Bay Delta Areas:
Priority 5 - Ensure that restoration is not threatened by degraded environmental water quality (the project is aimed at improving water quality in former salt ponds).
Priority 6 - Ensure recovery of at-risk species…. (the project will benefit a number of special status species, including migratory fish. The project also has a rigorous data collection and monitoring component that will add to our understanding of restoring former salt ponds).

Bay Region:
Priority 1 – Restore wetlands in critical areas…. (the project will restore thousands of acres of wetlands).
Priority 4 – Understand performance of wetlands restoration… (the project also has a rigorous data collection and monitoring component that will add to our understanding of restoring former salt ponds).
Priority 5 – Restore shallow water, local stream, and riparian habitats for the benefit of at-risk species (the project will create thousands of acres of valuable shallow water habitat that will be utilized by at-risk species).
Priority 6 – Protect at-risk species in the Bay using water management… (the proposed water control structures will help prevent spills of highly saline water from the former salt ponds into the Bay).
Priority 7 – Improve scientific understanding of the linkages between populations of at-risk species and inflows… (the data collected and analyzed by USGS will add to the understanding of the relationship between water quality and habitat value. Inflows to the former salt ponds will be optimized to benefit habitat within the ponds without causing significant degradation downstream.
Priority 8 – Use monitoring, evaluations of existing monitoring data, and new investigations to develop new strategies for restoring Bay fish populations… (the project includes a rigorous monitoring program developed by USGS that will be used in conjunction with an adaptive management program implemented by DFG to benefit fisheries).

2. Relationship to Other Ecosystem Restoration Projects

Nearby acquisitions and potential restoration projects include: U.S. Fish and Wildlife acquisition of the 1,400-acre Cullinan Ranch, DFG's acquisition of nearly 10,000 acres of

former Cargill Salt Ponds and 62 acres along Huichica Creek, and the potential future transfer of Skagg's Island to the U.S. Fish and Wildlife Service. Coordination is necessary between Cullinan Ranch, Skagg's Island, and the North Bay Salt Pond restoration projects as each project will affect the tidal prism and sediment budget in the North Bay. Restoration of the Napa Marsh will also serve as a model for restoration of the South Bay Salt Ponds, if they are acquired by the federal government.

3. Requests for Next-Phase Funding

No previous Calfed funding has been received for this project.

4. Previous Recipients of CALFED Program or CVPIA Funding

The Coastal Conservancy has applied for and obtained Calfed funding for two previous projects: 1) Introduced Spartina Eradication Project (Project # 11332-0-J001, and 2) Hamilton Wetland Restoration Project (Project # B81642).

5. System-Wide Ecosystem Benefits

The Napa-Sonoma Marsh Restoration Project will result in system-wide ecosystem benefits for the Bay. The project will restore a large patch of tidal marsh that supports a wide variety of fish, wildlife and plants, including special status mammals and water birds, specifically the salt marsh harvest mouse, California clapper rail, and black rail. Endangered fish, specifically Delta smelt, Sacramento splittail, steelead trout, and Chinook salmon, and other fish species will benefit from the project due to the creation of food production and rearing areas. Aquatic animals, including the Dungeness Crab, abd other benthic and planktonic invertebrates will benefit from the project. The project will restore one of the last available tidal marsh areas along the lower Napa River, providing a small but significant natural setting for habitat management and protection. Experience gained in restoring the Napa-Sonoma ponds can be utilized in the restoration of other similar ponds in the South Bay and on the east side of the Napa River.

C. Qualifications

California Coastal Conservancy was created by the State Legislature in 1976 to protect, restore, and enhance coastal resources. The Conservancy has a staff of 63, who, from 1999 to 2001, managed a budget of over $398 million, of which $230 million has already been put to work on over 300 projects along the coast of California and in the nine-county Bay Area. The Conservancy has taken the lead in developing innovative approaches to wetlands restoration throughout the state, such as Sonoma Baylands, Hamilton Airfield, and Arcata Marsh, and has acted quickly to seize unique opportunities to obtain and protect significant resource lands, including Cullinan Ranch and the former Cargill Salt Ponds in the Napa-Sonoma Marshes. The agency has taken the lead in complex, multi-agency efforts, such as Tijuana Estuary, and has extensive experience in wetland restoration acquisition, planning, and implementation, including Rush Ranch,

Los Penasquitos, Bolsa Chica, Elkhorn Slough, Huntington Beach, and the Huichicha Creek Watershed.

The Conservancy's team for the Napa-Sonoma Marsh Restoration Project includes Nadine Hitchcock, Program Manager; Amy Hutzel, Project Manager; Glenn Alex, Staff Counsel; Sam Schuchat, Executive Officer; and the support of the accounting, contracts, and clerical staff of the Conservancy. Nadine Hitchcock, Program Manager for the San Francisco Bay Conservancy Program, will oversee the Conservancy's role in this project, including project management, interagency coordination, environmental compliance, facilitation of public and non-profit organization forums, and consultant and contractor selection and oversight. Ms. Hitchcock has over 17 years experience managing projects with the Conservancy, and 5 previous years experience with the Coastal Commission. Along with overall management of the Bay Program, she has managed or supervised several large-scale projects involving multiple agencies and nonprofit organizations, including the Napa River Flood Control Project, the San Francisco Bay Joint Venture, the Introduced Spartina Eradication Project, and the Regional Wetlands Monitoring Plan.

California Department of Fish and Game manages 106 state wildlife areas composed of more than 631,000 acres. The state acquired these wildlife areas to protect and enhance habitat for wildlife species, and to provide the public with wildlife-related recreational uses. These lands provide habitat for a wide array of plant and animal species, including many listed as threatened or endangered. The Napa-Sonoma Marshes State Wildlife Area consists of 13,000 acres of former commercial salt ponds, tidal marshes, uplands, and seasonal wetlands.

Larry Wyckoff will assist with project management and implementation, and is an Associate Wildlife Biologist for the Napa-Sonoma Marshes State Wildlife Area with Region 3 of the California Department of Fish and Game. He has been with the Department for 14 years. He will be assisted by Jim Swanson, Senior Biologist for the Napa-Sonoma Marshes State Wildlife Area, and by Tom Huffman, a Fish and Wildlife Assistant who is responsible for hands-on management of the Napa-Sonoma Marshes State Wildlife Area

GAIA Consulting Inc., is a small, woman-owned, SBA 8(a)-certified environmental consulting company with offices in Oakland and Walnut Creek, California. Since its inception in 1993, GAIA has completed numerous projects throughout the Bay Area. Work has included extensive environmental documentation pertaining to base closures, site investigation and remediation projects, EIS/Rs for complex and controversial projects, air monitoring and emission reduction projects, risk evaluations for property redevelopment, health and safety program development and training, and litigation support. Recent projects include a Phase I/II assessment for a proposed wetland mitigation site, preparing the engineering Feasibility Study and part of the EIS/R for the Port of Oakland 50-foot Channel Deepening Project, and managing the permitting and other environmental aspects of the Port of Oakland's maintenance dredging program.

Susanne von Rosenberg is a licensed professional chemical engineer and registered environmental assessor with 18 years experience in research, engineering, and consulting. She is a graduate of MIT, and worked for Mobil Corporation, Dames & Moore, and ERM-West, Inc. before co-founding GAIA Consulting, Inc. in 1993. She specializes in management of complex, time-critical, multi-stakeholder projects.

Philip Williams and Associates, Inc., was started in 1979. Dr. Williams has been engaged in a wide range of national and international hydrologic and engineering hydraulics work since he received his Ph.D. in 1970 from the University of London. From his original research field of sediment hydraulics, Dr. Williams has pioneered practical technical analyses in wetland hydrology, multiobjective river corridor management, lake water balances, the impacts of climate change, the hydraulics of coastal lagoons, and estuarine management. The work of Philip Williams and Associates has addressed a wide variety of problems, including flood management, salt marsh restoration, reservoir operation, harbor maintenance dredging, riparian management, watershed sediment yield, groundwater management, and coastal lagoon restoration. The majority of work has involved assessment of the environmental effects of hydrologic change, often working with professionals of other disciplines to prepare feasibility studies, management plans, and environmental impact studies.

