COMPREHENSIVE MANAGEMENT PLAN

FOR THE

SACRAMENTO RIVER WILDLIFE AREA

California Department of Fish and Game
February, 2004

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LIST OF TERMS

Acronyms

The following acronyms are utilized in this Plan with the meanings that are indicated below:

"CALFED Program"	- refers to the programs of the California Bay-Delta Authority, which is the State and federal partnership working to improve the quality and reliability of California's water supply while restoring the California Bay-Delta Ecosystem.
"CEQA"	- refers to the California Environmental Quality Act.
"DPR"	- refers to the California Department of Parks and Recreation.
"DWR"	- refers to the California Department of Water Resources
"NCNCR"	- refers to Northern California – North Coast Region of the Department of Fish and Game, which is also referred to as "Region 1". The Region includes Tehama County.
"NOAA Fisheries"	- refers to the National Marine Fisheries Service.
"NRCS"	- refers to the Natural Resources Conservation Service.
"RM"	- refers to River Mile, which is a measure of location along the Sacramento River in an established system that extends from the mouth of the river upstream. The designation "R" or "L" following the mile number indicates the location of a property on the right or left side of the river when facing downstream. For example, "RM 145R" means a location at River Mile 145 on the right side of the channel.
"SRCA"	- refers to the Sacramento River Conservation Area, a 37,000-acre area along the Sacramento River between Keswick Dam and Verona.
"SRCAF"	- refers to Sacramento River Conservation Area Forum, a non-profit organization representing the seven counties that are included in the SRCA.
"SRGIS"	- refers to the Sacramento River Geographic Information System that is maintained by the Department of Water Resources. The system contains spatial data related to

vegetation, soils, flood frequency, erosion projections and other technical aspects of the river corridor.

"SRNWR" refers to the Sacramento River National Wildlife Refuge. complex of public habitat land along the Sacramento River managed by the USFWS.

"SVCSR" - refers to Sacramento Valley - Central Sierra Region of the Department of Fish and Game, which is also referred to as "Region 2". The Region includes Colusa, Glenn and Butte Counties.

"TNC" - refers to The Nature Conservancy, a private, nonprofit conservation organization.

"USFWS" - refers to the US Fish and Wildlife Service.

Defined Terms

The following defined terms are utilized in this Plan with the meanings that are indicated below:

"Adaptive Management" - refers to the management of habitat according to an explicit and analytical process by which management decisions are made and modified as new information is gathered and more is learned about the functioning of the riparian ecosystem.

"Comprehensive Conservation Plan" - refers to the Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge Sacramento

"Department" - refers to California Department of Fish and Game.

"Ecosystem Approach" - refers to the resource management concept of achieving species management objectives by sustaining and enhancing the fundamental ecosystem structures and processes that contribute to the well being of species.

"Handbook" - refers to the Sacramento River Conservation Area Handbook.

"High Terrace" - refers to land areas along the river that are usually 10 to 20 feet above normal water surface and have generally existed since before 1900. Such areas were riparian habitat in the past but have commonly been cleared and leveled for agricultural use. These sites generally have a flood frequency of two to five years.

"Low Terrace" - refers to land areas along the river that are usually less than 10 feet above normal water surface and have generally been deposited by the river since 1900. Such areas are commonly natural riparian habitat and have not

been converted to agricultural use due to their low-lying nature. They commonly contain sloughs, oxbow lakes and other water features and they are often subject to annual flooding.

"Planning Process" - refers to the process of developing this Comprehensive Management Plan including public outreach, research, field work and other related activities.

"Special Status Species" - refers to species that are State and/or federally listed as Threatened, Endangered, those considered as candidates or proposed for listing, State Species of Special Concern, federal Species of Concern and plants that are State and/or federally listed as Threatened, Endangered or Rare, or considered by the California Native Plant Society as rare, threatened or endangered.

"Plan" - refers to the Comprehensive Management Plan for the Sacramento River Wildlife Area.

"Wildlife Area" - refers to the combined Sacramento River Wildlife Area and Merrill's Landing Wildlife Area.

I INTRODUCTION

The riparian ecosystem of the Sacramento River is a unique natural resource that has great environmental, social and economic value to the people of the State of California. This Comprehensive Management Plan (this Plan) addresses a key component of that ecosystem, the Sacramento River Wildlife Area (Wildlife Area). The Wildlife Area is composed of approximately 3770 acres of important riparian habitat located along an seventy-mile reach of the Sacramento River in north central California. Figure 1 depicts the location of the Wildlife Area.

This Comprehensive Management Plan represents the commitment of the Department of Fish and Game (the Department) to manage the important resources of this Wildlife Area in accordance with the laws of the United States of America and the State of California, incorporating the best available scientific information and professional judgement. It also incorporates the commitment of the Department to coordinate and cooperate with Wildlife Area neighbors, other local interests, the Sacramento River Conservation Area Forum (SRCAF) and other conservation entities that are active along the Sacramento River. This Plan proposes practical, science-based conservation of the natural ecosystem with provision for compatible public recreation use. It is based on an Ecosystem Approach to habitat management consistent with the principles of the *Sacramento River Conservation Area Handbook* (*Handbook*). It is intended to contribute to the recovery of Special Status Species and the maintenance of other native species and game species utilizing natural processes to create a sustainable system over the long term.

❖ The Mission of the Department

The Department of Fish and Game, as part of the Resources Agency of the State of California, has the following mission to guide its planning and operations:

"The Mission of the Department of Fish and Game is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public"

The Department manages fish, wildlife, plant species and natural communities for their intrinsic and ecological value and their benefits to people. This includes the goal of habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. The Department is also responsible for the diversified use of fish and wildlife including recreational, commercial, scientific and
educational uses.

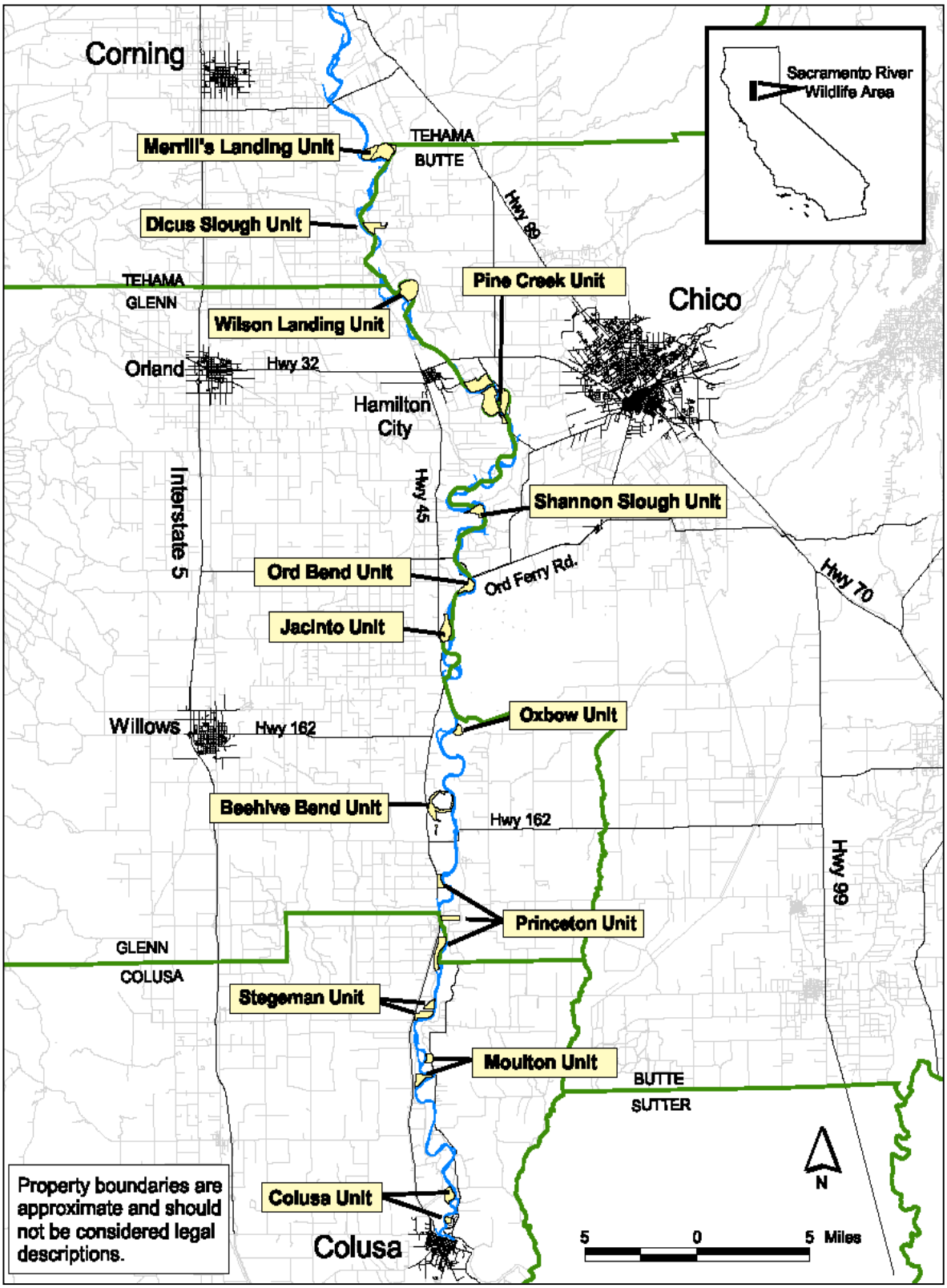

Figure 1. Location of the Sacramento River Wildlife Area

❖ The Purpose of Wildlife Areas

California is renowned as a land of magnificent natural scenery and a wealth of wildlife. Some of the state's most important sites for wildlife and coincidentally, some of its most scenic, are designated wildlife areas. These lands provide habitat for a wide array of plant and animal species, including many listed as Special Status Species. Included within this system is the Sacramento River Wildlife Area.

Consistent with its Mission, the Department of Fish and Game administers 108 state wildlife areas composed of about 650,000 acres of wildlife habitat. These areas are scattered throughout the state, with most located in central and northern California. The state owns about two-thirds of this acreage while the remainder is managed under agreements with other public agencies. The Department of Fish and Game manages these Wildlife Areas for the following purpose:

"To protect and enhance habitat for wildlife species, and to provide the public with compatible, wildlife-related recreational uses."

The protection and enhancement of habitat for wildlife is the principal consideration in the management of this Wildlife Area. Because the Department is also committed to the provision of compatible recreation use within the Wildlife Area, this Plan also focuses on the management of wildlife-related recreation activities that coexist within the riparian ecosystem.

❖ The Comprehensive Management Plan

The existing Sacramento River Wildlife Area is located within Colusa, Glenn, and Butte Counties. It is part of the Department's Sacramento Valley - Central Sierra Region (SVCSR). The Sacramento River Wildlife Area is composed of thirteen physically separate Units that extend from River Mile 145 (RM 145) just north of the City of Colusa, upstream to RM 215 which is three miles south of Woodson Bridge. Four of the Units are further divided into physically separated Subunits for description and inventory purposes in this Plan.

The existing Merrill's Landing Wildlife Area lies just across the county boundary from the Merrill's Landing Unit of the Sacramento River Wildlife Area. It is in Tehama County and it is within the Department's Northern California - North Coast Region (NCNCR). Originally the two Merrill's Landing properties were located across the river channel from each other, but a channel movement and subsequent sedimentation have since connected the two properties.

This Comprehensive Management Plan addresses the property that is currently included in the Sacramento River Wildlife Area and the Merrill's Landing Wildlife Area as a single management element. This Plan proposes that the two Wildlife Areas be merged because of their physical proximity and because both Areas contain the same type of important riparian habitat. Table 1 depicts the Units and Subunits of the Wildlife Area. The land area is expressed in terms of the "Record Area" and the "Current Area". The difference between the two reflects the increases and decreases in area that have resulted from the meandering of the river since the Department acquired the property.

Table 1. Sacramento River Wildlife Area Units

Unit	Subunit	Record Area (ac.)1	Current Area (ac.)2	River Mile	County
Merrill's Landing	-	468.8	473	213 - 215.5 L	Butte / Tehama
Dicus Slough	-	143.8	155	209 L	Butte
Wilson Landing	-	285.5	338	203 - 205 L	Glenn
Pine Creek	North	371.7	331	196 - 198 L	Glenn
	West	471.1	463	194 - 197 R	Butte / Glenn
	East	218.6	197	194.5 - 195.5 L	Glenn
Shannon Slough	-	150	144	187 R	Glenn
Ord Bend	-	112.2	136	183 R	Glenn
Jacinto	-	283	242	180 - 181 R	Glenn
Oxbow	-	94.1	76	175 L	Glenn
Beehive Bend	-	197.9	269	170 - 171 R	Glenn
Princeton	North	120.1	86	166 R	Glenn
	East	102.3	95	164 L	Glenn
	South	227.8	194	161.5 - 163 R	Colusa
Stegeman	-	154.5	194	159 - 160 R	Colusa
Moulton	North	106	74	157L	Colusa
	South	131.2	125	155 – 156 R	Colusa
Colusa	North	118	136	146 – 147 R	Colusa
	South	44.5	42	145 L	Colusa
Totals		3801.1	3770		

Notes: [1] Record Area reflects the Department property inventory and County Assessor's Office records.
[2] Current Area is calculated from the updated property boundaries in the SRGIS, which reflect land area per 5/24/99 aerial photography.

This Comprehensive Management Plan was prepared with the benefit of a significant public input program and substantial coordination with other public and private entities that operate along the Sacramento River. The expressed purposes of this Plan are as follows:

- ***To guide the management of habitats, species, appropriate public use and programs to achieve the Department's mission: "To manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public."***

- ***To direct an Ecosystem Approach to the management of the Wildlife Area in coordination with the principles of the Sacramento River Conservation Area Forum and the objectives of the California Bay- Delta Program.***

- ***To identify appropriate public use opportunities within the Wildlife Area.***

- ***To direct the coordination of efforts and resources with the managers of other public and private conservation lands adjacent to the Wildlife Area in order to maximize the benefits of the ecosystem for fish, wildlife and native plants and to facilitate public education and interaction with the natural environment.***

- ***To direct the management of the Wildlife Area in a manner that promotes cooperative relationships with adjoining private property owners.***

- ***To establish a descriptive inventory of the sites and the wildlife and plant resources that occur in the Wildlife Area.***

- ***To provide an overview of the Wildlife Area's operation, maintenance and personnel requirements to implement management goals. It serves as a budget planning aid for annual regional budget preparation.***

- ***To provide an overview of the potential and actual environmental impacts and subsequent mitigations that may occur during management, and environmental documentation to comply with State and federal statutes and regulations.***

❖ The Planning Process

This Comprehensive Management Plan was developed through a partnership between the Department of Fish and Game and The Nature Conservancy (TNC). Both parties contributed resources to the project and specific roles and responsibilities were established. The Department provided overall guidance to the Planning Process and was responsible for all decisions as to the content of the Plan. The Nature Conservancy was responsible for administrative support for the project planner and for the provision of scientific input and expertise through its Sacramento River Project office located in Chico, California. The Planning Process was also coordinated with other agencies and stakeholders along the river corridor.

Management Structure - A unique management structure was developed to guide the Planning Process. A Core Work Group was established as the basic working unit for development of this Plan. It consisted of the project planner, two Wildlife Biologists and one Fisheries Biologist representing the SVCSR and the Lands and Facilities Branch of the Department of Fish and Game. A Wildlife Biologist from the NCNCR provided additional input to the Group.

The Core Work Group reported to a Steering Committee that included the Deputy Director-Science Advisor, the Chief of the Lands and Facilities Branch and the Supervising Biologist from the SVCSR. The Committee also included the Project Director and Agency and Community Relations Manager from The Nature Conservancy's Northern Central Valley Office and the manager of the Sacramento River National Wildlife Refuge. The Committee gave direction as to the scope and composition of this Plan.

Policy Direction - The Planning Process was guided by the general policy parameters that direct the Department of Fish and Game. These include compliance with all State and federal laws. The Department Mission, the Purpose of the Wildlife Areas and the Purposes of the Comprehensive Management Plan, as stated in this Chapter, provided broad direction for the development of this Plan. Finally, the principles established for the SRCAF and the objectives established through the California Bay Delta Program (CALFED) were considered as guidelines for this Plan. The SRCAF and the CALFED are both important partnerships to which the Department is committed.

Information Basis - The Planning Process focused on the development of three major forms of new information that all contributed to the draft Plan. These were Public Input, Science and Analysis and Agency Coordination. Public Input was obtained through an extensive Public Outreach Program as described below. Science and Analysis was established through the development of a detailed property inventory for all of the Units and Subunits within the Wildlife Area. Information was obtained through a literature search, meetings with knowledgeable individuals, onsite field analysis and review of various technical studies. Agency coordination was a product of the Integrated Planning Program that included numerous meetings with state and federal agencies that manage and regulate other public properties along the Sacramento River. Figure 3 illustrates the key information inputs to the Planning Process.

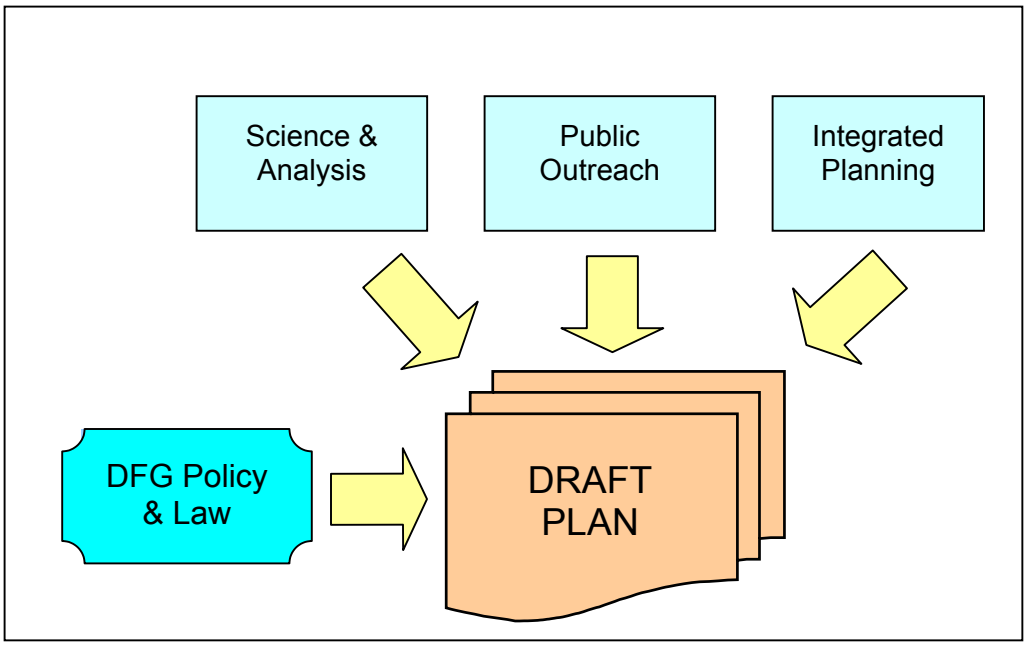

Figure 2. Information Input to the Planning Process

Public Outreach Program – A Public Outreach Program was designed as a key element of the Planning Process to ensure there were ample opportunities for local interests and the general public to be a part of the development of this Plan. It was recognized that a wide range of people considered themselves stakeholders in the Planning Process. Substantial efforts were made to identify stakeholders, contact them and solicit their ideas regarding the future of the Wildlife Area. Close coordination with the Sacramento River Conservation Area Forum was also a major part of this outreach effort. The Public Outreach Program featured the following components:

- A series of twenty-seven, detailed interviews with representatives of local government, property ownership, recreation and conservation interests.

- Two advertised public meetings for initial input.
  - April 1, 2003 in Chico, attended by 30 persons
  - April 3, 2003 in Colusa, attended by 19 persons

- Two detailed presentations and regular updates to both the Sacramento River Conservation Area Forum and the Forum's Technical Advisory Committee.

- Presentations to the Boards of Supervisors and Fish and Game Commissions of the counties in the project area.

- Review of the public input received for other recent planning projects along the river (the Comprehensive Conservation Plan for the Sacramento River National Wildlife Area and the Sacramento River Public Recreation Access Study)

- Two advertised public meetings for input on the draft Plan.
  - December 1, 2003 in Chico, attended by 23 persons.
  - December 4, 2003 in Chico, attended by 14 persons.

- Presentation of the draft Plan to the Sacramento River Conservation Area Forum.

Appendix A provides a summary of the comments received at the initial public meetings, a summary of interview comments and examples of the various communication devices that were utilized to publicize the Planning Process.

Integrated Planning Program – An Integrated Planning Program was prepared to ensure that planning for the Wildlife Area was coordinated with plans for other habitat conservation lands along the Sacramento River. The Wildlife Area is part of a mosaic of public and private habitat properties along the river corridor. Other substantial habitat conservation ownerships include those of the US Fish and Wildlife Service, the State Department of Parks and Recreation, the State Department of Water Resources and the State Lands Commission. Direct coordination with these agencies was deemed essential in order to maximize the benefit of the riparian ecosystem for fish, wildlife and plant species and to support cost effective management of the area. Coordination with other agencies was vital during the preparation of this Plan and it will remain important in the ongoing management of the Wildlife Area. Key provisions of the Integrated Planning Program included:

- The Core Work Group serving as part of the Expanded Team for the preparation of the US Fish and Wildlife Service's Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge.

- Initial meetings with appropriate staff of DPR, DWR and CALFED to identify specific opportunities for coordinated planning and management.

- The Steering Committee reviewing the management coordination findings of the Sacramento River Public Recreation Access Study.

- Utilizing the Sacramento River Conservation Area Forum to help disseminate information regarding this Plan to address public and private interests.

Environmental Analysis - An environmental analysis pursuant to the California Environmental Quality Act was prepared in conjunction with the Draft Plan. This analysis evaluated the potential environmental impacts of the continued operation of the Wildlife Area under the provisions of this Plan. This assessment concluded that a Negative Declaration should be approved for the project; a finding that the project would not have a significant impact on the environment. The Negative Declaration, which is contained in Appendix K, was approved by the Director of the Department of Fish and Game in conjunction with the approval of this Plan.

II DESCRIPTION OF THE WILDLIFE AREA

The Sacramento River Wildlife Area is composed of a series of separate properties that extend from RM 145, one mile north of the City of Colusa, to RM 215, approximately three miles south of Woodson Bridge. The Wildlife Area is divided into thirteen Units of fee title ownership, which total 3770 acres. The Units are titled for geographic reference, utilizing names that historically applied to the general vicinity of each Unit. For the purposes of this Plan, physically separated and distinct portions of these Units are described as Subunits. There are also three conservation easements held by the Department, which total 188 acres. These three easements apply to private property and do not include the right of public access. Accordingly, these conservation easements are not mapped or located in this Plan.

All of the Wildlife Area properties are located within the floodplain of the Sacramento River and the various sites are inundated by flood waters every one to five years on average (California Department of Water Resources, 2003). The floodplain is a very dynamic area from a geomorphic perspective. These properties have been physically shaped and altered by the river over an extended period of time, as the river has meandered back and forth across the floodplain. Most of the Wildlife Area is of relatively recent origin in that the river channel has meandered across the area during the past century. This channel activity is documented by historic channel locations mapped back to 1896. These lands were within the river channel at one time and, as the channel moved, they were formed by the deposition of sediment. All of the remaining portions of the Wildlife Area were part of the river channel in the more distant past.

❖ Geographic Setting

The Wildlife Area is located within the Sacramento Valley, the northerly portion of the Great Valley of California. It is roughly midway between Sacramento and Redding. The Wildlife Area lies within a narrow corridor along the Sacramento River, which is centered in a wide alluvial valley. All Units are directly adjacent to the river and are accessible from the river. The majority of the land is within one-fourth mile of the river and greater distances are the result of relatively recent changes to the channel location. The northerly five Units are located upstream from the Sacramento River Flood Control Project where there is no system of continuous levees. Where Project levees occur, generally south of Ord Ferry, eight Wildlife Area Units are completely inside of the Project levees. The most northerly (upstream) portion is the Merrill's Landing Unit at RM 215L and the most southerly (downstream) portion of the Wildlife Area is the Colusa-South Subunit at RM 145L. Figures 2a through 2d depict the detailed location of the fee title Units of the Wildlife Area.

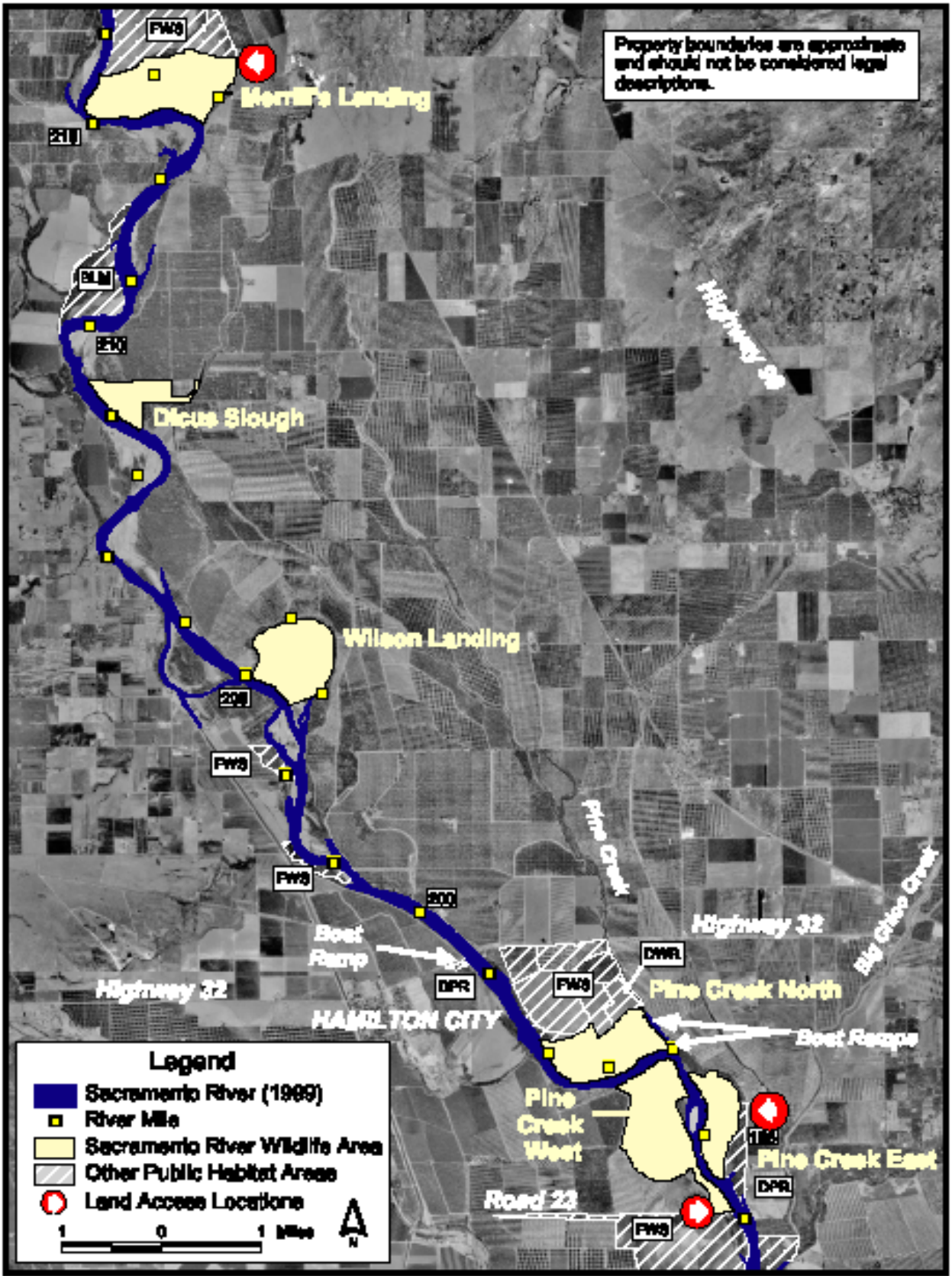

Figure 2a. The Sacramento River Wildlife Area - River Mile 194 to 216

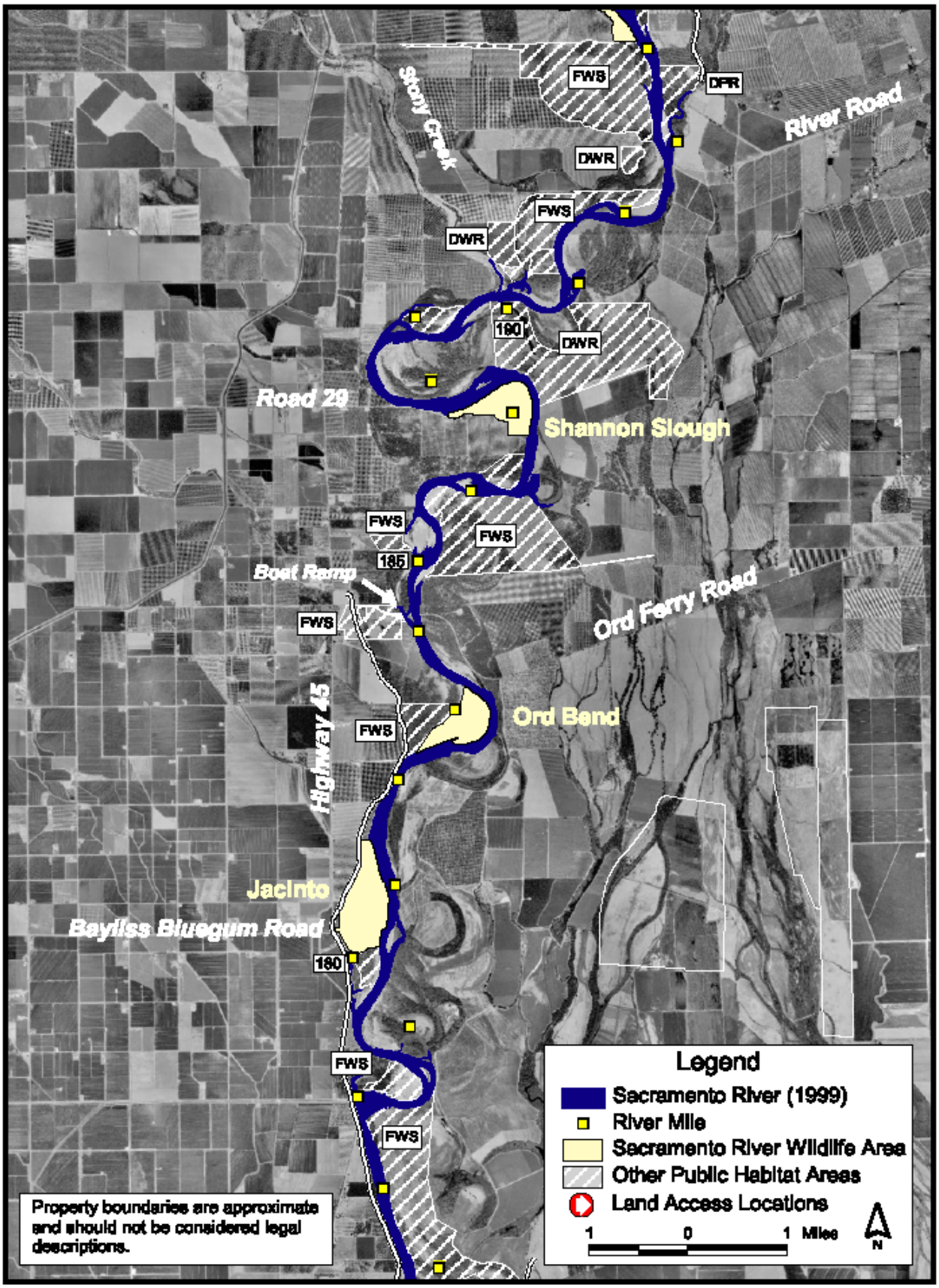

Figure 2c. The Sacramento River Wildlife Area - River Mile 177 to 194

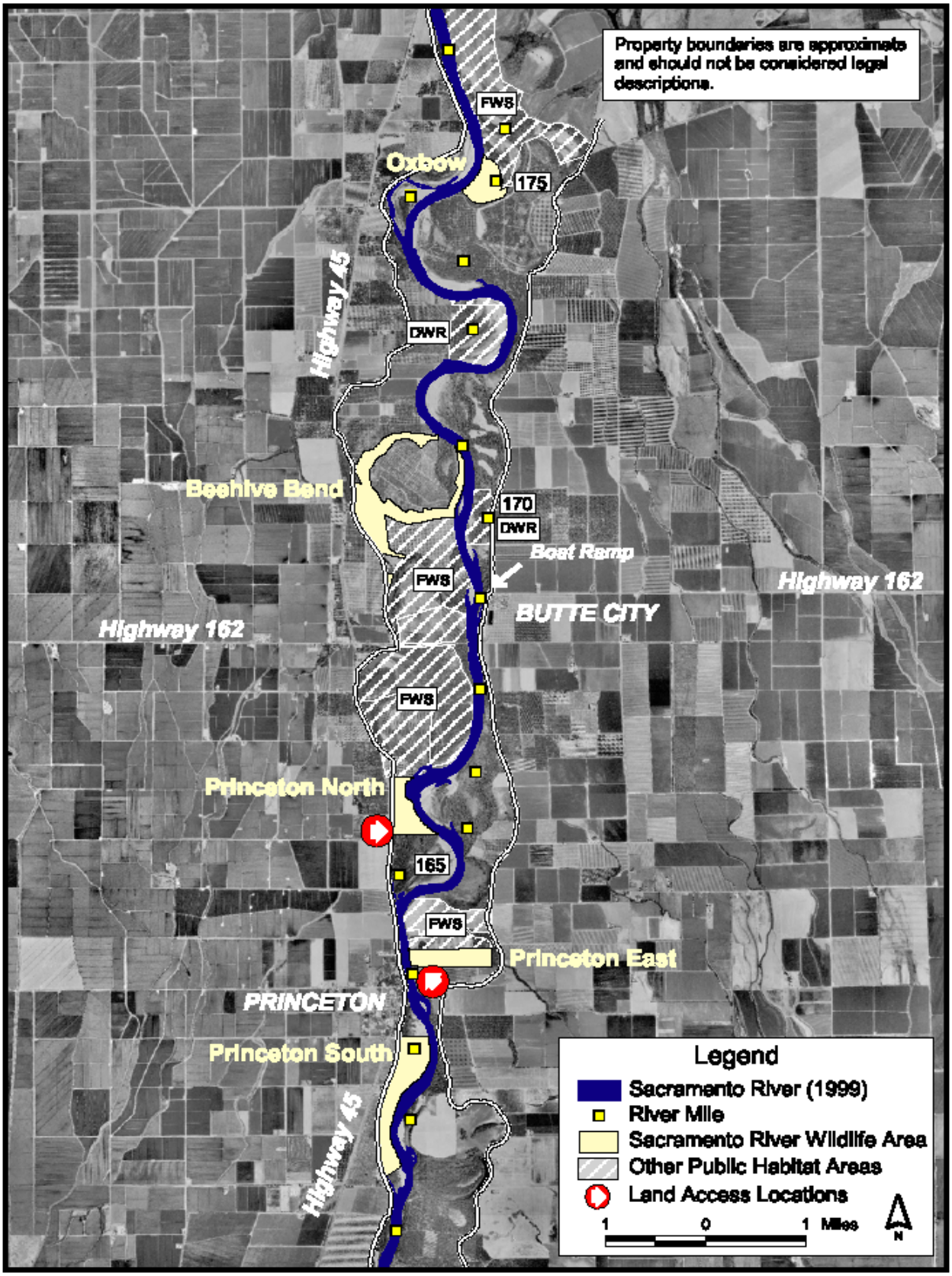

Figure 2c. The Sacramento River Wildlife Area - River Mile 161 to 177

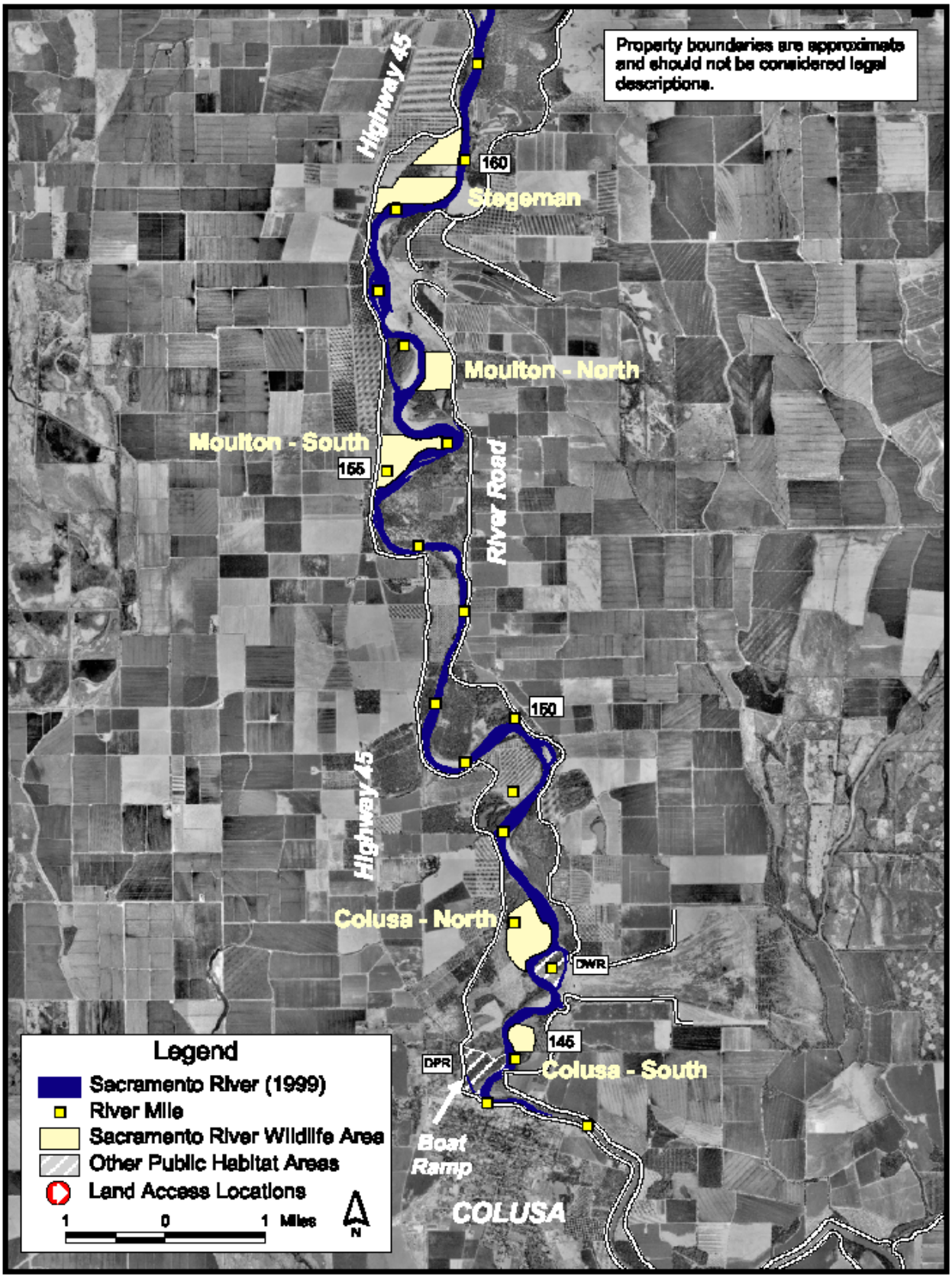

Figure 2d. The Sacramento River Wildlife Area - River Mile 144 to 161

❖ Acquisition of the Wildlife Area

The Wildlife Conservation Board is a State agency, separate and independent from the Department of Fish and Game, that acquires the property to be managed by the Department. The Wildlife Area has been acquired by the Wildlife Conservation Board over a 45-year period of time. The Wildlife Area was primarily acquired from private individuals and corporations, all of whom were willing sellers. These properties were purchased for fair market value on the basis of competent, professional appraisals, approved by the State Department of General Services. The remaining minor portion of the Wildlife Area was transferred from governmental agencies.

The Department is one of several public agencies and private organizations that manages property in support of the adopted goal of the SRCAF as expressed in the *Handbook*:

Preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Redding and Chico and reestablish riparian vegetation along the river from Chico to Verona.

Other significant managers of habitat property include USFWS, DPR , the Reclamation Board, the Bureau of Land Management, River Partners and TNC. The total area of land that has been reserved for habitat conservation in the entire SRCA is approximately 22,000 acres. The Department works in partnership with these other entities to promote the Goal of the SRCAF. Chapter IV describes the programs of other managers of habitat property and the ongoing coordination that occurs.

The initial portion of the Wildlife Area, 50 acres that is now a part of the Princeton – North Subunit, was acquired in 1958. Two properties totaling 333 acres were acquired in 1978 and four properties, totaling 783 acres, were acquired in 1986 and 1987. The remaining area of about 2600 acres was acquired between 1989 and 1995 to bring the Wildlife Area to a total of 3770 acres. These property acquisitions were funded through a number of State sources, primarily bonds that were approved by the voters of California for purposes that included habitat conservation and recreation. The utilization of these funds for habitat acquisition was reviewed and approved by the Wildlife Conservation Board. Table 2 details the acquisitions that formed the Wildlife Area and the funding sources that were utilized.

The conservation easements were likewise purchased from willing sellers for the fair market value of the property rights that were transferred. Conservation easements involve the transfer of certain specified property rights. The landowner retains fee title ownership of the property and all the property rights that are not sold as part of the transaction. Each of the three conservation easements are unique documents that reflects the objectives of the fee title owner of the property at the time of the transaction. Generally, conservation easements commit the landowner to maintain the habitat value of the subject property. For example, a property that is in riparian habitat would typically be kept in that habitat under a conservation easement. Such easements may also permit continuation of agricultural use subject to the limit that the land cannot be developed for more intensive use. All transferred rights, which become binding limitations on the fee title ownership, are specified in the easement deed. The Department is also provided the right to access the property and verify that the easement provisions are being met. The decision to sell either a conservation

Table 2. Acquisition History of the Wildlife Area

Unit	Subunit	Year	Record Acres	Parcel History No.	Fund Source for Acquisition [1]
Fee Title Land					
Princeton	North	1958	50	820202	447
Jacinto	-	1978	183.1	820401	733
Shannon Slough	-	1978	150	820413	733
Merrill's Landing		1979	295.5	820432	742, Federal LWCF
Pine Creek	North	1984	371.7	820691	447
Pine Creek	-	1987	118.3	820771	140
Pine Creek	West	1987	7.9	821252	140
Wilson Landing	-	1986	285.5	820825	140
Dicus Slough	-	1989	20.1	820902	140
Jacinto	-	1989	99.7	820919	786
Stegeman	-	1990	88.3	820962	786
Moulton	South	1990	131.2	820963	786
Stegeman	-	1990	66.2	820976	786
Merrill Landing	-	1990	172.3	820990	786
Beehive Bend	-	1991	88.3	821015	786
Princeton	North	1991	46.8	821058	786
Princeton	East	1991	100.3	821092	786, 999-Mitigation
Beehive Bend	-	1991	109.6	821100	786
Ord Bend	-	1991	112.1	821107	786
Moulton	North	1991	106	821121	786
Pine Creek	West	1991	185.6	821122	786
Pine Creek	West	1991	159.3	821257	786
Dicus Slough	-	1991	25	821123	786
Pine Creek	East	1991	20	821149	786
Pine Creek	East	1991	198.7	821150	786
Oxbow Unit	-	1992	94.1	821148	786
Princeton	South	1992	227.8	821230	786
Dicus Slough	-	1993	98.7	821239	786
Colusa	South	1994	44.5	821334	786
Princeton	North	1994	23.3	821356	997-Donation
Colusa	North	1994	118	821359	262, 447
Merrill Landing	-	1995	1	821456	998-Exchange
Conservation Easements					
"A"	-	1987	76.2	820800	140
"B"	-	1993	25.3	821335	786
"C"	-	1994	87.1	821360	262

[1]Fund Key

Fund	140	Environmental License Plate Fund
	262	Habitat Conservation Fund
	447	Wildlife Restoration Fund
	733	Beach, Park Recreation and Historical Facilities Fund
	742	Urban and Coastal Park Fund
	786	California Wildlife, Coastal and Park Conservation Act
	997	Donation (from Farmer's Home Administration)
	998	Exchange (for property in the Stegeman Unit)
	999	Mitigation (DWR mitigation site)
	LWCF	Federal Land and Water Conservation Fund

easement or fee title ownership of a property is one that is made by the landowner as part of property negotiations.

It is anticipated that additional property may be added to the Wildlife Area in the future, consistent with the purposes of this Plan. However, any such acquisition will be a subsequent determination that cannot precisely be predicted at this time. Future acquisitions may include fee title purchase or donations as well as acquisition of conservation easements through purchase or donation. Priorities for acquisition include lands with significant habitat value and lands that will expand or fill gaps in areas of public habitat conservation. Consistent with the Principles of the Sacramento River Conservation Area Forum, expanded habitat areas will help to address the impacts of habitat fragmentation and permit better accommodation of the natural river processes that create and maintain habitat.

❖ Property Boundaries and Adjacent Land Uses

The land area of the various Units within the Wildlife Area has changed over the years as the meandering of the river channel has eroded some areas and deposited new land in other areas. This dynamic situation will continue in the future. An estimate of the current land area of each Unit and Subunit of the Wildlife Area was developed utilizing Arc View version 3.2 software and aerial photography dated May, 1999, that is contained in the Sacramento River Geographic Information System (SRGIS). The purpose of this area estimate was to provide a reasonably current determination of land area for planning purposes.

Every Unit of the Wildlife Area is adjacent to the Sacramento River. On the land, the Units abut both private and public land ownership. The public or private nature of ownership and land use of the adjacent land was determined as part of the Site Inventory that was prepared part of the Planning Process. The evaluation of adjoining land use, which was prepared as part of the Site Inventory, indicates that approximately 55% of the Wildlife Area directly adjoins areas of riparian habitat. Approximately 40% adjoins areas of agriculture crops and about 5% of the Wildlife Area adjoins levees with roads or highways adjacent to them.

❖ Unit Descriptions

The Wildlife Area includes existing riparian habitat and property that was formerly riparian habitat, prior to conversion to other use. Approximately 75% of the fee title portion of the Wildlife Area is natural riparian habitat and about 13% has been replanted to riparian habitat. The remaining area, approximately 432 acres or about 11.5% of the total area, is composed of relatively low value habitat that has not naturally developed into riparian habitat with a high value for wildlife. Such areas are typically dominated by remnant, abandoned orchards or nonnative invasive species. The conservation easement area is about one-half in agriculture and one-half in riparian habitat. Table 3 specifies the generalized habitat composition of the Wildlife Area.

A detailed Site Inventory was prepared as an information base for the Planning Process and the ongoing management of the Wildlife Area. This document consolidated and summarized information from SRGIS, numerous published technical sources, site analysis and various technical studies conducted by TNC. The information relates to Geomorphology, Hydrology, Botany, Biology, Archaeology and other fields of technical relevance. The Site Inventory is included

Table 3. Generalized Habitat Composition of the Wildlife Area

Unit	Subunit	Current Area (acres)	River Mile	Habitat Composition (acres) Native[1]	Restored[2]	Unrestored[3]
Fee Title Land						
Merrill's Landing	-	473	213 - 215.5 L	343	-	130
Dicus Slough	-	155	209 L	75	-	80
Wilson Landing	-	338	203 - 205 L	173	-	165
Pine Creek	North	331	196 - 198 L	331	-	-
	West	463	194 - 197 R	228	235	-
	East	197	194.5 - 195.5 L	155	-	42
Shannon Slough	-	144	187 R	144	-	-
Ord Bend	-	136	183 R	136	-	-
Jacinto	-	242	180 - 181 R	204	38	-
Oxbow	-	76	175 L	76	-	-
Beehive Bend	-	269	170 - 171 R	211	58	-
Princeton	North	86	166 R	36	50	-
	East	95	164 L	51	44	-
	South	194	161.5 - 163 R	160	34	-
Stegeman	-	194	159 - 160 R	184	-	10
Moulton	North	74	157L	28	46	-
	South	125	155 – 156 R	125	-	-
Colusa	North	136	146 – 147 R	131	-	5
	South	42	145 L	42	-	-
Total		3770		2833	505	432
Percent of the Total Area				75.1%	13.4%	11.5%
Conservation Easements						
"A"		25	145 +/-	-	-	25
"B"		87	147+/-	20	-	67
"C"		76	150+/-	76	-	-
Total		188		96	0	92
Percent of the Total Area				51.1%	0.0%	48.9%

Notes: [1] Native habitat is composed of natural Great Valley Riparian Forest and related communities.
[2] Restored habitat is composed of replanted Great Valley Riparian Forest and related communities.
[3] Unrestored habitat is composed of low value habitat where replanting has not occurred.

as Appendix C. A brief overview of each Unit and Subunit of the Wildlife Area has been compiled from the Site Inventory to provide a description of each separate property in the Wildlife Area.

Within these descriptions, the defined term Low Terrace is used to describe low-lying areas that have been deposited by the river over the past century and commonly flood annually. They are primarily areas of natural riparian habitat and have generally not been used for agriculture, due to their low-lying nature and dense vegetation. They often contain sloughs, oxbow lakes and other water features that are important to fish and wildlife species. The defined term High Terrace is used to describe higher land areas that have generally existed since before 1900. Such areas have often been cleared for some agricultural use in the past. These sites generally have a flood frequency of two to five years.

- **Merrill's Landing Unit** – 473 acres at RM 213 to 215.5L (see Figure 2a)
  This Unit incorporates the Merrill's Landing Wildlife Area and is composed of a central High Terrace surrounded by a Low Terrace that was the main river channel until the late 1970's. It features dense riparian forest, grass lands, riparian scrub area, an oxbow lake and a large gravel bar that provides access from the river. Access to a very small portion of the site is available on the West Side of Ballard Road, just below the Butte-Tehama County line. The majority of the site is accessible only from the river. The site is located approximately 3 miles downstream of the boat ramp at the Tehama County Park at Woodson Bridge.

- **Dicus Slough Unit** – 155 acres at RM 209L (see Figure 2a)
  This Unit is composed of an easterly High Terrace and a Low Terrace on the west. It features dense riparian forest, grasslands, riparian scrub, a slough with permanent water and a large gravel bar that provides access from the river. Access is limited to the river and the site is located approximately 9 miles downstream of the boat ramp at the Tehama County Park at Woodson Bridge.

- **Wilson Landing Unit** – 338 acres at RM 203 to 205L (see Figure 2a)
  This Unit is composed of a central High Terrace surrounded by a Low Terrace that was the main river channel until the late 1970's. It features dense riparian forest grasslands, an oxbow lake and small gravel bars that provide access from the river. Access is limited to the river. The site is located approximately 5.5 miles upstream of the boat ramp at the Irvine Finch Unit of the State Park.

- **Pine Creek-North Subunit** – 331 acres at RM 196 to 198L (see Figure 2a)
  This Unit is a Low Terrace that features dense riparian forest and a gravel bar that provides easy access from the river. Access is limited to the river and the site is located approximately one and one-half miles downstream of the boat ramp at the Irvine Finch Unit of the State Park.

- **Pine Creek-West Subunit** – 463 acres at RM 194 to 197R (see Figure 2a)
  This Unit is a Low Terrace that features dense riparian forest, riparian scrub, approximately 235 acres that were restored to riparian habitat in 2002 and a large gravel bar that provides easy access from the river. Land access to a small portion of the site is available from Glenn County Road 23, east of Highway 45, with a trail that connects to the river during dry months. The site is located approximately 2.5 miles downstream of the boat ramp at the Irvine Finch Unit of the Bidwell-Sacramento River State Park.

- **Pine Creek-East Subunit** – 197 acres at RM 194.5 to 195.5L (see Figure 2a)
  This Unit is primarily a Low Terrace that features dense riparian forest, an oxbow area with seasonal and permanent water, 42 acres of abandoned orchards and a large gravel bar that provides easy access from the river. Land access is available from River Road in Butte County via a primitive trail located on the north side of the administration compound for the Bidwell-Sacramento River State Park, approximately .2 miles south of Sacramento Avenue. The site is located approximately four miles downstream of the boat ramp at the Irvine Finch Unit of the State Park.

- **Shannon Slough Unit** – 144 acres at RM 187R (see Figure 2b)
  This Unit is a Low Terrace that features dense riparian forest, slough areas with seasonal and permanent water, scrub area with a gravel base and a large gravel bar that provides easy access from the river. Access is only from the river and

the site is located approximately four miles upstream of the boat ramp at the Ord Bend County Park.

- **Ord Bend Unit** – 136 acres at RM 183R (see Figure 2b)
  This Unit is a Low Terrace that features dense riparian forest, a scrub area with a gravel base and a large gravel bar that provides easy access from the river. Access is only from the river and the site is located approximately one mile downstream of the boat ramp at the Ord Bend County Park.

- **Jacinto Unit** – 242 acres at RM 180 to 181R (see Figure 2b)
  This Unit is primarily a Low Terrace with some High Terrace area. It features dense riparian forest, approximately 38 acres that were restored to riparian habitat in 2000 and a gravel bar that provides easy access from the river. Access is limited to the river and the site is located approximately three and one-half miles downstream of the boat ramp at the Ord Bend County Park.

- **Oxbow Unit** – 76 acres at RM 175L (see Figure 2c)
  This Unit is a Low Terrace that features dense riparian forest, scrub area with a gravel base and a surrounding oxbow with some permanent water. The site is relatively isolated and infrequently visited. There are no gravel bars and access is only from the river. The site is located approximately six miles upstream of the boat ramp at Butte City.

- **Beehive Bend Unit** – 269 acres at RM 170 to 171R (see Figure 2c)
  This Subunit is a combination of Low and High Terraces. It features dense riparian forest, a large oxbow lake and a slough, approximately 58 acres that were restored to riparian habitat in 2000 and a gravel bar. Access is limited to the river and the site is located approximately one and one-half miles upstream of the boat ramp at Butte City.

- **Princeton-North Subunit** – 86 acres at RM 164L (see Figure 2c)
  This Subunit is a combination of Low and High Terraces. It features approximately 23 acres that were restored to riparian habitat in 1992 and 27 acres that were restored in 2000. The remainder of the area is dense riparian forest and there is an inholding, a private residence located within the site. The area can be accessed from the river at a gravel bar and it is located approximately three miles downstream of the boat ramp at Butte City. Land access is also available off of the east side of Highway 45, approximately 1.3 miles north of the Town of Princeton. A parking area and trail known as the "Site 21 Fishing Access" is maintained by Glenn County pursuant to a long term Operating Agreement with the Wildlife Conservation Board.

- **Princeton-East Subunit** – 95 acres at RM 164L (see Figure 2c)
  This Subunit is primarily a High Terrace. It features approximately 34 acres that were restored to riparian habitat in 1992 and the remainder of the area is natural riparian forest with an scrub area adjacent to the river. The site can be accessed from the river though there is no gravel bar. The site is located approximately five miles downstream of the boat ramp at Butte City. Land access is also available from Glenn County Road XX, across the river from the Town of Princeton.

- **Princeton-South Subunit** – 194 acres at RM 161.5 to 163R (see Figure 2c)
  This Subunit is primarily a Low Terrace with some High Terrace area. It features dense riparian forest, approximately 34 acres that were restored to riparian habitat in 2001 and a large gravel bar that provides easy access from the

river. Access is limited to the river and the site is located approximately six miles downstream of the boat ramp at Butte City.

- **Stegeman Unit** – 194 acres at RM 159 to 160R (see Figure 2d)
  This Unit is primarily a Low Terrace that includes two parcels that are separated by a private ownership about 600 feet in width. It features dense riparian forest, ten acres of abandoned orchard, open grassland with a gravel base and a large gravel bar that provides easy access from the river. Access is limited to the river and the site is located approximately ten miles downstream of the boat ramp at Butte City.

- **Moulton-North Subunit** – 74 acres at RM 157L (see Figure 2d)
  This Subunit is located on a High Terrace with no gravel bar area. It features approximately 42 acres that were restored to riparian habitat in 2001 and the remainder of the site is natural riparian habitat. Access is limited to the river and the site is located approximately thirteen miles upstream of the boat ramp at the Colusa-Sacramento River State Recreation Area.

- **Moulton-South Subunit** – 125 acres at RM 155 to 156R (see Figure 2d)
  This Subunit is primarily a Low Terrace. It features dense riparian forest, open grassland with a gravel base and a small gravel bar. Access is limited to the river and the site is located approximately twelve miles upstream of the boat ramp at the Colusa-Sacramento River State Recreation Area.

- **Colusa-North Subunit** – 136 acres at RM 146 to 147R (see Figure 2d)
  This Subunit is primarily a Low Terrace. It features dense riparian forest, a small slough that holds seasonal water, five acres of abandoned orchard and a large gravel bar that provides easy access from the river. Access is limited to the river and the site is located approximately two miles upstream of the boat ramp at the Colusa-Sacramento River State Recreation Area.

- **Colusa –South Subunit** – 42 acres at RM 145L (see Figure 2d)
  This Subunit is a Low Terrace that is entirely a dense riparian forest with a slough that holds seasonal water. There are no gravel bar areas. Access is only from the river and the site is located approximately one mile upstream of the boat ramp at the Colusa-Sacramento River State Recreation Area.

❖ Natural Environment

The Sacramento River has continually meandered across its alluvial valley transforming the landscape and supporting a unique riparian ecosystem within its floodplain. The natural process of channel meander involves constant change through erosion and deposition of sediment. Some of the major factors that drive this meander pattern include the type of river bed and bank sediment, the flow regime of the river, the type of vegetation and land use occurring on the floodplain, and artificial constraints to channel movement. The *Sacramento River Conservation Area Handbook,* Chapter 2*,* contains an overview of the natural processes that create and modify the riparian habitat along the river. Much of the material within this section is adapted from the *Handbook* with the input of Department biologists and TNC science staff.

Climate – The climate of the middle Sacramento Valley is classified as Mediterranean. It is characterized by cool, wet winters and hot, dry summers.

Rainfall is distributed throughout the winter season, often occurring in steady two and three day storms. The mean annual temperature is 61.7°F and the record extremes are 118°F and 15°F. South winds are generally associated with storms in the winter and cooling trends in the summer. North winds are generally associated with dry conditions in the winter and hot and dry conditions in the summer.

Geology and Soils – The portion of the Wildlife Area north of Chico Landing (RM 193) is underlain by sedimentary and volcanic deposits including the Tehama and Tuscan Formations. On top of these formations lie terrace deposits such as the Riverbank and Modesto Formations, as well as paleochannel deposits, meanderbelt deposits and bank and marsh deposits. The Modesto and Riverbank deposits flank the river in steps away from the channel and tend to erode at lower rates than younger deposits. These areas also tend to from higher more consolidated banks and have a higher proportion of better quality Columbia and Vina soils. Substantial portions of the Units in this area are classified by the Natural Resources Conservation Service (NCRCS) as Riverwash, which has a very limited capability to support either crops or dense riparian vegetation.

Wildlife Area Units between Chico Landing and Colusa are bounded on the west by terrace deposits of the Modesto Formation and on the east by paleochannel deposits of a much older river system. Natural levees of loam material have developed along the main channel separating it from the natural flood basins on the east and west. Sediment texture is finer in this reach than the northern reach with more silty and sandy banks verses the more gravely banks to the north. Columbia series soils, as mapped by the NCRCS, in the 1970's, are dominant in this area along with substantial areas of Riverwash. However, soil designations often change due to river channel migration and the creation of new floodplain. Updated soils maps will provide better planning information in the future.

Hydrology and Geomorphology – Stream flow is the primary controlling variable affecting the riverine environment. The natural disturbance regime of the river, the intra and inter-annual variability in the flow regime and all of its associated physical processes are the factors largely responsible for the mosaic of riparian vegetation communities along the river. In the Wildlife Area, and along the river in general, the preservation and restoration of physical processes is the key to successful long-term restoration of the ecosystem.

- **Channel Movement -** The processes of channel meander and avulsion, are the dominant process that shape the floodplain and associated natural communities along an alluvial river such as the Sacramento River. Meandering involves the river channel migrating laterally through the floodplain, eroding materials on the outside (concave side) of a bend in the channel creating nearly vertical cut banks, while at the same time depositing materials on the inside (convex side) of a bend creating point bars. This combination of erosion on the outside of bends and deposition on the inside results in the familiar meander form when seen on a map or aerial photo. Figure 3 depicts a typical bend on the river. Over time, this process of erosion and deposition continually creates new floodplain area and provides a variety of ecosystem niches for the associated riparian communities.

  Channel avulsion also create a dynamic variety of landforms that sustain natural communities along the river. Although channel avulsion is a complex process, it can be described simply as the channel cutting off a bend that has become too tight to maintain. When a meanderbend becomes too tight of a turn for the river to maintain, the river will create a straighter path for itself. Recent analysis has

identified at least a third of the riparian communities on the Sacramento River result from this process (Greco, 2000).

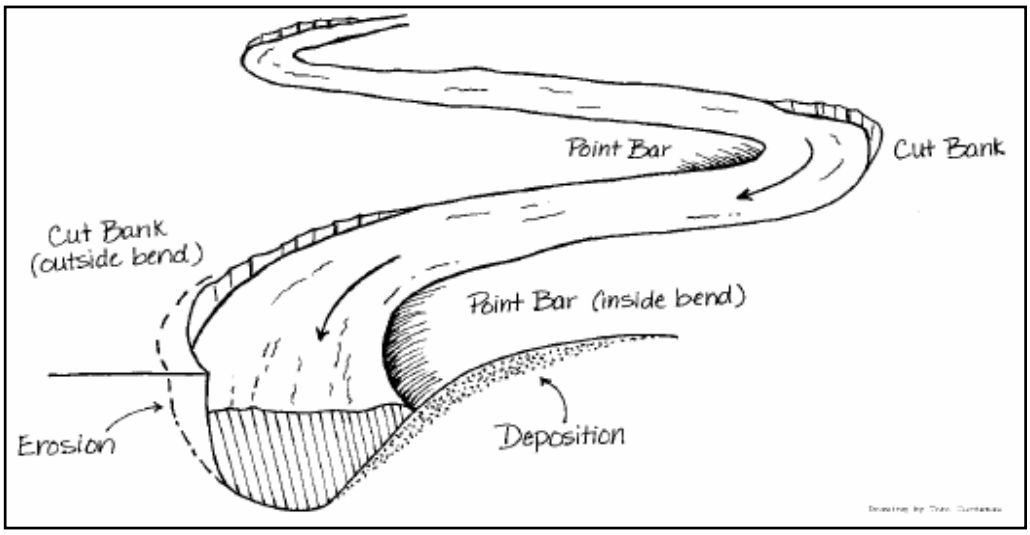

Figure 3. Typical Bend on the Sacramento River

* Illustration from the *Sacramento River Conservation Area Handbook.*

This process leaves evidence on the floodplain in the form of oxbow lakes and sloughs. A slough results from a relatively recent avulsion, where the channel has filled one end in with sediment, generally the upstream end, leaving the bottom or downstream end connected to the river. As more time passes, this bottom end eventually fills in as the river channel moves away from it creating an oxbow lake.

A 150 year meanderbelt has been described and mapped by the Department of Water Resources for the Sacramento River. This meanderbelt includes the location that the river channel has occupied in the last 100 years (moving both through meander and avulsion), and where it is projected to occupy in the next 50 years. The science of geomorphology does not yet have the predictive capability to designate exactly where the channel may be in the future. Channel movement can be either incremental or more sudden and this is controlled by the interaction of many complex physical factors. Therefore, the 50-year projections are approximate yet still of great value for large-scale planning. The location of the Units in the Wildlife Area is focused on this meander belt where the continuity of riparian habitat is critical to many wildlife and fish species.

Within the meanderbelt, the constant movement of the channel can greatly change the configuration of property. Figure 4 depicts the change that has occurred at RM 183 where the Ord Bend Unit of the Wildlife Area is located. The main river channel moved approximately one mile to the west between 1896 and 1908 as the result of avulsion. An oxbow lake known as “The Lagoon” resulted from this sudden shift in the channel location. Since that time, the river has moved progressively east, eroding and redepositing the land area that is now the Ord Bend Unit. Similar substantial changes in the river channel location and

the resulting reconfiguration of the adjoining land areas have occurred throughout the Wildlife Area.

Bank protection or armoring has been extensively installed along the outside of meander bends in the past to try to halt erosion and protect existing land uses and investments including agriculture, buildings, pumping plants, bridges and other improvements. Bank protection typically involves stripping away existing vegetation and replacing it with riprap, a covering of large rocks or concrete rubble, set at a relatively steep angle. Bank protection alters the rate of channel movement both upstream and downstream. It often relocates and modifies patterns of erosion, but does not halt erosion. When the channel migration process is frozen in place at one bend by bank protection, the bend downstream or across the river may erode more rapidly than it would have otherwise (Sacramento River Conservation Area Forum, 2002).

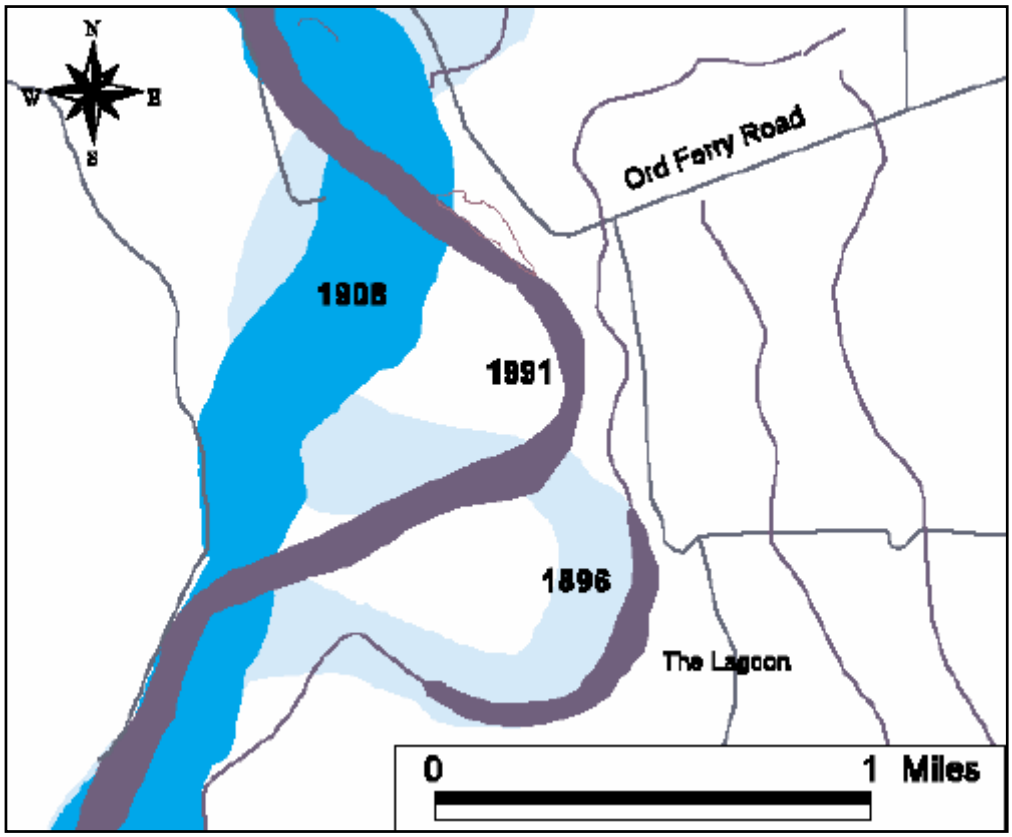

Figure 4. River Channel Movement at RM 183

* Illustration from the *Sacramento River Conservation Area Handbook.*

Bank protection has also been shown to have very substantial, negative impacts on wildlife and fish species. Site-level impacts occur that are directly related to the loss of vegetation and habitat where the bank protection is installed. An example is the loss of the cut banks that are required for bank swallow nesting. Substantial, reach-level impacts also occur. Bank protection halts the formation of new riparian forest and alters the sediment transport regime, a primary driving force in the overall ecological balance of the riverine ecosystem. Another major

impact is the loss of large woody debris, a key component of fishery habitat, in the river downstream of the riprap (U.S. Fish and Wildlife Service, 2000).

- **Sediment Transport** – Sediment transport is the process that supplies the source of materials for land and habitat building. The river works as a conveyor of sediment, transporting materials eroded from upper reaches and depositing them in lower ones. Material transported by the river includes various sizes of rock material, soil, fine vegetative matter and large woody debris. This material is generally deposited in the inside of meander bends, but it is deposited over a larger area of the floodplain in conjunction with flood flows.

  The construction of Shasta Dam in the 1940's reduced the contribution of sediment from the upper portion of the watershed and modified the natural sediment transport regime. The exact status of the river in terms of sediment transport and balance is a matter of some scientific uncertainty, and additional research and information is needed before management conclusions can be drawn.

- **Hydrology and Flooding –** Hydrology and flooding are important factors in the creation and maintenance of riparian habitat. While Shasta Dam has substantially regulated the flow regime of the river from its natural conditions, the river still retains a level of its natural variability. This includes relatively frequent flooding of low lying floodplain areas within the meanderbelt. There are substantial unregulated tributaries below the Dam, which significantly contribute to the degree of natural variability that is still present within the flow regime. Although many aspects of the flow regime have been altered, such as the frequency, magnitude, duration, timing and rate of change, flooding as an important natural disturbance regime has not been eliminated. In part, it is this condition that makes this reach of the river such a priority for conservation. This river in the vicinity of the Wildlife Area still displays a level of function and ecological integrity as a result of this flow variability.

  Most of the Wildlife Area is located in low-lying portions of the floodplain that are inundated every year or every two years on average. High Terrace areas of the Wildlife Area experience flooding with an average frequency of once every two to five years per the SRGIS. Flood flows within the Wildlife Area deposit sediment over the portion of the floodplain that is inundated, building up the level of the land. The sediment also provides mineral and vegetative matter to create and enrich the soil that sustains riparian vegetation. The plants that form the mosaic of riparian habitat have selectively adapted to and depend on this flood regime.

❖ Sacramento River Flood Control Project

The management of habitat in the Wildlife Area must be considered in the context of the Sacramento River Flood Control Project. The Army Corps of Engineers completed the project in 1968. The system was designed to provide flood damage reduction for 800,000 acres of agricultural land as well as the urban areas located in the floodplain. The system was also designed to increase the sediment transport capacity of the river in order to flush out large quantities of debris resulting from gold mining activities in the surrounding mountains. Overall, the flood control project mimics the spatial patterns of natural historic flood flows with a complex system of levees, weirs for diversion of floodwaters, offstream floodways and channel

modifications. Under natural conditions, a portion of these floodwaters was discharged from the river channel south of Chico Landing (RM 193) and flowed into lowland areas to the east and west. The Flood Control Project levees begin near the Ord Ferry Bridge (RM 184) and extend downstream to the mouth of the river. The *Sacramento River Conservation Area Handbook,* Chapter 2*,* contains an overview of the Sacramento River Flood Control Project. Much of the material within this section is adapted from the *Handbook* with the input of Department biologists and TNC science staff.

The Flood Control Project affects the natural river process in various ways depending on the location. The Project levees in the Wildlife Area are generally setback from the channel, accommodating continued channel meander where bank protection has not been installed. South of Colusa, and south of the Wildlife Area, the project levees, and often bank protection, are directly adjacent to the river channel, effectively limiting channel meander and the natural process of habitat formation and maintenance. The continued viability of a limited channel meander in the vicinity of the Wildlife Area is a major functional component of ecological integrity. The Flood Control Project serves a large area and flood damage reduction is an important State and local priority. Therefore, the impacts of the system upon the riparian habitat must be considered as part of an Ecosystem Approach to habitat management.

The Reclamation Board of the State of California is charged with the responsibility of maintaining the integrity of the Sacramento River Flood Control Project. The Reclamation Board reviews proposals for physical change within the "Designated Floodway" to ensure that such projects will not cause new flooding problems. This review is applicable to some improvements within the Wildlife Area such as planting to restore riparian habitat. All Department projects requiring such review are submitted for the Reclamation Board approval to ensure that they do not decrease the integrity of the flood control system.

❖ Sacramento River Bank Protection Project

To support the objectives of the Sacramento River Flood Control Project the Sacramento River Bank Protection Project was authorized in 1960 and a second phase was authorized in 1973. The purpose of the project was to reduce the need for emergency levee repair, periodic dredging, and loss of land area due to channel meander. This was to be accomplished by bank stabilization that typically involved stripping away existing vegetation and replacing it with riprap. Eventually, the serious ecosystem impacts of bank protection became an issue and all of the authorized bank protection sites were not completed. Recreationists and conservationists objected strongly to the losses of fish, wildlife and aesthetic resources that occurred from riprapping. Additionally there were concerns that bank protection could act to transfer erosive impacts to different property.

In addition to bank protection that has occurred as part of the Sacramento River Bank Protection project, substantial areas of river bank have also been modified through private landowner projects. Concrete rubble has often been dumped over eroding banks and other materials such as car bodies have occasionally been utilized in the past. Generally, these projects have occurred without required review or permits from the Reclamation Board and the U.S. Army Corps of Engineers.

Direct impacts occur to relatively small-scale areas when native vegetation is removed from the project levee or riverbank and replaced with rock. More importantly, long-term and much larger scale impacts to the overall ecosystem result

from halting the process of river channel meander. As described above, this meander is one of the fundamental processes that creates and maintain the diverse mosaic of riparian communities. There remains, however, strong interest in developing a more comprehensive program which would not only protect the levee system but could also preserve the riparian environmental values (Sacramento River Conservation Area Forum, 2002). The conflicting objectives of bank protection and the protection of wildlife habitat and Special Status Species are not yet resolved.

❖ Cultural Resources

The Wildlife Area undoubtedly contains cultural resources from the prehistoric and historic periods. In order to evaluate the existence and significance of such resources, a cultural resources analysis of the Wildlife Area was conducted as part of the Planning Process. This evaluation was performed by Peak & Associates in 2003 and it included the following components:

1. A review of existing records to determine if any known cultural resource locations were within the boundaries of the Wildlife Area.
2. A sensitivity analysis of the potential for cultural resources for each Unit and Subunit of the Wildlife Area.
3. An explanation of the actions that should be taken if cultural resources are discovered in the Wildlife Area in the future.

The complete text of the Cultural Resources Analysis is contained in Appendix G.

In summary, the analysis concluded that there were no recorded cultural resources sites recorded within the Wildlife Area. The report noted that about half of the Units have been substantially disturbed by channel meander over the past century, such that these sites have a low sensitivity for cultural resources. The remaining sites have a moderate sensitivity for such resources and detailed field evaluation of these sites was recommended prior to management actions that will include substantive physical change to the property.

III DESCRIPTION OF HABITATS AND SPECIES

The Sacramento River has meandered across its alluvial valley for thousands of years, transforming the landscape and supporting a unique riparian ecosystem within its floodplain. The dynamic riverine processes examined in Chapter II have created and maintained this riparian ecosystem. The plants in the riparian communities have adapted to and become dependent upon these natural processes. In turn, many species of fish and wildlife that inhabit the riparian corridor have adapted exclusively to these habitat communities. As a result, threats to the viability and connectivity of this habitat are threats to the viability of those species.

The wildlife and fish resources of the Sacramento River riparian ecosystem are of great natural and economic importance. The river corridor supports a great variety of resident and migratory species. For example, waterfowl and songbirds are attracted by the diversity of habitat. Many neotropical songbirds breed in the riparian communities along the river and winter in Central and South America while terrestrial species prosper in the moist and lush environment. The river supports four distinct runs of Chinook salmon and is the greatest source of supply for the commercial salmon fishery off the California coast. It also supports runs of other anadromous game fish including steelhead trout, striped bass, shad and sturgeon, which combine to generate substantial local economic activity.

❖ Habitat Communities and Plant Species

The Sacramento River Wildlife Area is part of a rich riparian ecosystem that supports a wide variety of wildlife and fish on a seasonal and year-round basis. Within this ecosystem, the riparian habitat provides the food, water, and shelter necessary for the reproduction and survival of Special Status Species, other native species and game species of fish and wildlife. The habitat includes various forms of vegetation, wetlands, banks, sand and gravel bars along the river. The *Sacramento River Conservation Area Handbook,* Chapter 2 contains a description of the habitats in the river corridor. Much of the material in this section is adapted from the *Handbook* with the input of Department biologists and botanists. A more complete listing of the plant species known or expected to exist in the Wildlife Area is included as Appendix D.

Ecological Adaptation – The riparian vegetation along the Sacramento River has evolved in an environment maintained by the natural disturbance regime. This regime is primarily composed of flooding and substrate erosion and deposition. The majority of the species are phreatophytyes, which must have their roots in contact with a stable water supply during long periods of the year. Most of the trees within the riparian corridor are broadleaved and deciduous during the winter months. Such broad leaves enable these trees to maximize sun exposure, thus maximizing growth. Such early colonizing species as willows and cottonwood exhibit rapid growth of foliage and roots necessary for pioneer colonizers to survive during the hot, dry summers on a substrate composed of alluvial sands or gravels with available

subsurface water. Other adaptations that plants have made to thrive in the riparian corridor include:

- seed dispersal mechanisms to ensure successful recruitment such as seeds which float and are resistant to rotting;
- adventitious roots (roots that bud from buried stems) which form after sediments are deposited over plants during flood events;
- ability to tolerate low levels of oxygen in soil in flooding events, and;
- ability to form suckers and roots after mechanical damage.

These adaptations help to ensure plant survival in the portions of the Wildlife Area that are subject to frequent riverine disturbances. These mechanisms dictate that the initial colonizers may not be able to replace themselves at a site. Instead, they will colonize other newly disturbed or deposited areas and the cycle will be repeated.

As silt accumulates under the initial willow-cottonwood scrub, other trees such as box elder and ash are able to germinate in the spring after flooding has ended. Because the existing trees have slowed the flood flows, the materials deposited in these areas tend to have a higher percentage of fine material such as silt. This finer material builds soils that are able to retain moisture longer than sand and gravel substrates and thus additional species can thrive. Species such as box elder and ash can tolerate some deposition, but not to the same extent as the early- colonizing cottonwood and willow species. On higher areas of the floodplain where the disturbance regime is more muted and deposited soils are deeper, species such as valley oak and sycamore are typically dominant.

Flood events can also result in channel avulsions, which can bring about major physical change in a short period of time. The Wilson Landing and Merrill's Landing Units were the sites of such sudden changes in the river channel that resulted in a profound impact on the habitat characteristics of the immediate area. The new channels that were formed through avulsions in the 1970's quickly became the active channels, resulting in the creation of oxbow lakes within the former channel. These oxbow areas benefited from the adaptations of the native plant species and the river's steady deposition of sediment. Working in tandem these forces can develop "optimal" riparian habitat for Special Status Species such as the yellow-billed cuckoo within as few as 12 years (Greco, 1999).

As noted in the previous Chapter II, the loss of riverine processes, primarily related to flow regulation and bank protection, has seriously impacted the ability of the river to meander and to create and renew riparian habitat. This loss of natural processes has also seriously affected the ability of plant species to recolonize land in the Wildlife Area, especially land on High Terrace sites. These changes to the natural situation make the conservation and restoration of riparian habitat necessary to support Special Status Species, other native species and game species of fish and wildlife.

Successional Stages – From a distance, the riparian communities of the Sacramento River appear to be a uniform blanket of lush, green growth. A closer view, however, reveals that there are distinct bands of vegetation that are differentiated by plant species composition, forest structure and wildlife usage. These areas of vegetation are, in turn, differentiated by the magnitude that they are affected by the disturbance regimes and by their position on the floodplain. The Wildlife Area is located adjacent to and in close proximity to the river where the natural disturbance regime

results in an environment of continual physical change. The riparian communities and their associated vegetation species have adapted to colonize and establish themselves in successional stages as these areas are physically changed over time.

The successional stages of the riparian communities that occur in the Wildlife Area can be classified into several distinct plant communities for overview purposes. In the field, however, the pattern of riparian communities is far more complex. Any one species of tree, shrub or vine can occur in more than one natural community. There is an intergrading between communities and there is rarely an abrupt edge between them. Figure 5 illustrates the typical succession pattern for these communities in relation to river hydrology and channel movement. The Figure incorporates a fifth riparian community the Valley Oak Woodland, which exists in some upland areas above the Wildlife Area. It should be noted that the clearing of riparian forest for other uses, the presence of large project levees and the loss of natural riverine process often interrupts the typical, natural successional pattern reflected on the diagram. The riverine process also creates other aquatic and marsh habitats that are not reflected in this simplified description of typical succession stages.

The California Natural Diversity Database (NDDB/Holland) classification system was chosen for the primary description of habitat in this Plan for consistency with the *Handbook*. This system is most known by the public in reference to the Wildlife Area. The descriptions of the habitat communities relate to the typical situation and do not reflect variations related to the loss of some natural riverine process in the Wildlife Area. It is important to note that this loss can result in interference with the typical successional patterns.

Great Valley Riparian Forest – The Great Valley Riparian Forest communities, classified by NDDB/Holland, are the dominant communities in the Wildlife Area and the focus of this Plan. The Great Valley Riparian Forest series of habitat communities are uniquely adapted to the natural processes of the river and the resulting natural environment. Also prominently represented in the Wildlife Area are the Coastal and Valley Freshwater Marsh and the Great Valley Willow Scrub communities. While these communities do not specifically fall within the Great Valley Riparian Forest series in NDDB/Holland, they are seral stage communities that often succeed to the Great Valley Cottonwood Forest. For the purposes of this Plan, these communities are treated as components of the Great Valley Riparian Forest series.

The Great Valley Riparian Forest communities are a biologically rich habitat. The cottonwood-willow areas support more breeding avian species that any other comparable, broad California habitat type (Gaines, 1977). Riparian forests along the Sacramento River have several characteristics which enable them to support such an abundance and diversity of wildlife. Abundant resources, high structure and habitat diversity (maintained over time by flooding and channel movement) and linear continuity all contribute to the diversity of species in the Wildlife Area.

Proximity to water, a variety of soils and periodic influx of nutrient-rich sediment from flooding all contribute to the abundance of resources in the riparian forest system. This abundance continues through the summer months, in contrast with much of California, which is hot and dry such that many plant species outside of the riparian corridor go dormant. The riparian forests attract a vast array of terrestrial and aquatic insects, which in turn attract many species of birds, fish and mammals.

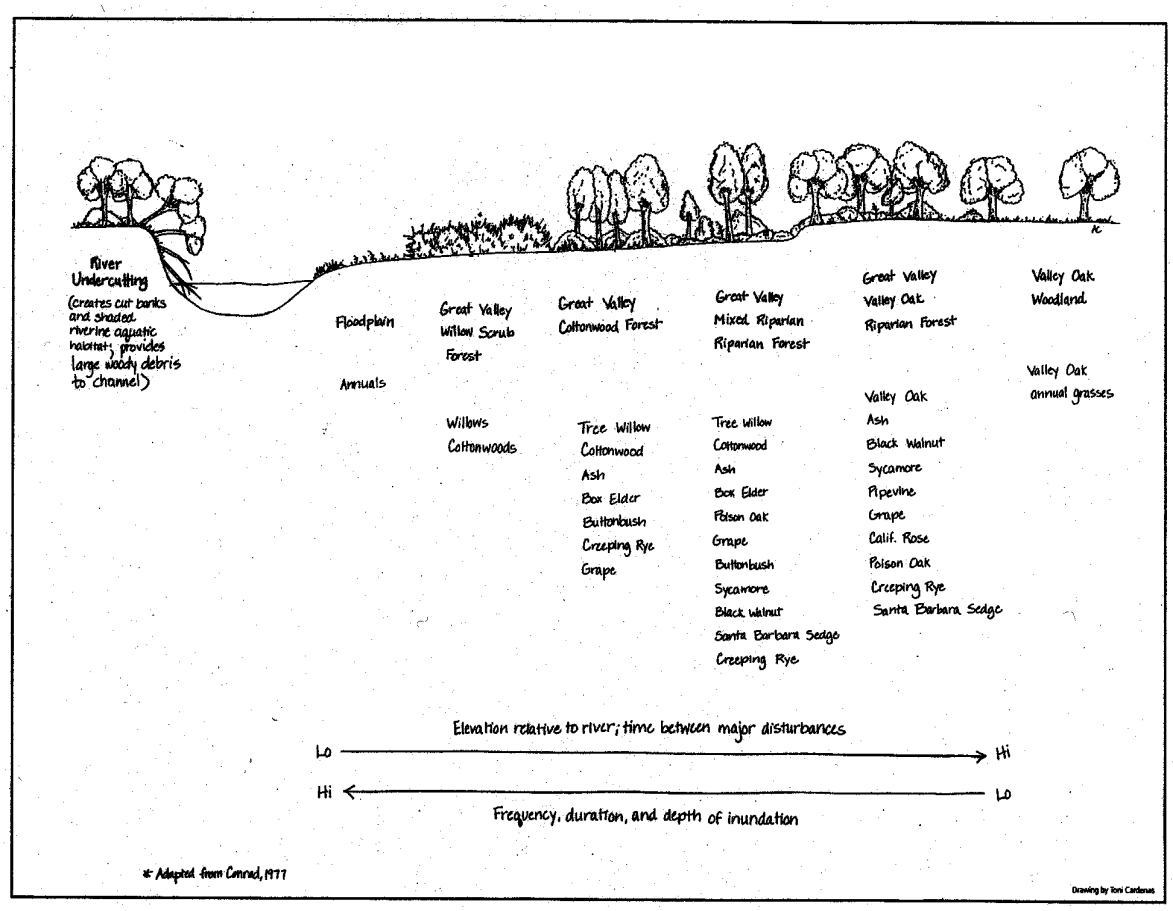

Figure 5. Typical Plant Communities and Successional Stages

* Illustration from the *Sacramento River Conservation Area Handbook.*

Coastal and Valley Freshwater Marsh occurs commonly in the Wildlife Area on the lowland periphery of the side channels, sloughs and oxbow lakes that are formed by the natural riverine processes. These areas are seasonally inundated to a substantial depth by floodwaters. The plant community is typically dominated by monocots up to two meters in height. These include, cattails, bulrush, sedges, spike rushes and watercress. Rooted aquatic species with floating stems and leaves may also be present including water primrose, water smartweed and pondweed. Black willow and button brush are also common at the edges of the water. The Coastal and Valley Freshwater Marsh areas may succeed to the Great Valley Willow Scrub community if deposition raises the level of the land above the permanent water level and these areas can rapidly move to the Great Valley Cottonwood Riparian Forrest community when deposition rates are substantial. This community is especially important for many species of migratory birds and fish.

- **Great Valley Willow Scrub** is the most common pioneering community found on depositional areas (typically point bars) on the river's edge. The community will tend to survive along a band that meets the substrate, texture and moisture requirements of germinating seeds. The young plants are adapted to a coarse substrate such as sand or gravel. The rapidly growing root systems must stay in contact with water as it recedes to summer levels. If the right conditions exist,

the narrow band of cottonwoods in this community will become the riparian forests of the future. Common species in this community are the sandbar willow, other willow species (black, red, yellow and arroyo willows) and Fremont cottonwood. Openings within the willow scrub may be covered by annual and perennial grasses and forbs. As vegetation slows the velocity of flood flows, deposition increases reducing the frequency and duration of inundation. As this occurs, California sycamore, box elder and Oregon ash may become established. This community intergrades with and generally succeeds to the Great Valley Cottonwood Riparian Forrest.

The initial colonization and long-term survival of these species is directly related to the river's flow regime. If the flow level drops too fast, the roots of young plants cannot reach groundwater levels and mortality occurs. Research indicates that manipulation of the flow regime on the river can interfere with the colonization of cottonwoods on recently deposited areas (Roberts et al., 2002).

- **Great Valley Cottonwood Riparian Forest** is typically the successor community to the Great Valley Willow Scrub. As t he river meanders away from this area the land is raised through deposition of sediment and the frequency of flooding is diminished. This community is dominated by Fremont cottonwood, which sometimes constitutes the entire upper canopy. A second tall tree, the black willow, is often a significant member of the community. This community has a total canopy coverage of greater than 80%. Many species are able to germinate under the dense canopy cover, including berries, California rose, wild grape and poison oak, and many smaller tree species combine to develop into a dense understory. Such areas are commonly referred to as "riparian jungle." Trees such as box elder and ash may become established in the understory, but do not typically become significant canopy species until flooding becomes less frequent.

  The tall form of the cottonwood trees is visible from a great distance. It is a common indicator of the river when crossing the featureless areas of the Sacramento Valley. This community intergrades with and generally succeeds to the Great Valley Mixed Riparian Forest away from the river.

- **Great Valley Mixed Riparian Forest** is typically the successor to the Great Valley Cottonwood Forest as the land area is further raised through deposition of sediment and flooding frequency continues to diminish. This community has a diverse, often dense, mixture of tall cottonwoods and willows in combination with sycamores, box elders, black walnuts and alders at greater than 80% canopy coverage. Shrubs such as buttonbrush, blackberries and poison oak are often covered by an assortment of vines (clematis, wild grape and pipevine) which extend up into the overstory trees. Perennial grasses, such as creeping wild rye, and Santa Barbara sedge may form dense pockets in the understory. Openings in this community may also contain elderberry savanna. This community intergrades with the Great Valley Cottonwood Riparian Forest in lower lying areas and the Great Valley Valley Oak Riparian Forest in higher areas.

  This community may be a substantial distance from the active channel but still experiences relatively frequent flooding. This brings additional deposition but not necessarily the damaging flows and subsequent erosion. As the community becomes drier (i.e. further above the water table), species such as the valley oaks are able to germinate and become established. Over an extensive period of time valley oaks become dominant and the community develops into the most mature of the riparian vegetation types, the Great Valley Valley Oak Riparian Forest.

- **Great Valley Valley Oak Riparian Forest** is dominated by tall, mature valley oaks with significant numbers of sycamores, black walnuts and ash. The canopy is typically less dense than the Great Valley Cottonwood or Mixed Riparian Forest at less than 60% canopy coverage. The understory may be dense with vines and shrub species typical in the Mixed Riparian Forest, shrub species from drier sites and often stands of perennial grasses and sedges. Often present with this community type are very old specimens of elderberry plants, which are the host of the valley elderberry longhorn beetle.

  This community is subject to periodic flooding, but of a lesser frequency and duration that the preceding communities. This brings additional deposition and, as a site rises further above the water table, it can develop into a Valley Oak Woodland. Within the Wildlife Area the Valley Oak Woodland does not currently exist.

- **Other Terrestrial Habitat Communities** occur in pockets in or adjacent to the Wildlife Area and there are also indications of communities that may have previously existed on the Wildlife Area. These communities include the following:

  - