

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

- | | |
|---|---|
| <input type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit |
| <input checked="" 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 type="checkbox"/> Planning | <input checked="" type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input type="checkbox"/> Education |
| <input type="checkbox"/> Research | |

By signing below, the applicant declares the following:

- 1.) The truthfulness of all representations in their proposal;
- 2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the 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 2.4) 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.

RICHARD MARSHALL

Printed name of applicant

Richard E. Marshall

Signature of applicant

Holland Land Levee Protection and Habitat Restoration Project

April 1999

Applicant:

Reclamation District No. 999
c/o Richard Marshall
38563 Netherlands Road
Clarksburg, California 95612
Telephone: 916/775-2144
Fax: 916/775-9139
e-mail: recdist999@sprintmail.com

Applicant Type: Public Agency
Tax I.D. 94-6001099

Primary Contact:

Murray, Burns and Kienlen
c/o Gilbert Cosio Jr.
1616 29th Street Suite 300
Sacramento, California 95816
Telephone: 916/456-4400
Fax: 916/456-0253
e-mail: mbkgib@aol.com

EXECUTIVE SUMMARY***Project Description & Primary Biological /Ecological Objectives***

This proposal requests CALFED funding to repair 1200 lineal feet of erosion on Sutter and Miner Sloughs on the Reclamation District No. 999 (RD 999) levee. The erosion repair will use biotechnical techniques instead of the traditional methodology of fill and riprap. The primary objectives of the project are 1) to use biotechnical bank and levee methods to protect and enhance the levee bank and 2) create and protect SRA, in-stream cover and tidal perennial aquatic habitats which are valuable to CALFED priority species such as delta smelt, splittail, chinook salmon and other anadromous fish.

Cost

The estimated cost for completing the proposed project is as follows

Topographic surveys and mapping	\$ 5,000
Prepare preliminary engineering and biotechnical design	\$ 15,000
Regulatory permitting and CEQA/NEPA documentation	\$ 30,000
Final engineering and biotechnical design and compilation of contract plans and specifications	\$ 15,000
Construction	\$ 175,000
Vegetation planting	\$ 40,000
Post-project weed control	\$ 25,000
Post-project biological monitoring	\$ 40,000
CALFED project management	\$ 10,000
Total	\$ 355,000
RD 999 Cost Share	\$ 60,000
CALFED Funding	\$ 295,000

Adverse and Third Party Impacts

There are no direct third party impacts associated with the project.

Applicant Qualifications

Reclamation District No. 999 is the public agency responsible for maintenance and rehabilitation of the levees within its jurisdiction. RD 999 is well acquainted with the CEQA process, bidding laws, contracting for levee work, and in general flooding issues in the North Delta.

Murray, Burns and Kienlen has been retained by RD 999 to secure CALFED funding, provide planning, permitting and engineering services in connection with project planning and construction. MBK has been the RD 999 Engineer for a number of years. MBK is a consulting civil engineering firm providing services in the general areas of flood control, water supply

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planning and water rights. As a subset of their flood control clientele, MBK provides engineering services to many Delta reclamation districts. MBK personnel involved with Delta reclamation district engineering have extensive experience in water resources engineering and planning.

Monitoring and Data Evaluation

Monitoring objectives for the project include documenting changes in sediment erosion and deposition between project sites and control sites, assessing effectiveness of biotechnical designs for erosion protection in the Delta, and documenting changes in habitat quality and species richness for plant and wildlife communities. Hypotheses to be tested include comparative differences between erosion/deposition, species richness, and other biological or habitat characteristics between project and control sites.

Erosion pins, sampling of quadrats for plant populations, and wildlife surveys will be used to document changes in geomorphic and biological parameters between project sites that have undergone biotechnical treatments, and control sites. Habitat creation or enhancement for CALFED priority species will be quantified. A complete, detailed monitoring plan will be finalized following award of the contract. The monitoring plan, and the results, will be reviewed by a Technical Advisory Committee consisting of senior scientists from the private sector, agency representatives, and outside reviewers.

Local Support/Coordination with other Programs

The landowners and trustees of RD 999 are in support of the enhancement project, and will grant access to the involved contractors and other project personnel. None of the other local parties are expected to have concerns about the project.

Compatibility with CALFED Objectives

The proposed project addresses Strategic Plan Goal #2: Rehabilitation and Protection of Natural Processes. Under the topic area of Habitat Restoration: Channels, Flood plains and Tidal Marshes, the project will lead to protection and enhancement of 1200 lineal feet of riparian and aquatic habitat along Miner and Sutter Sloughs. It will restore and protect priority habitats such as SRA along tidal waterways, while providing in-stream cover and improved habitat for priority species such as Delta special status plant species, delta smelt, splittail, chinook salmon, steelhead, and numerous wildlife species.

The proposed project does not conflict with CALFED objectives such as water quality and water supply reliability but is complementary to the CALFED objective of levee system integrity.

PROJECT DESCRIPTION

Project Description and Approach

Reclamation District No. 999 (RD 999) proposes to restore and protect its levee bank where erosion is threatening valuable CALFED priority habitat. Instead of utilizing traditional erosion repair consisting of fill and riprap, RD 999 plans to stabilize the bank and encourage re-vegetation by using biotechnical methods.

The primary objectives of the project are 1) to use biotechnical bank and levee methods to protect and enhance the levee bank and 2) create and protect SRA, in-stream cover and tidal perennial aquatic habitats which are valuable to CALFED priority species such as delta smelt, splittail, chinook salmon and other anadromous fish.

The biotechnical methods proposed to be used incorporate various combinations of organic fabrics, plant materials, and geotechnical substances that will serve the dual purpose of erosion control and habitat creation. Some of the methods include the use of ballast buckets, coir biologs, and coir mats, planted with abundant quantities of the appropriate native species to provide erosion control and create habitat favorable for CALFED priority species.

The project consists of a series of sites located on the RD 999 levee along the right bank of Sutter Slough and the right bank of Miner Slough in Solano County. A total of 1200 lineal feet is planned for restoration and protection. Four sites along Sutter Slough total 900 lineal feet, and two sites on Miner Slough total 300 lineal feet.

Figures 1-5 detail the design concepts, methods of installation, and anticipated end products of these elements.

Proposed Scope of Work

To complete this project, the following tasks have been identified:

- Task 1. Topographic surveys and mapping
- Task 2. Prepare preliminary engineering and biotechnical design
- Task 3. Regulatory permitting and CEQA/NEPA documentation
- Task 4. Final engineering and biotechnical design and compilation of contract plans and specifications
- Task 5. Construction
- Task 6. Vegetation planting
- Task 7. Post-project weed control – Annual maintenance of weeds until plants are established.
- Task 8. Post-project biological monitoring
- Task 9. CALFED project management

- Program review presentations – One annual review presentation will be made to share information with CALFED or other agency staff and interested parties regarding the progress and results of the project.
- Quarterly reporting – Quarterly reports will be submitted for 3 years.
- Final report – A final report will be prepared on the project, and will include the monitoring results and other information as appropriate.
- Local Involvement Plan – A plan will be submitted to CALFED after award of CALFED contract.

Location of Project

The proposed project is located within the Sacramento-San Joaquin Delta in Solano County (Figure 6). Four of the erosion areas are on the right bank of Sutter Slough between Levee Mile 1 and 4. On Miner Slough, two erosion areas are located just west of the Highway 84 bridge (Figure 7).

ECOLOGICAL/BIOLOGICAL BENEFITS

Ecological/Biological Objectives

The primary ecological/biological objective of the project is to protect and restore Shaded Riverine Aquatic (SRA) habitat along Delta waterways. The proposed project addresses Strategic Plan Goal #2: Rehabilitation and Protection of Natural Processes. Under the topic area of Habitat Restoration: Channels, Flood plains and Tidal Marshes, the project will lead to protection and enhancement of 1200 lineal feet of riparian and aquatic habitat along Miner and Sutter Sloughs. It will restore and protect priority habitats such as SRA along tidal waterways, while providing in-stream cover and improved habitat for priority species such as Delta special status plant species, delta smelt, splittail, chinook salmon, steelhead, and numerous wildlife species.

Levee construction and bank protection have led to the loss of riparian, wetland, and shallow-water habitat throughout the Delta. Biotechnical habitat improvements on levees and shorelines will help re-establish natural processes in the Delta, support increased biodiversity, and restore ecological functions needed for aquatic and wildlife resources. These improvements will address stressors related to loss of flood plains and their associated riparian communities.

