Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

Project Information

1. **Proposal Title:**

   Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

2. **Proposal applicants:**

   Randy Riviere, Riviere and Associates
   Robert Kelley, Stevinson Water District

3. **Corresponding Contact Person:**

   Randy Riviere
   Riviere & Associates
   PO Box 578 Atwater, CA 95301
   209 357-4244
   rriviere@elite.net

4. **Project Keywords:**

   Water Resource Management
   Watershed Management
   Wetlands Ecology

5. **Type of project:**

   Monitoring

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

   No

7. **Topic Area**:

   Floodplains and Bypasses as Ecosystem Tools

8. **Type of applicant:**

   Joint Venture

9. **Location - GIS coordinates:**

   Latitude: 37.265

   Longitude: -120.804

   Datum:

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

The study area is the East Grasslands section of the Grasslands Ecological Area (GEA) in the San Joaquin Valley and includes approximately 35,000 acres east of the San Joaquin River in western Merced County. The study area also includes 9,000 acres of the James J. Stevinson Corp. landholdings which lie on the northwest border of the GEA and involve 18 miles along the San Joaquin River and 5 miles along the Merced River in Merced and Stanislaus Counties.

10. **Location - Ecozone:**

    12.1 Vernalis to Merced River, 12.2 Merced River to Mendota Pool, 13.3 Merced River, Code 16: Inside ERP Geographic Scope, but outside ERP Ecozones

11. **Location - County:**

    Merced, Stanislaus

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:**

    18

15. **Location:**

    California State Senate District Number: 12

    California Assembly District Number: 26

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:	20
Total Requested Funds:	258,307.20

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)

Kim Forrest	**U.S. Fish & Wildlife Service**	**209-826-3508**	**kim_forrest@r1.fws.gov**
Bill Loudermilk	**California Department of Fish & Game**	**559-243-4005**	**wlouderm@dfg.ca.gov**

21. **Comments:**

This monitoring project is a collaborative effort between Riviere & Associates, the University of Missouri, Stevinson Water District and other landowners in the project area. Randy Riviere of Riviere & Associates will lead the effort with the guidance of Dr. Leigh Fredrickson of the University of Missouri and Dr. Frederick Reid of Ducks Unlimited. SWD and other landowners in the EGL support the effort on their lands.

Environmental Compliance Checklist

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

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

      No
   b) Will this project require compliance with NEPA?

      No
   c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

      This project involves monitoring only and will not have any impact upon resources in the watershed.

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

   CEQA Lead Agency:
   NEPA Lead Agency (or co-lead:)
   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
   Xnone

   NEPA
   -Categorical Exclusion
   -Environmental Assessment/FONSI
   -EIS
   Xnone

   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?

      None

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

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

LOCAL PERMITS AND APPROVALS

Conditional use permit

Variance

Subdivision Map Act

Grading Permit

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

STATE PERMITS AND APPROVALS

Scientific Collecting Permit

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification

Coastal Development Permit

Reclamation Board Approval

Notification of DPC or BCDC

Other

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation

ESA Compliance Section 10 Permit

Rivers and Harbors Act

CWA 404

Other

PERMISSION TO ACCESS PROPERTY

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

Permission to access state land.
Agency Name:

Permission to access federal land.
Agency Name:

Permission to access private land.
Landowner Name:

6. **Comments.**

Land Use Checklist

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

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?**

   No

   If you answered no to #3, explain what type of actions are involved in the proposal (i.e., research only, planning only).

   monitoring only

4. **Comments.**

   The proposed monitoring project will involve several landowners throughout the East Grasslands. These landowners have been made aware of and support the goals of this effort. Upon recommendation of funding, Riviere & Associates will obtain written permission from involved landowners to conduct the monitoring project.

Conflict of Interest Checklist

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

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):

Randy Riviere, Riviere and Associates
Robert Kelley, Stevinson Water District

Subcontractor(s):

Are specific subcontractors identified in this proposal? No

Helped with proposal development:

Are there persons who helped with proposal development?

No

Comments:

Budget Summary

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

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**
1.1	Categorize wetland habitat types	80	1200	408	1000	200			1200	4008.0	801.6	4809.60
1.2	Determin wetland spatial distribution	100	1500	510				2500		4510.0	902	5412.00
1.3	Digitize wetland habitat types and integrate with GIS	80	1200	408		7500		2500		11608.0	2321.6	13929.60
1.4	Develop study plots	180	2700	918		1500		5000		10118.0	2023.6	12141.60
1.5	Sample vegetation, water and invertebrate parameters	240	3600	1224		750		3000		8574.0	1714.8	10288.80
2.1	Develop transect system	120	1800	612		1500				3912.0	782.4	4694.40
2.2	Integrate transects with GIS	40	600	204				2500		3304.0	660.8	3964.80
2.3	Perform waterbird surveys	240	3600	1224		200		2500		7524.0	1504.8	9028.80
2.4	Data organization and entry	120	1800	612						2412.0	482.4	2894.40
3.1	Data analysis	80	1200	408				1500		3108.0	621.6	3729.60
3.2	Prepare quarterly report	40	600	204						804.0	160.8	964.80
3.3	Prepare annual report	20	300	102						402.0	80.4	482.40
4.0	Project management								15840	15840.0	3168	19008.00
		1340	20100.00	6834.00	1000.00	11650.00	0.00	19500.00	17040.00	76124.00	15224.80	91348.80

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**
1.5	Sample vegetation, water and invertebrate parameters	240	3600	1224		750				5574.0	1114.8	6688.80
2.3	Perform waterbird surveys	240	3600	1224		200				5024.0	1004.8	6028.80
2.4	Data organization and entry	120	1800	612						2412.0	482.4	2894.40
3.1	Data analysis	80	1200	408						1608.0	321.6	1929.60
3.2	Prepare quarterly report	40	600	204						804.0	160.8	964.80
3.3	Prepare annual report	20	300	102						402.0	80.4	482.40
4.0	Project management								15840	15840.0	3168	19008.00
		740	11100.00	3774.00	0.00	950.00	0.00	0.00	15840.00	31664.00	6332.80	37996.80