Team members for the Napa-Sonoma Marsh Restoration Project include Dr. Williams; Chris Bowles, Ph.D., a civil engineer specializing in hydraulic design, with experience in the application of computational and physical models for hydraulic structures; Bob Battalio, a civil engineer with extensive experience in coastal engineering, wetland and creek restoration design, and waterfront civil engineering projects; and Peter Goodwin, Ph.D., a civil engineer specializing in the application of computational modeling to the solution of ecological management issues, with experience in flood control, wetland enhancement, and sedimentation studies throughout the United States and abroad.

Ducks Unlimited. J. Jasper Lament was educated at the University of Miami (Florida) and Queen's University (Canada), earning a Ph.D. in Biology and a Bachelor of Science (Honors) in Biology and Geography. He has extensive training and experience in the biology of fish, waterbirds, and wetlands. Dr. Lament is Ducks Unlimited's primary tidal wetland biologist for the California coast, where he is managing wetlands restoration projects in San Francisco, San Diego, and Monterey Bays. Within the San Francisco Estuary, Dr. Lament is responsible for about a dozen restoration projects in San Pablo Bay, and fifty in the Suisun Marsh.

Steven Edward Carroll, P.E., has a Bachelor of Science from Humboldt State University. Mr. Carroll has design and construction management responsibility for restoration projects in California with Ducks Unlimited, Inc.. Mr. Carroll has been directly responsible for the engineering design and construction of over 10,000 acres of seasonal and tidal wetland restoration and enhancement projects totaling $9 million in agreements. Mr. Carroll has been responsible for the design and construction management of a tidally-fed screened intake in the San Pablo Bay area and a screen for an existing pumping facility on Butte Creek in the Sacramento Valley. He is currently responsible for the

preliminary design on a project that will screen over 20 pumps in the Sacramento Valley's Sutter Bypass. Prior to joining Ducks Unlimited, Inc. Mr. Carroll assisted a West Coast firm in the preparation of feasibility reports for constructing fish screens on the Sacramento and San Joaquin Rivers. Mr. Carroll has participated in the biological analysis of fish barriers on the Sacramento River system. Projects included an evaluation of an acoustic barrier at Georgiana Slough, and the Glen-Colusa Irrigation District fish screen and bypass at Hamilton City. While at California Department of Water Resources, Mr. Carroll participated in a study to determine the population, migration times and spawning habitat for the Sacramento Splittail.

Hydroscience Engineers, Inc. HydroScience Engineers (HSe) is a California Corporation specializing in the planning, permitting, design, and construction management of complex water resources projects. HSe provides engineering services for water, wastewater, and recycled water projects. HSe has a Central Valley Area office in Sacramento and a San Francisco Bay Area office in American Canyon. They have designed and permitted a wide range of water and wastewater collection, treatment, distribution, and disposal systems for private and public agency clients throughout California. HSe has particular expertise in permitting and designing advanced membrane wastewater treatment plants for discharge to impaired waterways in the State. In addition, HSe also has expertise in permitting and designing constructed wetlands projects for recycled water and wetlands restoration projects.

U.S. Geological Survey. The following individuals from the U.S. Geological Survey will conduct monitoring for the project. **John Y. Takekawa--**Experience: federal research biologist in California for 15 years; research specialty ecology of migratory waterbirds with technical specialty in application of radio telemetry; studies focused on the Pacific Rim, California, and San Francisco Bay; established the San Francisco Bay Estuary Field Station of the U. S. Geological Survey located on San Pablo Bay in 1995. Education: PhD 1987, Iowa State University, Ames, Iowa; Animal Ecology/Statistics minor, MS 1982, University of Idaho, Moscow, Idaho; Wildlife Resources, BS 1979, University of Washington, Seattle, Washington; Wildlife Science/Forestry. **Keith Miles--**Experience: primary focus of research, effects of contaminants on estuarine and marine habitats, particularly federal trust species; emphasis to determine consequences of accumulation of contaminants and discriminating effects caused by contaminants from naturally occurring changes in wildlife populations; effects of contaminants on the structure of invertebrate and vegetative assemblages and the potential for accumulation of these contaminants among specific prey guilds of migratory waterbirds and marine mammals; habitats at Chesapeake Bay, San Francisco Bay, and the Arctic environment; recent research to determine the effects of contaminants on fossorial animals in the Mohave Desert. Education: PhD Oregon State University, June 1987, Wildlife Ecology, MS Oregon State University, August 1976, Wildlife Biology, BS Howard University, June 1972, Zoology.