Erosion repair and bank protection traditionally consists of fill and riprap. However, the amount of revegetation that occurs is unpredictable. The methods proposed in this project are the most feasible and inexpensive approach to develop priority habitat types while stabilizing the bankline. These efforts are based on the hypothesis that biotechnically enhanced SRA habitats provide higher value aquatic and terrestrial habitat than riprap. Alternatives to biotechnical methods such as constructed berms and set-back levees are desirable, however, they require lengthy planning efforts, and can lead to loss of farmlands which may not always be economically or politically acceptable. Many of the plantings proposed as part of this project will consist of fast growing herbaceous plants which should benefit priority species within two to three years. The use of biotechnical enhancements will ensure durability of habitats, therefore biological benefits will be comparatively large and long lasting.

The role of plants in stabilizing riverbanks and similar areas has been widely documented by Habitat Assessment & Restoration Team, Inc. (H.A.R.T.). This project represents an extension of H.A.R.T.'s ongoing research and development of biotechnology for river bank stabilization and habitat improvement. H.A.R.T.'s work on the American River, Georgiana Slough, Beaver Slough, and elsewhere in the Delta show the relative merits of different vegetation and landscape materials and their relationship to the erosion/depositional process. These data demonstrate that increasing plant and fabric roughness on revetment sites can simultaneously reverse the erosion cycle and induce deposition.

Linkages

The methods proposed in this project are similar to the methods used in "*Tyler Island Levee Protection and Habitat Restoration Plan*" and "*Cache Slough Shaded Riverine Enhancement*

Project” which have been funded by CALFED. The proposed project, along with the on-going projects, will demonstrate the compatibility of levee protection and habitat enhancement. Results from these projects will aid in guiding the development of adaptive maintenance and restoration projects throughout the Delta.

This project is consistent with the ERPP objective to “Restore 10 to 20 linear miles of riparian and riverine aquatic habitat in the North Delta Ecological Management Unit...” (ERPP Volume 2, Target 5, page 103). It is also consistent with ERPP vision to “restore riparian (waterside) vegetation corridors along levees and associated SRA habitat” (ERPP Volume 2, page 80).

System-Wide Ecosystem Benefits

The proposed project complements other SRA improvement projects in the Delta, contributing toward improved ecological function of Delta waterways. By addressing potential habitat “gaps” along Miner and Sutter Sloughs, the project contributes to SRA habitat linkage to other parts of the Delta, and to development of continuous riparian belts that benefit both fish and wildlife species of concern to CALFED. These habitat linkages provide synergistic benefits that exceed those of independent, isolated projects.

Compatibility with Non-Ecosystem Objectives

The proposed project does not conflict with CALFED objectives such as water quality and water supply reliability. The project is complementary to the CALFED objective of levee system integrity, and provides additional benefits by stabilizing the bank using a non-traditional method of bank protection that provides increased habitat for CALFED priority species.

TECHNICAL FEASIBILITY AND TIMING

Alternatives

The proposed alternative involves repairing erosion sites using biotechnical materials to enhance and protect habitat while stabilizing the bankline. Traditional methods of bank protection were not selected because they are unpredictable in the amount of vegetation that will re-establish itself after the levee bank is armored with rip-rap.

Setback levees were considered, as an alternative, but were not economically viable at this site. Water-side berms were also considered, but were rejected because of hydraulic concerns due to the high velocity flood flows of the channels and environmental concerns regarding loss of open water habitat.

Environmental Compliance

The proposed project will be required to comply with California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). Compliance with CEQA will be accomplished by filing a categorical exemption for maintenance of existing structure, with RD 999 as the lead agency. To comply with NEPA, an Environmental Assessment and Finding of No Significant Impact (FONSI) will be prepared (as needed), with the lead agency (ACOE or USBR) to be determined later. If the project is funded through the USBR, the need for an Environmental Assessment and FONSI is assumed.

The following regulatory permits are anticipated for the project:

- U.S. Army Corps of Engineers Nationwide Permit or Letter of Permission
- California Department of Fish & Game Streambed Alteration Agreement
- State Water Resources Control Board Water Quality Certification
- California State Reclamation Board Approval

These permits will be pursued after preliminary design of the project is completed, and will be obtained prior to construction.

Implementation

The project, as proposed, is currently ready for implementation and work can begin upon CALFED's notice to proceed. No outstanding implementation issues exist, and there are no constraints on the schedule. The feasibility of the technical approach has already been proven, permitting needs have been identified, and similar permitting requirements have been satisfied on other projects.

MONITORING AND DATA COLLECTION METHODOLOGY

Biological/Ecological Objectives

Monitoring objectives include documenting the relationship between plant/bioengineering installations relative to control sites to determine the extent of sediment recruitment; assessing the effectiveness of biotechnical design as a viable means of erosion protection in the Delta; documenting the increase of habitat structural and species diversity, especially in relationship to increases in plant and wildlife diversity; and reducing weed populations. Hypotheses related to these objectives, and other monitoring information, are described in Table 1.

Monitoring Parameters and Data Collection Approach

Sediment deposition and/or erosion will be compared between bioengineered and control sites by installing metal erosion pins. Measurements will be made at the end of the depositional season (end of winter) and at the end of the boating season (September). Monitoring of plant installations will consist initially of survival censuses and later of cover sampling. Plant species composition of control and bioengineered areas will be assessed to measure progress of the project. Similarly, wildlife use of the areas will be monitored to indicate whether bioengineered areas are providing better habitat for CALFED priority species.

Data Evaluation Approach

The research monitoring program will include the testing of a variety of scientific hypotheses, including comparison of erosion/deposition, in-stream shade, richness of plant and wildlife communities, and plant survival and cover between control and treated sites. The complete monitoring plan will consist of 6 components: 1) project's goals and objectives, 2) statements of hypotheses, 3) sampling or censusing designs, 4) data management and quality control, 5) data-evaluation protocols, and 6) procedures for utilizing monitoring results in adaptive management of the project. Standard erosion pins will be used to measure erosion and/or deposition.

The detailed monitoring plan will be developed under Task 2 of the project. The detailed plan will include coordination with the CMARP program regarding monitoring methods. Peer review of the monitoring plan and data from the project will be accomplished via establishment of a Technical Advisory Committee (TAC) for the project. The TAC will consist of senior staff of parties involved in the project, resource agency representatives, and other outside reviewers as appropriate (e.g., from academia).

TABLE 1. MONITORING DATA RELATED TO BIOLOGICAL/ECOLOGICAL OBJECTIVES

Hypothesis/Question to be Evaluated	Monitoring Parameter(s) and Data Collection Approach	Data Evaluation Approach	Comments/Data Priority
Sediment deposition at bioengineered sites will be greater than at control sites.	Depth of sediment deposits will be measured using metal erosion pins at the end of winter (depositional season) and the end of the boating season (September)	Significance of differences in deposition will be statistically evaluated.	This will be a key parameter for evaluation of erosion protection.
Sediment erosion will be lower at bioengineered sites than at control sites.	Amount of erosion will be measured using metal erosion pins at the end of winter (depositional season) and the end of the boating season (September)	Significance of differences in erosion will be statistically evaluated.	This will be a key parameter for evaluation of erosion protection.
Native plant populations and cover will increase at bioengineered sites compared to control sites.	Native plant populations, and cover characteristics will be evaluated at both sites, based on subsampling of quadrat along the levee.	Differences in amount of cover and native species populations will be statistically evaluated.	Control of non-native invasive species and planting of native species will increase habitat value for CALFED priority species.
Plant species richness will increase at bioengineered sites compared to control sites.	Plant species diversity will be evaluated at both sites, based on subsampling of quadrat along the levee.	Differences in plant species richness will be statistically evaluated.	Establishment of a more natural, native plant community is expected to increase habitat values and species richness.
In-stream shade will increase at bioengineered sites compared to control sites.	In-stream shade along the water line will be measured in both areas using a spherical densiometer or equivalent instrument. Photo documentation will be used.	Shade measurements will be statistically compared, and photo documentation evaluated.	Significant differences in shade values are expected to require several years of plant growth.
Wildlife resource diversity will be enhanced in the bioengineered areas compared to the control sites.	Conduct seasonal field surveys at established stations along the levee to document wildlife use of the project and control areas.	Species diversity and richness will be statistically evaluated for the project area and control sites.	Wildlife use of areas with a diverse assemblage of native plants is expected to be higher than other areas.

