

# Summary Information

River Partners

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit, Sacramento River National Wildlife Refuge*

Amount sought: \$372,100

Duration: 36 months

Lead investigator: Mr. Dan Efseaff, River Partners

## Short Description

This project will examine the performance of a riparian savanna and grassland restoration. The monitoring effort will focus on key wildlife and vegetation responses. In 2000, River Partners initiated restoration on 206 acres of the Llano Seco Unit (Tract 4 and Tract 8) of the Sacramento River National Wildlife Refuge (Figures 1 and 2). Tract 4 (T4) and Tract 8 (T8) are located approximately 10 miles southwest of Chico, in Butte County, California. Funding was provided under the Central Valley Project Improvement Act (CVPIA).

## Executive Summary

River Partners seeks \$372,100 to lead a collaborative effort to examine the performance of a riparian savanna and grassland restoration. The monitoring effort will focus on key wildlife and vegetation responses.

In 2000, River Partners initiated restoration on 206 acres of the Llano Seco Unit (Tract 4 and Tract 8) of the Sacramento River National Wildlife Refuge (Figures 1 and 2). Tract 4 (T4) and Tract 8 (T8) are located approximately 10 miles southwest of Chico, in Butte County, California. Funding was provided under the Central Valley Project Improvement Act (CVPIA) under the “section 3406(b)(1) other program”. This monitoring proposal will capitalize on several unique features of the project:

- The original restoration plan provided a detailed conceptual site model and outlined the management assumptions used to implement the project.
- The native grass planting was designed as a multifactorial experiment to examine: 1) interspecies competition (separate and mixed seeding), 2) fertilizer application to enhance

establishment, and 3) management treatments. The design provides an opportunity to examine management practices in a systematic, scientifically sound manner.

- Plant communities were established on a grid cell pattern that allows examination of spatial wildlife usage patterns (Figures 3 and 4).
- Monitoring during the project included vegetation monitoring and avian point count surveys.

These features provide an effective monitoring framework to:

- Examine bird abundance and community composition and to map bird distribution over time in order to identify frequently used areas at the scale of the treatment and across treatments (e.g., weedy field versus restored grassland). At the treatment scale, it is possible that these data reveal patterns of use related to variation in restoration design (e.g., planting densities).
- Determine current trends in native grass composition and vegetation succession on the Llano Seco Unit. This information will allow for the evaluation of our management hypotheses and the conceptual site model. Ultimately, this will add to our understanding of the ecosystem and improve project implementation.
- Provide much needed scientifically based data to guide long-term management decisions for native grass plantings.
- Directly communicate (through a workshop) monitoring findings on native grass establishment and management to practitioners and landowners. Use this collaborative effort to establish standard native grass monitoring protocols to meet multiple user goals.

We anticipate that these efforts will greatly add to our understanding of the role of native grasses in meeting CALFED goals (wildlife and invasive species).

## PROPOSAL

# **Vegetation and Wildlife Response to Native Grass Restoration on the Llano Seco Unit, Sacramento River National Wildlife Refuge**

Sacramento River National Wildlife Refuge  
Angel Slough, Sacramento River Floodplain  
Butte County, California

November 19, 2004



*Submitted to:*



CALFED  
BAY-DELTA  
PROGRAM

California Bay Delta Program  
Monitoring and Evaluation Proposal



R I V E R  
P A R T N E R S

539 Flume Street  
Chico, CA 95928  
[info@riverpartners.org](mailto:info@riverpartners.org)

Phone: (530) 894-5401  
Fax: (530) 894-2970  
[www.riverpartners.org](http://www.riverpartners.org)

## PROPOSAL TABLE OF CONTENTS

<b>I. PROPOSAL .....</b>	<b>2</b>
A. Project Description: Project Goals and Scope of Work. ....	2
1. Problem, Goals, and Objectives .....	7
2. Justification .....	8
3. Previously Funded Monitoring .....	11
4. Approach and Scope of Work.....	11
5. Expected Outcomes and Products .....	17
6. Data Handling, Storage, and Dissemination .....	18
7. Public Involvement and Outreach.....	18
8. Work Schedule.....	19
B. Applicability to CALFED Bay-Delta Program ERP Goals, the ERP Draft Stage 1 Implementation Plan, and CVPIA Priorities. ....	21
1. ERP and CVPIA Priorities .....	21
2. Relationship to Other Ecosystem Restoration Actions, Monitoring Programs, or System- wide Ecosystem Benefits .....	21
3. Additional Information for Proposals Containing Land Acquisition .....	21
C. Qualifications.....	21
D. Cost.....	23
1. Budget.....	23
2. Cost sharing.....	23
3. Long-term funding strategy.....	24
E. Compliance with Standard Terms and Conditions. ....	24
F. Literature Cited.....	24
G. Nonprofit Verification. ....	26

### List of Tables

Table 1. Summary of project goals and objectives at the Llano Seco Unit, Sacramento River National Wildlife Refuge, Butte County, California.....	8
Table 2. Summary of reference sites for the proposed monitoring on the Llano Seco Unit, Butte County, California. ....	12
Table 3. Project Timeline for the Beehive Bend monitoring project. ....	20

### List of Figures

Figure 1. Sacramento River National Wildlife Refuge, Llano Seco Unit vicinity map.	
Figure 2. Llano Seco Unit project area map.	
Figure 3. Location of proposed plant communities for Llano Seco Unit T4 and T8.	
Figure 4. Experimental block design of native grass planting at Llano Seco Unit's T4.	
Figure 5. Brief overview of native grass monitoring approach at the Llano Seco Unit, Butte County, California. ....	9
Figure 6. Overview of the monitoring approach at the Llano Seco Unit, Butte County, California.	

## **PROPOSAL**

### **VEGETATION AND WILDLIFE RESPONSE TO NATIVE GRASS RESTORATION ON THE LLANO SECO UNIT, SACRAMENTO RIVER NATIONAL WILDLIFE REFUGE BUTTE COUNTY, CALIFORNIA**

#### **I. PROPOSAL**

##### **A. Project Description: Project Goals and Scope of Work.**

River Partners seeks \$372,100 to lead a collaborative effort to examine the performance of a riparian savanna and grassland restoration. The monitoring effort will focus on key wildlife and vegetation responses.

In 2000, River Partners initiated restoration on 206 acres of the Llano Seco Unit (Tract 4 and Tract 8) of the Sacramento River National Wildlife Refuge (Figures 1 and 2). Tract 4 (T4) and Tract 8 (T8) are located approximately 10 miles southwest of Chico, in Butte County, California. Funding was provided under the Central Valley Project Improvement Act (CVPIA) under the "section 3406(b)(1) other program". This monitoring proposal will capitalize on several unique features of the project:

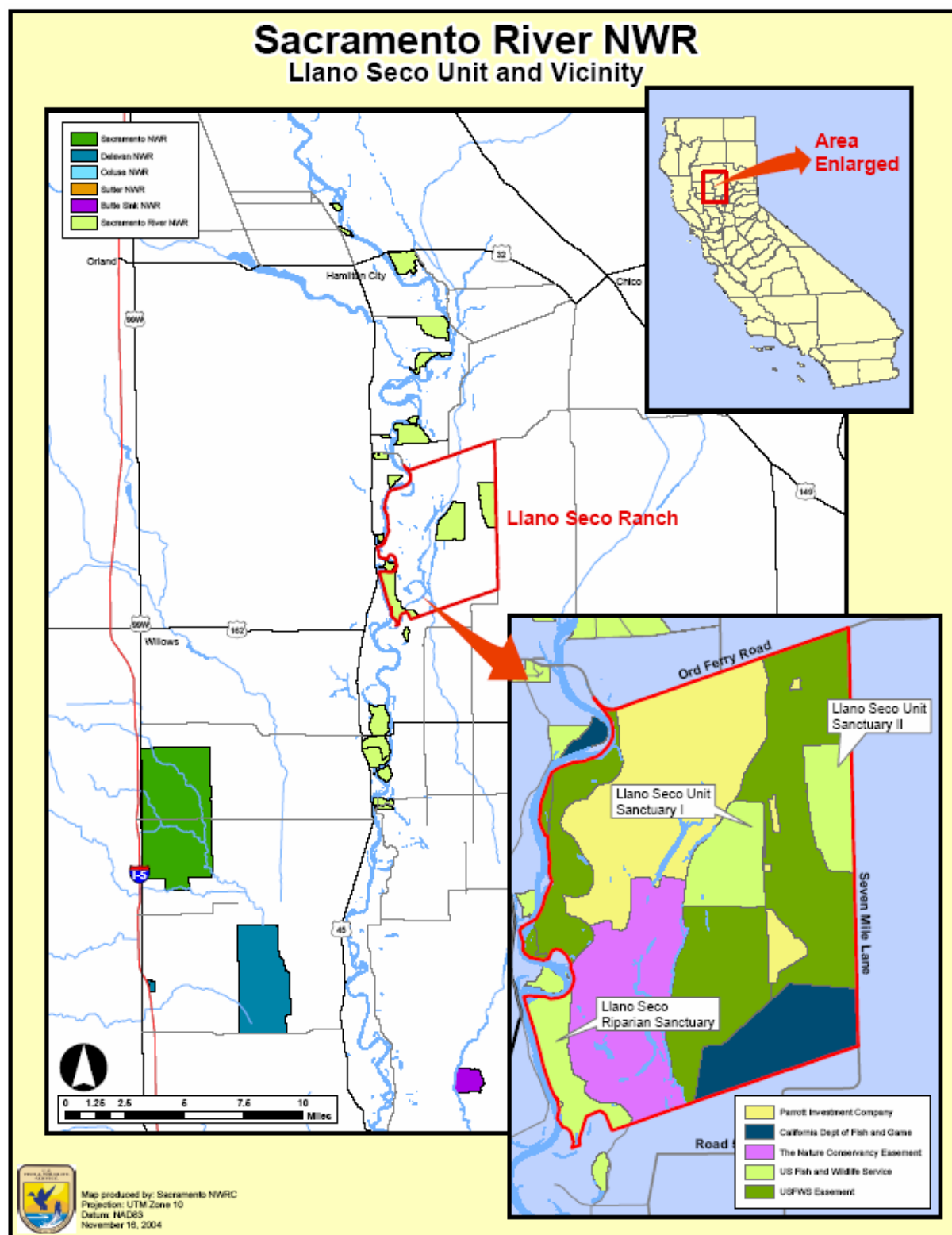
- The original restoration plan provided a detailed conceptual site model and outlined the management assumptions used to implement the project.
- The native grass planting was designed as a multifactorial experiment to examine: 1) interspecies competition (separate and mixed seeding), 2) fertilizer application to enhance establishment, and 3) management treatments. The design provides an opportunity to examine management practices in a systematic, scientifically sound manner.
- Plant communities were established on a grid cell pattern that allows examination of spatial wildlife usage patterns (Figures 3 and 4).
- Monitoring during the project included vegetation monitoring and avian point count surveys.