D. Cost

1. Budget

An itemized budget for the tasks for which Calfed funding is sought is provided below.

Other tasks related to the project are being funded from other sources.

Task #	Task Description	Services or Consultants	Indirect Costs	Total
Year 1				
1	Project Management	$80,000	$2,400	$82,400
2	Preliminary engineering design	$200,000	$6,000	$206,000
3	Collection of baseline water quality and avian and aquatic species data.	$150,000	$4,500	$154,500
4	Preparation of construction drawings (plans and specifications)	$100,000	$3,000	$103,000
5	Permitting.	$100,000	$3,000	$103,000
6	Construction of water control structures, conveyance systems, and related infrastructure	0	0	0
7	Construction and post-construction monitoring of water quality and avian and aquatic species data.	0	0	0
	Subtotal	$630,000	$18,900	$648,900
Year 2				
1	Project Management	$80,000	$2,400	$82,400
2	Preliminary engineering design	0	0	0
3	Collection of baseline water quality and avian and aquatic species data.	$100,000	$3,000	$103,000
4	Preparation of construction drawings (plans and specifications)	$150,000	$4,500	$154,500
5	Permitting.	$100,000	$3,000	$103,000
6	Construction of water control structures, conveyance systems, and related infrastructure	0	0	0
7	Construction and post-construction monitoring of water quality and avian and aquatic species data.	0	0	0
	Subtotal	$430,000	$12,900	$442,900
Year 3				
1	Project Management	$80,000	$2,400	$82,400
2	Preliminary engineering design	0	0	0
3	Collection of baseline water quality and avian and aquatic species data.	0	0	0
4	Preparation of construction drawings (plans and specifications)	0	0	0
5	Permitting.	$40,000	$1,200	$41,200
6	Construction of water control structures, conveyance systems, and related infrastructure	$3,000,000	$90,000	$3,090,000
7	Construction and post-construction monitoring of water quality and avian and aquatic species data.	$200,000	$6,000	$206,000
	Subtotal	$3,320,000	$99,600	$3,419,600
	GRAND TOTAL	**$4,330,000**	**$129,900**	**$4,511,400**

2. Cost Sharing

The overall project has been underway for a number of years. The Cargill salt ponds have been purchased by the state. A feasibility study for the overall project is underway, as is the CEQA/NEPA documentation for the project. Contributions to fund these tasks have been made as follows:

State Coastal Conservancy	$1,424,682
CA Department of Fish and game	$561,710
U.S. Army Corps of Engineers	$300,000

An additional $1.3 million in project funding has been requested from the U.S. Army Corps of Engineers. This funding request is currently under consideration, and if obtained, will be used for later stages of the project.

E. Local Involvement

Local agencies provide input on the project via the Napa-Sonoma Marsh Restoration Group (NSMRG). The NSMRG provides a forum for discussion of restoration projects in the Napa-Sonoma Marshes, and includes agency representatives, non-profit conservation organizations, and private entities, including the U.S. Army Corps of Engineers (San Francisco District), San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Geological Survey, San Francisco Estuary Institute, U.C. Davis, Cargill, Inc., Ducks Unlimited, Point Reyes Bird Observatory, The Bay Institute, Save The Bay, National Audubon Society, Southern Sonoma County Resource Conservation District, Napa County Resource Conservation District. Throughout the feasibility study, engineering, construction, and monitoring, the NSMRG meets on a regular basis to provide feedback, avoid replication of work, and identify issues requiring further study.