LOCAL INVOLVEMENT

The following entities have been notified of RD 999's intent to submit a proposal to receive funding for the proposed project. Attached are letters notifying the respective agencies, including the County:

- Delta Protection Commission
- Solano County
- Reclamation District No. 349
- Reclamation District No. 501

The landowners and trustees of RD 999 are in support of the enhancement project, and will grant access to the involved contractors and other project personnel. None of the other local parties are expected to have concerns about the project. A detailed local involvement plan will be developed following award of the contract. The plan will include identification of all local parties interested in the project. Procedures for communication with these parties (public notices, mailing lists, meetings, etc.) and receiving feedback will be identified and implemented.

There are no direct third party impacts associated with the project. Most of the land in the impacted areas is already zoned for agriculture, and zoning changes are not required.

COST

Attached on the following page is Table 2 showing the estimated costs of the tasks described in the Scope of Work section. The quarterly budget is shown in Table 3.

Schedule

The District anticipates completion of construction by November 2000 by adopting the following schedule:

Task 1. Surveys and mapping	Jan. 2000 to Feb. 2000
Task 2. Prepare preliminary engineering and biological design	Feb. 2000 to Apr. 2000
Task 3. Regulatory permitting and CEQA/NEPA documentation	Apr. 2000 to Jun. 2000
Task 4. Final engineering and biological design and compilation of contract plans and specifications	Apr. 2000 to Jul. 2000
Task 5. Construction	Aug. 2000 to Nov. 2000
Task 6. Vegetation planting	Sep. 2000 to Nov. 2000
Task 7. Post-project weed control	Nov. 2000 to Dec. 2003
Task 8. Post-project biological monitoring	Nov. 2000 to Dec. 2003
Task 9. CALFED project management	Jan. 2000 to Dec. 2003

TABLE 2 – COST ESTIMATE

Task	Direct Labor Hours	Direct Salary & Benefits	Service Contracts	Material & Acquisition Contracts	Miscellaneous & other Direct Costs	Overhead & Indirect Costs	Total Cost
1			5,000				5,000
2			15,000				15,000
3			30,000				30,000
4			15,000				15,000
5			175,000				175,000
6			40,000				40,000
7		10,000	15,000				25,000
8			40,000				40,000
9			10,000				10,000
Reclamation District No. 999 Cost Share							60,000
Total CALFED Funding Request							295,000

TABLE 3 – QUARTERLY BUDGET

Task	Quarterly Budget Jan - Mar 00	Quarterly Budget Mar - Jun 00	Quarterly Budget Jul - Sept 00	Quarterly Budget Oct - Dec 00
1	5,000	0	0	0
2	10,000	5,000	0	0
3	0	30,000	0	0
4	0	7,500	7,500	0
5	0	0	75,000	100,000
6	0	0	0	40,000
7	0	0	0	8,000
8	0	0	0	10,000
9	1,000	1,000	1,000	1,000

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COST SHARING

Cost share will be provided by RD 999 for Tasks 1 to 3 and a portion of 7. Further cost share will be provided by means of a portion of the weed control and long-term operation and maintenance of the project and in-kind services during post-project monitoring. RD 999's cost share contributions are itemized in Table 2.

As a participant in the Delta Levees Program, the District has received verbal commitment from the State Department of Water Resources (DWR) for cost sharing. Based on legislative appropriation, the SB 34/AB360 Delta Levee Program intends to cost share up to 50% or \$200,000 to fund habitat enhancement associated with this project. In addition, DWR and the Department of Fish and Game through the Delta Levees Program will assist with project management, monitoring and regulatory compliance of the project at no cost to CALFED.

APPLICANT QUALIFICATIONS

Reclamation District No. 999 has maintained the levee exceptionally well since its reconstruction by the Corps of Engineers in the 1950's. Levee inspections by the State consistently rate the levee's maintenance as "outstanding."

Murray, Burns and Kienlen (MBK) has been the RD 999 Engineer for a number of years. MBK is a consulting civil engineering firm providing services in the general areas of flood control, water supply planning and water rights. As a subset of their flood control clientele, MBK provides engineering services to Delta reclamation districts. MBK personnel involved with Delta reclamation district engineering have extensive experience in water resources engineering and planning. MBK personnel have been, and continue to be, extremely involved in shaping the future of the Delta by sitting on numerous boards and advisory committees regarding such areas as environmental and regulatory issues, funding, engineering and land use.

Consistent with Government Code §4525, Murray, Burns and Kienlen was selected by RD 999 to provide planning, permitting and engineering services in connection with project planning and construction. The selection was made on the basis of qualifications and demonstrated competence for the requested services, including documentation of fair and reasonable prices.

MBK acts as a consultant for twenty-one (21) other reclamation districts in the Sacramento-San Joaquin Delta. MBK is also a prime engineering consultant to the Sacramento Area Flood Control Agency (SAFCA) and has been involved as a consultant for many organizations concerned with water conveyance and flood control in the Central Valley.

Mr. Gilbert Cosio, principal of Murray, Burns and Kienlen, will be responsible for engineering and management of the project. Mr. Cosio would be responsible for coordinating all activities in regard to engineering and environmental services performed for Reclamation District No. 999. Mr. Cosio has 17 years of experience in flood control, hydrology, hydraulics, water resource planning, drainage water supply, surveying and levee maintenance. Mr. Cosio is currently Principal-in-Charge of all Delta levee reclamation district work for MBK. Mr. Cosio coordinates levee inspections, levee maintenance and rehabilitation projects, competitive bid plans and specification preparation and contract administration for Delta reclamation districts. He also oversees maintenance planning, funding application and claims, regulatory coordination, environmental assessments, CEQA documentation and reports and presentations to respective reclamation district boards of trustees. Mr. Cosio's Delta work has also led to testimony at public hearings, Reclamation Board hearings and workshops, and State Water Resources Control Board hearings. Mr. Cosio has coordinated levee work and claims with County, State and Federal agencies in charge of disaster assistance. Mr. Cosio was a member of the Delta Coalition, which was a committee involved with developing levee maintenance legislation in 1988. Mr. Cosio is also a member of the Habitat Advisory Committee set up to administer the mitigation element of the Delta Levee Subventions Program and a member of the Habitat Advisory Committee subcommittee regarding regulatory permit streamlining for levee maintenance projects. Mr. Cosio is a member of CALFED's Levees and Channels Technical Team.

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MBK has successfully planned and implemented habitat enhancement projects along the Sacramento River and Delta. Some of the projects include *Beaver Slough Vegetation Berm Project*, *Holland Tract & McCormack Williamson Tract Bank Protection Demonstration Projects*. Projects under planning now include *Cache Slough Shaded Riverine Aquatic Habitat Enhancement Project* funded by CALFED and *Lower Sacramento River Riparian Vegetation Project* funded by the Corps and the Department of Water Resources.

Consistent with Government Code §4525, H.A.R.T., Inc., was selected by Murray, Burns and Kienlen to provide environmental services in connection with project development. The selection was made on the basis of qualifications and demonstrated competence for the requested services, including documentation of fair and reasonable prices.

Jeffrey A. Hart, Ph.D., of H.A.R.T., Inc., is a plant ecologist who will assist in the design of the restoration component of this project, including pre-project baseline surveys, species selection, and erosion control techniques. Dr. Hart has had considerable success in designing and implementing restoration projects (e.g., Stone Lakes National Wildlife Refuge), biotechnical projects (e.g., Dry Creek, Lower American River, North Fork Mokelumne River), and resource studies (e.g., Cosumnes River, Lower American River). He is successfully conducting a similar project under a previous award from CALFED. His other clients include mostly government agencies and non-profit organizations such as the Sacramento Area Flood Control Agency, Sacramento County Water Resources Division, Ducks Unlimited, The Nature Conservancy, California Department of Water Resources, and Turlock Irrigation District. Hart has successfully completed restoration contracts with Ducks Unlimited, and has made considerable progress with the CalTrans Beach Lake Mitigation site.

Consistent with Government Code §4525, EA Engineering, Science, and Technology, Inc., was selected by Murray, Burns and Kienlen to provide environmental services in connection with project development, permit processing, and biological monitoring. The selection was made on the basis of qualifications and demonstrated competence for the requested services, including documentation of fair and reasonable prices.

Pursuant to California Government Code §1090, EA Engineering, Science, and Technology, Inc. is disclosing a remote interest in proposals submitted for funding under CALFED's 1999 Category III program. EA staff, as third tier subcontractors to the Bureau of Reclamation, have provided technical and administrative support to CALFED agency staff in the Restoration Coordination Program. EA's legal counsel has determined that EA's participation as a subconsultant in contracts that may be awarded under the Category III program does not constitute a violation of California Government Code §1090.