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**
1.5	Sample vegetation, water and invertebrate parameters	240	3600	1224		750				5574.0	1114.8	6688.80
2.3	Perform waterbird surveys	240	3600	1224		200				5024.0	1004.8	6028.80
2.4	Data organization and entry	120	1800	612						2412.0	482.4	2894.40
3.1	Data analysis	80	1200	408						1608.0	321.6	1929.60
3.2	Prepare quarterly report	40	600	204						804.0	160.8	964.80
3.3	Prepare annual report	20	300	102						402.0	80.4	482.40
3.4	Prepare final report	40	600	204						804.0	160.8	964.80
4.0	Project management								15840	15840.0	3168	19008.00
5.0	Publish results in professional outlet								15000	15000.0	3000	18000.00
6.0	Develop comprehensive management plan								10000	10000.0	2000	12000.00
		780	11700.00	3978.00	0.00	950.00	0.00	0.00	40840.00	57468.00	11493.60	68961.60

Grand Total=198307.20

Comments.

Budget Justification

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

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

Wildlife technician 1430 hrs Wildlife technician 1430 hrs

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

Project Manager $110/hr Graduate student $20,000/yr Wildlife technicians $15/hr

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

Wildlife technicians 34%

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

ESRI GIS training $1,000

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

aerial photos $7,500 field supplies $5,050 office $1,000

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.

N/A

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.

All units of equipment are less than $5,000.

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

Inspections of work in progress 120 hrs/yr $13,200/yr Report oversight 16 $ 1,760 Presentations 8 $ 880 Total 144 hrs/yr @ $110/hr = $15,840

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

University stipend for University of Missouri graduate student - $20,000/yr

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.

Overhead rate of 20% includes administrative, facilities, utilities, maintenance, etc.

Executive Summary

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

The Stevinson Water District (SWD) is located in Merced County at the confluence of the Merced and San Joaquin Rivers and delivers over 33,000 AF of surface water to approximately 13,000 acres of farmlands on an annual basis. SWD receives the bulk of its waters from streams which originate in the Sierra Nevada foothills (Bear Creek, Owens Creek, Duck Slough, Deadman Creek) that flow through the eastern section of the Grassland Ecological Area (GEA), locally termed the East Grasslands (EGL). The GEA represents 30% of the remaining wetland habitats in the Central Valley and is the largest contiguous block of wetlands remaining in the Valley. The EGL is critical habitat for arctic-nesting geese, sandhill cranes and many other waterbird species, and contains the Merced, Arena Plains and East Bear Creek Units of the San Luis National Wildlife Refuge Complex, as well as large private ranches. SWD and other landowners in the EGL have initiated wetland and riparian improvement projects in partnership with the U.S. Fish and Wildlife Service, North American Wetlands Conservation Council, Natural Resources Conservation Service, California Department of Fish and Game, Wildlife Conservation Board, Ducks Unlimited, and Riviere & Associates. With this proposal, SWD and Riviere & Associates request CALFED assistance to create a partnership with the University of Missouri to help develop environmentally sound water management practices throughout the EGL watershed. Wetland habitats and waterbird use of these habitats, as related to hydrological parameters in the EGL watershed, will be evaluated for three years. The goal of this monitoring program is to provide baseline information regarding the hydrological requirements of waterbirds in the EGL and to carry this information forward to prescribe habitat restoration/enhancement and management efforts to benefit waterbirds and water resource development for regional and downstream uses.

Proposal

Riviere and Associates

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

Randy Riviere, Riviere and Associates
Robert Kelley, Stevinson Water District

Waterbirds and Water Resources in the East Grasslands / Stevinson Water District Watershed

A. Project Description: Project Goals and Scope of Work

1. Problem

The Stevinson Water District (SWD), located at the confluence of the Merced and San Joaquin Rivers in Merced County, delivers over 33,000 acre-feet of surface water to approximately 13,000 acres of farmlands in this region on an annual basis. SWD receives the bulk of its waters from streams which originate in the Sierra Nevada foothills (Bear Creek, Owens Creek, Duck Slough, Deadman Creek) and flow through the eastern section of the Grassland Ecological Area (GEA), locally termed the East Grasslands (EGL) (see figure, Attachment 1).

The San Joaquin Valley Grassland Ecological Area (GEA) consists of approximately 160,000 acres of National Wildlife Refuges, State Wildlife Areas and private lands located within the San Joaquin River Basin in western Merced County, California (Merced Data Special Services, Inc. 1993). The GEA represents 30% of the remaining wetlands in the Central Valley and is the largest contiguous block of wetlands remaining in the Valley (Fredrickson and Laubhan 1995). The Central Valley provides critical wintering habitat for over 60% of waterfowl that use the Pacific Flyway and 20% of all waterfowl in North America (Gilmer et al. 1982). Despite the importance of this region to waterbirds, nearly 95% of historical wetlands and 98% of riparian habitats in the Central Valley have been destroyed (Jones and Stokes Assoc. 1987). The FWS has recognized the Central Valley as one of the most important wintering areas for waterfowl in the United States and has listed this region among its highest priority areas in the North American Waterfowl Management Plan. The Western Hemispheric Shorebird Reserve Network has designated the Grasslands as an international reserve for migrant and wintering shorebirds. The California Riparian Habitat Joint Venture has made the San Joaquin River and its floodplain a Flagship project recognizing its importance for local and migratory songbirds. Protecting, restoring, and enhancing habitats within the GEA are important for the maintenance of local and migratory wetland and riparian-dependent wildlife.