F. Compliance with Standard Terms and Conditions

The Coastal Conservancy is agreeable to, and able to comply with, terms and conditions included in Attachment D, the Terms and Conditions for State Funds, except as follows: (1) the Conservancy would revise or exclude Paragraph 11 in the "Attachment D Terms and Conditions for State Funds", requiring it to indemnify, defend and save harmless the State because the Conservancy is itself an agency of the State. (2) The Conservancy would exclude Paragraph 12 in the "Attachment D Terms and Conditions for State Funds", because agents and employees of the Conservancy are, in fact, officers and employees or agents of the State of California.

G. Literature Cited

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Figure 1 – Site Location Map

Figure 2 – Topographic Map of Area

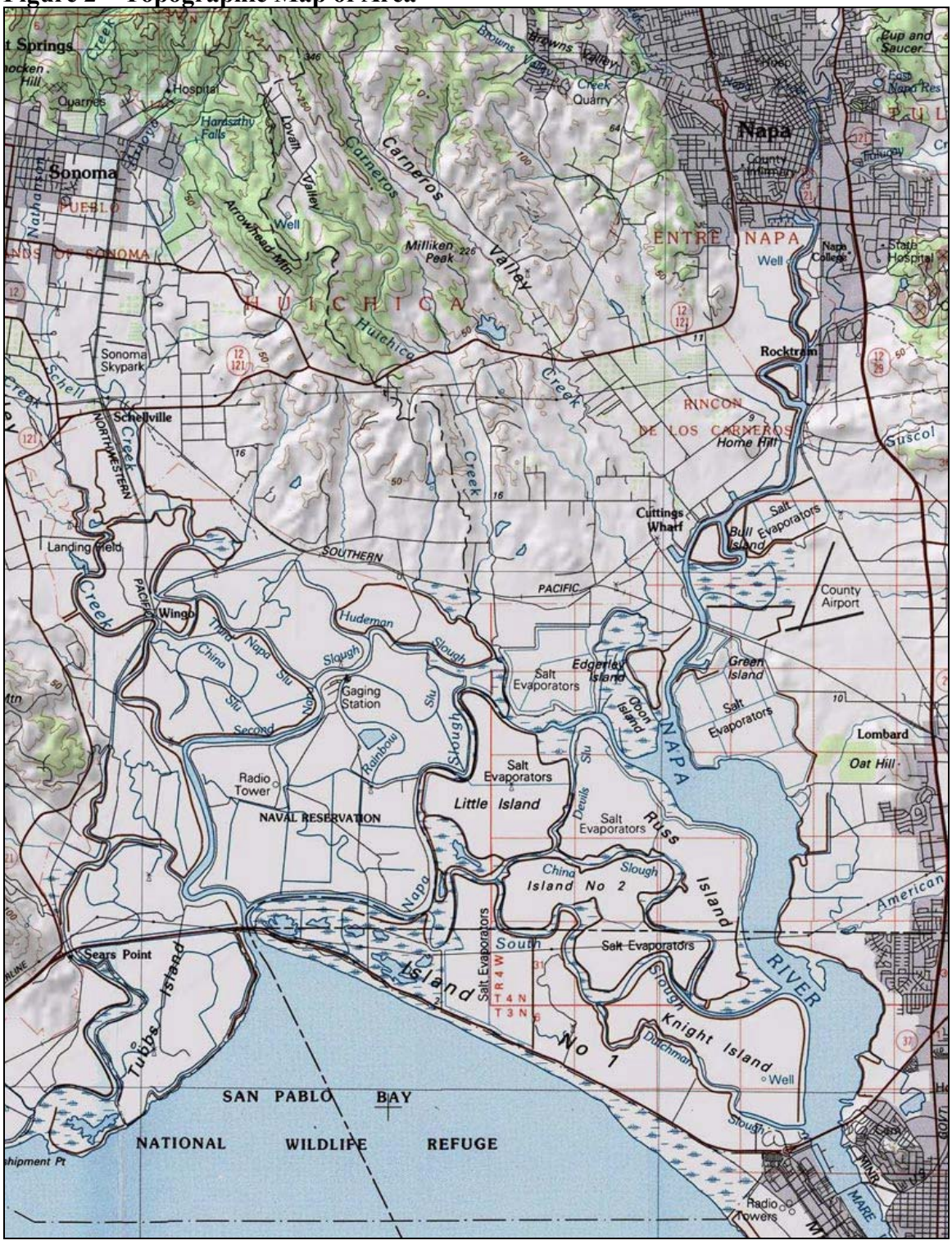
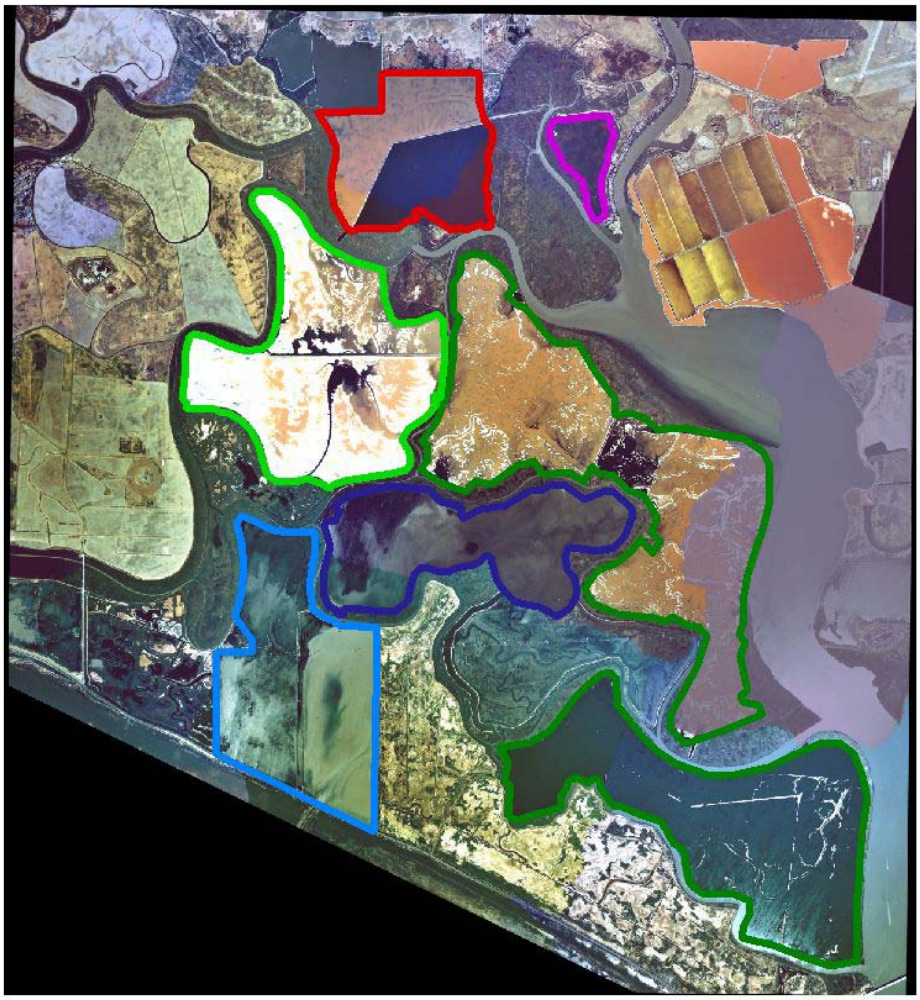


Figure 3 – Habitat Objectives



Habitat Objectives

- Intake/Muted Tidal Pond
- Muted Tidal Ponds/Tidal Marsh
- Managed Deep-Water Pond
- Managed Shallow-Water Ponds
- Tidal Marsh
- Salt Ponds