Alicia Pool, of EA Engineering, Science, and Technology is a wildlife ecologist who will assist with biological monitoring of the project, including monitoring plan development, pre-project baseline surveys for wildlife, and post-project monitoring. Ms. Pool has conducted wildlife surveys for TES species and other wildlife throughout California, including numerous surveys in the Delta and along the Sacramento and San Joaquin rivers. She has 10 years experience in habitat assessments, use of wildlife survey protocols, and impact determinations under NEPA and CEQA.

COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

Attached are the requested state and federal forms.

APPLICATION FOR FEDERAL ASSISTANCE

OMB Approval No. 0348-0043

		2. DATE SUBMITTED	Applicant Identifier
1. TYPE OF SUBMISSION:		3. DATE RECEIVED BY STATE	State Application Identifier
Application <input checked="" type="checkbox"/> Construction <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction <input type="checkbox"/> Non-Construction		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier
5. APPLICANT INFORMATION			
Legal Name: Reclamation District No. 999		Organizational Unit:	
Address (give city, county, State, and zip code): 38563 Netherlands Road Clarksburg, CA 95612		Name and telephone number of person to be contacted on matters involving this application (give area code) Gilbert Cosio, Jr. (916) 456-4400	
6. EMPLOYER IDENTIFICATION NUMBER (EIN): 9 4 - 6 0 0 1 0 9 9		7. TYPE OF APPLICANT: (enter appropriate letter in box) <input checked="" type="checkbox"/> G	
8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in box(es) <input type="checkbox"/> <input type="checkbox"/> A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other(specify): _____		A. State H. Independent School Dist. B. County I. State Controlled Institution of Higher Learning C. Municipal J. Private University D. Township K. Indian Tribe E. Interstate L. Individual F. Intermunicipal M. Profit Organization G. Special District N. Other (Specify) _____	
		9. NAME OF FEDERAL AGENCY: Department of Interior Bureau of Reclamation	
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> TITLE: _____		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Holland Land Levee Protection & Habitat Restoration Project	
12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): Solano County, California			
13. PROPOSED PROJECT		14. CONGRESSIONAL DISTRICTS OF:	
Start Date 1/00	Ending Date 12/03	a. Applicant 3rd District - OSE	b. Project 3rd District - OSE
15. ESTIMATED FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?	
a. Federal	\$ 295,000 ⁰⁰	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE _____	
b. Applicant	\$ ⁰⁰	b. No. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E. O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	
c. State	\$ ⁰⁰		
d. Local	\$ ⁰⁰		
e. Other	\$ ⁰⁰		
f. Program Income	\$ ⁰⁰		
g. TOTAL	\$ 295,000 ⁰⁰	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation. <input checked="" type="checkbox"/> No	
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.			
a. Type Name of Authorized Representative Richard Marshall		b. Title General Manager	c. Telephone Number (916) 775-2144
d. Signature of Authorized Representative <i>Richard E. Marshall</i>		e. Date Signed 4/15/97	

Previous Edition Usable
Authorized for Local Reproduction

Standard Form 424 (Rev. 7-97)
Prescribed by OMB Circular A-102

ASSURANCES - CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

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

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

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

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title, or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal interest in the title of real property in accordance with awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progress reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL <i>Richard E. Marshall</i>	TITLE General Manager
APPLICANT ORGANIZATION Reclamation District No. 999	DATE SUBMITTED 4/15/99

SF-424D (Rev. 7-97) Back

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	\$.00	\$.00	\$.00
2. Land, structures, rights-of-way, appraisals, etc.	\$.00	\$.00	\$.00
3. Relocation expenses and payments	\$.00	\$.00	\$.00
4. Architectural and engineering fees	\$ 15,000 .00	\$.00	\$ 15,000 .00
5. Other architectural and engineering fees	\$.00	\$.00	\$.00
6. Project inspection fees	\$.00	\$.00	\$.00
7. Site work	\$.00	\$.00	\$.00
8. Demolition and removal	\$.00	\$.00	\$.00
9. Construction	\$ 215,000 .00	\$.00	\$ 215,000 .00
10. Equipment	\$.00	\$.00	\$.00
11. Miscellaneous	\$ 65,000 .00	\$.00	\$ 65,000 .00
12. SUBTOTAL (sum of lines 1-11)	\$.00	\$.00	\$.00
13. Contingencies	\$.00	\$.00	\$.00
14. SUBTOTAL	\$.00	\$.00	\$.00
15. Project (program) income	\$.00	\$.00	\$.00
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ 295,000 .00	\$.00	\$ 295,000 .00
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X _____%		\$ 295,000 .00

1-016251

1-016251

U.S. Department of the Interior

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

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

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. See below for language to be used; use this form for certification and sign; or use Department of the Interior Form 1954 (DI-1954). (See Appendix A of Subpart D of 43 CFR Part 12.)

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

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

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

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

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

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

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

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

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

DI-2011
March 1995
(This form consolidates DI-1953, DI-1954,
DI-1955, DI-1956 and DI-1963)

PART C: Certification Regarding Drug-Free Workplace Requirements

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

Alternate I. (Grantees Other Than Individuals)

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

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

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

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

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

PART D: Certification Regarding Drug-Free Workplace Requirements

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

Alternate II. (Grantees Who Are Individuals)

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

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

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

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

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

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

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

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

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

Richard E. Marshall

TYPED NAME AND TITLE Richard Marshall General Manager

DATE

4/15/99

NOTIFICATION LETTERS

Attached are letters notifying local agencies.

MURRAY, BURNS AND KIENLEN

A CORPORATION
CONSULTING CIVIL ENGINEERS
1616 29th STREET SUITE 300
SACRAMENTO, CALIFORNIA 95816
TELEPHONE (916) 456-4400
FAX (916) 456-0253

ANGUS NORMAN MURRAY
1913 - 1985

JOSEPH D. COUNTRYMAN, P.E.
GILBERT COSIO, JR., P.E.
MARC VAN CAMP, P.E.

JOHN F. WRIGHT, P.E.
MICHAEL C. ARCHER, P.E.
JEFFREY E. TWITCHELL, P.E.
MARK E. FORTNER, P.E.
DON T. TRIEU
THOMAS R. HICKMANN
TEDDY D. RAMIL

CONSULTANTS:
JOSEPH I. BURNS, P.E.
DONALD E. KIENLEN, P.E.

April 16, 1999

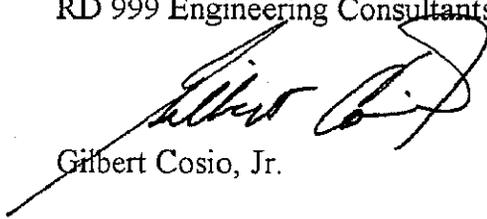
Delta Protection Commission
P.O. Box 530
Walnut Grove, CA 95690

Subject: CALFED Proposal for Levee and Habitat Protection Project

To Whom It May Concern:

Notice is hereby given that Reclamation District No. 999 (RD 999) has submitted a CALFED proposal to request funding to repair four erosion sites on the right bank of the Sutter Slough and two sites on the right bank of Miner Slough. The proposed project consists of erosion repair totaling 1,200 lineal feet using biotechnical methods instead of the traditional methodology of fill and riprap. RD 999 will be developing a Local Involvement Plan to inform interested parties and agencies. If your agency or district would like to be informed of the progress of the project or if you should have further questions, please call me at 916/456-4400.

Sincerely,
MURRAY, BURNS & KIENLEN
RD 999 Engineering Consultants



Gilbert Cosio, Jr.

GC/mv
rd999L0416991

cc: Reclamation District No. 999
c/o Richard Marshall

MURRAY, BURNS AND KIENLEN

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1616 29th STREET SUITE 300
SACRAMENTO, CALIFORNIA 95816
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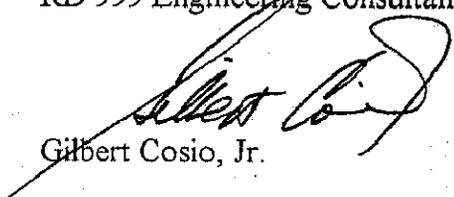
Solano County Planning Department
601 Texas Street
Fairfield, CA 94533

Subject: CALFED Proposal for Levee and Habitat Protection Project

To Whom It May Concern:

Notice is hereby given that Reclamation District No. 999 (RD 999) has submitted a CALFED proposal to request funding to repair four erosion sites on the right bank of the Sutter Slough and two sites on the right bank of Miner Slough. The proposed project consists of erosion repair totaling 1,200 lineal feet using biotechnical methods instead of the traditional methodology of fill and riprap. RD 999 will be developing a Local Involvement Plan to inform interested parties and agencies. If your agency or district would like to be informed of the progress of the project or if you should have further questions, please call me at 916/456-4400.

