

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection Project

Project Information

1. Proposal Title:

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection Project

2. Proposal applicants:

Les Heringer, M & T Chico Ranch

3. Corresponding Contact Person:

Les Heringer
M & T Chico Ranch
3964 Chico River Rd Chico, CA 95928
530 342-2954
mtchico@sunset.net

4. Project Keywords:

**Fish Passage/Fish Screens
Fluvial Geomorphology
Sediment Generation, Movement, and Accumulation**

5. Type of project:

Fish Screen

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

No

7. Topic Area:

Fish Screens

8. Type of applicant:

Private for profit

9. Location - GIS coordinates:

Latitude: 39.701

Longitude: -121.941

Datum:

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

The project location is on the East Bank of the Sacramento River just south of the Bidwell State Park at River Mile 193. The project is downstream of the Big Chico Creek's confluence with the Sacramento River and is approximately six miles SSW of the City of Chico.

10. Location - Ecozone:

3.3 Chico Landing to Colusa, 7.5 Big Chico Creek

11. Location - County:

Butte

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:

2nd

15. Location:

California State Senate District Number: 1

California Assembly District Number: 3

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: N/A

Total Requested Funds: \$1,816,500

b) Do you have cost share partners already identified?

No

c) Do you have potential cost share partners?

No

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

No

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

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?

No

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?

No

Please list suggested reviewers for your proposal. (optional)

21. Comments:

17a) The single overhead rate is not applicable because the applicant is not performing the work described in this proposal. All work will be done by subconsultants. 17c) M&T Chico Ranch and Llano Seco Ranch have demonstrated strong commitment to this project by contributing to the Environmental Documentation - Negative Declaration, legal fees to assist in securing the necessary permits for construction, and surveying and appraisal of the gravel bed. Other potential cost share partners may include the City of Chico and U.S. Fish and Wildlife although no commitment has been made at the time this proposal was completed. 18) Construction for the M&T/Llano Seco Fish Screens and relocation of the pumping facility was delivered by Ducks Unlimited, Inc. CALFED No. 96-M22. (\$4.7 Million)

Environmental Compliance Checklist

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection 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: CA Department of Fish and Game

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

-EIR

-none

NEPA

-Categorical Exclusion

☒ Environmental Assessment/FONSI

-EIS

-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.

CEQA: The draft Proposed Negative Declaration is to be submitted to the State permit clearing house for public review on 9/14/01. The final CEQA documents should be completed shortly after or by July 2002. NEPA: NEPA documentation will be secured by July 2002 or sooner.

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 Required

CWA 401 certification Required

Coastal Development Permit

Reclamation Board Approval Required

Notification of DPC or BCDC

Other

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation Required

ESA Compliance Section 10 Permit Required

Rivers and Harbors Act

CWA 404

Other Required

PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land.

Agency Name:

Permission to access state land.

Agency Name: CA State Park and Recreation

Required

Permission to access federal land.

Agency Name:

Permission to access private land.

Landowner Name:

6. Comments.

8) Under Federal Permits and Approvals: A Letter of Permission (LOP) will be secured by the US Army Corps of Engineers. At the time of this proposal, the permits listed were checked as being required, but not yet obtained. The environmental documentation process has begun and it is possible that many of the permits listed above will be secured between the time this proposal is submitted and when it is reviewed.

Land Use Checklist

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection 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?

Yes

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?

8

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

The inside of the gravel bar will be excavated to approximately 5 feet below the summer-fall low-flow water surface elevation. Excavation of the gravel bar would return flow patterns to those that occurred in 1995.

- 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	Gravel Bed along the edge of the river	none - Gravel bed will be reduced
Zoning	A-5	none
General Plan Designation	OFC (Orchard Field Crops)	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.**

M & T Chico Ranch will manage the property and provide operations and maintenance services.

4. Comments.

Conflict of Interest Checklist

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection 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):

Les Heringer, M & T Chico Ranch

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

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

various	MWH
Dan Tibbits	Owen Ayres & Associates
Christian Braudrick	Stillwater Sciences

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

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

Chris Leininger CL & Co

Michelle Treinen MWH

Neil Schild MWH

Kevin Foerster U.S. Fish and Wildlife Service

Comments:

Budget Summary

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection 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						226800	2,300		229100.0	2300	231400.00
2	Public Outreach and Local Involvement						120000			120000.0		120000.00
3	Gravel Bar Reduction Engineering						92100			92100.0		92100.00
4	Gravel Bar Reduction						375000			375000.0		375000.00
5	Gravel Bar Monitoring						25000			25000.0		25000.00
6	Data Collection						113300			113300.0		113300.00
7	Develop Solution Alternatives to Sediment Deposition						43600			43600.0		43600.00
8	River Modeling						48000			48000.0		48000.00
9	Environmental Documentation						0			0.0		0.00
10	Conceptual Design						0			0.0		0.00
11	Feasibility Report						0			0.0		0.00
12	Obtain Funding for Preferred Alternative						0			0.0		0.00
		0	0.00	0.00	0.00	0.00	1043800.00	2300.00	0.00	1046100.00	2300.00	1048400.00

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						205300			205300.0		205300.00
2	Public Outreach and Local Involvement						95000			95000.0		95000.00
3	Gravel Bar Reduction Engineering						0			0.0		0.00
4	Gravel Bar Reduction						0			0.0		0.00
5	Gravel Bar Monitoring						15000			15000.0		15000.00
6	Data Collection						0			0.0		0.00
7	Develop Solution Alternatives to Sediment Deposition						0			0.0		0.00
8	River Modeling						85300			85300.0		85300.00
9	Environmental Documentation						35500			35500.0		35500.00
10	Conceptual Design						52000			52000.0		52000.00
11	Feasibility Report						71900			71900.0		71900.00
12	Obtain Funding for Preferred Alternative						0			0.0		0.00
		0	0.00	0.00	0.00	0.00	560000.00	0.00	0.00	560000.00	0.00	560000.00

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						104800			104800.0		104800.00
2	Public Outreach and Local Involvement						47500			47500.0		47500.00
3	Gravel Bar Reduction Engineering						0			0.0		0.00
4	Gravel Bar Reduction						0			0.0		0.00
5	Gravel Bar Monitoring						7500			7500.0		7500.00
6	Data Collection						0			0.0		0.00
7	Develop Solution Alternatives to Sediment Deposition						0			0.0		0.00
8	River Modeling						0			0.0		0.00
9	Environmental Documentation						0			0.0		0.00
10	Conceptual Design						0			0.0		0.00
11	Feasibility Report						25400			25400.0		25400.00
12	Obtain Funding for Preferred Alternative						22900			22900.0		22900.00
		0	0.00	0.00	0.00	0.00	208100.00	0.00	0.00	208100.00	0.00	208100.00

Grand Total=1816500.00

Comments.

Budget Justification

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection Project

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

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

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

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

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

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

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

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

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

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

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.

The subconsultant will perform the tasks listed in the Budget-Form VI. The estimated time required to finish the project is 8,420 hours to be allocated over three years and among the project team members. In many cases multiple people will be working on the same task at the same time. This will increase efficiency and lower costs. The hourly rate ranges from \$80 per hour for an Associate Engineer to \$170 per hour for a Principal Engineer.

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.

A computer to hold all permanent files at M&T Chico Ranch and to run the model developed by Ayres Associates. These files will be made available to CALFED upon request. Estimated Costs: Computer - \$1,500 21" Monitor - \$760 Keyboard - \$20 Mouse - \$20 Total = 2,300

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 presentations, response to project specific questions and necessary costs directly associated with specific project oversight.

The costs associated with the tasks listed below are for a three year period. Tasks / Costs: Completion of Contracting forms = \$11,900, Performance Measures/Project Monitoring = \$50,100, Project Presentations = \$7,100, Budget Management/Quarterly Reports = \$216,500, Prepare Work Plan = \$19,500, Participate in Project Meetings = \$140,500, Institute and Maintain QA/QC Program = \$50,400, Administrative Support = \$40,900.

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

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

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.

N/A - Applicant is not performing the work described in this proposal. All work will be contracted out.

Executive Summary

M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection Project

Location: Bidwell State Park, Butte County, River Mile 193 on east bank of the Sacramento River, six miles SSW of the City of Chico. **Project Type:** Fish Screen and Ladder Construction **Project Approach:** This project is designed to achieve a short-term and a long-term solution for the protection of the M&T/Llano Seco Fish Screen Facility constructed to provide valuable protection to at-risk anadromous fish species and valuable water supplies to private, state and federal wetlands. An immediate threat exists to the operations of this facility due to the lateral migration of the channel downstream toward the facility. The pumping facility with state-of-the-art fish screens was constructed for \$4.7 million in 1997 and provides critical fish passage to natal spawning and rearing habitat in Big Chico Creek. Since then, river dynamics have created substantial sediment depositions and the pumping plant intake is now in an eddy behind the gravel bar at the mouth of Big Chico Creek and in danger of being severed from the Sacramento River during seasonally increased river flows. Intake screens are no longer providing sufficient sweeping flows critical to fish screen operation and fish survival. Consistent with environmental recommendations to protect anadromous fish species and wetland habitat, it is proposed that the gravel bar be excavated to its 1995 size and location to protect the facility. In addition, a comprehensive feasibility study will be conducted together with river modeling to determine the appropriate actions for a long-term solution for facility protection and operability. **Hypothesis:** The current rate of sediment deposition and river channel geomorphology will potentially isolate and engulf M&T/Llano Seco Fish Screen Facility rendering them inoperable and increase the mortality rate of spring-run, fall and late fall-run chinook salmon, and steelhead. **Key Uncertainties:** -Rate of sediment deposition. -River meander and hydrology. **Expected Outcome(s):** Short-term and long-term solutions for the protection of the M&T Ranch/Llano Seco Pumping Plant from alluvial river depositions causing the fish screen and pumping facility to become damaged and inoperable. A comprehensive river model to better understand natural sediment transport processes taking place at the M&T Ranch/Llano Seco Fish Screen Facility in order to design an appropriate protection strategy. **Relationship to CALFED ERP and CVPIA Goals:** This project is effectively implementing the CALFED ERP Goals 1,2 & 4 and fulfilling the CVPIA Anadromous Fish Restoration Program Section 3406(b)(1) objectives and the Anadromous Fish Screen Program (AFSP) Section 3406(b)(21).