Figure 5 – Site Photo

Figure 6 – Aerial View of Project Site

Figure 7 – Existing Pond Levee

Figure 8 – Aerial View of Project Site

Figure 9 – Site with Overlay of Pre-Salt Pond Conditions

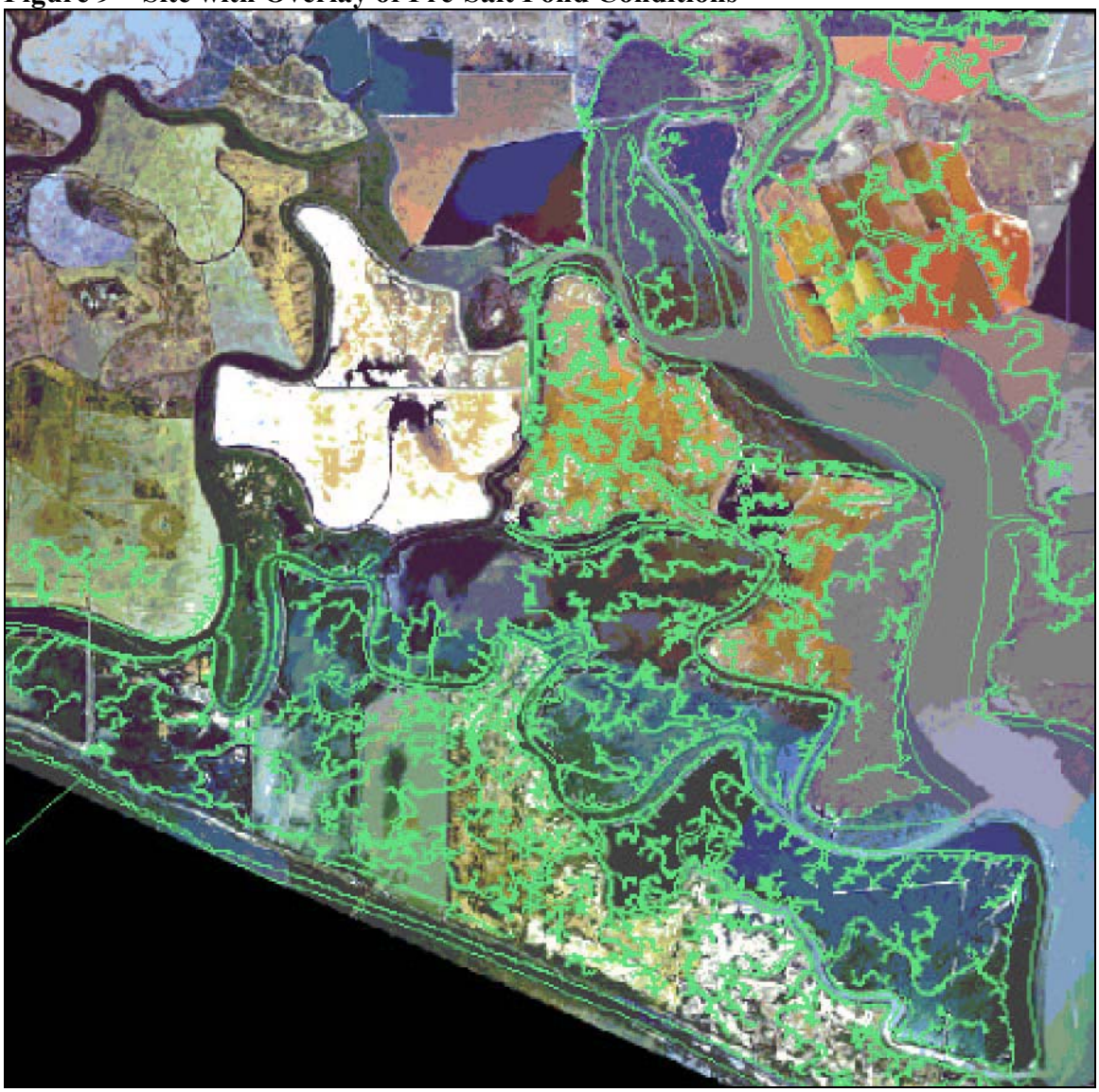


Figure 10 – Proposed Water Control Structures