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GC/mv
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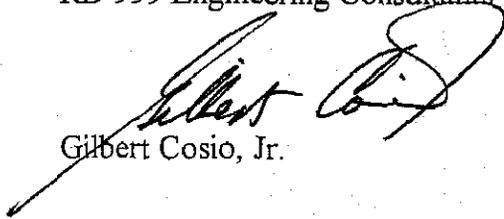
Reclamation District No. 349
P.O. Box 368
Courtland, CA 95615

Subject: CALFED Proposal for Levee and Habitat Protection Project

To Whom It May Concern:

Notice is hereby given that Reclamation District No. 999 (RD 999) has submitted a CALFED proposal to request funding to repair four erosion sites on the right bank of the Sutter Slough and two sites on the right bank of Miner Slough. The proposed project consists of erosion repair totaling 1,200 lineal feet using biotechnical methods instead of the traditional methodology of fill and riprap. RD 999 will be developing a Local Involvement Plan to inform interested parties and agencies. If your agency or district would like to be informed of the progress of the project or if you should have further questions, please call me at 916/456-4400.

Sincerely,
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RD 999 Engineering Consultants



Gilbert Cosio, Jr.

GC/mv
rd999\0416991

cc: Reclamation District No. 999
c/o Richard Marshall

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April 16, 1999

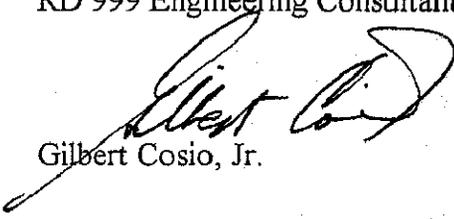
Reclamation District No. 501
3554 Hwy 84
Walnut Grove, CA 95690

Subject: CALFED Proposal for Levee and Habitat Protection Project

To Whom It May Concern:

Notice is hereby given that Reclamation District No. 999 (RD 999) has submitted a CALFED proposal to request funding to repair four erosion sites on the right bank of the Sutter Slough and two sites on the right bank of Miner Slough. The proposed project consists of erosion repair totaling 1,200 lineal feet using biotechnical methods instead of the traditional methodology of fill and riprap. RD 999 will be developing a Local Involvement Plan to inform interested parties and agencies. If your agency or district would like to be informed of the progress of the project or if you should have further questions, please call me at 916/456-4400.

Sincerely,
MURRAY, BURNS & KIENLEN
RD 999 Engineering Consultants

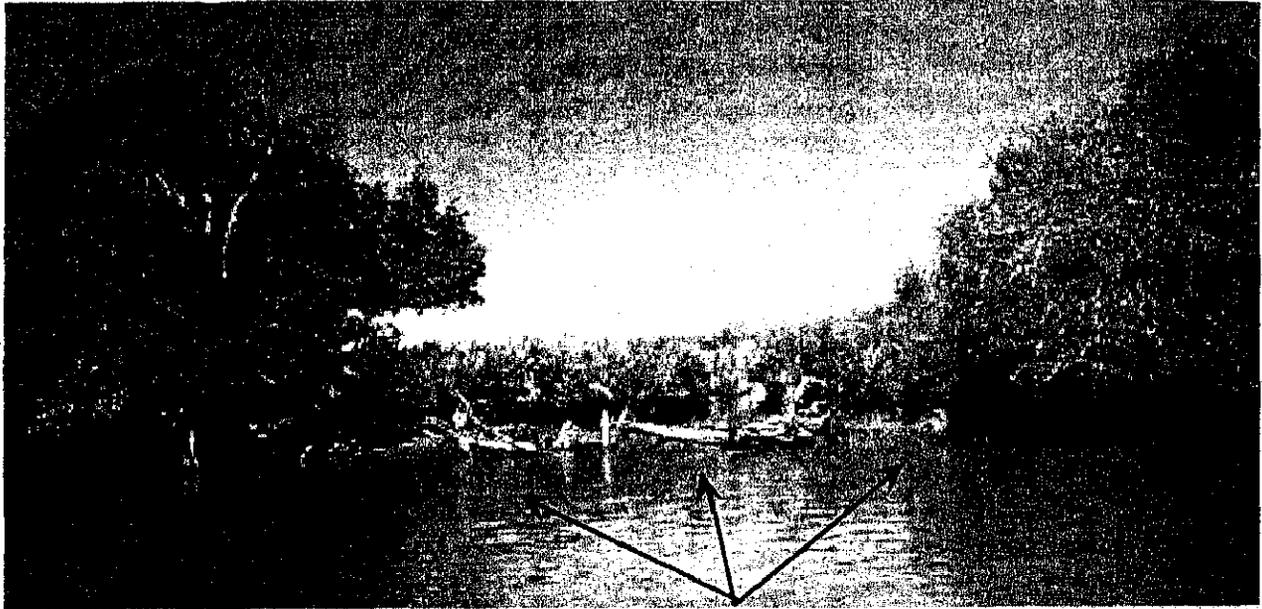

Gilbert Cosio, Jr.

GC/mv
rd999\L0416991

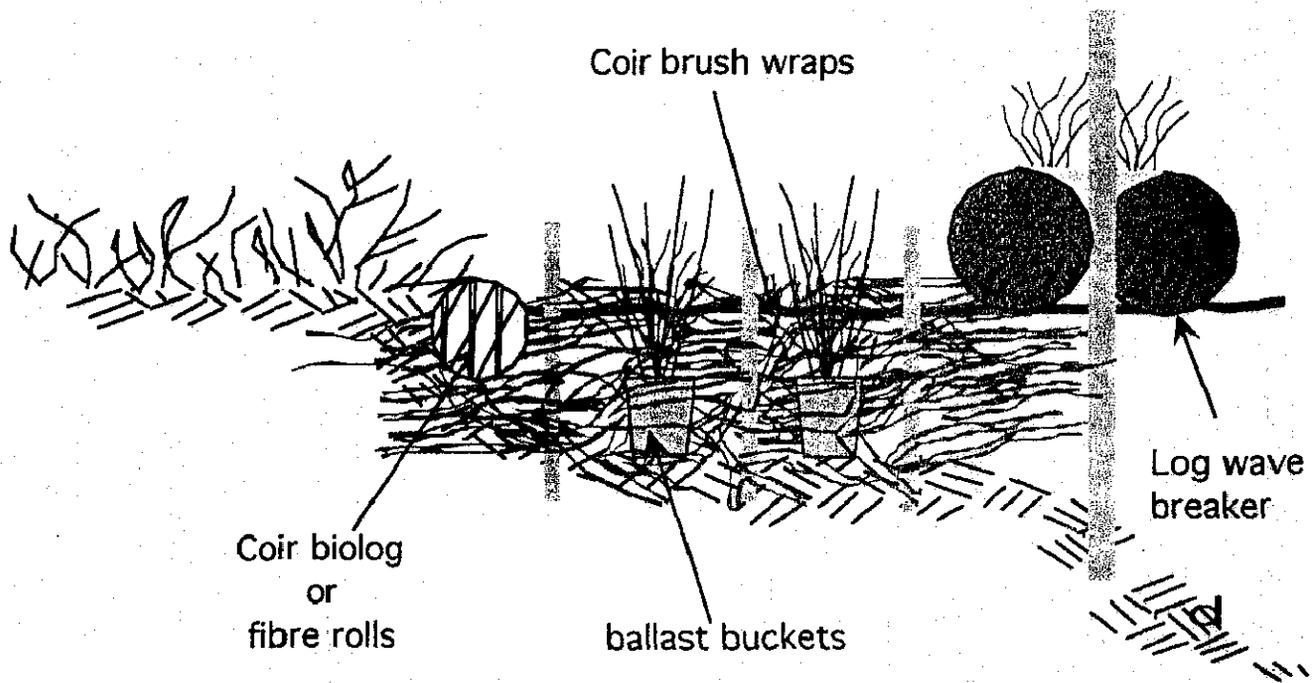
cc: Reclamation District No. 999
c/o Richard Marshall

Reclamation District No. 999 Holland Land Levee and Habitat Protection Project

Design Being Considered for Miner Slough Sites



Erosion



Protection Strategy

Several methods of protection and habitat enhancement are proposed: floating log breakwaters, coir wrapped brush boxes, ballast buckets, and coir biologs.