James J. Stevinson Corporation (Stevinson) owns 95% of SWD lands. Stevinson lands involve over 18 miles of riparian, wetland and agricultural habitats along the San Joaquin River system (Jones and Stokes Assoc. 1998), and approximately 5 miles of riparian habitat along the Merced River upstream from where it meets the San Joaquin (see figure, Attachment 2). The Kelley family, who owns and operates Stevinson, has initiated a long-term land protection, restoration and management effort to protect and restore landscape values upon nearly 9,000 acres of its landholdings along the San Joaquin and Merced Rivers. The Kelley's have retained Riviere & Associates to assist them in placing conservation easements upon much of their landholdings, and restoring and enhancing over 2,000 acres of wetland and riparian habitats on their lands. To date, Stevinson has entered over 1,400 acres of its lands into the Natural Resources Conservation Service (NRCS) Emergency Watershed Protection Floodplain Easement Program and has initiated wetland and riparian habitat improvement projects in partnership with NRCS, the U.S. Fish and Wildlife Service (FWS), North American Wetlands Conservation Act (NAWCA),

Ducks Unlimited (DU), California Department of Fish and Game (CDFG), and the State Wildlife Conservation Board (WCB) on Stevinson landholdings. The cooperative project of riparian wetland restoration and enhancement being conducted on Stevinson lands will provide significant habitat benefits to wetland and riparian wildlife that depend upon the Grasslands region.

Opportunities exist to utilize wetland habitats within the entire EGL watershed to improve regional water supply and water quality. A resource study is needed to identify strategies to realize these benefits as habitat values to wetland-dependent waterbirds are retained and enhanced. In addition to the aforementioned ongoing Stevinson efforts to restore/enhance wetland habitats on Stevinson lands, other projects are being conducted and planned in this regard in the EGL. For example, the Duck Slough Project involving three landowners, DU, WCB and Riviere & Associates began this year and involves improvements in water management capabilities on over 2,000 acres in the EGL. Riviere & Associates is also presently working with the FWS and DU to implement a $1 million NAWCA grant to realize similar benefits in the EGL. This effort involves five landowners and over 3,600 acres of wetland and riparian habitat restoration in the EGL. There is a need to evaluate these and future efforts regarding their potential to increase water supply, improve water quality and improve waterbird habitat in the region.

With this proposal, Riviere & Associates requests CALFED assistance to create a partnership with the University of Missouri, Stevinson and other landowners to help develop environmentally sound water management practices throughout the EGL watershed. Wetland habitats and waterbird use of these habitats, as related to hydrological parameters in the EGL watershed, will be evaluated for three years in this project. The goal of this monitoring program is to provide baseline information regarding the hydrological requirements of waterbirds in the EGL and to carry this information forward to prescribe habitat restoration/enhancement and management efforts to benefit waterbirds and water resource development for regional and downstream uses.

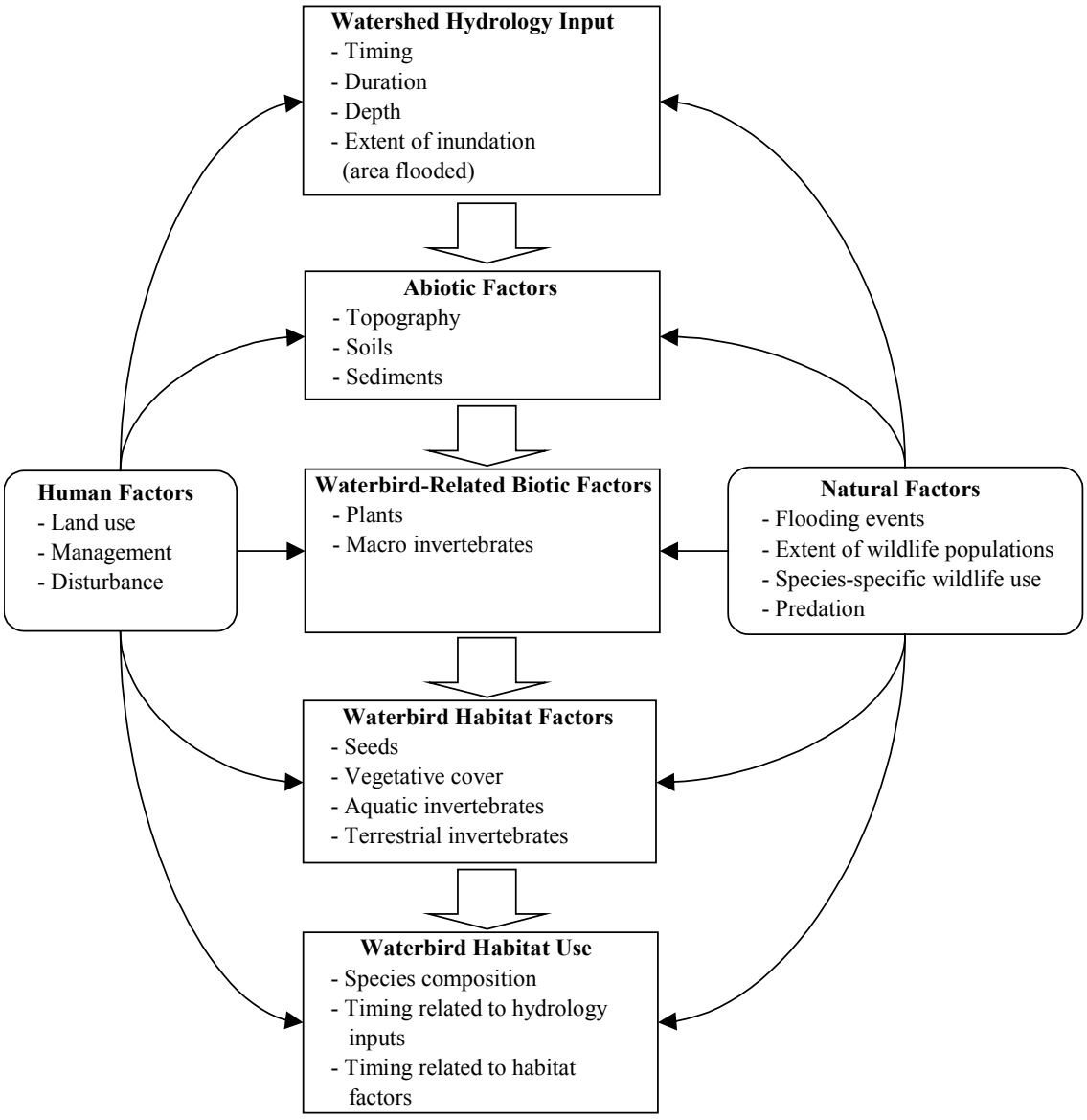
The objectives of the monitoring project include:

1. Define waterbird habitat requirements in the EGL watershed.
2. Prescribe management strategies to benefit EGL waterbirds, increase water supply and provide water quality improvements for regional and downstream utilization.
3. Provide habitat restoration/enhancement alternatives to benefit EGL waterbirds, increase water supply capability, and provide water quality improvements for regional and downstream utilization.

The hypotheses associated with this proposed project are as follows:

1. Species-specific waterbird use of the EGL wetlands is dependent upon hydrological dynamics, vegetation characteristics, and invertebrate abundance.
2. Numbers and success of ground-nesting waterbirds are dependent upon hydrological dynamics, vegetation characteristics and invertebrate abundance.

2. Justification



Simplified conceptual model involving hydrological-driven factors related to waterbird use in floodplain systems.

This conceptual model illustrates the hydrological-driven factors of a functioning floodplain system as related to waterbirds. The proposed monitoring project will provide baseline information regarding the hydrological requirements of waterbirds in the EGL. This will lead to a better understanding of these factors and how they relate to floodplain system function and processes. The information generated through this project will be utilized to evaluate and improve ongoing and future restoration/enhancement projects and develop management strategies for water resources in the EGL to improve water supply and water quality. As our understanding of floodplain systems increases, we can refine habitat restoration/enhancement objectives and revise management strategies.

The hypotheses associated with this proposed project are as follows:

Hypotheses	Methods
1. Species-specific waterbird use of the EGL wetlands is dependent upon hydrological dynamics, vegetation characteristics, and invertebrate abundance.	1A. East Grasslands (EGL) wetland habitat types will be categorized and their spatial distribution mapped by utilizing aerial photographs. Habitats will be digitized into a Geographical Information System (GIS), and a stratified-random sample of study plots will be developed across the EGL complex. Hydrology, vegetation, and invertebrate parameters will be determined in each study plot. 1B. Randomly placed transects will be developed across the EGL and integrated with GIS. Observers will walk each transect and record the perpendicular distance, habitat type, and number of waterbird species visible from the transect line. Distance sampling and the software program DISTANCE will be used to estimate the density of waterbirds in each habitat type. 1C. Species-specific waterbird use will be compared to wetland habitat types available in the EGL, and the hydrology, vegetation, and invertebrate parameters inherent to these wetland systems.
2. Numbers and success of ground-nesting waterbirds are dependent upon hydrological dynamics, vegetation characteristics and invertebrate abundance.	2. Nest searching will be conducted on selected sites throughout the EGL. Species-specific nesting densities and nest success will be determined and compared to the habitat parameters obtained in 1A. – 1C. above.

3. Approach

Waterbird density and habitat selection will be determined within floodplain wetland complexes in the EGL. Waterbird habitat use will be compared with various hydrological parameters to determine water management strategies that will optimize habitat benefits for waterbirds and the development of regional water resources. Determination of waterbird density and habitat selection will approximate the methodology used by Laubhan and Gammonly (2000).

Habitat Availability

Wetland types will be categorized and their spatial distribution across the EGL mapped by utilizing aerial photographs. Habitats will be digitized and incorporated into a geographical information system (GIS), and stratified-random sample of study plots will be identified and developed across the EGL. Water (timing, duration, depth, stability, extent of flooding), vegetation (visual obstruction [Robel et al 1970], vegetation height) and invertebrate (abundance) parameters will be determined in each study plot.

Waterbird Density

Randomly placed parallel transects will be developed across the EGL and integrated with the GIS. Observers will walk each transect and record the perpendicular distance, habitat type and number of waterbird species visible from the transect line. Distance sampling (Buckland et al 1993) and the software program DISTANCE (Laake et al 1994) will be used to estimate the density of waterbirds in each habitat type.

4. Feasibility

Riviere & Associates has developed important working relationships with all relevant government and non-government organizations involved with the GEA. Riviere & Associates also manages biological resources on over 33,000 acres of GEA habitats – much of which are located within the EGL watershed. The proposed waterbird monitoring will involve several landowners throughout the EGL. These landowners have been made aware of and support the goals of this effort. Upon recommendation of funding, Riviere & Associates will obtain written permission from involved landowners to conduct the monitoring project. These relationships will be pivotal in the successful implementation of this monitoring program and actual realization of management prescriptions developed in this effort.

Randy Riviere, the owner of Riviere & Associates and principal investigator of this proposed monitoring effort, has extensive experience related to waterbird and wetland ecology and has completed a similar large-scale research effort in the GEA involving waterbird use of wetland and agricultural habitats within the system.

5. Performance Measures

Performance measures for the proposed monitoring project will consist of reports, publications and presentations including the following:

- Quarterly fiscal and programmatic reports for 3 years.
- Annual reports for 3 years.
- Periodic presentations regarding results.
- Final report.
- Publication in professional outlets.
- Articles in popular outlets.
- Comprehensive EGL Watershed Management Plan.

6. Data Handling and Storage

Project data analysis will be conducted, and reports will be developed on a quarterly basis along with annual reports presented at the end of each project year. Data will be entered in an appropriate software program and analyzed using various statistical techniques. Final project results will be published in relevant scientific and popular outlets targeting natural resource and water management professionals.