Proposal

M & T Chico Ranch

**M&T/Llano Seco Fish Screen Facility - Short-Term/Long-Term Protection
Project**

Les Heringer, M & T Chico Ranch

A. Project Description: Project Goals and Scope of Work

Project Location: Bidwell State Park, Butte County, River Mile 193 on east bank of the Sacramento River, six miles SSW of the City of Chico. Ecozone 3 – Sacramento Region, 3.3 – Chico Landing to Colusa. (See **Attachment 1** for a location map.)

1. Problem:

Diverse and cumulative impacts are associated with downward trends of all four races of chinook salmon, steelhead trout, splittail and other Sacramento River dependent aquatic species within the Sacramento River Basin. Poorly screened diversions, seasonal dams installed in rivers, small, unscreened diversions, and a limited number of large diversions (> 250 cfs) have contributed to a decrease in survival rates of juvenile and adult salmon populations within the basin. As part of a major effort to reduce the risk of mortality for salmonid species within the Sacramento River Basin, the M&T Chico Ranch diversion pumps, located in Big Chico Creek, were relocated to the mainstem Sacramento River Channel in 1997. This project involved consolidating the diversion with the Llano Seco Wildlife Refuge, constructing state-of-the-art fish screens on the pumping facility and dedicating 40 cfs of flow to Butte Creek for fish and wildlife in exchange for Sacramento River water. The project was listed as an action item in the *CVPIA Anadromous Fish Restoration Program* and the *California Department of Fish and Game's 1993 Restoring Central Valley Streams: A Plan for Action*. Total project costs supported by the CALFED Program were \$4.7 million.

At full capacity, the new diversion supplies water at 150 cfs from the Sacramento River to M&T Chico Ranch, Llano Seco Ranch, the Llano Seco Unit of the Sacramento River National Wildlife Refuge, and the Llano Seco Unit of the Upper Butte Basin Wildlife Area. As a year-round pumping facility, water is delivered to 15,000 acres of farmland and refuge land, including over 4,000 acres of wetland owned and managed by the U.S. Fish and Wildlife Service and the California Department of Fish and Game (CDFG). These wetlands provide valuable habitat for waterfowl and other wetland species. In addition to providing key wetland habitat, the new pumping plant ensures salmon restoration in Big Chico and Butte Creeks by eliminating entrainment and by providing fish transportation flows, respectfully. As a result of the investment made for the M&T/Llano Seco Fish Screen Facility, valuable increases to populations of at-risk species and their associated habitats have been enhanced and restored. However, the natural processes occurring in the Sacramento River are posing a substantial threat to these restoration activities and the on-going operations of this facility.

Since the time of project completion, subsequent geomorphic changes in the Sacramento River channel, in the vicinity of the M&T/Llano Seco diversion pumps, have formed a gravel bar that poses a significant risk to continued pumping and fish screen operations of the M&T/Llano Seco facility. This encroaching gravel bar appurtenant to Bidwell State Park just upstream of the M&T/Llano Seco pumping plant also threatens the City of Chico's wastewater treatment outfall, located on the same bank of the Sacramento River approximately 300 feet downstream of the pumping plant intake. Both facilities are in danger of being severed from the Sacramento River because the pumping plant intake is now in an eddy behind the gravel bar located at the mouth of Big Chico Creek. Subsequently, the intake screens are no longer providing sufficient sweeping flows consistent with National Marine Fisheries Service and CDFG) fish screen criteria due to the deposition of sediment. Eddy currents are also unable to maintain a clean screen as originally designed. As a result of these changes, anadromous fish including spring-, fall-, late fall-, and winter-run chinook salmon and steelhead trout in the Sacramento River and Big Chico Creek have the potential to be adversely impacted by nonfunctioning fish screens. Should the M&T/Llano Seco pumps become inoperable, valuable private, state and federal wetland refuges would be impacted from a loss of

water supplied by the M&T/Llano Seco pumps. Also, a significant investment made by the CALFED Program would be lost with the damage or destruction of the M&T/Llano Seco Fish Screen Facility.

Past evaluations of the river were made to select the current diversion site on the Sacramento River. Historical maps and aerial photographs compiled by California Department of Water Resources (CDWR) indicate that, since 1896, the river has not meandered east of its current location at the pumping plant which is located on a geologic control. Because the bank is relatively stable, it was chosen as the site for the new pumping plant. At this location, however, the Sacramento River has historically migrated to the west. As recently as 1935, the west bank was approximately 1,000 feet west of its current location. Between 1995 and 2001, the Sacramento River shifted 500 feet toward the west bank (or an average of 83 feet/year). As the river migrated in this direction, flow velocities at the pump intake and outfall have been reduced and sediment deposition has increased. In addition, aerial photographs indicate that the mouth of Big Chico Creek has shifted both upstream and downstream from its current location over recent decades.

Concurrent with the lateral migration of the channel, the gravel bar at the apex of the meander has migrated downstream toward the pump facility. Between 1995 and 1999, the gravel bar, that is currently aggrading at the pump intake, migrated over 1,100 feet downstream. Between 1999 and 2001, the gravel bar moved an additional 600 feet downstream. Diving surveys in May 2001 show that the riverbed aggraded approximately 5 feet relative to past surveys at the City of Chico diffuser, and 2 of the 7 diffuser nozzles were buried by sediment (Sierra View Divers 2001). A similar survey conducted in May 2001 at the M & T/Llano Seco pumps revealed that the channel bed is encroaching on the fish screen. These surveys noted that sediment deposition has reduced clearance under the intake from 6 feet to 2–3 feet. The date of the previous survey was not given in the report, but the divers estimated that the screens will stop functioning normally within two years if the current rate of deposition continues (Sierra View Divers 2001). (**Attachment 2** illustrates the migration of the bed from 1997 to 2001.)

The Sacramento River Conservation Area (SRCA) Program (SB 1086) reviewed this problem and, with funding from CALFED, commissioned Stillwater Sciences to identify a short-term alternative to maintain operation of the pumps and outfall. (See **Attachment 3**) The upstream reach of the pump location was examined for evidence that upstream changes (including hard points in the channel) are contributing to planform changes at the pumping plant and City outfall. CDWR maps of historical bank location obtained from aerial photographs between 1923 and 1999 from the pumping plant to river mile 195 (approximately 2 miles upstream) were examined. These maps have not been checked for accuracy, and quantitative measurements of channel migration rates cannot be made. These maps do indicate, however, that river migration historically occurred upstream of the pumping plant. Historical river migration upstream of the pumping plant is also evident from the current photographs that show old meander channels along the west bank of the river. Based upon available information, the effects of upstream hard points on the bar that is threatening the pumping plant cannot be assessed. It is important to note, however, that the Sacramento River will continue to migrate within its historical meander corridor at the pumping plant site.

The deposition of the gravel bar at the pump intake and the City outfall is not the result of localized processes. Rather, the deposition of this bar is the result of large-scale channel migration processes. As such, measures that address only short-term, local conditions or processes will likely provide only short-term, stop-gap benefits. Larger-scale measures that address longer-term, larger-scale processes will likely provide more persistent benefits.

In addition to long-term considerations, the fish screen facility is significantly at risk due to potential high flows anticipated by winter runoff in the Sacramento River. This situation would cause further migration of the gravel bar that would then completely engulf the facility. Excavation of the gravel bar to its 1995

size and location is appropriate to ensure immediate protection of the facility until a long-term solution is investigated and implemented.

Past Studies: Stillwater Sciences, 2001, Technical Memorandum: Prepared for M&T Chico Ranch, Llano Seco Ranch and the Sacramento River Conservation Area, (August 13, 2001), HDR Engineering, Inc., 2001, Initial Study and Proposed Mitigated Negative Declaration M&T Ranch/Llano Seco Ranch & Refuge/City of Chico Sacramento River Water Intake: Prepared for CDFG and the City of Chico (August 2001).

2. Justification

Conceptual Model: The conceptual model (shown in **Attachment 4**) illustrates the goal of the project and describes the causal interconnections among the key participants and ecosystem components such as natural sediment deposition and the anadromous fish in the Sacramento River and Big Chico Creek.

Underlying Basis for Work: Protection of the function and operation of the M&T/Llano Seco Fish Screen Facility.

Hypothesis: The current rate of sediment deposition and river channel geomorphology will potentially isolate and engulf M&T/Llano Seco Fish Screen Facility rendering them inoperable and increase the mortality rate of spring-run, fall and late fall-run chinook salmon, and steelhead.