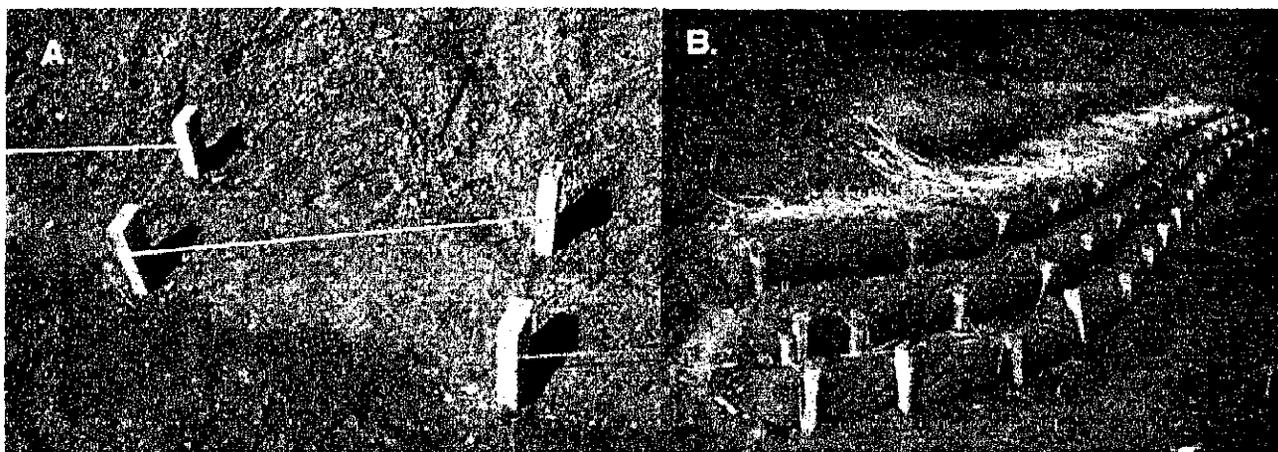
FIGURE 1

Reclamation District No. 999

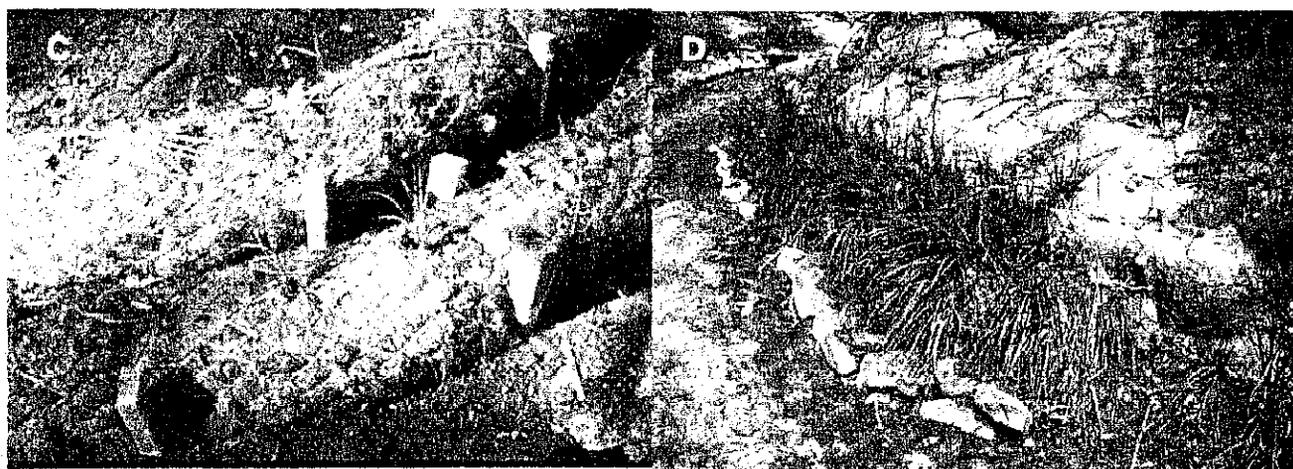
Holland Land Levee and Habitat Protection Project

Biolog Design Above Low Water

Fibre rolls (or biologs) are made from the fibre of coconut husks that are enclosed in a woven rope mesh made either from coconut fibre or from synthetic polyethylene. They range in diameter from 12 to 20 inches and are about 20 feet long. These biodegradable structures have high tensile strengths, absorb and retain considerable moisture, collect sediment, and can be planted with various kinds of plants. They may be used as breakwater structures or for toe protection.

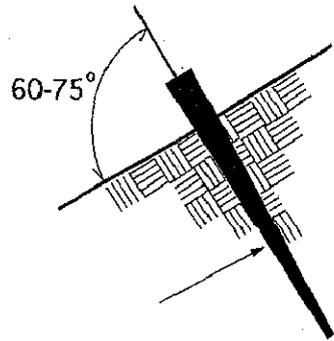


Biologs are rolls or "logs" of coconut fibre material, fastened to embankments for protection against erosion. A. The rolls are placed in soil trenches. Tapered stakes are placed on opposite sides of the rolls and partially driven into the soil at approximately 3-4 foot centers. Twine is attached to the ends of the stakes, and then the entire stake and twine system is driven into the soil, thereby securing the roll into the soil. B. Note that several rolls can be used together.



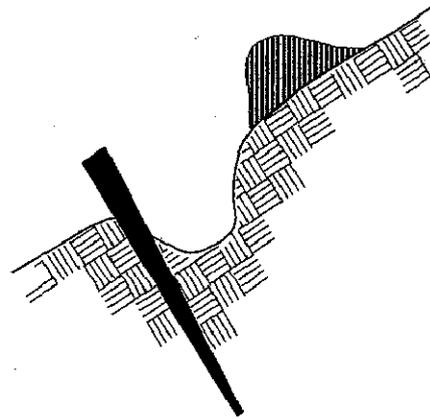
C. Plants can be planted directly into the rolls. D. Biologs attract considerable deposition. After one flooding season they can become entirely filled with sediment, thereby creating ideal conditions for plant growth.

Step 1



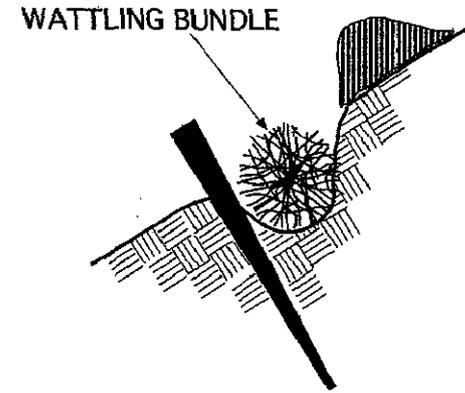
Stake on contour, 3'-4' o.c.

Step 2



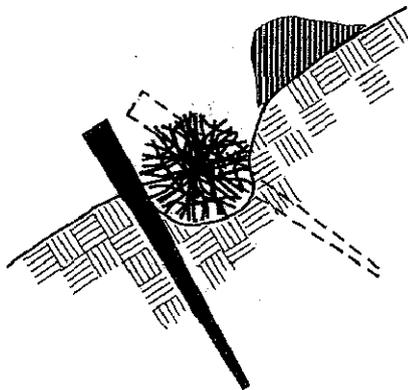
Trench above stakes 1/2 dia. of bundles.

Step 3



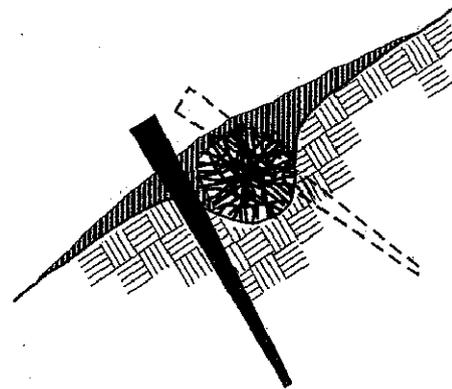
Place bundles in trench.

Step 4

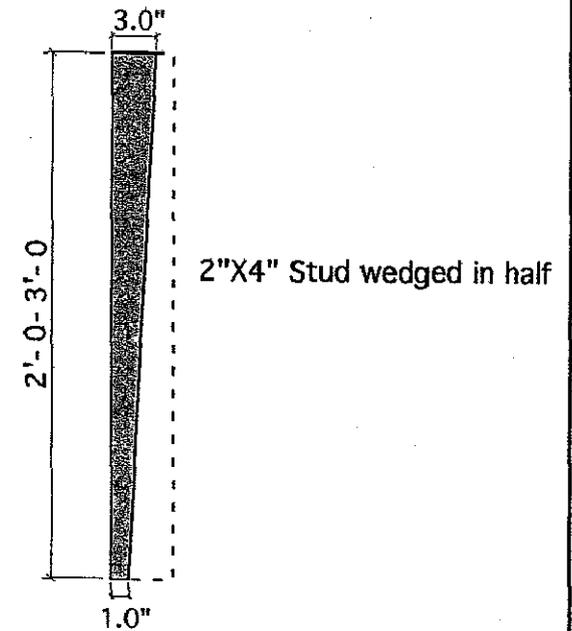


Add stakes through and below bundles.