7. Expected Products/Outcomes

The information and management implications produced by this research effort will be published in popular and scientific outlets. Technical bulletins will be developed to effectively communicate specific management prescriptions among public and private land managers. Scientific manuscripts will be developed to make research results available to professional wildlife biologists, engineers, hydrologists, and other scientists. Research principals will also make themselves available to discuss the results of this effort at local, regional and national events, conferences and workshops. This effort will also be introduced to interest groups through various local events such as the annual Wild on Wetlands Weekend sponsored by the Grassland Resource Conservation District. A management plan for the EGL watershed will be developed with the information gained through the monitoring effort. This project will provide natural resource managers, landowners and academic professionals with additional tools to promote wetland management for the benefit of waterbirds, water resource development and other land management goals on public and private lands. This information will also assist academics in the proper training of future natural resource management professionals.

8. Work Schedule

Project management performed by Riviere & Associates will be necessary to ensure project goals are met in an effective and timely manner. An academic graduate student and two wildlife technicians will perform the fieldwork involved with the monitoring program.

Work Breakdown Structure and Schedule

WBS#	Task	Year 1				Year 2				Year 3			
		2002	2003			2004				2005			
		Oct-Dec	Jan-Mar	Apr-June	July-Sep	Oct-Dec	Jan-Mar	Apr-June	July-Sep	Oct-Dec	Jan-Mar	Apr-June	July-Sep
1.0	Habitat Availability												
1.1	Categorize wetland habitat types												
1.2	Determine wetland spatial distribution												
1.3	Digitize wetland habitat types and integrate with GIS												
1.4	Develop study plots												
1.5	Sample vegetation, water and invertebrate parameters												
2.0	Waterbird Density												
2.1	Develop transect system												
2.2	Integrate transects with GIS												
2.3	Perform waterbird surveys												
2.4	Data organization and entry												
3.0	Analysis												
3.1	Data analysis												
3.2	Prepare quarterly report												
3.3	Prepare annual report												
3.4	Prepare final report												
4.0	Project Management												
5.0	Publish results in professional outlet												
6.0	Develop comprehensive management plan												

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

1. ERP, Science Program and CVPIA Priorities

The proposed monitoring project in the EGL watershed will lead to improvements in riparian wetland habitat function and processes in the San Joaquin Region. Water management capabilities of wetland habitats will be expanded to enhance habitat values. The monitoring project will evaluate the success of ongoing habitat efforts and provide needed information to increase the effectiveness of these and future restoration/enhancement efforts within the EGL watershed and other efforts throughout the San Joaquin Region and beyond. This monitoring project addresses the following ERP Stage 1 priorities:

MR1. Non-Native Invasive Species

Stevinson lands along the reach of the Merced River at the confluence with the San Joaquin River have the most extensive and complex stands of native vegetation remaining in the Merced River corridor downstream from the Crocker-Huffman Dam. Objectives developed in the Merced River Corridor Restoration Plan include preserving the existing native riparian vegetation and preventing the spread of non-native invasive species (NIS) and associated decline in habitat quality. Threats from NIS in the area include tree of heaven, edible fig and mulberry (Stillwater Sciences 2001).

Management prescriptions developed from results obtained through this monitoring program on Stevinson lands and other lands throughout the EGL will outline strategies to propagate and retain vegetation communities inherent to properly functioning floodplain wetlands.

MR2. Wildlife-Friendly Agriculture

Agriculture and ranching are important land uses in the EGL watershed, and many acres of agricultural and ranch habitats are associated with riparian floodplain wetlands in this system. Agricultural and ranch land uses will be involved with the proposed monitoring program, and management prescriptions produced in this effort will exemplify and strive to improve habitat values related to waterbirds on these lands. Since hydrological parameters as they relate to waterbird habitat use are a primary focus of this effort, agricultural water sources will be evaluated for their potential to be utilized for waterbird habitat and water resource improvements.

Riviere & Associates, through its Environmental Affairs of Business division, works to ensure agricultural operational compatibility with the local landscape through wildlife-compatible cropping patterns and habitat restoration efforts. Riviere & Associates currently manages over 14,000 acres of wildlife-compatible cropping patterns involving irrigated pasture, alfalfa, corn and cereal grain rotations integrated with wetland and riparian habitats on lands in the GEA.

MR3. Environmental Education Actions

The monitoring program will be conducted by a university graduate student with goals of becoming an environmental professional dealing with broad landscape issues. Wildlife technicians will be those interested in obtaining important experience to improve their abilities to become environmental professionals. Local youth (Boy/Girl Scouts) and school groups will be encouraged to participate in research efforts.

SJ1. Collaborative Habitat Restoration

Habitat restoration/enhancement projects are ongoing in the EGL watershed and involve Riviere & Associates, DU, FWS, NAWCA, WCB and CDFG. Completed and planned restoration/enhancement projects total approximately 5,600 acres in the project area. The monitoring project proposed will provide critical information leading toward management prescriptions to benefit waterbirds and water resources inherent to these and future projects.

SJ2. Geomorphic Processes Restoration

The EGL watershed is among the most dynamic floodplain environments remaining in the Central Valley of California. Diverse vegetation communities and habitat conditions that exist in the EGL are artifacts of the dynamic hydrological patterns inherent to this region. This monitoring project will evaluate the hydrological patterns in the EGL, as related to topography, habitat types, vegetation communities and other variables, and compare these factors to waterbird use and life cycle requirements. The information obtained from this monitoring effort will be used to develop management strategies for ongoing and future habitat restoration projects in the EGL watershed.

SJ4. At-Risk Species

The proposed monitoring program would provide information leading to improved restoration and management of habitats in the EGL floodplain system. Appropriate management of wetland and associated upland habitats in the EGL will benefit numerous waterbird species including Aleutian Canada geese and greater sandhill cranes. The EGL is a winter stronghold for arctic-nesting geese and both lesser and greater sandhill cranes. Mountain plovers have been documented using EGL habitats and would benefit from appropriate management of uplands in the system. Swainson's hawk are common inhabitants of EGL habitats and would benefit from improved management of wetland-associated uplands for foraging purposes.