These features provide an effective monitoring framework to:

- Examine bird abundance and community composition and to map bird distribution over time in order to identify frequently used areas at the scale of the treatment and across treatments (e.g., weedy field versus restored grassland). At the treatment scale, it is possible that these data reveal patterns of use related to variation in restoration design (e.g., planting densities).
- Determine current trends in native grass composition and vegetation succession on the Llano Seco Unit. This information will allow for the evaluation of our management hypotheses and the conceptual site model. Ultimately, this will add to our understanding of the ecosystem and improve project implementation.
- Provide much needed scientifically based data to guide long-term management decisions for native grass plantings.

## PROPOSAL

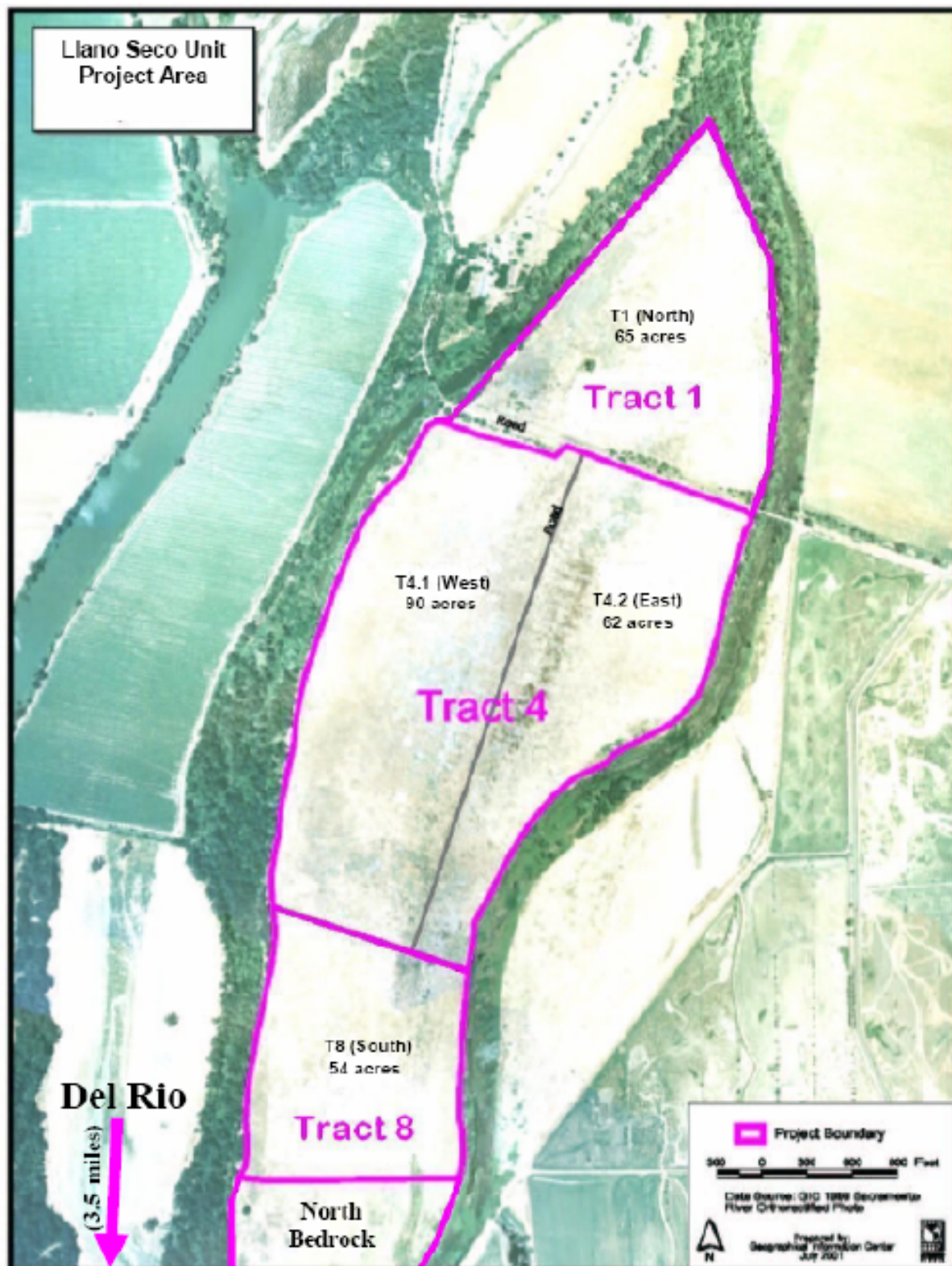
Figure 1. Sacramento River National Wildlife Refuge, Llano Seco Unit vicinity map.





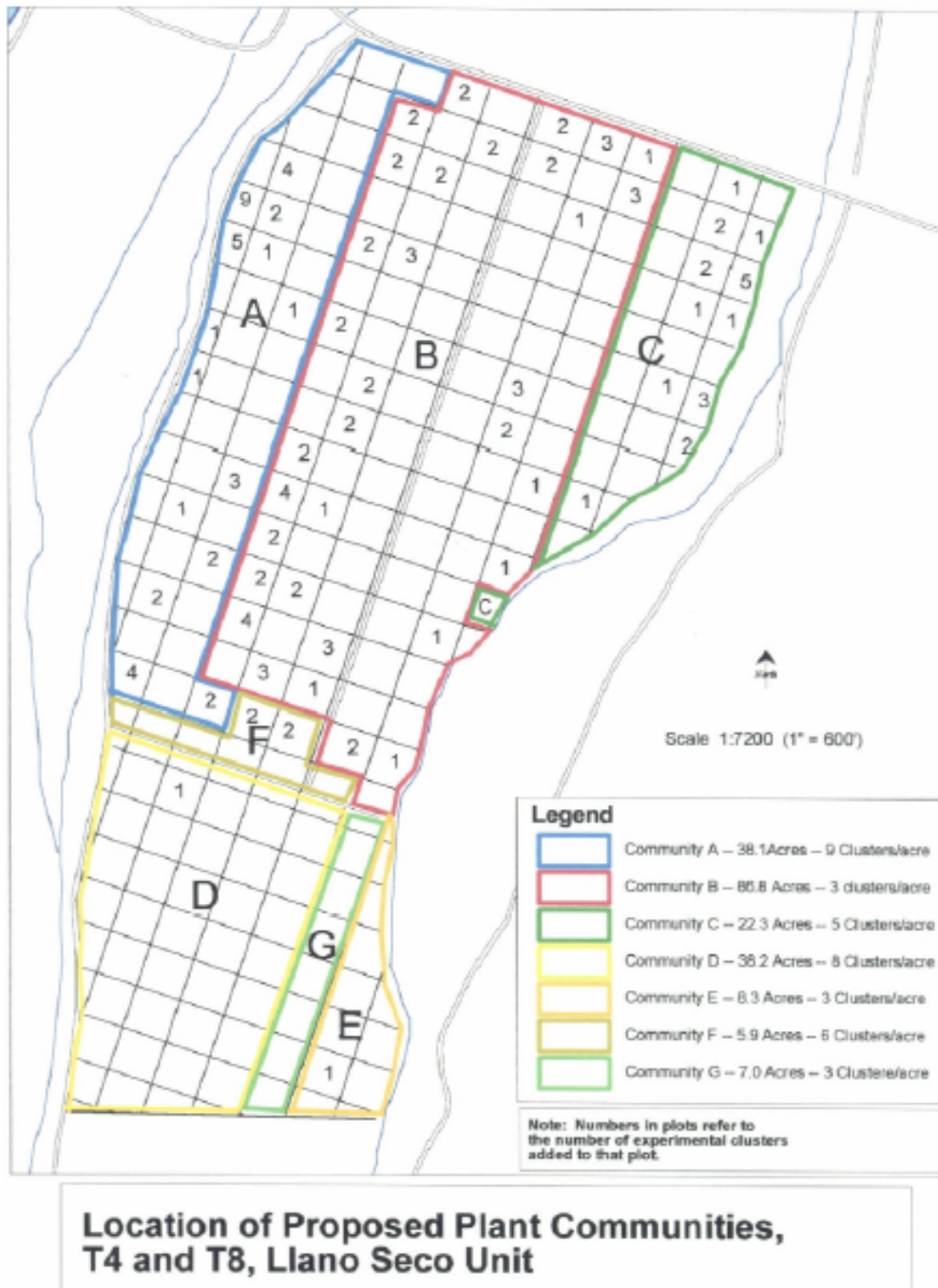
## PROPOSAL

Figure 2. Llano Seco Unit project area map.



## PROPOSAL

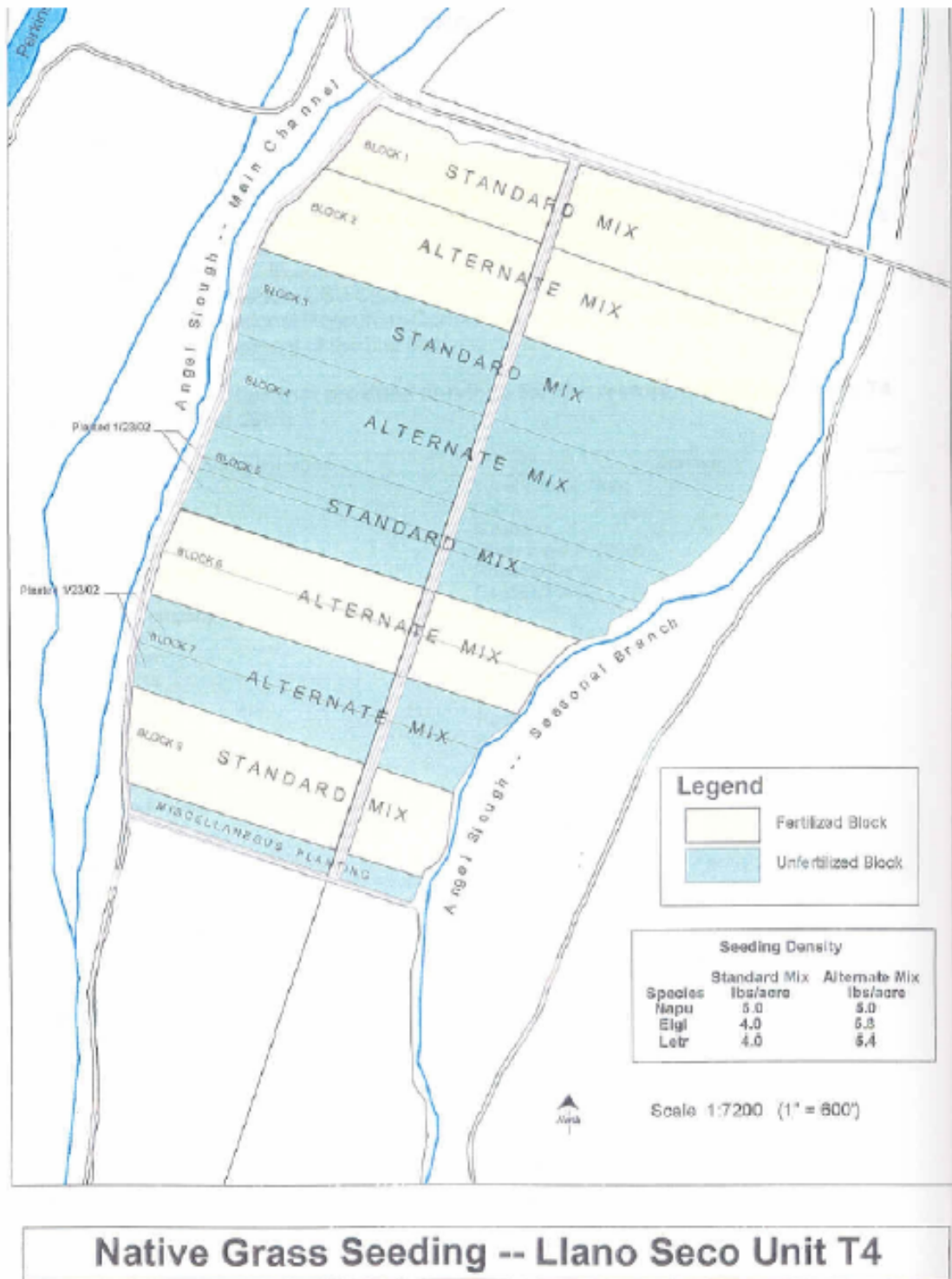
**Figure 3. Location of proposed plant communities for Llano Seco Unit's T4 and T8.**





## PROPOSAL

**Figure 4. Experimental block design of native grass planting at Llano Seco Unit's T4.**



## PROPOSAL

- Directly communicate (through a workshop) monitoring findings on native grass establishment and management to practitioners and landowners. Use this collaborative effort to establish standard native grass monitoring protocols to meet multiple user goals.