Hypothesis Testing: Gravel bar excavation will eliminate the threat of substantial sediment deposits overtaking and rendering M&T/Llano Seco Fish Screen Facility inoperable. River modeling will be utilized to test the hypothesis and contribute to finding a long-term solution to the problem.

Assumptions: Excavation of the gravel will return flow patterns to those that occurred when the project was first constructed in 1997 and will provide adequate sweeping flows to maintain fish screen operational criteria.

Key Uncertainties:

- Rate of sediment deposition.
- River meander and hydrology.

Reduce Uncertainties by:

- Monitoring and modeling of river dynamics.
- Elimination of immediate threat of encroaching gravel bar.

River modeling falls under the “Undertake Targeted Research to Provide Necessary Knowledge” on the Healey Ladder of the Adaptive Management process. The scientific uncertainty is too great to allow resolution in the context of a pilot or other implementation project. Project implementation of a long-term solution cannot be taken until a better of understanding of river dynamics is understood. This information tool is critical to choosing an appropriate solution to on-going sediment deposition that threatens the functionality and operation of the M&T/Llano Seco Fish Screen Facility.

3. Approach

A partial excavation of the gravel bar will eliminate the immediate threat to the operations and function of the M&T/Llano Seco Fish Screen Facility. This solution has been discussed with resource agencies and

stakeholders at SRCA meetings. Excavation of the gravel bar would return flow patterns to those that occurred when the project was first constructed in 1995. Up to 100,000 cubic yards of sand and gravel would be removed from bar located just upstream of the pumping facility intake screens. The new bar alignment would return river currents to the east shoreline at the screened intake as occurred when the screened intake was first constructed. The new channel alignment would prevent short-term sediment deposition near the facilities by eliminating the eddy behind the bar and providing direct Sacramento River currents to the pumping plant site.

The removal of the gravel bar is planned to be a 3-step process:

1. A temporary stream crossing over Big Chico Creek will be constructed to provide heavy equipment access to the site. The crossing will extend from an existing access road on the M&T Chico Ranch across Big Chico Creek to the gravel bar. This crossing will include one or more 24-inch diameter by 18-foot long corrugated metal culverts (CMP) covered with clean gravel fill. The crossing will be approximately 15-foot wide roadbed on the top and will extend approximately 60 feet across the span of Big Chico Creek. The crossing is to be removed after construction activities have been completed and the original contours restored. On the bar, the stream crossing will extend to the construction site in the center of the bar via a compacted gravel pathway. This pathway will require some brush and small tree removal for a short distance from the crossing to the open bar. Upon project completion, this pathway will be restored to its original state including any necessary grading and replanting within the pathway.
2. The 8-acre excavation area inside on the gravel bar will be excavated to approximately 5 feet below the fall low-flow (4,000 cfs Sacramento River flow) water surface elevation. During excavation, a 5 to 10-foot berm will be left on the outer edge of the dry bar to separate the Sacramento River and Big Chico Creek from the construction activities. This technique will reduce and/or eliminate any turbidity caused by re-suspension of sands and silts during construction. This buffer would isolate turbid seep water in the excavation area from the Sacramento River and Big Chico Creek during construction. Silt will settle in the excavation area and would be subject to resuspension when high flows capture the area during the winter-spring period.
3. Winter flood flows will complete the reconfiguration of the bar by capturing the excavated area and scouring the outer berm.

The gravel removed from the bar will be relocated to a 6-acre spoils area on M&T Chico Ranch across the temporary crossing on Big Chico Creek. The area is located just inside the east flood levee of the M&T Chico Ranch property. Gravel and sands from the bar would be dispersed evenly over the storage area with a drainage gradient toward the water to alleviate any ponding. Although the gravel storage area is in the flood plain, the area is a backwater under flood flows and sands and gravels would remain in place. The gravel and sand would remain available for river and floodplain restoration activities of the SRCA at any future date. (See Performance Measure #2)

In order to address the long-term protection of the fish screens, this project also proposes to prepare a Feasibility Study to determine and prioritize alternative actions that focus on the effects of geomorphic processes on the potential success of each alternative in reducing threats to the screen pumping facility and the City outfall.

The Feasibility Report will be prepared by Montgomery Watson Harza and will summarize the findings of determining a beneficial long-term solution to the sediment deposition that threatens the functionality and operation of the M&T/Llano Seco Ranch Fish Screen Facility. Preparation of the Feasibility Report will consist of gathering existing data, researching existing conditions in the river, understanding fluvial geomorphology, monitoring the gravel bar, gathering data from surveyors, hydrologists, and geo-technical engineers, and preparing a river model to assist in determining an appropriate long term solution. The approach associated with the Feasibility Report is explained below.

- 1) Gather existing studies and reports on the Sacramento River's fluvial geomorphology to obtain a general understanding of the river and its processes. Determine what information was used to place the pumps in the current location and compare this data to the existing situation and conditions. Assess the impacts of placing the pumps in their current location and determine how the impacts may be mitigated by future action. (See Performance Measure #4)
- 2) Once the gravel bar has been removed, perform an assessment and document its new size and outer boundaries. Divers will inspect the gravel bar semi-annually and collect necessary data on the southern migration of the gravel bar. A general monitoring plan will be detailed and initiated to supplement existing data and augment ongoing monitoring. A physical monitoring plan will be developed to establish a firm understanding of existing conditions and enable informative assessments of post-project performance with respect to natural processes in the Sacramento River. (See Performance Measure #3)
- 3) Review and analyze proposed alternatives presented by Stillwater Sciences in their report entitled, "Final Draft of M&T Ranch and Llano Seco Wildlife Refuge Pump Intake." Determine the effects of implementing various project alternatives on the continual operation of the pumps and on the anadromous fish that use this reach of the Sacramento River and Big Chico Creek. Propose additional alternatives and include suggestions from those involved with the project.
- 4) Collect various data such as hydraulic and geotechnical information to compile a list of design criteria to be used in developing a river model and in the final design of the preferred alternative. (See Performance Measure #5)
- 5) Develop a river model to analyze the hydraulic effects of implementing various alternatives. Ayers Associate will prepare the model. (See Performance Measure #6)
- 6) Using the river model, develop conceptual designs of selected alternatives to determine a cost efficient alternative that will be recommended as the long-term solution to the sediment deposition at M&T/Llano Seco Pumping Station while maintaining and protecting native habitat. (See Performance Measure #8)
- 7) Conduct a Biological Assessment to determine the environmental effects on the natural habitat within the Sacramento River. (See Performance Measure #7)
- 8) Ayres Associates and Montgomery Watson Harza will work closely with those involved in the project to determine the objectives and concerns of those affected by the project. Performance and model development meetings will be held with various stakeholders to develop the river model and to receive input on the Feasibility Report. Stakeholders include M&T Chico Ranch, Llano Seco Ranch, City of Chico, Bidwell State Park, Sacramento River National Wildlife Refuge, U.S. Fish and Wildlife Service, CDFG, CDWR, National Marine Fisheries Service, and landowners Walter Stiles Jr., and Val

Shaw, M.D. This will likely be an iterative process where various sets of promising project elements are combined, simulated, and brought back for consideration. (See Performance Measure #1)

- 9) Prepare the Feasibility Report. The report will explain the problem, list the alternatives, justify the preferred alternative, and summarize the benefits associated with implementing the preferred alternative. (See Performance Measures #9 and #10)

Ayres Associates will develop a model to determine an appropriate long-term solution. (See Performance Measure #6) The approach to this modeling is described below:

- 1) Perform a hydrographic survey of the entire Sacramento River bottom for a reach approximately 1.5 miles both upstream and downstream of the M&T/Llano Seco pumping plant. The hydrographic surveying will involve the use of dual-frequency real-time GPS receivers combined with an Innerspace survey grade fathometer operating from a 16-ft jet boat. Position and depth data (X, Y and Z) from the GPS receivers and fathometer will be logged concurrently by a portable computer. Data will be collected along cross sections at a maximum spacing of approximately 300 feet.
- 2) Reduce all field data and develop in-river bathymetric mapping. This mapping will be combined with overbank mapping previously developed by the U.S. Army Corps of Engineers (COE). This combined mapping will be used to represent the existing site conditions.
- 3) Develop a 2-D hydraulic model for the specified reach of the Sacramento River using the RMA-2V computer model. The model will be used to analyze the hydraulic effects of implementing the preferred alternative. The model will be validated to either known high water marks or to other hydraulic models of the area. The validated model will run for two flow conditions: bank full flow (approximately a 2-year event) and CA Department of Water Resource's advertised capacity for the reach.
- 4) Revise the validated 2-dimensional model described above to incorporate the preferred alternative. The model will be run for the two flow conditions described in above.
- 5) Revise the validated 2-dimensional model to reflect another possible alternative agreed to by the project team and stakeholders. This alternative will be developed from the input provided by the interested parties in multiple modeling development meetings. This model shall be run for the two flow conditions described above.
- 6) Prepare a draft and final report that summarizes the analyses performed, impacts of the alternatives, conclusions, and recommendations for implementation of either of the alternatives. This report will include graphics that show conditions without the project, with the project, and differences between the two scenarios.
- 7) Ayres will hire Stillwater Sciences to perform a technical review of their modeling efforts including the hydraulic and geomorphic understanding of the Sacramento River and Ayres' final report.

4. Feasibility

Project feasibility for removing the gravel bar, preparing a Feasibility Study, and conducting a model for the different alternatives is excellent with the time allotted as specified in the work schedule. There have been numerous discussions with contractors to determine the necessary actions associated with removing the gravel bar, i.e., number of personnel, equipment, and days to finish the project. The gravel bar is

easily accessible and discussions with Bidwell State Park have been underway to obtain permission to conduct the proposed excavation of the encroaching gravel bar. The completion of the gravel bar excavation is dependent on late flood flows in the Sacramento River. This constraint limits the timeframe of which construction can take place in the Sacramento River. With the permitting process under review and almost complete, it is highly feasible that construction will take place as indicated in the work schedule.

Table 1 lists the various agencies with applicable permit requirements. The applications for the permits listed in the table have been submitted to their respectable agencies, final details and comments are being addressed. The necessary permits will be secured by the time of construction. No other constraints that could prevent the execution of the project or impact the schedule such as zoning regulations or county planning ordinances are expected.

Table 1. Required Permits and Authorizations

Agency/Permit	Applicability	Requirements for Application	Status
COE of Engineers Section 404 Nationwide and Section 7 Individual Permits	Required when working in natural streams and rivers	<ul style="list-style-type: none"> - Section 401 Water Quality Certification - COE Application 4345 - NEPA Compliance - National Historic Preservation Section 106 Coordination - CDFG Section 1600 Stream Alteration Permit 	Application for Letter of Permission has been filed
Central Valley Regional Water Quality Control Board Section 401 Water Quality Certification	Required when working in natural streams and rivers if the construction area is less than 5 acres	<ul style="list-style-type: none"> - Responsible Agency pursuant to CEQA - Application Form and Fee - Section 1600 Stream Alteration Agreement or note contact with CDFG - Copy of COE Application 4345 	Application for the 401 certification has been filed and is pending before CVRWQCB
CDFG Section 1600 Stream Alteration Permit	Required when natural streambed is to be altered by construction	<ul style="list-style-type: none"> - Environmental Documentation - Application Form and Fee 	Application Pending
State Historic Preservation Officer (SHPO) and National Historic Preservation Section 106 Coordination	Required for construction	<ul style="list-style-type: none"> - Archeological Inventory Survey and Report 	Completed as part of the LOP process
California Endangered Species Act (CESA) Consultation	Required for construction	<ul style="list-style-type: none"> - Threatened and endangered biological review 	Section 7 consultation has been requested by COE as part of LOP Process

Endangered Species Act (ESA) Compliance	Required for construction	<ul style="list-style-type: none"> - Lead agency =NEPA - Threatened and endangered biological review 	Under Review
Reclamation Board Compliance	Required when under jurisdiction of Reclamation Board (flood control areas)	<ul style="list-style-type: none"> - Description of work and location - Environmental questionnaire and environmental review documents - Complete plans and specifications - Names and addresses of adjacent landowners 	Based on the existing encroachment permit #16561 GM for the pumping plant, a letter authorizing continuing maintenance has been issued.
National Environmental Policy Act (NEPA) Compliance	Required for construction	<ul style="list-style-type: none"> - Lead agency =COE - Prepare EA/FONSI 	Application for Letter of Permission has been filed
California Environmental Quality Act (CEQA)	Required for construction	<ul style="list-style-type: none"> - Lead agency =CDFG - Prepare Negative Declaration 	Public Review of Proposed Mitigated Negative Declaration is currently pending.
California State Parks and Recreation	Required for access to perform the construction	<ul style="list-style-type: none"> - Letter of Permission or Right of Entry 	Application submitted and under review by State Parks and General Services

The feasibility study will be prepared by Montgomery Watson Harza (MWH). MWH was the lead engineer on the design of the M&T Fish Screen Facility and prepared the O&M manual for the operation of the pumping facility. MWH has experience with the staff at M&T Chico Ranch and comprehensive knowledge of their existing facility. MWH has considerable expertise in collecting data and preparing feasibility reports. This background knowledge and previous involvement with the project will enable MWH to develop a feasibility study that addresses the concerns of all interested parties while finding a suitable solution to the sediment deposition at the M&T/Llano Seco Fish Screen facility.

The hydraulic model used to determine a long-term solution to the sediment deposition will be prepared by Ayres Associates. This model will be prepared using previous data collected by CDWR. Ayres offers extensive experience in modeling and understands the fluvial geomorphology of the Sacramento River. The preparation of the model and the feasibility study will coincide and depend on the excavation of encroaching gravel bar.

Authorities: This project has full support from the Sacramento River Conservation Area, the Butte Creek Watershed Conservancy, Sacramento Valley Landowners Association, the City of Chico, U.S. Fish and Wildlife Service, California Department of Parks and Recreation (Bidwell Park), CDFG, CDWR, and key landowners. Accessibility has been given by all landowners/operators and public agencies that have jurisdictions within the project area.

5. Performance Measures

A list of project-specific performance measures for each of the general indicator categories defined in Attachment G of the 2002 PSP are listed in **Table 2**. These performance measures will be used to assess the project's success in relation to its goals and objectives.

Table 2. Performance Measures

Performance Measure	Metric	Target	Baseline
1. Participation by landowners and key resource managers at project planning/ coordination meetings that include river modeling and Feasibility Study preparation and completion.	Number of representatives from interested agencies.	Full Participation for duration of the project.	Not Applicable
2. Gravel bar extraction to 1995 size and location	Area and Volume	Finalize Engineering Design and Construction with the approval of interested parties from Sept '02 to Nov '02	2001 Area and Volume of Gravel Bar
3. Development of Baseline Monitoring/Assessment/ Priorities Report	Number of steps to finish the report and number of documents to be issued to M&T Chico Ranch.	Complete Baseline Monitoring Plan with approval of M&T Chico Ranch staff.	Not Applicable
4. Assessment of gravel bar migration and stream flow dynamics and concurrent evaluation of deposition of sediment and any impacts on fish screens operations.	Area, Volume, Location	Semi-annual reports on gravel bar for the duration of the project	Post gravel bar reduction
5. Completion of comprehensive data collection from CDWR, CDFG, COE, and geo-technical investigations to develop river modeling.	Number of agencies having relevant data and the steps to collect data.	Full involvement from the respectable agencies and final deliverables provided to M&T during Dec '02 to Sept '03.	Known data
6. Completion of the River Modeling Project Report that summarizes the analysis performed, impacts of the alternatives, conclusions and recommendations	Number of steps, meetings, and alternatives analyzed for the completion of the river model. Number of reports to be issued to M&T	M&T Chico Ranch staff and other interested parties to review model and approve an alternative to the long-term solution of sediment deposition. M&T Chico Ranch's staff to review and	Other hydraulic models and studies

for implementation of the preferred alternative.	Chico Ranch.	approve final River Report from May '03 to March '04.	
7. Completion and distribution of Environmental Documentation and necessary permits for construction. Completion of the Biological Assessment for the Feasibility Study	Steps to complete CEQA and NEPA documentation and number of final documents to be issued to respectable agencies.	Final documents approved by all interested parties before construction of the project or before the final Feasibility Study during Feb '04 to July '04.	Not Applicable
8. Development and approval of conceptual design and recommendations for the preferred alternative.	Steps to develop conceptual designs of alternatives and the recommendation of a preferred alternative such as meetings, experience, input, feasibility, etc.	Full approval of conceptual design by interested parties	No action alternative
9. Development and approval of draft feasibility report	Number of draft reports to be issued to MFWC.	MFWC staff and other interested parties to review the report and submit comments during Sept '03 to Oct '04.	Stillwater Science's Report
10. Finalize Feasibility Study incorporating all review comments from the draft submittal.	Number of 100% Feasibility Study documents submitted to M&T Chico Ranch for the use of designing the preferred alternative.	Consultant to respond to all comments, incorporating relevant comments into the 100% report. M&T Chico Ranch to accept the Feasibility Study during Oct '04 to Dec '04.	Draft Feasibility Study

6. Data Handling and Storage

All paperwork and electronic data collected pertaining to project assessment, evaluation and implementation of any recommended construction actions will be handled and store on a secure network and compiled on CD ROM at Montgomery Water/Harza and M&T Chico Ranch. Permanent files will be kept at M&T Chico Ranch and made available to CALFED upon request.

7. Expected Products/Outcomes

- This project will provide a valuable opportunity to advance the science and practice of river restoration and management that can be applied to future fish screen projects on the Sacramento River.
- This project would engineer and conduct a short-term solution of dredging and excavating the gravel bar down to the location and size it was in 1995. This has been determined to best provide the short-term assurances that the gravel bar would not overtake the fish screens and outfall. This action would provide insurance to the parties that the fish screens and outfall would not be rendered inoperable before the long-term solution could be implemented.

- Environmental compliance and all permit documentation and certification will be prepared and completed.
- A Feasibility Study will be conducted and published to determine recommendations for a long-term solution. River modeling will be conducted to facilitate the identification of alternatives and a preferred alternative.
- Annual presentation and site visit to inform and update CALFED Technical/Science/BDPAC Committees about project progress and findings.
- Continued elimination of fish entrainment and mortality from the operation of the M&T/Llano Seco Pumping Plant.
- Continued improvement of in-stream flow conditions in Butte Creek for spring-run Chinook salmon.
- Continued assurance of a reliable water supply to the M&T Chico Ranch and Llano Seco Ranch and state and federal wildlife refuges .