2. Relationship to Other Ecosystem Restoration Projects

Stevinson is a stakeholder in the CALFED funded Merced River Corridor Restoration Plan which has a goal to improve ecological conditions in the Merced River for the benefit of native fish and wildlife and to involve landowners and other stakeholders in the process. Stevinson shares and has initiated actions to meet the objectives identified for the confluence reach of the Merced and San Joaquin Rivers in the Merced River Corridor Restoration Plan. These

objectives include preserving and restoring riparian habitat and identifying opportunities for easements and restoration projects (Stillwater Sciences 2001).

This monitoring project will be conducted on Stevinson lands and other lands in the EGL watershed where habitat restoration/enhancement projects are occurring. Stevinson, NAWCA, FWS, NRCS, DU, WCB and Riviere & Associates have developed partnerships to restore and enhance riparian wetlands in the EGL watershed. Completed habitat projects on Stevinson lands include over 600 acres, and future restoration and enhancement efforts (1,500 ac) are planned through NAWCA. The NAWCA Project involves five landowners and over 3,600 acres of wetland and riparian habitat restoration in the EGL. The Duck Slough Project, an effort that began this year in the EGL, involves three landowners, DU, WCB and Riviere & Associates and over 2,000 acres.

Stevinson recently received a funding commitment from NRCS for additional restoration activities on floodplain lands to benefit wetland, riparian and fishery resources. Water systems within the floodplain will be improved to facilitate fishery ingress and egress, improve waterbird habitats, and enhance operational ability to capture water inputs from upslope sources during non-flooding periods. Restoration activities will also promote riparian vegetation regeneration. The CDFG will provide guidance regarding fishery aspects of the floodplain restoration.

3. Requests for Next-Phase Funding

The proposed project has not been previously funded by the CALFED Program or CVPIA.

4. Previous Recipients of CALFED Program or CVPIA funding.

The project applicant has not received previous funding from the CALFED Program or CVPIA.

5. System-Wide Ecosystem Benefits.

The monitoring project proposed would assess waterbird utilization of wetland habitats in the EGL, and how hydrology and other factors affect this use. The information produced by this effort would provide insights regarding how water supply and water quality can be improved by wetland management that also benefits waterbirds, and will facilitate a watershed-wide wetland management plan with a goal of providing quality waterbird habitats and water supply and water quality improvements for both in- and out-of-watershed use.

Wetland habitat management prescriptions will be developed by utilizing the information produced by this research effort to benefit the myriad local and migratory waterbirds that depend upon the EGL watershed for various life cycle requirements. Increased wetland habitat management capability would be promoted among EGL watershed stakeholders through this effort that would provide EGL watershed benefits and potential downstream Bay-Delta improvements in water supply and water quality. The information presented by this effort would lead to wetland restoration and enhancement projects to benefit both environmental and economic factors throughout the EGL watershed.

Stevinson has a sizable supply of quality water which it receives via its East Side Canal. The East Side Canal system captures quality waters that enter the region from Sierra foothill stream groups (Bear Creek, Owens Creek, Duck Slough and Deadman Creek). There is great potential to integrate these freshwater resources with the significant amount of riparian and wetland systems that exist on Stevinson Corporation lands to facilitate water quality improvements along the Merced and San Joaquin Rivers. These water quality improvements could have important ramifications for fishery resources along these river systems.

6. Additional Information for Proposals Containing Land Acquisition.

This proposal does not request funding for land acquisition.

C. Qualifications

Randy Riviere, Wildlife Biologist and President of Riviere & Associates, an environmental consulting and management firm, will direct activities associated with the monitoring program. Mr. Riviere manages biological resources on over 33,000 acres of wetland, ranchland and agricultural habitats on private property in the San Joaquin Valley. Mr. Riviere received a Master's degree in Fisheries and Wildlife from the University of Missouri involving a landscape-level research effort regarding agricultural and wetland habitat use of waterbirds. He has worked with the agriculture industry for over 15 years and has received local, regional and national recognition for developing integrated approaches regarding agricultural operations and wetland wildlife habitats values. He continues to work to achieve agricultural operational compatibility with local wetland landscape through wildlife-friendly cropping patterns and wetland integration involving approximately 15,000 acres of farmlands near the GEA. Mr. Riviere previously worked for the FWS as manager of the Private Lands program which involved securing perpetual conservation easements on over 25,000 acres of wetland, ranchland and agricultural habitats in the San Joaquin Valley. He developed the first agricultural easement in the FWS Region 1 involving over 2,000 acres of wildlife-compatible cropping patterns and wetland habitats. Mr. Riviere is on the Board of Directors for the Merced County Farmland and Open Space Trust.

Publications include:

- Riviere, R.L. Dairy operations and habitat needs. Valley/Bay Habitats – A Technical Guidance Series for Private Land Managers. Issue No. 26, Winter 2000. Ducks Unlimited, Inc.
- Riviere, R.L. Mallard use of wetland and agricultural habitats during the breeding season in California's San Joaquin Valley Grasslands. M.S. thesis. University of Missouri – Columbia, Puxico, Missouri. December 1999.

Manuscripts in preparation include:

- Riviere, R.L. and L.H. Fredrickson. The potential role of agriculture in landscape protection strategies.
- Riviere, R.L. and K.P. Kenow. The effects of subcutaneously implanted radio transmitters upon selected nesting parameters of mallards.

The monitoring aspect will also involve the professional oversight of Dr. Leigh Fredrickson of the University of Missouri who will provide a graduate student to conduct the monitoring effort along with two wildlife technicians. Dr. Frederick Reid of Ducks Unlimited will also provide project guidance.

D. Cost

1. Budget

Please see online Budget Forms.