We anticipate that these efforts will greatly add to our understanding of the role of native grasses in meeting CALFED goals (wildlife and invasive species).

### 1. Problem, Goals, and Objectives

#### a) Problem

Native grass and understory plantings have become an important component of riparian restoration sites. For example, since 1999, River Partners has planted native grass and forbs on nearly 1,500 acres. While collaborative efforts, new technology, and application of ecological principals, have allowed for the successful establishment of native grasses, great uncertainties surround the response of wildlife and vegetation over the long term. This monitoring proposal will address the following problems as they apply to the Llano Seco native grass restoration:

- Grassland-associated birds are among the most imperiled group of bird species in North America (Knopf 1994, Peterjohn and Sauer 1999). This is not surprising as most grasslands were converted or degraded long ago (CPIF 2000). Hence, the restoration of grasslands and associated wildlife is urgent. Bird monitoring results from riparian restoration in California's Central Valley indicate that the abundance of several bird species is increasing, but similar information for grassland-associated species is sorely lacking. Which birds are present and in what numbers on restored native grasslands and savanna? Does community composition change seasonally? Which bird species benefit the most from these areas? Do distribution patterns point to specific habitat features?
- Non-native invasive plants, such as perennial pepperweed (*Lepidium latifolium*), Johnson grass (*Sorghum halepense*), and yellow star thistle (*Centaurea solstitialis*), threaten the biological integrity of areas managed for wildlife. Once established, native grass plantings hold the promise of displacing these weeds and making these areas more resistant to new plant invasions. The native grass composition progressively increased in cover during the initial sampling on Llano Seco. Does this trend hold up over time? Has the native grass plantings made the site more resistant to weed invasions? Has the establishment of native grasses affected the weed seed bank?
- Only limited, and often conflicting, information surrounds the long-term management of native grasses. As a result, land managers must embark on management decisions without scientifically sound information. When do they

## PROPOSAL

graze, burn, or apply herbicides (if they do anything)? What long-term management activities sustain native grass plantings? What are the costs of these activities and are they feasible to implement?

- Currently, restorationists, researchers, and land managers use a variety of methods to monitor native grass establishment. Consequently, no standard is available to compare sites and practices. Furthermore, rapid progress is being made toward techniques to improve native grass plantings, but information has been shared in an ad-hoc basis. Can effective standard methods be developed to meet multiple goals and provide comparisons across sites, treatments, and time? Can we develop a series of workshops to maintain the communication of new information?

### b) Goals and Objectives

The Llano Seco Unit provides a unique opportunity to enhance CALFED understanding of wildlife and vegetation responses to restoration. The goals and objectives of this monitoring effort are presented in Table 1.

**Table 1. Summary of project goals and objectives at the Llano Seco Unit, Sacramento River National Wildlife Refuge, Butte County, California.**

Project Goals and Objectives
<ul style="list-style-type: none"><li>• Evaluate horticultural grassland restoration design and management practices by estimating bird species community composition and abundance.</li><li>• Update comparisons of overall native grass cover experimental treatments (mixed and separate seeding and fertilizer addition), and compare with other areas of similar soils but different land uses.</li><li>• Compare bird use-distribution (i.e., areas of high activity) and abundance within and across native grass treatments.</li><li>• Evaluate the Conceptual Site Model developed in the Restoration Plan (SRP 2001).</li><li>• Evaluate the effectiveness of grassland management techniques (grazing, herbicides, and burning) to improve native grass vigor and cover.</li><li>• Compare assessment methods and develop effective standard native grass monitoring methods that can be translated across projects and has wide acceptance by restorationists, researchers, and land managers.</li><li>• Conduct a preliminary assessment of the seed bank to determine the influence of the grass planting.</li><li>• Sponsor a workshop to directly communicate project findings and native grass establishment and management techniques.</li></ul>

## 2. Justification

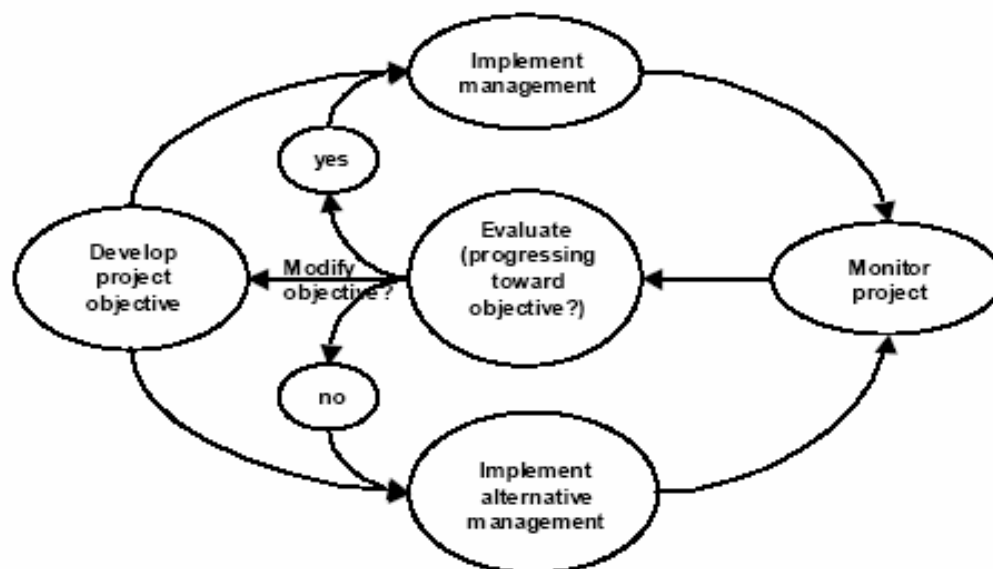
### a) Conceptual Model

The restoration plan (SRP 2001) developed a detailed conceptual site model that provided a synthesis of the site information and developed scenarios based on the current understanding of the physical and biological factors that influence site ecology. As the restoration was implemented using an adaptive management approach (Figure

## PROPOSAL

5), monitoring during the project helped evaluate the conceptual site model and management decisions.

**Figure 5. Adaptive management model used during implementation (SRP 2003).**



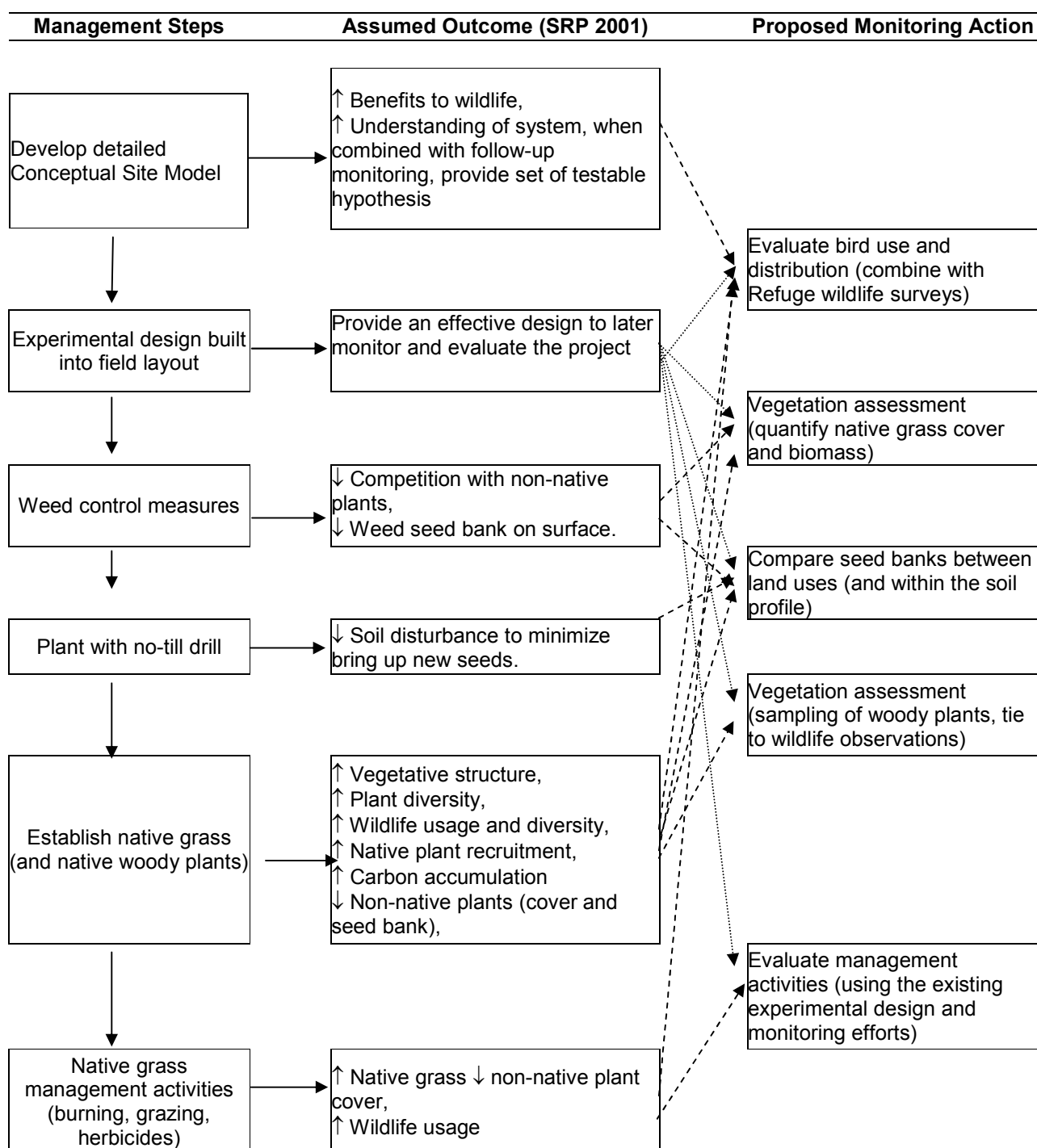
However, several elements of the model could not be tested during the 3-year implementation period. The restoration design and field layout provides an excellent framework (e.g. grid cell layout of plant communities, the native grass experimental replicated block design, detailed assumptions and model) to assess whether the restoration actions meet CALFED objectives. We propose to follow-up on key elements (especially related to native grass) of the conceptual site model (Figure 6) with this proposal.

Project assumptions, such as the planting will “jump start” native plant succession and displace non-native plants, will be evaluated through this proposal. However, the principle rationale for the restoration is the presumed increase in wildlife usage.

Restoration activities in California’s Central Valley have overwhelmingly focused on creating riparian forests and results indicate that the abundance of several bird species is increasing (Gardali et al. 2004). Similar information for grassland-associated species is sorely lacking. In order to evaluate the performance of grassland restoration and subsequent maintenance techniques for birds, we propose to study bird abundance, community composition, and local distribution. This work builds on initial breeding season survey work by PRBO from 2001 to 2003. Here, we also propose to study the winter bird community hypothesizing that grasslands are important for over-winter passerines and some waterbirds such as Sandhill Cranes (*Grus canadensis*). We

## PROPOSAL

**Figure 6. Overview of the monitoring approach at the Llano Seco Unit, Butte County, California.**



## PROPOSAL

propose that grassland monitoring requires different tools (spatial analysis) and provides benefits to a different set of birds than typical riparian forest restoration.

### b) Hypotheses

The project is guided by the following working alternative hypotheses:

- Restored grasslands and riparian savanna are important for over-winter passerines and some waterbirds such as Sandhill Cranes (*Grus canadensis*).
- Patterns of bird distribution will reflect local habitat features (depending on species and season).
- A detailed Conceptual Site Model and implementation of large-scale plantings with an experimental approach, provides a testable framework for later monitoring efforts.
- Native grass will displace weeds and take greater than 5 years to become dominant.
- Native grass establishment will reduce the composition of weed seeds in the seed bank.
- Collaborative efforts and comparative data can produce standard monitoring methods for native grasses in the Central Valley.

### 3. Previously Funded Monitoring

Previous CVPIA funding during implementation allowed for the following monitoring activities:

- Census and sampling of planted woody species,
- Visual estimation of herbaceous cover,
- Biomass sampling,
- Plant frequency along transects (in T8 only),
- Establishment of 7 photo points, and
- Avian point count surveys.

Funding for these projects ceased with the original grant. The monitoring results and approaches were published in numerous reports (SRP 2001, 2002a, 2002b, 2003) and one Master's thesis (Quinn 2003).

### 4. Approach and Scope of Work

River Partners proposes a collaborative effort to update the monitoring data and expand into key areas. We plan to integrate these efforts to increase our understanding of underlying mechanisms of bird response and plant responses. In addition, the comparison with nearby reference sites with similar soils provides the context to evaluate these efforts with relevant monitoring strategies (Table 2). We propose the following tasks:

- Task 1: Administer project management,
- Task 2: Develop a monitoring plan,



## PROPOSAL

**Table 2. Summary of reference sites for the proposed monitoring on the Llano Seco Unit, Butte County, California.**

Site	Owner	Location	Current/Past Landuse	Date of Restoration	Proposed Monitoring Activities			
					Birds	Vegetation <sup>a</sup>	Management Practices	Seed bank
Tract 1 (T1)	USFWS	Immediately north of T4.	Conservation/pasture and dryland crops.	2003	Yes	Yes, limited samples	No	Yes, limited.
Tract 4 (T4) <sup>b</sup>	USFWS	In between T1 and T8.	Conservation/irrigated crops.	2003	Yes.	Yes.	Yes	Yes
Tract 8 (T8) <sup>b</sup>	USFWS	Immediately south of T4.	Conservation/pasture and dryland crops.	2003	Yes	Yes, limited samples	No	Yes.
North Bedrock	Llano Seco Rancho	Immediately south of T8.	Hunting, grazing, and dryland crops	N/A	Yes	Yes, limited samples	No	Yes, limited.
Del Rio (East Field)	River Partners	Approximately 3.5 miles south of T8.	Conservation/Irrigated orchard	In progress.	Yes, but not part of proposal.	Yes, but not part of proposal.	No	Yes, limited

Note: Sites selected based on similar soils (Llano Seco, Hollenbeck, and White Cabin Series) and unique differences in recent land uses.

<sup>a</sup> Only T4 will receive native grass biomass monitoring. Although the focus of the project will be on native grass, we will also do a targeted evaluation of the woody species to support the bird monitoring and an overall assessment of the project.

<sup>b</sup> Restoration on T4 and T8 were funded by CVPIA.

## PROPOSAL

- Task 3: Evaluate bird use and spatial patterns,
- Task 4: Evaluate native grass management practices, update the native grass monitoring dataset, and examine key vegetation characteristics,
- Task 5: Use a collaborative effort to develop standard monitoring protocols and share native grass information (Outreach), and
- Task 6: Produce a final report and presentations.

Tasks are discussed in detail below.

### **a) Task 1: Administer project management**

As the lead, River Partners will administer project funding, monitor project progress, oversee subcontractor services, and communicate regularly to CALFED. River Partners will provide progress reports, invoices, and scheduled deliverables. This project is likely to require a considerable amount of coordination.

### **b) Task 2: Develop a monitoring plan**

To maximize the coordination and integration of the various efforts, we will work with our partners to write a detailed monitoring plan. The monitoring plan will examine ways to get a more complete picture from the monitoring (for example, vegetation surveys may overlap with bird survey points). We plan to merge past (T1) and current (Del Rio) monitoring efforts (from non-CALFED funded sources) to provide a more complete picture and context for the CALFED monitoring effort. Because of the importance of working with partners to develop standard methods and communicate the findings to a larger audience, the plan will also include an outreach section. The plan will also indicate how the project may be integrated with other complimentary CALFED monitoring efforts.

### **c) Evaluate bird use and spatial patterns**

Restoration activities in California's Central Valley have overwhelmingly focused on creating riparian forests and results indicate that the abundance of several bird species is increasing (Gardali et al. 2004). Similar information for grassland-associated species is sorely lacking. In order to evaluate the performance of grassland restoration and subsequent maintenance techniques for birds, we propose to study bird abundance, community composition, and local distribution. This work builds on initial breeding season survey work by PRBO from 2001 to 2003. Here, we also propose to study the winter bird community hypothesizing that grasslands are important for over-winter passerines and some waterbirds such as Sandhill Cranes (*Grus canadensis*).

Besides the general measures of abundance and community composition, our approach is to map bird distribution over time in order to identify frequently used areas at the scale of the treatment and across treatments (e.g., weedy field versus restored grassland). At the treatment scale, it is possible that these data reveal patterns of use related to variation in restoration design (e.g., planting densities).

This information will allow for the evaluation of horticultural grassland restoration and management practices, and will also compare bird use and distribution (e.g., areas of

## **PROPOSAL**

high activity) and abundance within and across management treatments. Some method details are provided below. PRBO will conduct the bird sampling and analyses. In addition, we will utilize USFWS wildlife surveys from the Llano Seco Unit.

### **(1) Territory Mapping**

We will map the distribution of birds using the territory mapping method (IBCC 1970) within each treatment. By marking the locations of birds on a detailed map, it is possible to count the number of territories in an area, estimate the density of birds, and plot spatial distribution. In the breeding season, we will GPS the centroid of each territory. During the winter period, when birds are less territorial, we will hand draw maps of species and / or flock occurrence noting flock size and composition. The resulting maps can be overlaid on to existing maps of restoration design and management treatments to reveal qualitative patterns.

### **(2) Point Count Surveys**

We will use the point count method (Ralph et al. 1993, 1995) to monitor the abundance and community composition of birds. This method is used to monitor population changes of breeding landbirds over time and is the standard for obtaining information on the diversity and richness of birds in a given area. In this method, skilled observers record all birds detected within a 50 meter radius of each sampling station during 5 minutes of observation, and counts will be repeated two times per year. The point count method is a standardized and widely applied census method that also contains a vegetation assessment component—a relevé (Ralph et al. 1993). The vegetation assessment component can be used to relate changes in bird composition and abundance to temporal (e.g., restoration) or inter-site differences in vegetation. River Partners has already established point count stations and collected preliminary bird observation data at Llano Seco Unit's T1 and T4 and throughout the Del Rio Wildland Preserve.

### **d) Evaluate native grass management practices, update the native grass monitoring, and examine key vegetation characteristics**

We propose several subtasks that will aid our understanding of the vegetation and bird responses to riparian grassland restoration. The vegetation monitoring will be a joint effort by CSUC and River Partners.

#### **(1) Evaluate native grass management practices and update the native grass monitoring**

Grazing by large herbivores, under controlled conditions, can be an effective management tool for maintaining high plant species diversity in managed systems where aggressive species might otherwise eliminate more desirable species (Harper 1977, Collins et al. 1998, Luoto et al. 2003, Loucugaray et al. 2004). This tool works when herbivores preferentially graze the aggressive dominants, thus reducing their competitive impact and permitting coexistence with less-competitive species. However, in any given situation this tool should be tested prior to any large-scale implementation.

## PROPOSAL

Periodic fire is a necessary condition for the continued maintenance of many natural systems in California (Barbour et al. 1999). Burning can help reduce undesirable species and can promote vigor and reproductive effort in native species that have evolved with fire. Grassland ecosystems, in particular, typically require fire (McNaughton 1983, Collins 1992).

A splendid opportunity to test the management implications of the interaction of these two important ecological factors, grazing and fire, presently occurs on the Llano Seco Unit. The USFWS is proposing several methods (burning, grazing, and herbicide application) to manage the native grasses. This task would allow us to capitalize on the experimental design built into the native grass planting to structure management activities in a systematic, experimental system before confounding influences begin.

We propose a controlled experiment testing the role of cattle grazing, fire and their interaction in the maintenance of restored native grass vigor and diversity. Within T4 (154 acres), we plan to construct eight fenced cattle 50 x 250 feet exclosures. Cattle will then be introduced to T4 but will of course be kept out of exclosures.

For the fire treatment we propose to use burn boxes (Wight 2002). Burn boxes are portable, open-topped four-sided metal boxes that are approximately 1.5 meter square (larger ones may be used if available). Fire is kept within the confines of the box, minimizing danger yet accurately simulating more wide-spread fire in terms of temperature. Wight (2000) successfully used burn boxes to study the fire ecology of several threatened plant species at SRNWR. Burn box fire treatments will occur both within and outside ( $n=8$  for each) the cattle exclosures.

Response variables will measure how the restored grasses respond to the experimental treatments. Using and expanding on previous methods of Quinn (2003) in this field at Llano Seco, we will use eight 1m<sup>2</sup> quadrats per treatment combination (fire and grazing; no fire and grazing; no grazing and fire; no grazing and no fire) to record species richness, cover and native grass biomass.

In addition, we will replicate the native grass monitoring used during implementation and document differences between native grass cover due to seeding treatment (mixed and separate seeding to examine interspecies competition) and fertilizer treatments initiated during planting. If we do not observe any statistically significant differences between seeding and fertilizer treatments in the first year, we may modify the monitoring regime to omit these initial treatments and focus on the management monitoring. Visual estimates of native grass and forb cover of 1 m<sup>2</sup> plots will be placed into vegetation classes (Daubenmire 1959). We will train observers on the same plot to arrive at similar means of estimation. Other rangeland evaluation techniques (USDA 1995) will also be evaluated, as well as potential standard measurements determined from the task below.

A statistical relationship between cover and native grass biomass will be established by regression and will use clipped grass quadrats from outside experimental areas. Once

## PROPOSAL

this regression is established we will record only cover in the quadrats. Data analysis of the entire experiment will use ANOVA in a two-way factorial design.

### **(2) Examine key vegetation characteristics**

We will also examine other key vegetation characteristics to examine the assumptions set forth in the site's conceptual site model including supporting the monitoring of bird-habitat relationships (SRP 2001). These efforts include:

- Update photo points,
- Compare vegetation with other areas of similar soils but different land uses and implementation strategies,
- Characterize woody vegetation,
- Conduct a preliminary survey of the seed bank.

The seed bank study approach is described below, while the other monitoring efforts are described in the River Partners Monitoring Program Plan (SRP 2003) and have been applied routinely on River Partners projects.

The seed bank is important for a variety of reasons. One assumption of the restoration plan was that the establishment of native species would alter the successional trajectory of the site to favor native species. In addition, we anticipate changes within the context of the fire and grazing experiment.

To assess weed seed bank changes under the various experimental treatment regimes described above and between previous land management practices (e.g. immediate conversion of agricultural land to restoration; fallow field present in between agriculture and restoration), we plan to provide a preliminary assessment of weeds in the seed bank.

We propose to use the well-established seedling emergence method (Leck 1989) to estimate the weed seed bank. Known volumes of soil (5cm x 5cm surface area, 5cm deep, =125cm<sup>3</sup>) will be excavated from each treatment (n=10 replicates per treatment) and the contents thoroughly mixed. Soil will then be spread out in standard greenhouse planting trays, exposed to natural sunlight, and well watered. Trays will be visited daily. As seedlings emerge they will be identified to species using Martin and Barkley (1961) and other sources as appropriate, and then discarded. Counting will continue until emergence ceases, at which time soil samples will be dried for 10 days, cooled, re-watered, and monitored again for as long as emergence continues. This regime can serve to break dormancy of weed seeds requiring such an alternation of wet/dry periods (Fenner 2000). Data to be analyzed will include: total species richness per treatment, seed density (volumetric), and emergence phenology.

It is important to link this information with the composition measurements, as we may be able to draw out potential mechanisms. For example, if we observe no difference in the presence of germinating weeds between areas planted to native grass and other areas, this may suggest that the native grass is inhibiting the germination of weeds.

## **PROPOSAL**

### **e) Use a collaborative effort to develop standard monitoring protocols and share native grass information (Outreach).**

Since River Partners initiated their first native grass planting in 1999, we have participated in annual meetings with native grass experts to assess the projects and guide future directions. In recent years, this informal effort has included a variety of staff from The Nature Conservancy, USFWS, agricultural consultants, Natural Resources Conservation Service, and many others. We propose to sponsor meeting to communicate the findings of the project and to help define methods and criteria for standard monitoring protocols. This task provides for a literature review of grassland protocols and demonstration of applicability to restoration areas. Once reviewed by participants we anticipate a selection of preferred methods. Ideally, the protocols would translate across projects and meet the needs of restorationists, researchers, and land managers. We plan to host three workshops and some informal meetings to discuss these issues.

### **f) Produce a final report**

This task covers the communication of the project findings. Each of the components will be added to a comprehensive report that would synthesize the findings into a narrative to describe the ecological changes on the site due to the project. The report would also evaluate the Conceptual Site Model developed in the Restoration Plan (SRP 2001) and develop an updated version that would address the topics listed in this report. Our hope is that our understanding of T4 would translate into future management actions to benefit specific wildlife and vegetation targets and minimize the stressors provided by weeds. In addition, we anticipate that the data collected will provide good information for journal articles and scientific conference presentations.

## **5. Expected Outcomes and Products**

List outcomes, products, and other key deliverables that your project will produce.

- Development of a monitoring plan.
- Two annual reports of the bird, rodent, and vegetation data collection.
- A final integrative report that merges the information collected during the project and evaluates the Conceptual Site Model and ecological principals behind the strategies used to implement the project. The evaluation of vegetation features incorporated into the restoration design to benefit wildlife will improve the design features and implementation of future projects.
- A report on the patterns of abundance, community composition, and distribution of birds in restored grasslands. This includes a GIS layer of bird distribution and use-distribution models.
- The assessment of the bird usage and population dynamics will describe the role restoration projects have in species recovery.
- A list of preferred methods of standard sampling techniques that could be applied to native grass and forb plantings within the CALFED watershed.
- Increased knowledge for land managers to implement and manage native grasses through participation in the workshops.



## PROPOSAL

- The project provides a rich amount of data that can be shared through presentations and journal articles.

### 6. Data Handling, Storage, and Dissemination

Data will be shared in a number of ways:

- Data collection for the bird data will be added to PRBO's data and reports on the Sacramento River.
- Reports and study findings will be presented to the Sacramento River Conservation Area Forum.
- Data and information collected for this project will be summarized in the reports listed including a comprehensive report that summarizes all site activities and lays out a blueprint for future monitoring.
- Reports will be made available on the River Partners website ([www.riverpartners.org](http://www.riverpartners.org)), Sacramento River Web, and Sacramento River Portal website (and others as needed).
- Reports will be archived at Merriam Library at CSU Chico, DFW, USFWS, and River Partners.
- Our intent is to allow for regular examination of the site. Therefore, data handling and storage will be considered in the monitoring plan.
- Any mapping information will be shared with the CSU, Chico Geographic Information Center.

We anticipate that the research from this program will generate scientific findings that will be shared with the research community through publications and presentations such as the CALFED Science conference.

Both PRBO and project staff have extensive experience with data base management, in particular with the types of data described in the proposal. Data are entered and proofed daily and are stored in a format compatible with ArcView and ArcInfo Geographic Information Systems (GIS) and SQL-based database systems. Results, reports and appropriate data will be made available through the PRBO website <http://www.prbo.org/cms/index.php>. PRBO maintains daily, weekly, and seasonal backup copies of all data collected as standard procedure. Original data sheets are scanned into Pdf files at the end of each field season and stored off site. Bird monitoring data and metadata is stored in the California Partners in Flight database, which is part of the California Information Node of the National Biological Information Infrastructure. This is a public access resource and is maintained at the Information Center for the Environment by UC Davis staff (<http://cain.nbii.gov/>)

### 7. Public Involvement and Outreach

Native grass restoration has received considerable attention over the past few years; we anticipate great interest in the proposed workshops. Outreach is an important component of the project and will generate some of the information and criteria for the selection of standard native grass monitoring methods. Such support will allow for the widespread use of standard methods.

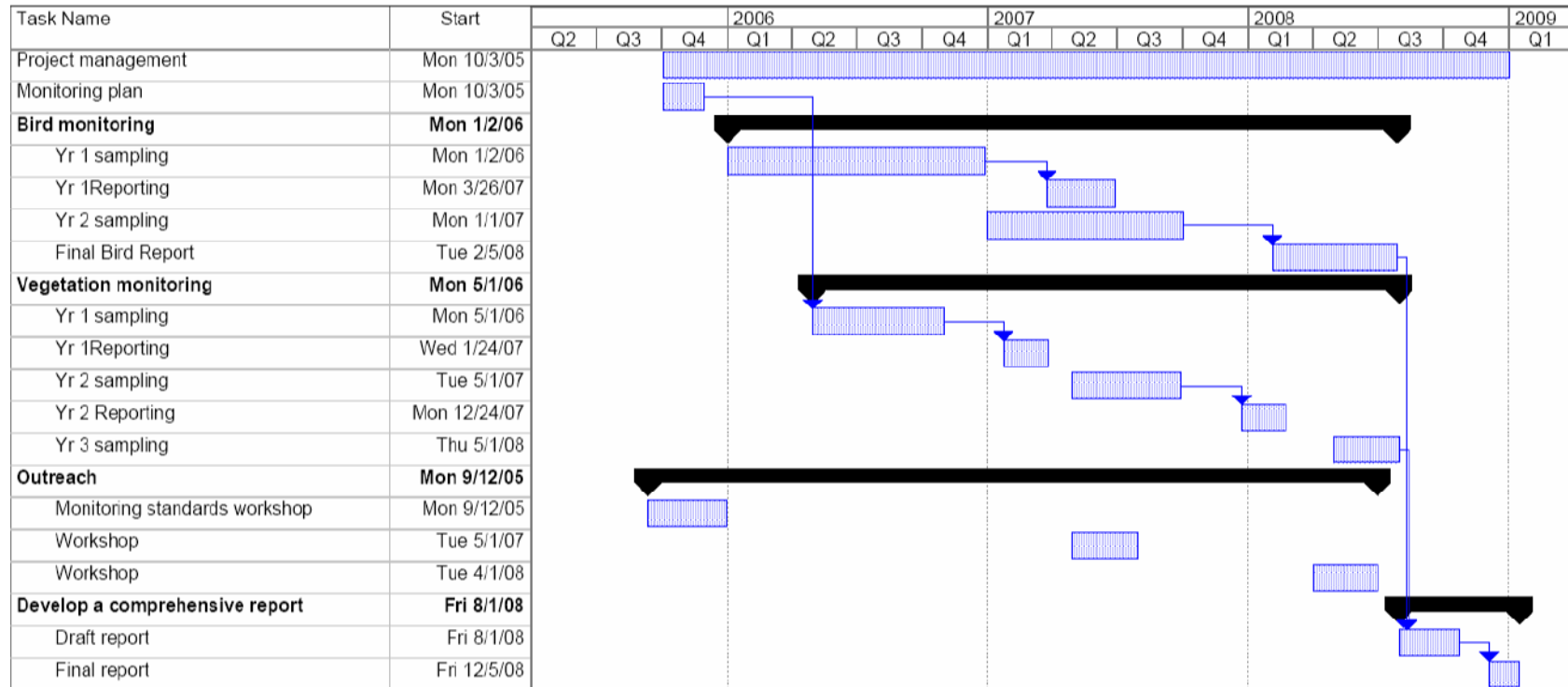
## **PROPOSAL**

### **8. Work Schedule**

A proposed work schedule is presented in Table 3.

# PROPOSAL

**Table 3. Project Timeline for the Llano Seco monitoring project.**



## **PROPOSAL**

### **B. Applicability to CALFED Bay-Delta Program ERP Goals, the ERP Draft Stage 1 Implementation Plan, and CVPIA Priorities.**

#### **1. ERP and CVPIA Priorities**

This proposal addresses three of the six goals identified in the ERP Draft Stage 1 Implementation Plan (Goal 1: At Risk Species, Goal 4: Habitats, and Goal 5: Non-native invasive species). This project will incidentally touch on Goal 2 (Ecosystem Processes and Biotic Communities) by reversing the physical processes that influence establishment of non-native species. The native grass and avian monitoring outlined in this proposal will identify species inhabitation and recovery in a previously restored Valley/Foothill Riparian Community along the Sacramento River as well as evaluate grassland habitat functionality and displacement of non-native species.