8. Work Schedule

The excavation of the gravel bar, river modeling, and preparation of the Feasibility Study will begin shortly after grant funds are available through a contract. Based on information provided at a CALFED proposal pre-submittal workshop a reasonable starting date for the work is assumed to be September 2002. The work schedule can be adjusted according to the actual execution date. The individual tasks for the M&T Fish Screen Facility Short/Long Term Solution Project are identified below. Tasks 1 and 2 will last the duration of the project. Tasks 3 and 4 (*deliverable: excavation of the gravel bar*) could be funded separately keeping in mind that Tasks 1 and 2 will be involved. Tasks 5-12 (*deliverable: Feasibility Report*) are inseparable and should be completed concurrently with Tasks 1 and 2. A summary of the tasks and their start and finish dates are included in **Table 3**.

Table 3. Work Schedule

Tasks	Start Date	End Date
1.0 Project Management	Sept '02	Feb '05
2.0 Public Outreach and Local Involvement	Sept '02	Feb '05
3.0 Gravel Bar Reduction Engineering	Sept '02	Oct '02
4.0 Gravel Bar Reduction	Oct '02	Nov '02
5.0 Gravel Bar Monitoring	Nov '02	Feb '05
6.0 Data Collection	Dec '02	Sept '03
7.0 Develop Solution Alternatives to Sediment Deposition	April '03	Jan '03
8.0 River Modeling	May '03	March '04
9.0 Environmental Documentation	Feb '04	July '04
10.0 Conceptual Design	Feb '04	Sept '04
11.0 Feasibility Report	Sept '03	Dec '04
12.0 Obtain Funding for Preferred Alternative	Jan '05	Feb '05

Note: Environmental documentation and permits required for gravel bar reduction have been submitted to the respectable agencies and are under review except for NEPA.

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

1. ERP, Science Program and CVPIA Priorities

CALFED Program Goals:

GOAL 1: At-Risk Species –This project will ensure the continuation of promoting the recovery of at-risk species, in particular spring-run and winter-run chinook salmon, steelhead trout, and splittail. The project also contributes to the reversing of the downward population trends of non-listed native species, by reducing or eliminating delay and injury to Butte Creek and Big Chico Creek adult fish by improving passage conditions and reducing entrainment in diversions for juvenile and larval fish.

GOAL 2: Ecosystem Processes and Biotic Communities – This project is expected to continue to support natural ecological processes that sustain natural aquatic and terrestrial biotic communities and life-cycle requirements by supporting a reliable stream-flow in Big Chico Creek. Stream-flows support important ecological processes such as riparian corridors and invertebrate production and fish spawning, nutrient and organic transport and sediment transport and decomposition that replenish riverine aquatic habitats. This project also presents the opportunity to comprehensively assess and evaluate channel dynamics and the river meander on an upper reach of the Sacramento River.

GOAL 4: Habitats - This project will continue to support essential conveyance of flows acquired for in-stream use in Big Chico Creek and Butte Creek that continues to support a mosaic of natural habitats. Additional, this project supports considerable flow to support valuable seasonal and permanent wetlands located on state, federal and private refuges.

ERP Multi-Species Conservation Strategy for the Sacramento River Basin: This project accomplishes specifically listed milestones for Stressor Reduction by providing unimpeded upstream and downstream passage for salmon and steelhead and by reducing or eliminating fish stranding under Water Diversions for the Sacramento Region – Sacramento River – **E034701. (MILESTONE)**

CALFED Science Program Goals:

- *Developing performance measures* that will track the success of the actions taken. Monitoring and data collection will provide the information to evaluate the effectiveness of the upgraded structures in reducing fish passage problems in the Butte Sink.
- Apply an *Adaptive Management* approach by monitoring riverine channel changes including gravel bar movement. Monitoring results will be incorporated into the River Model to better understand long-term solutions for the protection of the M&T/Llano Seco Fish Screen Facility. Hydraulic evaluations will also be included in modeling efforts to maximize fish screen operations. Comparisons of the relative effectiveness of different restoration strategies will guide management decisions.
- *Compare relative effectiveness of different restorations strategies* by bringing together recognized experts to contribute to a modeling effort that will assess and evaluate constraints and opportunities associated with the issue of protecting the M&T/Llano Seco Pumping Facility and city outfall from the natural processes existing with the riverine system.
- *Take advantage of existing data.* This project will combine resources of key resource managers such as U.S. Fish and Wildlife Service, CDFG, and CDWR. Each of these participating agencies have initiated and are continuing to gather pertinent data on this specific issue as well as private efforts to monitor and assess the current threats associated with this project. This project will

continue to compile, develop and disseminate valuable data that can be applied to future facilities facing the same threats.

CALFED Implementation Plan Multi-Regional and Regional Priorities:

REGIONAL IMPLEMENTATION– Sacramento Valley Region: This project address and fulfills Restoration Priorities for the Sacramento Region in the following ways:

SR-1 Develop and implement habitat management and restoration actions in collaboration with local groups such as the Sacramento River Conservation Area Non-Profit Organization.

The project site is located within the Sacramento River Conservation Area (SRCA) and intends to use the SRCA as the forum to conduct community outreach, solicit issues and concerns and coordinate with organization goals and objectives. M&T Chico Ranch has been actively involved in the SB 1086 process and the formation of the organization now known as the Sacramento River Conservation Area. In addition, Les Heringer, Jr., Farm Manager – M&T Chico Ranch, is a member of the Board of Directors of the Butte Creek Watershed Conservancy (BCWC). His participation in this watershed organization will ensure that the actions taken by this project will not be in conflict with the restoration efforts and watershed management efforts being coordinated by BCWC. Additionally, M&T Chico Ranch, Llano Seco Ranch, USFWS and CDFG will continue to participate and coordinate with the Sacramento Valley Landowners Association who is active in the protecting private property rights of farmers and ranchers along the Upper Sacramento River area.

- *Riparian habitat and channel meander.* This project intends to focus on Sacramento River channel meander and the connection between protection activities to the M&T Fish Screen Facilities and the protection and enhancement of riparian habitat. This will be accomplished by conducting a comprehensive Feasibility Study and modeling riverine processes to determine appropriate protection activities on the river and Big Chico Creek (CALFED Regional Program priority tributary). (Strategic Goal 1 – At-Risk Species, Strategic Goal 4 – Riparian Habitat)

SR-2 Restore fish habitat and fish passage particularly for spring-run chinook salmon and steelhead trout and conduct passage studies.

- *Fish passage improvements and fish passage programs.* This project will continue to ensure fish passage commitments on Butte and Big Chico Creeks that were made at the time the M&T/Llano Seco Fish Screen project was completed. Continued operations of the pumping facility will guarantee the investment for upstream and downstream migration.

SR-3 Conduct adaptive management experiments in regard to natural and modified flow regimes to promote ecosystem functions or otherwise support restoration actions.

- *Mechanistic models as restoration tools.* This project will develop a comprehensive river model to better understand how to support riparian habitat by incorporating fixed facilities within the natural riverine processes and the interaction with the Sacramento River and the confluence of Big Chico Creek. The model will simulate physical measurements to evaluate flow, sediment transport and other fluvial processes. (Strategic Goal 2, natural flow regimes)

SR-4 Restore geomorphic processes in stream and riparian corridors.

- *Intensive process and mechanistic studies.* This project will address geomorphic processes of the confluence of Big Chico Creek and the Sacramento River at this location by compiling existing data and gathering current physical data to develop a comprehensive simulation model. This important evaluation will help determine a long-term solution to the protection of the M&T/Llano Seco Fish Screen Facility while maintaining, to the extent possible, the natural meander and habitat values of the riverine system. (Strategic Goal 2 – Riparian Habitat)

SR-6 Continue major fish screen projects and conduct studies to improve knowledge of implications of fish screens for fish populations.

- *Continue and complete ongoing fish screen construction projects* and maintain existing investments currently supported by CALFED and/or CVPIA, including the following (Strategic Goal 1, At-Risk Species). **This project was a major program investment.**

M&T Ranch/Llano Seco Pumping Plant (one of eleven facilities names under this objective) The costs associated with relocating the M&T/Llano Seco Pumping Facility and constructing state-of-the-art fish screen was \$4.7 million shared by a partnership between M&T Chico Ranch, Llano Seco Ranch, U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation and Ducks Unlimited, Inc. (MILESTONE)

- *Comprehensive studies* - This project will directly address this objective by compiling and assessing valuable information to gain an understanding of appropriate placement, protection and long-term maintenance of the M&T/Llano Seco Fish Screen Facility. The proposed Feasibility Study and river modeling will have a potential to contribute to other similar projects facing the same threat of natural river channel dynamics to the proper operations of important fish protection investments.

SR-7 Develop conceptual models to support restoration of river, stream and riparian habitat.

- *Compare conceptual models and develop restoration performance measures for tributary streams and rivers.* This project will contribute to the need for compiling systematic knowledge of restoration activities on Sacramento River. The information gathered and compared to the project conceptual model and the overarching CALFED model will assist in evaluating the progress of the CALFED Bay-Delta Program.

Central Valley Project Improvement Act Goals: This project addresses the following Sections in TITLE 34, PUBLIC LAW 102-575; Section 3402(a): To protect, restore and enhance fish, wildlife, and associated habitats in the Central Valley...of California; for spring-run, winter-run chinook salmon, steelhead trout and splittail and their associated habitats in the CVPIA focus area of the Sacramento River; Section 3406(b)(21) – To avoid losses of juvenile anadromous fish at unscreened or inadequately screened diversions.