Step 5



Cover wattling bundle with soil, tamp firmly.



Stake Construction

1-016263

Sequence of Steps For Installing Wattling

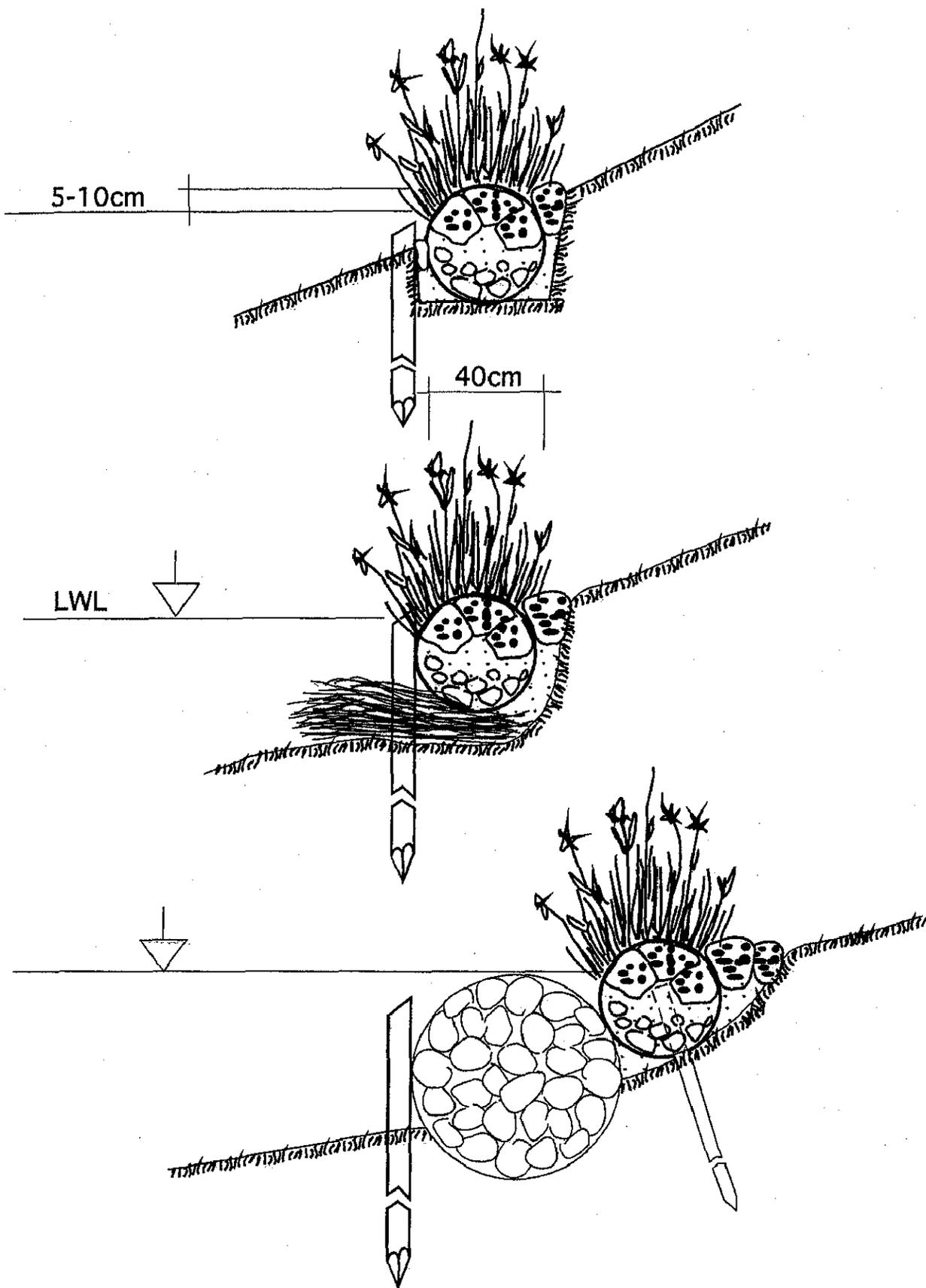


Diagram of a reed roll (swamp sod roll).

Bioengineering for Land Reclamation and Conservation by Hugo Schiechl
 page 148 figure 197

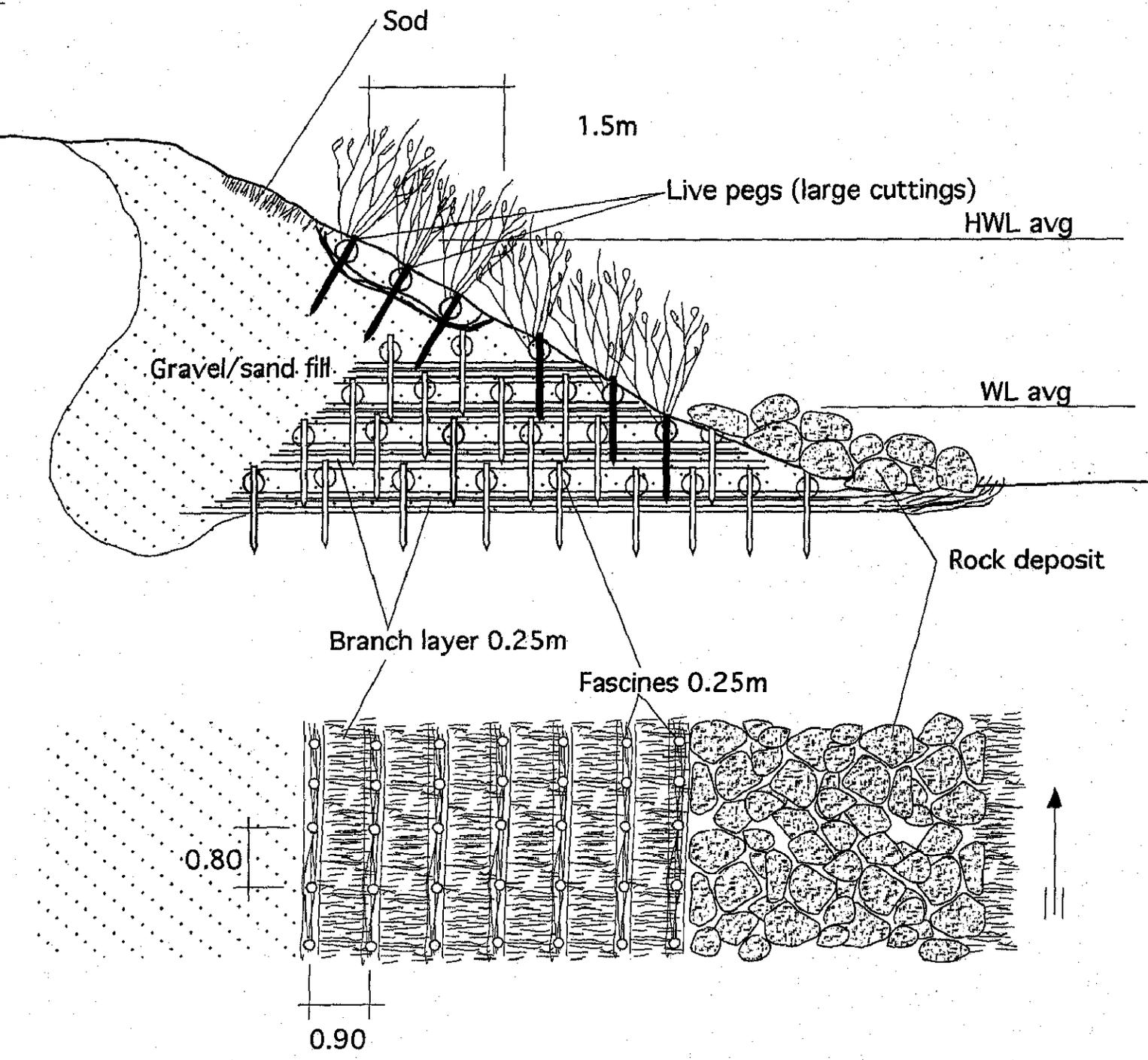
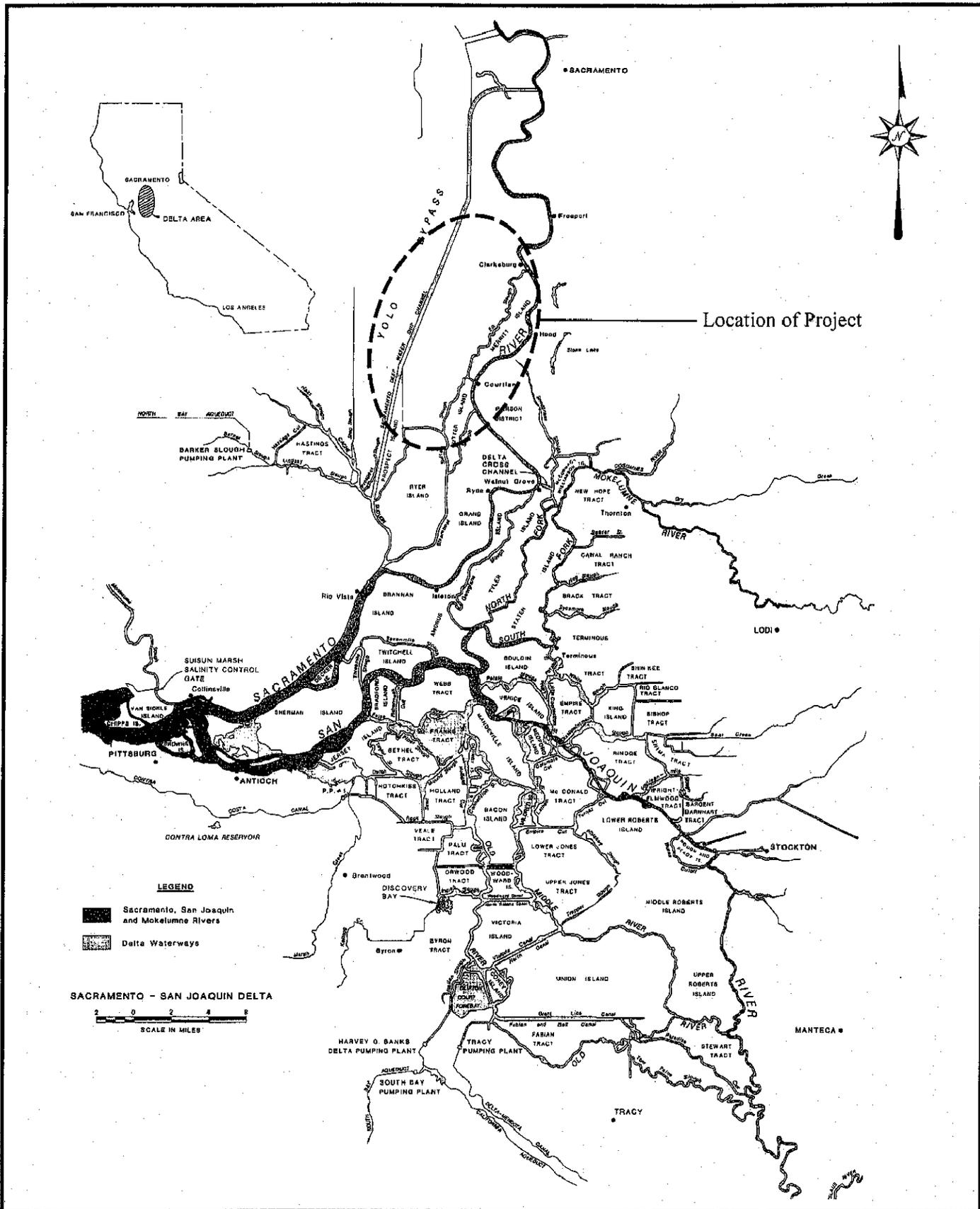


Diagram of branch packing for shore protection.

Bioengineering for Land Reclamation and Conservation by Hugo Schiechl
 page 161 figure 214

FIGURE 5

1-50-73



Location Map

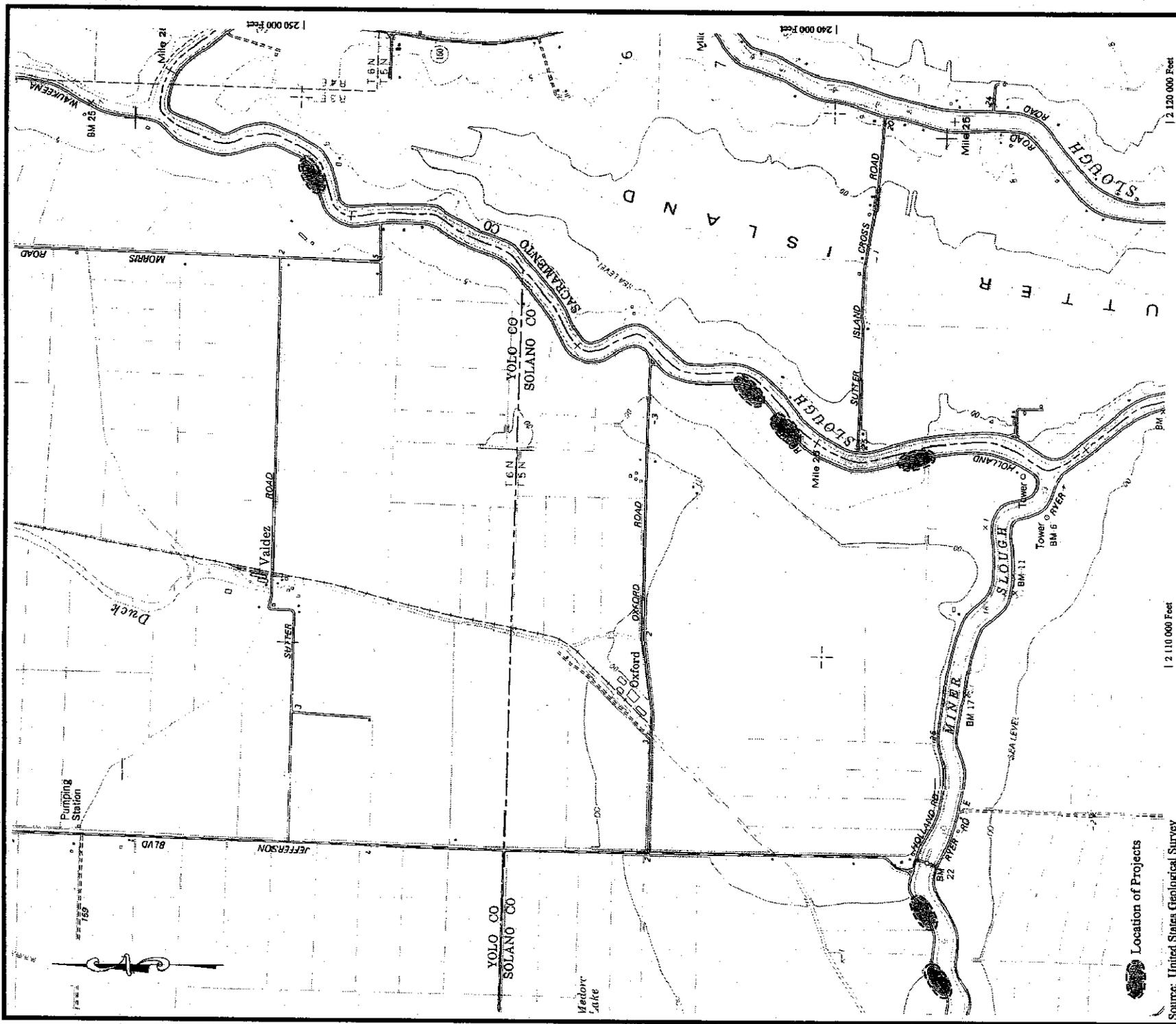
Reclamation District No. 999
Holland Land

 **MURRAY BURNS AND KIENLEN** - Consulting Civil Engineers
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FIGURE 6

I - 0 1 6 2 6 6

I-016266



Source: United States Geological Survey

Location of Projects

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Reclamation District No. 999
 Holland Land

SITE MAP

SCALE:	1" = 2,000'	SHEET:	1
JOB NUMBER:	4166	DATE:	April 1999
DRAWN BY:	JDS	DATE:	April 1999
			
Be Length On Original Drawing Except For 1/8" x 1/8" Block Accuracy		SUBJECTS CP 1 CP 1	

FIGURE 7

I - 0 1 6 2 6 7

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