2. Cost-Sharing.

NRCS has promoted the initiation of waterbird monitoring on Stevinson lands to provide information regarding the management of approximately 1,400 acres of Stevinson lands that are involved with their Floodplain Easement Program. Riviere & Associates and the CDFG are presently working to protect approximately 7,000 acres of Stevinson landholdings with perpetual conservation easements, and will benefit from the information produced by this waterbird research regarding the management of these easements. NRCS is providing $166,600 for restoration activities on floodplain areas of Stevinson lands to benefit wetland, riparian and fishery resources.

Stevinson, NAWCA, FWS, NRCS, CDFG, DU, WCB, Riviere & Associates and other EGL landowners have developed partnerships to restore and enhance floodplain resources on EGL habitats. A $1 million NAWCA grant involving five landowners and over 3,600 acres of wetland and riparian habitat restoration is currently being implemented in the EGL. The Duck Slough Project involving three landowners, DU and WCB began this year to implement a $324,000 grant for habitat restoration/enhancement and water management capability improvements on over 2,000 acres in the EGL.

It is requested that CALFED fund the proposed monitoring effort to facilitate appropriate management of these and future projects for the benefit of waterbirds and water resources inherent to the EGL watershed.

E. Local Involvement

The proposed waterbird monitoring will involve several landowners and all relevant agencies (e.g.; NRCS, FWS, CDFG, DU) throughout the EGL. These landowners and agencies have been made aware of and support the goals of this effort. Upon recommendation of funding, Riviere & Associates will obtain written permission from involved landowners to conduct the monitoring project.

The land protection, restoration and management efforts undertaken by Stevinson are part of the Merced River restoration effort. The Merced River Corridor Restoration Plan involves many landowners, agencies and other groups, the general public and various programs (e.g.; Merced River Stakeholder Group, Merced County Planning Department, NRCS, USFWS, CDFG, CDWR, CALFED, CVPIA, AFRP).

Information provided by this research project will assist all landowners in the EGL watershed in the management of their wetland systems. Increased wetland management capability will improve both recreational and livestock grazing values for the benefit of these landowners. Improvement of landowner understanding regarding the recreational and economic values that will be generated with improved wetland management capability will facilitate increased landowner involvement with watershed management in the EGL. Farming interests in the SWD could also benefit from the potential water supply and water quality improvements realized through enhanced wetland management capability in the EGL watershed.

F. Compliance with Standard Terms and Conditions.

We have reviewed and are in agreement with the terms and conditions in Attachments D and E of the Proposal Solicitation Package.

G. Literature Cited

Buckland, S. T., D. R. Anderson, K. P. Burnham, and J. L. Laake. 1993. Distance sampling and estimating abundance of biological populations. Chapman and Hall. London, England.

Fredrickson, L. H. and M. Laubhan. 1995. Land use impacts and habitat preservation in the Grasslands of Western Merced County, California. Grassland Water District, Los Banos, California, USA. 89pp.

Gilmer, D. S., M. R. Miller, R. D. Bauer and J. R. LeDonne. 1982. California's Central Valley wintering waterfowl: Concerns and challenges. Trans. N. Amer. Wildl. and Natur. Resour. Conf. 47:441-452.

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Jones and Stokes Associates. 1987. Sliding toward extinction: the state of California's natural heritage. The Nature Conservancy, San Francisco, California, USA. 105pp.

Laake, J. L., S. T. Buckland, D. R. Anderson, and K. P. Burnham. 1994. DISTANCE users guide, version 2.1. Colorado Cooperative Fish and Wildlife Research Unit, Colorado State University, Fort Collins, Colorado, USA.

Laubhan, M. K. and J. H. Gammonley. 2000. Density and foraging habitat selection of waterbirds breeding in the San Luis Valley of Colorado. J. Wildl. Manage. 64(3):808-819.

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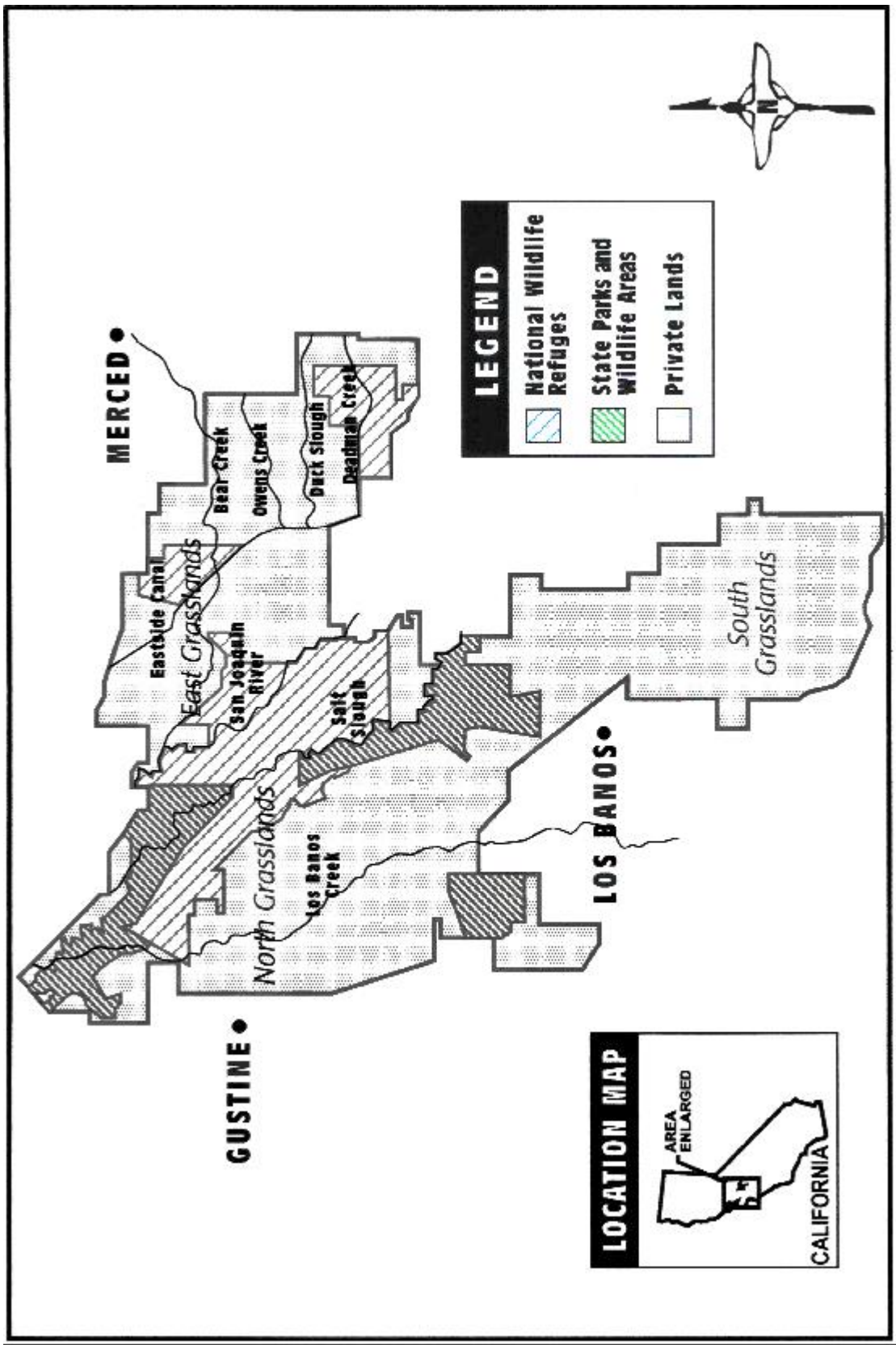
Stillwater Sciences. 2001. Merced River Corridor Restoration Plan. Draft, September 17, 2001. Stillwater Sciences, Berkeley, CA.