Applicability to the Anadromous Fish Restoration Program Section 3406(h)(1) objectives:

- *Improve habitat for all life stages of anadromous fish* by providing flows of suitable quality, quantity, and timing, and improved physical habitat; This project improves fish passage and flow management in Big Chico Creek and the Sacramento River that greatly increases the spawning success and survival of fall, late-fall, and spring-run chinook salmon and steelhead.

- *Improve survival rates* by reducing or eliminating entrainment of juveniles at diversions; The state-of-the-art fish screens constructed at the M&T/Llano Seco diversion result in the elimination of a source of mortality to spring and winter-run chinook salmon in the Sacramento River.
- *Improve the opportunity for adult fish to reach their spawning habitat* in a timely manner: The relocation of the M&T/Llano Seco diversion from Big Chico Creek to the mainstem Sacramento River has greatly increased the opportunity for adult anadromous fish to reach their natal spawning and rearing habitat in Big Chico Creek. As part of the facility relocation, reliable transportation flows were dedicated to Butte Creek to ensure timely access to spawning and rearing habitat in that tributary system.
- *Involve partners in the implementation and evaluation of restoration actions.* This project involves private, state and federal refuge managers. The pumping plant supplies water to 15,000 acres of farmland and refuge land, including over 4,000 acres of wetlands owned and managed by the U.S. Fish and Wildlife Service and CDFG. Llano Seco Ranch also owns and manages seasonal and permanent wetlands that rely on water delivery from the pumping facility. Each of these partners has contributed to the relocation, constructions and protection of the M&T/Llano Seco Pumping Facility. In addition, the City of Chico joins the partnership to minimize impacts to the pumping facility, as the City's wastewater treatment outfall is vulnerable to the same impacts.

Applicability to the Anadromous Fish Screen Program (AFSP) – Section 3406(b)(21): This project fulfills the goal of eliminating or minimizing the entrainment and impingement of juvenile chinook salmon (all runs), steelhead trout, green and white sturgeon, American shad, and striped bass in the Sacramento River at the M&T/Llano Seco Fish Screen Facility.

2. Relationship to Other Ecosystem Restoration Projects.

This project is an integral part of an overall ecosystem restoration program for Butte Creek and the Butte Creek Watershed. Upland restoration activities are critical to provide the connectivity to upper watershed spawning and rearing of anadromous fish species making their way to and from the Bay-Delta.

Considerable investments have been made in the lower, middle and upper reaches of Butte Creek to ensure this life history connection. **Upper Butte Creek:** Five dams have been removed, five dams have been modified with state-of-the-art fish ladders, and four dams modified with state of the art fish screens. Dedicated in-stream flows of 45 cfs have been acquired for fish passage. M&T Chico Ranch and Llano Seco Ranch dedicated 40 cfs of the total in-stream flows. **Butte Sink:** Upgrades have been made to 1 water control structure, 2 fish ladders, and 2 fish exclusion barriers. **Lower Butte Creek:** Ten real-time internet accessible telemetry stations have been installed to protect and manage the in-stream flows from the headwaters to the Sacramento River at the lower end of the Sutter Bypass. Nine technical and environmental evaluations have been completed for future projects. Sanborn Slough Bifurcation Structure to enhance fisheries and waterfowl in lower Butte Creek. Construction of an adult fish exclusion barrier to prevent fish entrainment in an agricultural drain at Drumheller Outfall has been completed. Costs associated with these project are estimated at approximately \$40 million.

In the same way, this project provides critical protection to upstream and downstream anadromous fish species to Big Chico Creek. Downstream Sacramento River efforts would lose value if the connection to the upper reaches of Big Chico Creek was compromised or lost.

3. Requests for Next-Phase Funding. N/A

4. Previous Recipients of CALFED Program or CVPIA funding. - None

Note: Construction for the M&T/Llano Seco Fish Screens and relocation of the pumping facility was delivered by Ducks Unlimited, Inc. (DU) – CALFED No. 96-M22

Financial Status: Expenditure: \$4,749,845.92 Income: \$4,530,556.71 DU: \$ 219,289.21

5. System-Wide Ecosystem Benefits

To reach the habitat goals of the CALFED Ecosystem Restoration Plan and the Anadromous Fish Restoration Plan for all salmonid species, connectivity to upstream spawning and rearing habitat in Butte and Big Chico Creeks is essential to the sustainable populations of spring-run, winter-run, fall and late fall-run salmon and steelhead trout. Restoring this critical pathway is vital to the downstream restoration efforts (Sacramento River and the Delta) as well as upper watershed activities (See B.2 Relationship to Other Ecosystem Restoration Projects, above).

6. Additional Information for Proposals Containing Land Acquisitions. N/A

C. Qualifications

Montgomery Watson Harza

Montgomery Watson Harza, MWH, is a full service civil and environmental engineering firm specializing in a variety of services including water and wastewater engineering, energy and infrastructure engineering, flood control, waste remediation, fisheries design, and environmental assessment and mitigation. The firm also works in a number of other industry sectors such as construction, finance, information technology, applied research, project management, laboratory services and government relations.

MWH - the result of a recent merger between Montgomery Watson and Harza Engineering Company – brings to the industry expertise in fish screen and water structure design and construction. With more than \$721 million in revenue, MWH has 5,500 specialists in more than thirty nations and more than 231 years of combined experience. MWH is successful in delivering progressive environmental solutions that reflect the latest scientific and technological developments while recognizing the importance of protecting the environment and the quality of life in local communities. MWH is a recognized leader in water resources and environmental planning. MWH has been present in Northern California for many years and continues to provide engineering service to many local private and public clients. The company has expertise and the capability to perform all phases of a project from the planning phase to the construction and operation of the completed project.

Montgomery Watson Harza Engineers:

Neil W. Schild is a Principal Engineer with 41 years of experience in operation and maintenance of dams, water supply reservoirs, and power generation projects. He earned a B.S. in Agricultural Engineering from Kansas State University and is a Professional Agricultural Engineer in California. During 20 years with the U.S. Bureau of Reclamation, he has proven his ability to provide reasonable and practicable solutions to even the most complex situations. His background includes design and construction of fish protection facilities, application of environmental regulations, management of water and land resources, transfer of water rights, water resource planning, project management, and administration of personnel. Mr. Schild was Project Manager for M&T Chico Ranch Fish Screen Facility, Gorrill Land Company Fish Screen and Ladders Project, and Banta-Carbona Irrigation District Fish Screen Feasibility Study. He is currently the Project Manager for various Fish Screen Feasibility Studies in Northern California.

Wayne C. Dahl is a Principal Engineer with 23 years of experience in large civil engineering projects including planning, design, and construction management of water resources projects, including flood control and water supply. He received a B.S. in Civil Engineering from North Dakota State University, and completed graduate course study in Hydrology from Arizona State University. He is a Professional Civil Engineer in California and Arizona, and a Land Surveyor in California. Mr. Dahl has expertise in the design and construction of water distribution systems; hydrology and drainage projects; canals, channels, pipelines, and pumping stations; reservoir design; and bridges and roadways. Mr. Dahl is experienced in all phases of project and program implementation, including planning, analysis, design, plans and specifications, bidding, and construction management. He is the Project Manager for the American River Pump Station Project, and for Arcade Water District's Capital Improvement Program.

Dennis E. Dorratcague is a Principal Engineer and the water resources director in Montgomery Watson Harza's Northwest Region. He earned a B.S. from University of Notre Dame and his M.S. in Civil Engineering at Colorado State University. He is a Professional Civil Engineer in Washington, Oregon, Alaska, and California. He has been working in the field of hydrology and hydraulics since 1972, primarily concentrating on hydraulic structures and fisheries engineering. He has served as Technical Manager for the Banta-Carbona Irrigation District Fish Screen Feasibility Study and for the preliminary and final design for a fish screen, ladder, and tailrace barrier in Western Oregon. Mr. Dorratcague was also Project Manager for the development of the Feature Design Memorandum for the Surface Bypass Spillway Project; the hydraulic modeling, preliminary and final designs, and construction services of a fish screen on the White River in Western Washington; the preliminary and final design of a fish screen facility for Pacific Power and Light Company; and the Salmon Falls Fish Passage Project.

Michelle Treinen is an Engineer with experience in civil, environmental, and water resource engineering. She received a B.S. in Civil Engineering from Loyola Marymount University and a M.S. in Environmental Engineering from University of California Berkeley. She is a Professional Civil Engineer in California. Her experience covers a variety of fields within civil engineering such as civil site design, water supply projects, and wastewater treatment plant improvements. She has performed various tasks including reservoir sizing, yard piping design, site grading, access road design, drainage assessment, and construction scheduling. She also prepared a Mitigated Negative Declaration and has successfully mitigated for an endangered plant at a reservoir site. Ms. Treinen served as Project Engineer on the Spring Lane Tank No. 2 project located in Tiburon, California and is currently the lead Civil Engineer on the Eastridge Reservoir in Fairfield, California.

Kathy Vanderwal Dubé is a Senior Geologist with 16 years of experience in conducting river and hillslope geomorphology and erosion/sedimentation studies to assess the environmental impacts and engineering feasibility of various water control and watershed development projects. She earned a B.S. in Environmental Sciences and Resource Management from Lehigh University and a M.S. in Geological Sciences from the University of Washington. Kathy Vanderwal Dubé is a Professional Geologist in Oregon and a Qualified Watershed Analyst in Washington. Her background includes evaluating the effects of both past and proposed projects on watershed characteristics, developing appropriate mitigation measures to protect aquatic and terrestrial habitats, determining changes in gravel composition, calculating sediment transport rates, and analyzing the effects of changes in gravel supply on fish and aquatic habitat. Her expertise in fluvial geomorphology and sediment transport in gravel-bedded rivers has allowed her to work on various projects in the Northwest. For example, Ms Dubé was Project Geologist on the Lewis River Project, Cedar River Delta Project, Cowlitz River Project, and the Cushman River Project.