#### **2. Relationship to Other Ecosystem Restoration Actions, Monitoring Programs, or System-wide Ecosystem Benefits**

This study will generate new as well as expand upon previous strategies to restore native grassland habitat. Project findings will be documented and made available to future researchers interested in restoration of diminishing grassland habitat. Avian monitoring will provide more information about the criteria necessary for seasonal bird species inhabitation of native grasslands.

#### **3. Additional Information for Proposals Containing Land Acquisition**

Land acquisition is not a part of this proposal.

### **C. Qualifications.**

River Partners is the project lead and will conduct a portion of the vegetation monitoring and produce the final report. PRBO will conduct the bird monitoring and reporting and Dr. Wood of CSUC will be responsible for the seed bank study and biomass studies.

#### **River Partners**

**Dan Efseaff** received a B.S. in Biology from U.C. Davis and a M.S. in Biology from C.S.U. Chico, where he researched the interaction of riparian tree roots with soil types. He has 12 years of broad experience working for natural resource agencies, consulting firms, and research institutions. Since the beginning of his employment with River Partners in 1991, he has taken on the role of Restoration Ecologist and developed sampling programs, prepared ecological risk assessments, conducted botanical surveys, and constructed plant designs based on soil type. Mr. Efseaff will serve as the project lead and coordinate the efforts of other collaborators.

**Helen Swagerty** received a B.S. in Environmental Science from Oregon State University. She began her experience with River Partners as an Americore Volunteer in 2000. She is currently River Partner's Restoration Biologist for the Sacramento Valley and has conducted and organized monitoring surveys for valley elderberry longhorn

## PROPOSAL

beetle, plant survivorship and vigor, and native grass establishment and completes monitoring reports.

**Michelle Cederborg** obtained a B.S. in Biology and a M.S. in Botany at CSU Chico. She has previous experience in horticulture, vegetation sampling, and rare plant surveys through a three-year student assistantship with Department of Water Resources. As a Biological Technician with River Partners, she monitors plants survivorship and growth, leads the seed collection process and completes monitoring reports.

**Paul Kirk** has experience as a seasoned educator and in conducting floristic surveys. With River Partners, he monitors vegetation, writes scientific reports and coordinates and performs educational activities with school and community groups. He received a B.A. in Biology and Chemistry, teaching credentials in Bilingual Multiple Subjects and Life Science and a M.S. in Botany at CSU Chico.

**Tom Griggs** has 22 years of experience in riparian restoration. He developed the original riparian restoration efforts on the Sacramento River and has been published extensively in professional journals on riparian restoration. He obtained a B.S. in Biology from California Polytechnic University, Pomona, a M.S. in Botany from C.S.U. Chico and a Ph.D. in ecology from U.C. Davis. In 2001, he became the Senior Restoration Ecologist for River Partners where he has played a major role in the successful restoration of many northern California sites, including those managed by private owners, Sacramento River and San Joaquin River National Wildlife Refuge, and California Department of Fish and Game.

## PRBO

**Christine A. Howell** has degrees from the University of California Berkeley (B.A. Biology 1991) and the University of Missouri Columbia (PhD Ecology 1999). Her doctoral research focused on avian demography and life history evolution in a coastal California population of Song Sparrows. In 2000 she received an National Science Foundation Post-doctoral Fellowship in Biological Informatics to pursue research in collaboration with Missouri Botanical Garden and the International Center for Tropical Ecology at the University of Missouri Saint Louis. Her NSF research focused on the development and use of spatially explicit models and statistics (applying Geographic Information System technology) as practical tools in coarse-grain conservation studies. She uses these approaches to test hypotheses about the distributions of rare species, conservation reserve design, and the implications of global climate change. In 2004 she joined the staff of PRBO as a Conservation Scientist.

**Geoffrey R. Geupel** has a degree from Lewis and Clark College (BS Biology 1978) and has been employed as a biologist at PRBO for 24 years. He is currently Director of the PRBO's Terrestrial Ecology Division with a \$1.7 million annual budget and employing over 40 field biologists. Mr. Geupel with over 25 years experience in ornithological monitoring and research, has authored over 30 refereed publications including Field Methods for Monitoring Landbirds published in 1993 by the USFS and has helped

## PROPOSAL

define bird-monitoring protocols now used throughout North America. Current areas of interest include population biology, bird response to habitat restoration, and conservation planning. He is currently: Co-Chair of California Partners in Flight and board or technical committee member of the Riparian Habitat Joint Venture, Central Valley Joint Venture Sonoran Joint Venture, Sacramento River Technical Advisory Committee and Important Bird Area (IBA) National Technical Committee.

**Thomas Gardali** grew up in California's Great Central Valley. He earned an undergraduate degree in Environmental Studies from the University of California at Santa Cruz in 1992 and has been a field biologist and ecologist for PRBO since 1993. His research interests are conservation oriented and range from natural history to restoration to the effects of habitat succession and climate patterns on birds. He has authored over 15 peer-reviewed publications and oversees field crews for 8 different projects in the Central California Region for the Terrestrial Ecology Division.

### CSUC

**David M. Wood** has degrees from U.C. Davis (B.A. Zoology 1975), California State University Fresno (M.A. Biology 1982) and the University of Washington (Ph.D. Botany 1987). He was a postdoctoral research associate at the Institute of Ecosystem Studies in Millbrook, NY from 1987 to 1988. He then joined the faculty of Wheaton College in Norton, MA as an assistant professor from 1988 to 1990. In 1990 he joined the faculty at California State University Chico where he is now a full professor (homepage: <http://www.csuchico.edu/~dmwood> ). Dr. Wood's research interests are centered in community and ecosystem ecology, with special interests in riparian ecology, ecological succession and ecosystem recovery from disturbance. Dr. Wood has conducted field research on Mount St. Helens (ongoing since 1982), eastern deciduous forest in New York (completed), and the Sacramento River (ongoing since 1998). He has graduated 11 Masters Degree students, seven of whom conducted their research on riparian ecology (C. Bracken, B McAlexander, D. Peterson, D. Efseaff, M. Quinn, B. Borders, J. Hunt). He has 14-refereed publications, has authored 2 book reviews, and is coauthor on 4 book chapters. Dr. Wood has received grants from several agencies and organizations including The Nature Conservancy and the National Science Foundation.

### D. Cost.

There are three elements to this section.

#### 1. Budget

The total cost of this project is \$372,100. Additional information is presented in the budget form

#### 2. Cost sharing

Rancho Llano Seco will provide for the management of the cattle used on the site as well as some labor to maintain the fencing for the management monitoring. The USFWS will provide a significant contribution to the land management, wildlife surveys, and consultation. Although some money is set aside for key participants, we will receive some consultation from participants on standard monitoring techniques.



## PROPOSAL

### 3. Long-term funding strategy

The project will be set up to allow for future monitoring at periodic intervals. Funding may come from USFWS as we intend that the protocols that are established will be used by in routine monitoring of vegetation and wildlife.

### E. Compliance with Standard Terms and Conditions.

River Partners is currently working under CALFED-issued contracts. We do not anticipate any problems with future contracts. We are willing and able to comply with the terms of standard ERP agreements.

### F. Literature Cited.

- Barbour, M.G., J.H. Burk, W.D. Pitts, F.S. Gilliam and M.W. Schwartz. Terrestrial Plant Ecology. 3rd Ed. Addison Wesley Longman, Menlo Park.
- California Partners in Flight (B. Allen, lead author). 2000. The draft grassland bird conservation plan: A strategy for protecting and managing grassland habitats and associated birds in California. Version 1.0. Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, CA 94970 (<http://www.prbo.org/CPIF/Consplan.html>).
- Collins, S.L., A.K. Knapp, J.M. Briggs, J.M. Blair and E.M. Steinauer. 1998. Modulation of diversity by grazing and mowing in native tallgrass prairie. *Science* 280: 745-747
- Collins, S.L. 1992. Fire frequency and community heterogeneity in tallgrass prairie vegetation. *Ecology* 73: 2001-2006.
- Daubenmire, R.F. 1959. A canopy-coverage method. *Northwest Science* 33: 43-64.
- Fenner, M. 2000. *Seeds: The Ecology of Regeneration in Plant Communities*. Oxon, UK and New York.
- Gardali, T., A.L. Holmes, S.L. Small, N. Nur, G.R. Geupel, and G.H. Golet. 2004. Abundance patterns of landbirds in restored and remnant riparian forests on the Sacramento River, California, USA. In Gardali, T., S.L. Small, N. Nur, G.R. Geupel, G. Ballard, and A.L. Holmes. 2004. Monitoring landbirds in the Sacramento Valley. PRBO unpublished report.
- Harper, J. L. 1977. *Population Biology of Plants*. Academic Press, London.
- I.B.C.C. (International Bird Census Committee) 1970. An international standard for a mapping method in bird census work recommended by the International Bird Census Committee. *Audubon Field Notes* 24:722-726.
- Knopf, F.L. 1994. Avian assemblages on altered grasslands. *Studies in Avian Biology* 15:247-257.
- Leck, M.A., V.T. Parker and R.L. Simpson (Eds.). *Ecology of Soil Seed Banks*. Academic Press, San Diego. Martin, A.C. and W.D. Barkley. 1961. *Seed Identification Manual*. University of California Press, Berkeley.
- Loucougaray, G., A. Bonis and J. Bouzillé. 2004. Effects of grazing by horses and/or cattle on the diversity of coastal grasslands in western France. *Biological Conservation* 116: 59-71.
- Luoto, M., M. J. Pykälä and M. Kuussaari. 2003. Decline of landscape-scale habitat and species diversity after the end of cattle grazing. *Journal for Nature Conservation* 11: 171-178.
- McNaughton, S.J. 1983. Serengeti grassland ecology: The role of composite environmental factors and contingency in community organization. *Ecological Monographs*, Vol. 53 291-320.
- Peterjohn, B.G., and J.R. Sauer. 1999. Population status of North American grassland birds from the North American Breeding Bird Survey 1966-1996. *Studies in Avian Biology* 19:27-44.

## PROPOSAL

- Quinn, M.B. 2003. Effects of planting treatment on establishment of three species of California native grasses. Masters Thesis, California State University, Chico, CA.
- Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. Field Methods for Monitoring Landbirds. General Technical Report PSW-GTR 144. USDA Forest Service. 41 pp.
- Ralph, C. J., J. R. Sauer, and S. Droege. 1995. Monitoring Bird Populations by Point Counts. General Technical Report PSW-GTR 149. USDA Forest Service. 181 pp.
- [SRP] Sacramento River Partners. 2003. 2003 Monitoring program plan for Sacramento River Partners. Draft report. May 28, 2003. Dan Efseaff, Tom Griggs, Erin McKinney, Tamara Sperber, and Helen Swagerty. Chico, California.
- [SRP] Sacramento River Partners. 2003. 2002 End of season report for Tracts 4 and 8, Llano Seco Unit, Sacramento River National Wildlife Refuge. Butte County, California. Helen Swagerty. Chico, California.
- [SRP] Sacramento River Partners. 2002a. 2002 Mid Season Report for Tracts 4 and 8, Llano Seco Unit, Sacramento River National Wildlife Refuge. Butte County, California. July 26, 2002. H. Swagerty and D. Efseaff. Chico, California.
- [SRP] Sacramento River Partners. 2002b. 2001 End of Season Report for Tracts 4 and 8 Llano Seco Unit. Draft Report. Dan Efseaff, Erin McKinney, and Helen Swagerty, authors. Prepared for the US Fish and Wildlife Service and the Central Valley Project Improvement Act.
- [SRP] Sacramento River Partners. 2001. Riparian Restoration Unit Plan for Tract 4, Llano Seco Unit, Sacramento River National Wildlife Refuge, Butte County, California. Dan Efseaff, editor. Chico, California.
- Walters, C. 1986. Adaptive management of renewable resources. MacMillan, New York, NY.
- Wight, N.K. 2000. Effects of prescribed burning on rare alkali plants at the Sacramento National Wildlife Refuge complex. Masters Thesis, California State University, Chico, CA.
- USDA US Department of Agriculture. 1995. Interagency Rangeland monitoring Handbook – Utilization Studies (1734-3).