Attachment 1



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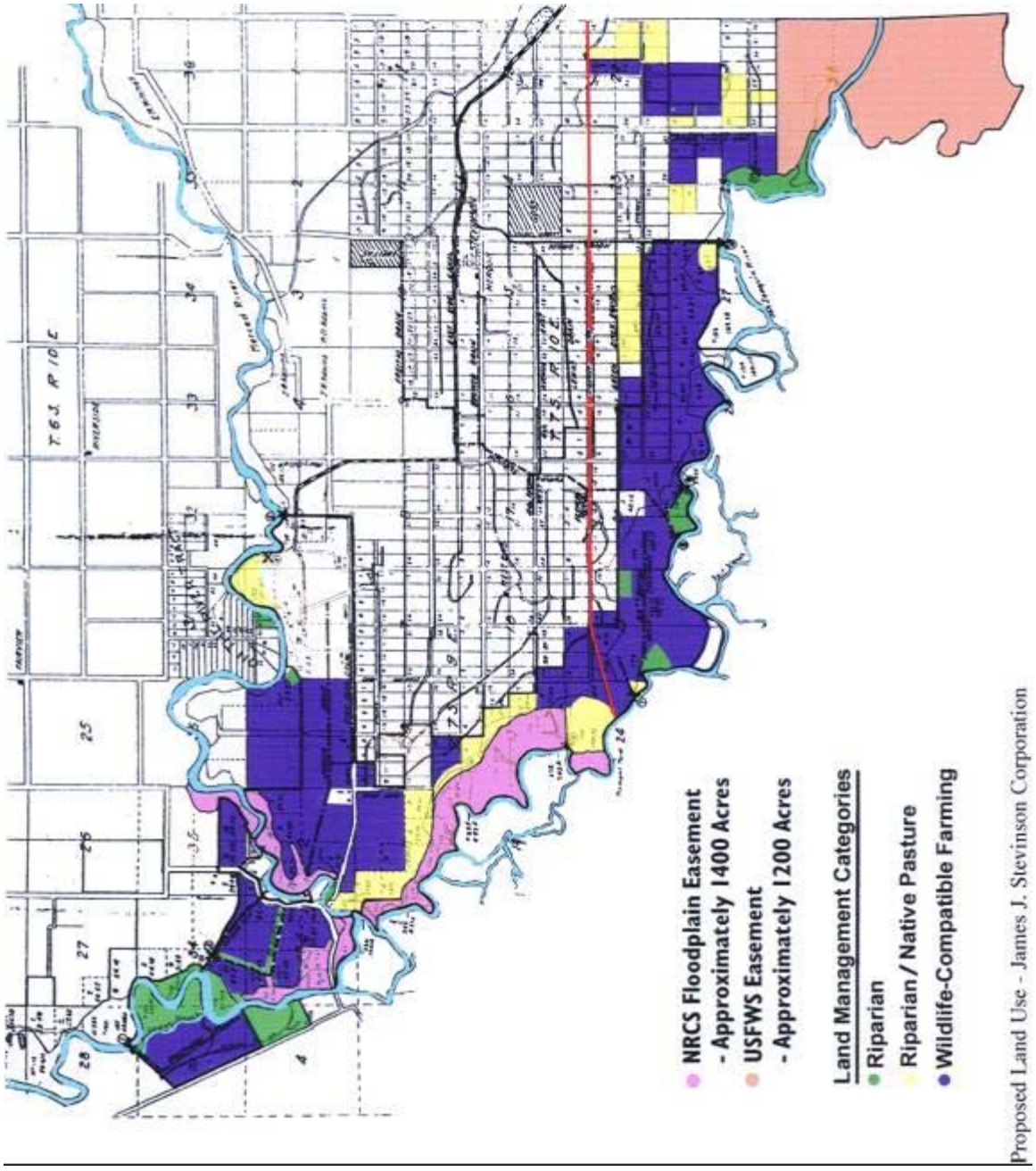
Attachment 2



Proposed Land Use - James J. Stevinson Corporation