Owen Ayres & Associates, Inc.

Ayres Associates is a full-service architect/engineering firm with highly specialized water resources engineering capabilities. From offices in Sacramento, California and Fort Collins, Colorado, Ayres Associates provides expert capabilities in hydrology and hydraulics, river mechanics, sediment yield and transport, and fluvial geomorphology. Services are provided by a full-time staff of hydraulic and civil engineers, hydrologists, geologists, and scientists who are experienced in hydraulic analyses and design, control of surface water runoff, floodplain management, floodplain modeling, and sediment transport and channel stability analyses.

D. Cost

1. Budget \$ 1,816,500 (See Form)
2. Cost-Sharing – No present commitments.

E. Local Involvement

Outreach Plan: Key stakeholders involved in this project include Walter Stiles, Jr. and Dr. Val Shaw, M.D. (adjacent river property owners from the project), the City of Chico, the California Department of Parks & Recreation – Bidwell State Park (CDPR), the Sacramento River National Wildlife Refuge (NWR), managed by the U.S. Fish and Wildlife Service, the Sacramento Valley Landowners Association, and the Sacramento River Conservation Area (SRCA). SRCA is fully apprised of the present circumstances and has written a letter of support for the proposed actions described in this proposal. (See **Attachment 3** – Letter from SRCA) The City of Chico is not a property owner, however, they are responsible for the Wastewater Treatment Plant Outfall located adjacent from the fish screen facility and owns an easement through the M&T Chico Ranch to the Sacramento River. Bidwell State Park is key to the stakeholder process, as the gravel bar has accreted onto parkland property and is directly across the river from the property owned by the NWR. Currently, Bidwell State Park representatives have been in discussions with M&T Chico Ranch about proposed gravel bar relocation. The adjacent landowners have been contacted and are involved in the preliminary environmental documentation that is required prior to the proposed gravel bar excavation. These partners will continue to be notified on a regular basis (at least 2 to 3 times per month) by phone, fax, e-mail and personal contact in regard to project implementation. Regular meetings will be scheduled to incorporate issues and concerns raised by each stakeholder as alternatives are being developed. Local government, other interested individuals and conservation groups will be included in regular updates of the project at the Sacramento River Conservation Area meetings held once a month. Two presentations per year will be given to the Butte County Board of Supervisor and the City of Chico City Council. Presently, Les Heringer, Jr. Farm Manager – M&T Chico Ranch, is a member of the Board of Directors of the Butte Creek Watershed Conservancy. The watershed group is already actively involved in this project and has given M&T Chico Ranch a letter of support for proposal solicitation. Mr. Heringer, Jr. will continue to report to BCWC Board of Directors at their monthly organizational meetings.

An Initial Study has been initiated and public meetings will be held within the community. Additional public meetings will be held, at a minimum once per year, during the lifetime of the project. River modeling will be demonstrated and preliminary discussion of a suggested alternative will be conducted to solicit issues and concerns from the community and general public. One general public field trip to the project site will be organized and conducted during the spring of the third year. CALFED staff will be regularly apprised of project development and requested to provide input to ensure project consistency with the CALFED program.

F. Compliance with Standard Terms and Conditions

M&T Chico Ranch has reviewed the standard State and Federal contract terms described in Attachments D and E included in the CALFED Ecosystem Restoration Program 2002 Proposal Solicitation Package and agrees to the standard clauses. M&T Chico Ranch finds no disagreement in the proposal or the standard terms.

G. Literature Cited

CALFED Bay-Delta Program. Guide for Regulatory Compliance for Implementing CALFED Actions, Volume 2: Environmental Regulatory Processes, June 2001.

Central Valley Anadromous Fish Annual Run-Size, Harvest and Population Estimates, 1967 through 1991, CDFG, August 1994 Revision.

Central Valley Project Improvement Act, Title 34 of PL 102-575, Sections 3402, 3406 and 3407. Approach and Focus for Implementing the CVPIA 1999-2004.

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Department of California Fish and Game, National Community Conservation Planning Act, Sections 2800-2840, 1991.

Final Endangered Species Act Section 7 Consultation Handbook, March 1998.

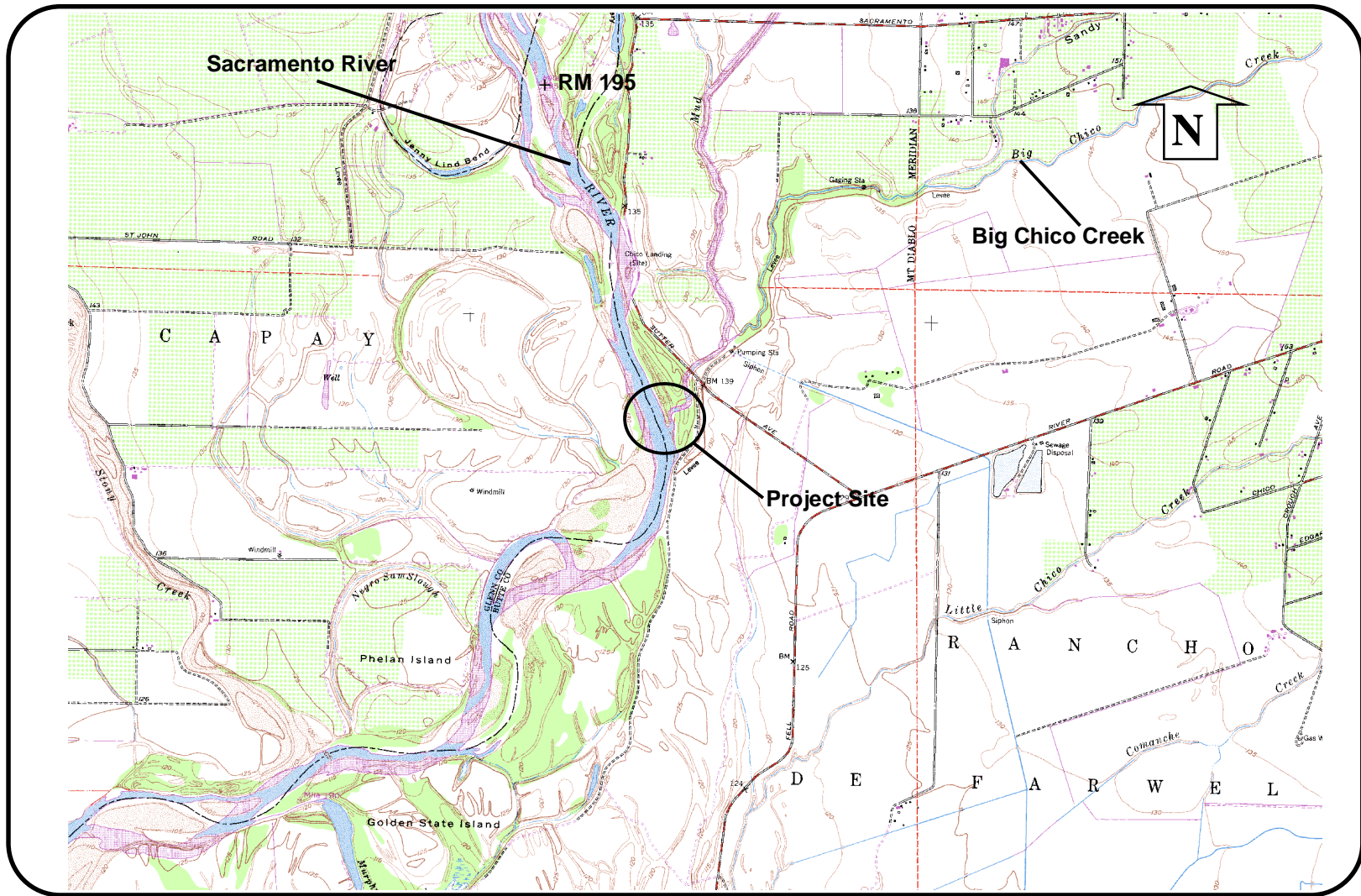
HDR Engineering, Inc., 2001, Initial Study and Proposed Mitigated Negative Declaration of M&T Ranch/Llano Seco Ranch/City of Chico Sacramento River Water Intake Stream Channel Maintenance: Prepared for CA Department of Fish and Game, September 2001.

McMillen, M.D., and W. Porter, White River Fish Screen Project Planning and Design. Proceedings of Waterworks '97, 1997.

Schild, Neil W., M&T/Parrott Pumping Station and Fish Screen. Presented at Fish Passageway Workshop, Sacramento, California, March 26, 1998.

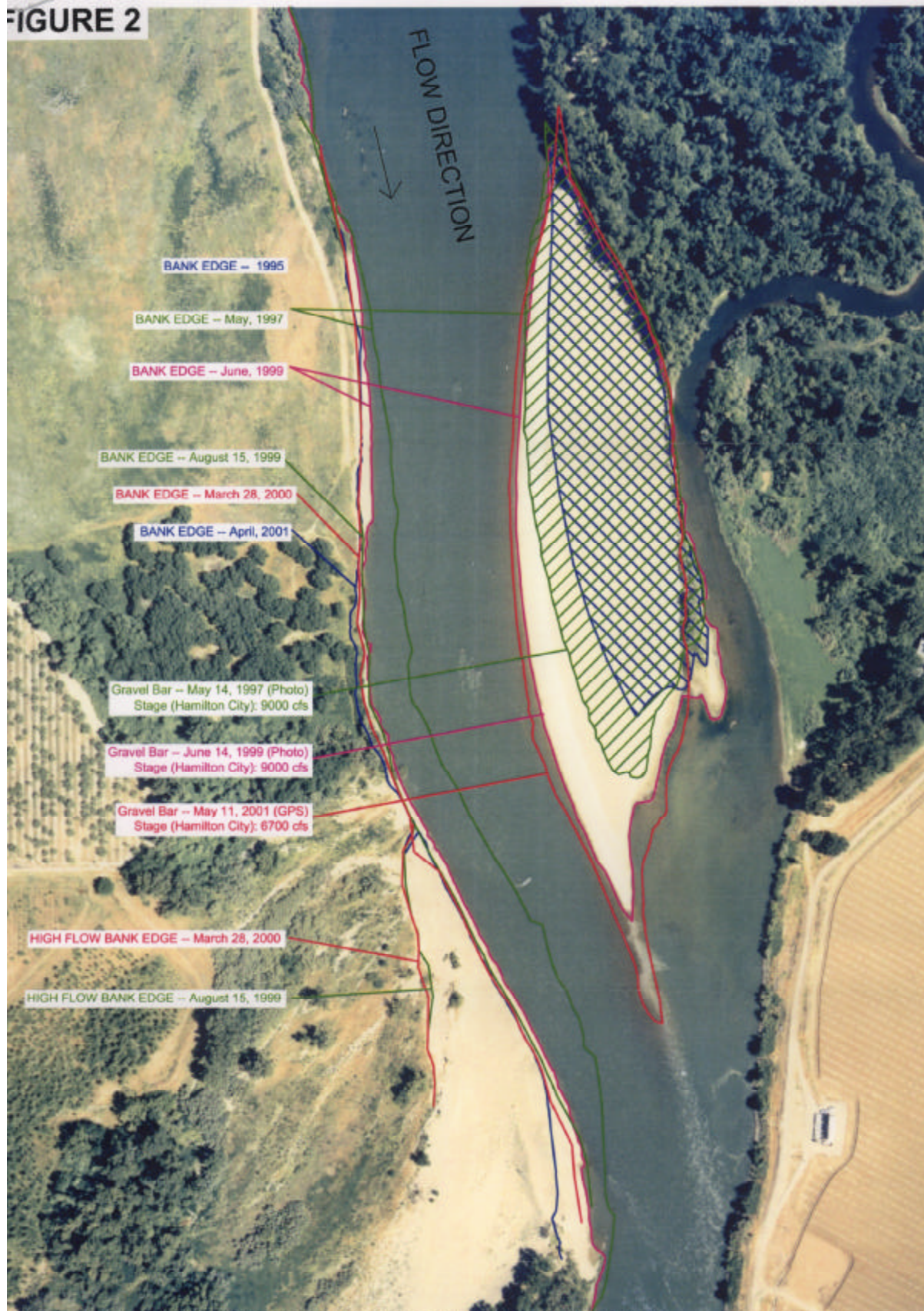
Stillwater Sciences, 2001, Technical Memorandum: Prepared for M&T Ranch, Sacramento River Conservation Area, and California Department of Water Resources, August 2001.

ATTACHMENTS



Attachment 1. Project Location and Vicinity

FIGURE 2



SACRAMENTO RIVER BANK EROSION SITE M & T RANCH

June 14, 1999 Aerial Photo

DRAFT

name: N:\Geo\PROJECTS\SacRiverBankErosionStudy\SpecificSites\BigChicoCreek-M&TRanch\BigChicoCreek-M&TRanchBaseMap-JHM-05-02-01.dwg
out Name: M&TRanch-1to500 Plot Time: May 11, 2001 - 2:02pm

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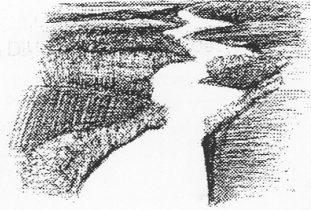


SACRAMENTO RIVER CONSERVATION AREA

c/o CALIFORNIA DEPARTMENT OF WATER RESOURCES
2440 MAIN STREET RED BLUFF, CALIFORNIA 96080

Web-page www.SacramentoRiver.ca.gov

Denny Bungarz, Chairman - Ben Carter, Vice Chairman - Jane Dolan, Sec/Treas
Burt Bundy, Manager - (530) 528-7411 Fax (530) 528-7422 bundy@water.ca.gov



November 7, 2000

Mr. Patrick Wright
Interim Executive Director
CALFED Bay-Delta Program
1416 Ninth Street, Room 1155
Sacramento, California 95814

Re: Sacramento River Conservation Area Request for CALFED Funding Assistance

Dear Mr. Wright:

The Sacramento River Conservation Area (SRCA) Board of Directors on November 2, 2000 formally authorized that you be contacted for your assistance in addressing a matter of utmost importance to the success of our program. As you know, the main objective of our program is to promote riparian habitat along the Sacramento River and to encourage limited natural river meander in certain areas.

A prime example of the need to limit river meander currently exists near the confluence of Big Chico Creek and the Sacramento River. A state-of-the-art screened river diversion and an integral out-fall for the City of Chico, both located downstream from Hamilton City, are in danger of being severed from the Sacramento River due to gravel deposition near the mouth of Big Chico Creek. At this time, we call upon CALFED to provide technical and financial assistance to our program so that an immediate solution can be developed for this serious problem. We believe that a portion of the funding set aside for CALFED Ecosystem Restoration Program (ERP) contingencies could be properly applied in this instance.

Description of Problem

In 1997, the M&T Chico Ranch and Llano Seco Ranch completed a \$5 million state-of-the-art screened diversion on the Sacramento River, immediately upstream of the City

of Chico municipal treated wastewater out-fall. Funding for the facility was provided through several avenues, including the Fish and Wildlife Service (CVPIA/AFRP), the State Water Contractors Association, the Wildlife Conservation Board, and others. In 1998, M&T Ranch requested that the California Department of Water Resources (DWR) monitor a gravel bar that had begun to appear upstream of the diversion. Since that time, the bar has expanded 1,100 feet south and 450 feet west from the point of initial deposition. The downstream tip of the gravel bar is now located directly across from the diversion intake, and immediately upstream from the City of Chico out-fall. The function of both of these critical facilities will be compromised by further migration of the bar.

Importance of this Location

The M&T/Llano Seco screened pumping plant provides a guaranteed water supply to nearby agricultural lands, as well as over 8,000 acres of permanent wetlands owned and managed by the U.S. Fish and Wildlife Service and 1,500 acres of seasonal wetlands owned by the Calif. Dept. of Fish and Game. Additionally, it protects habitat for migrating Chinook salmon and steelhead by allowing 40 cfs for fish flows to be used in Butte Creek, one of the most important and last remaining spawning areas for spring-run Chinook salmon. The City of Chico out-fall represents the terminus for the wastewater collection and treatment system that serves the greater Chico urban area.

Proposed Action Plan

The SRCA Board recommends an action plan that consists of three primary steps: 1) Secure funding and authorization of a lead agency to develop a short-term solution within the next six months that prevents immediate adverse impacts to the diversion and out-fall; 2) Utilize the information available from hydraulic and geomorphologic modeling of the area being conducted through studies by groups such as; DWR, The Nature Conservancy, under contract with the U.S. Fish and Wildlife Service, and the Corps of Engineers, through the Comprehensive Study, to develop a long-term solution that assures the continued function of both facilities and is also consistent with the principles and guidelines of the Sacramento River Conservation Area, and 3) Support the completion and/or construction of a long term solution.

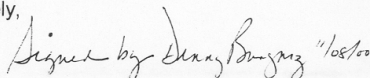
Request for CALFED Funding to Assist with a Short-Term Solution

At this time, we formally request CALFED funding to assist with developing a short-term solution that allows adequate time for the SRCA Board to work with the Corps and/or the Reclamation Board on a long-term project. The short-term solution envisioned at this time, includes the removal and disposal of a portion of the gravel bar that threatens operation of the M&T/Llano Seco pumps and out-fall. We will attempt to facilitate the permitting process through the appropriate agencies participating in the SRCA. We also envision that the ongoing modeling efforts will be used as a tool to assess potential impacts associated with immediate and long-term solutions. Our goal is to complete gravel removal operations as early as next spring. We expect the costs for the short term phase of this project not to exceed \$500,000.

Because of the urgency of the M&T/Llano Seco pump situation, we would ask the Ecosystem Roundtable to consider this matter. We also request your assistance in addressing this matter in the upcoming state budget, if necessary.

We would be happy to present our thoughts before the Ecosystem Roundtable or the Amendment or Issues Sub-committees. Please do not hesitate to contact me if you have any questions regarding this matter.

Sincerely,

A handwritten signature in cursive script that reads "Denny Bungarz" followed by a date "10/8/03".

Denny Bungarz, Chairman

cc: U.S. Congressman Doug Ose
U.S. Congressman Wally Herger
California Assemblyman Sam Aarstad
California Assemblyman Dick Dickerson
California Senator Maurice Johannessen
CALFED Ecosystem Roundtable
City of Chico
Richard Thieriot, Llano Seco Ranch
Les Heringer, M & T Ranch
SRCA Board Members