## PROPOSAL

### G. Nonprofit Verification.

#### Internal Revenue Service

Date: October 6, 2003

River Partners  
% John Carlon  
539 Flume Street  
Chico, CA 95928

Department of the Treasury  
P. O. Box 2508  
Cincinnati, OH 45201

Person to Contact:  
Kaye Keyes 31-07416  
Customer Service Specialist  
**Toll Free Telephone Number:**  
8:00 a.m. to 6:30 p.m. EST  
877-829-5500  
**Fax Number:**  
513-263-3756  
**Federal Identification Number:**  
94-3302335

Dear Sir or Madam:

This is in response to your request of October 6, 2003, regarding your organization's tax-exempt status.

In December 1998 we issued a determination letter that recognized your organization as exempt from federal income tax. Our records indicate that your organization is currently exempt under section 501(c)(3) of the Internal Revenue Code.

Based on information subsequently submitted, we classified your organization as one that is not a private foundation within the meaning of section 509(a) of the Code because it is an organization described in sections 509(a)(1) and 170(b)(1)(A)(vi).

This classification was based on the assumption that your organization's operations would continue as stated in the application. If your organization's sources of support, or its character, method of operations, or purposes have changed, please let us know so we can consider the effect of the change on the exempt status and foundation status of your organization.

Your organization is required to file Form 990, Return of Organization Exempt from Income Tax, only if its gross receipts each year are normally more than \$25,000. If a return is required, it must be filed by the 15th day of the fifth month after the end of the organization's annual accounting period. The law imposes a penalty of \$20 a day, up to a maximum of \$10,000, when a return is filed late, unless there is reasonable cause for the delay.

All exempt organizations (unless specifically excluded) are liable for taxes under the Federal Insurance Contributions Act (social security taxes) on remuneration of \$100 or more paid to each employee during a calendar year. Your organization is not liable for the tax imposed under the Federal Unemployment Tax Act (FUTA).

Organizations that are not private foundations are not subject to the excise taxes under Chapter 42 of the Code. However, these organizations are not automatically exempt from other federal excise taxes.

Donors may deduct contributions to your organization as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to your organization or for its use are deductible for federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

## PROPOSAL

-2-

River Partners  
94-3302335

Your organization is not required to file federal income tax returns unless it is subject to the tax on unrelated business income under section 511 of the Code. If your organization is subject to this tax, it must file an income tax return on the Form 990-T, Exempt Organization Business Income Tax Return. In this letter, we are not determining whether any of your organization's present or proposed activities are unrelated trade or business as defined in section 513 of the Code.

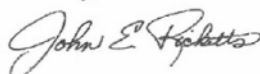
Section 6104 of the Internal Revenue Code requires you to make your organization's annual return available for public inspection without charge for three years after the due date of the return. The law also requires organizations that received recognition of exemption on July 15, 1987, or later, to make available for public inspection a copy of the exemption application, any supporting documents and the exemption letter to any individual who requests such documents in person or in writing. Organizations that received recognition of exemption before July 15, 1987, and had a copy of their exemption application on July 15, 1987, are also required to make available for public inspection a copy of the exemption application, any supporting documents and the exemption letter to any individual who requests such documents in person or in writing. For additional information on disclosure requirements, please refer to Internal Revenue Bulletin 1999 - 17.

Because this letter could help resolve any questions about your organization's exempt status and foundation status, you should keep it with the organization's permanent records.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

This letter affirms your organization's exempt status.

Sincerely,



John E. Ricketts, Director, TE/GE  
Customer Account Services

# Tasks And Deliverables

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit,  
Sacramento River National Wildlife Refuge*

Task ID	Task Name	Start Month	End Month	Deliverables
1	Project Management	1	36	Semiannual and final reports. Periodic invoices.
2	Monitoring plan	1	36	Monitoring plan.
3	Bird use and spatial patterns	1	36	2 Annual reports Final report
4	Native grass and vegetation characteristics	1	36	2 Annual reports
5	Outreach	1	36	3 workshops
6	Reporting	1	36	draft and final comprehensive reports

## Comments

If you have comments about budget justification that do not fit elsewhere, enter them here.

**Additional deliverables will be included in the reports, but the reports will be a central depository of information.**

# Budget Summary

## Project Totals

Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
\$85,382	\$23,580	\$3,519	\$10,900	\$181,740	\$2,400	\$0	\$0	\$307,521	\$64,579	\$372,100

Do you have cost share partners already identified?

Yes.

If yes, list partners and amount contributed by each:

see proposal

Do you have potential cost share partners?

No.

If yes, list partners and amount contributed by each:

Are you specifically seeking non–federal cost share funds through this solicitation?

No.

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit, Sacramento River National Wildlife Refuge*

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit, Sacramento River National Wildlife Refuge*

## Year 1 ( Months 1 To 12 )

Task	Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And	Other Direct	Direct Total	Indirect Costs	Total
------	-------	----------	--------	--------------------------	--------------------------	-----------	-----------	--------------	--------------	----------------	-------



							Rights Of Way	Costs			
1: project management (12 months)	2659	495	0	0	0	0	0	0	\$3,154	662	\$3,816
2: Monitoring plan (12 months)	8826	2377	50	800	2500	0	0	0	\$14,553	3056	\$17,609
3: Bird use and spatial patterns (12 months)	3189	1021	270	0	30800	0	0	0	\$35,280	7409	\$42,689
4: Native grass and vegetation characteristics (12 months)	20093	5343	949	5350	50860	350	0	0	\$82,945	17419	\$100,364
5: Outreach (12 months)	3309	894	300	500	4000	200	0	0	\$9,203	1933	\$11,136
6: Reporting (12 months)	8842	2358	50	500	1000	0	0	0	\$12,750	2678	\$15,428
<b>Totals</b>	<b>\$46,918</b>	<b>\$12,488</b>	<b>\$1,619</b>	<b>\$7,150</b>	<b>\$89,160</b>	<b>\$550</b>	<b>\$0</b>	<b>\$0</b>	<b>\$157,885</b>	<b>\$33,157</b>	<b>\$191,042</b>

## Year 2 ( Months 13 To 24 )

Task	Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
1: project management (12 months)	1080	246	0	0	0	0	0	0	\$1,326	278	\$1,604
	0	0	0	0	0	0	0	0	\$0	0	\$0

2: Monitoring plan (12 months)											
3: Bird use and spatial patterns (12 months)	786	267	150	100	30850	0	0	0	\$32,153	6752	\$38,905
4: Native grass and vegetation characteristics (12 months)	11400	3225	525	650	37280	650	0	0	\$53,730	11283	\$65,013
5: Outreach (12 months)	1110	317	300	500	4000	100	0	0	\$6,327	1329	\$7,656
6: Reporting (12 months)	5466	1529	0	500	750	0	0	0	\$8,245	1731	\$9,976
<b>Totals</b>	<b>\$19,842</b>	<b>\$5,584</b>	<b>\$975</b>	<b>\$1,750</b>	<b>\$72,880</b>	<b>\$750</b>	<b>\$0</b>	<b>\$0</b>	<b>\$101,781</b>	<b>\$21,373</b>	<b>\$123,154</b>

### Year 3 ( Months 25 To 36 )

Task	Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
1: project management (12 months)	927	231	0	0	0	0	0	0	\$1,158	243	\$1,401
2: Monitoring plan (12 months)	0	0	0	0	0	0	0	0	\$0	0	\$0
3: Bird use and spatial patterns (12 months)	407	147	100	0	13700	0	0	0	\$14,354	3014	\$17,368
	6464	1907	425	0	0	1000	0	0	\$9,796	2057	\$11,853

4: Native grass and vegetation characteristics (12 months)											
5: Outreach (12 months)	2161	669	300	500	4000	100	0	0	\$7,730	1623	\$9,353
6: Reporting (12 months)	8663	2554	100	1500	2000	0	0	0	\$14,817	3112	\$17,929
<b>Totals</b>	<b>\$18,622</b>	<b>\$5,508</b>	<b>\$925</b>	<b>\$2,000</b>	<b>\$19,700</b>	<b>\$1,100</b>	<b>\$0</b>	<b>\$0</b>	<b>\$47,855</b>	<b>\$10,049</b>	<b>\$57,904</b>

# Budget Justification

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit,  
Sacramento River National Wildlife Refuge*

## Labor

Yr 1 Task 1 Project Manager - 4 hrs @ \$46.13/hr Restoration  
Ecologists - 61 hrs @ \$26.40/hr Accounting - 36 hrs @  
\$24.00/hr

Task 2 Senior Restoration Ecologists - 28 hrs @ \$31.69/hr  
Restoration Ecologists - 99 hrs @ \$26.40/hr Biology  
Technicians - 379 hrs @ \$14.05/hr

Task 3 Restoration Ecologists - 55 hrs @ \$26.40/hr Biology  
Technicians - 227 hrs @ \$14.05/hr

Task 4 Senior Restoration Ecologists - 65 hrs @ \$31.69/hr  
Restoration Ecologists - 169 hrs @ \$26.40/hr Biologists - 360  
hrs @ \$16.82/hr Biology Technicians - 535 hrs @ \$14.05/hr

Task 5 Senior Restoration Ecologists - 11 hrs @ \$31.69/hr  
Restoration Ecologists - 28 hrs @ \$26.40/hr Biologists - 41  
hrs @ \$16.82/hr Biology Technicians - 109 hrs @ \$14.05/hr

Task 6 Senior Restoration Ecologists - 55 hrs @ \$31.69/hr  
Restoration Ecologists - 76 hrs @ \$26.40/hr Biologists - 109  
hrs @ \$16.82/hr Biology Technicians - 232 hrs @ \$14.05/hr

Yr 2 Task 1 Project Manager - 1 hrs @ \$47.79/hr Restoration  
Ecologists - 5 hrs @ \$27.35/hr Accounting - 36 hrs @ \$24.86/hr

Task 3 Restoration Ecologists - 25 hrs @ \$27.35/hr Biology  
Technicians - 54 hrs @ \$14.55/hr

Task 4 Senior Restoration Ecologists - 30 hrs @ \$32.83/hr  
Restoration Ecologists - 90 hrs @ \$27.35/hr Biologists - 200  
hrs @ \$17.42/hr Biology Technicians - 310 hrs @ \$14.55/hr

Task 5 Senior Restoration Ecologists - 4 hrs @ \$32.83/hr  
Restoration Ecologists - 9 hrs @ \$27.35/hr Biologists - 12 hrs  
@ \$17.42/hr Biology Technicians - 36 hrs @ \$14.55/hr

Task 6 Senior Restoration Ecologists - 27 hrs @ \$32.83/hr  
Restoration Ecologists - 47 hrs @ \$27.35/hr Biologists - 68  
hrs @ \$17.42/hr Biology Technicians - 145 hrs @ \$14.55/hr

Yr 3 Task 1 Accounting - 36 hrs @ \$25.75/hr

Task 3 Restoration Ecologists - 10 hrs @ \$28.33/hr Biology  
Technicians - 27 hrs @ \$15.08/hr

Task 4 Senior Restoration Ecologists - 22 hrs @ \$34.01/hr  
Restoration Ecologists - 48 hrs @ \$28.33/hr Biologists - 116  
hrs @ \$18.05/hr Biology Technicians - 150 hrs @ \$15.08/hr

Task 5 Senior Restoration Ecologists - 6 hrs @ \$34.01/hr  
Restoration Ecologists - 13 hrs @ \$28.33/hr Biologists - 27  
hrs @ \$18.05/hr Biology Technicians - 73 hrs @ \$15.08/hr Task  
6 Senior Restoration Ecologists - 48 hrs @ \$34.01/hr  
Restoration Ecologists - 70 hrs @ \$28.33/hr Biologists - 100  
hrs @ \$18.05/hr Biology Technicians - 215 hrs @ \$15.08/hr

## Benefits

Yr 1 Project Manager - 17.22% Senior Restoration Ecologists -  
27.53% Restoration Ecologists - 16.39% Biologists - 27.08%  
Biology Technicians - 32% Accounting - 23%

Yr 2 Project Manager - 17.83% Senior Restoration Ecologists -  
29.04% Restoration Ecologists - 16.95% Biologists - 28.36%  
Biology Technicians - 34% Accounting - 23.94%

Yr 3 Project Manager - 18.51% Senior Restoration Ecologists -  
30.69% Restoration Ecologists - 17.58% Biologists - 29.79%  
Biology Technicians - 36% Accounting - 24.98%

## Travel

Yr 1 Task 2 River Partners Vehicle 91 miles @ .55/mile Task 3 River Partners Vehicle 491 miles @ .55/mile Task 4 River Partners Vehicle 1,725 miles @ .55/mile Task 5 River Partners Vehicle 545 miles @ .55/mile Task 6 River partners Vehicle 91 miles @ .55/mile

Yr 2 Task 3 River Partners Vehicle 273 miles @ .55/mile Task 4 River Partners Vehicle 955 miles @ .55/mile Task 5 River Partners Vehicle 545 miles @ .55/mile

Yr 3 Task 3 River Partners Vehicle 182 miles @ .55/mile Task 4 River Partners Vehicle 773 miles @ .55/mile Task 5 River Partners Vehicle 545 miles @ .55/mile Task 6 River Partners Vehicle 182 miles @ .55/mile

## Supplies And Expendables

Yr 1 Task 2 Office Supplies \$800 Task 4 Field Supplies \$5,350

Task 5 Office Supplies \$500

Task 6 Office Supplies \$500

Yr 2 Task 3 Office Supplies \$100 Task 4 Field Supplies \$650 Task 5 Office Supplies \$500 Task 6 Office Supplies \$500

Yr 3 Task 5 Office Supplies \$500

Task 6 Office Supplies \$1,500

## Services And Consultants

Yr 1 Task 2 CSUC Research Foundation - Map creation \$1,000 TBD - creation of graphs \$1,000 TDB - peer reviewer \$500 Task 4 PRBO - Bird monitoring \$30,800 (includes wages, supplies, housing & utilities and overhead) Task 4 CSUC Research Foundation (Dave Woods)- Vegetative Monitoring \$35,500(includes wages, supplies, travel and overhead) Llano

Seco Ranch - Install fencing at \$4.00 per foot \$15,360 Task 5  
TBD - Stipend for participants \$4,000 Task 6 TBD - peer  
reviewer \$1,000

Yr 2 Task 3 PRBO - Bird monitoring \$30,850 (includes wages,  
supplies, housing & utilities and overhead) Task 4 CSUC  
Research Foundation (Dave Woods)- Vegetative Monitoring  
\$29,600 (includes wages, supplies, travel and overhead) Llano  
Seco Ranch - Install fencing at \$2.00 per foot \$7,680 Task 5  
TBD - Stipend for participants \$4,000 Task 6 TBD - peer  
review \$750

Yr 3 Task 3 PRBO - Bird monitoring \$13,700 (includes wages,  
supplies, housing & utilities and overhead) Task 5 TBD -  
Stipend for participants \$4,000 Task 6 TBD - peer review  
\$2000

## Equipment

Yr 1 Task 4 Use of River Partners equipment (Quad) \$350 Task 5  
Use of River Partners equipment (Quad) \$200

Yr 2 Task 4 Use of River Partners equipment (Quad) \$650 Task 5  
Use of River Partners equipment (Quad) \$100

Yr 3 Task 4 Use of River Partners equipment (Quad) \$1,000 Task  
5 Use of River Partners equipment (Quad) \$100

## Lands And Rights Of Way

None

## Other Direct Costs

None

## Indirect Costs/Overhead

River Partners average annual overhead rate is 21%. This is  
the existing rate on current CALFED contracts.

Equipment

## Comments



# Environmental Compliance

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit,  
Sacramento River National Wildlife Refuge*

## CEQA Compliance

Which type of CEQA documentation do you anticipate?

☒ none

- ☐ negative declaration or mitigated negative declaration
- ☐ EIR
- ☐ categorical exemption

If you are using a categorical exemption, choose all of the applicable classes below.

- ☐ Class 1. Operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. The types of "existing facilities" itemized above are not intended to be all-inclusive of the types of projects which might fall within Class 1. The key consideration is whether the project involves negligible or no expansion of an existing use.
- ☐ Class 2. Replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced.
- ☐ Class 3. Construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. The numbers of structures described in this section are the maximum allowable on any legal parcel, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.
- ☐ Class 4. Minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.
- ☐ Class 6. Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies. These may be strictly for information

gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.

– Class 11. Construction, or placement of minor structures accessory to (appurtenant to) existing commercial, industrial, or institutional facilities, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

Identify the lead agency.

Is the CEQA environmental impact assessment complete?

If the CEQA environmental impact assessment process is complete, provide the following information about the resulting document.

**Document Name**

**State Clearinghouse Number**

If the CEQA environmental impact assessment process is not complete, describe the plan for completing draft and/or final CEQA documents.

## NEPA Compliance

Which type of NEPA documentation do you anticipate?

☒ none

– environmental assessment/FONSI

– EIS

– categorical exclusion

Identify the lead agency or agencies.

If the NEPA environmental impact assessment process is complete, provide the name of the resulting document.

If the NEPA environmental impact assessment process is not complete, describe the plan for completing draft and/or final NEPA documents.

Successful applicants must tier their project's permitting from the CALFED Record of Decision and attachments providing programmatic guidance on complying with the state and federal endangered species acts, the Coastal Zone Management Act, and sections 404 and 401 of the Clean Water Act.

Please indicate what permits or other approvals may be required for the activities contained in your proposal and also which have already been obtained. Please check all that apply. If a permit is *not* required, leave both Required? and Obtained? check boxes blank.

<b>Local Permits And Approvals</b>	<b>Required?</b>	<b>Obtained?</b>	<b>Permit Number (If Applicable)</b>
<b>conditional Use Permit</b>	-	-	
<b>variance</b>	-	-	
<b>Subdivision Map Act</b>	-	-	
<b>grading Permit</b>	-	-	
<b>general Plan Amendment</b>	-	-	
<b>specific Plan Approval</b>	-	-	
<b>rezone</b>	-	-	
<b>Williamson Act Contract Cancellation</b>	-	-	
<b>other</b>	-	-	

<b>State Permits And Approvals</b>	<b>Required?</b>	<b>Obtained?</b>	<b>Permit Number (If Applicable)</b>
<b>scientific Collecting Permit</b>	-	-	
<b>CESA Compliance: 2081</b>	-	-	
<b>CESA Compliance: NCCP</b>	-	-	
<b>1602</b>	-	-	
<b>CWA 401 Certification</b>	-	-	
<b>Bay Conservation And Development Commission Permit</b>	-	-	
<b>reclamation Board Approval</b>	-	-	
<b>Delta Protection Commission Notification</b>	-	-	
<b>state Lands Commission Lease Or Permit</b>	-	-	

<b>action Specific Implementation Plan</b>	-	-	
<b>other</b>	-	-	

<b>Federal Permits And Approvals</b>	<b>Required?</b>	<b>Obtained?</b>	<b>Permit Number (If Applicable)</b>
<b>ESA Compliance Section 7 Consultation</b>	-	-	
<b>ESA Compliance Section 10 Permit</b>	-	-	
<b>Rivers And Harbors Act</b>	-	-	
<b>CWA 404</b>	-	-	
<b>other</b>	-	-	

<b>Permission To Access Property</b>	<b>Required?</b>	<b>Obtained?</b>	<b>Permit Number (If Applicable)</b>
<b>permission To Access City, County Or Other Local Agency Land Agency Name</b>	-	-	
<b>permission To Access State Land Agency Name</b>	-	-	
<b>permission To Access Federal Land Agency Name</b>	-	-	
<b>permission To Access Private Land Landowner Name</b>	-	-	

If you have comments about any of these questions, enter them here.

# Land Use

*Vegetation and wildlife response to native grass restoration on the Llano Seco Unit,  
Sacramento River National Wildlife Refuge*

Does the project involve land acquisition, either in fee or through easements, to secure sites for monitoring?

☒ No.

☐ Yes.

How many acres will be acquired by fee?

How many acres will be acquired by easement?

Describe the entity or organization that will manage the property and provide operations and maintenance services.

Is there an existing plan describing how the land and water will be managed?

☐ No.

☐ Yes.

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

☐ No.

☒ Yes.

Describe briefly the provisions made to secure this access.

**River Partners will secure a Special Use Permit from the US Fish and Wildlife Service, Sacramento River National Wildlife Refuge in order to access the site throughout the duration of the project.**

Do the actions in the proposal involve physical changes in the current land use?

☒ No.

☐ Yes.

Describe the current zoning, including the zoning designation and the principal permitted uses permitted in the zone.

Describe the general plan land use element designation, including the purpose and uses allowed in the designation.

Describe relevant provisions in other general plan elements affecting the site, if any.

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.

☐ Yes.

Land Designation	Acres	Currently In Production?
Prime Farmland		–
Farmland Of Statewide Importance		–
Unique Farmland		–
Farmland Of Local Importance		–

Is the land affected by the project currently in an agricultural preserve established under the Williamson Act?

☒ No.

☐ Yes.

Is the land affected by the project currently under a Williamson Act contract?

☒ No.

☐ Yes.

Why is the land use proposed consistent with the contract's terms?

Describe any additional comments you have about the projects land use.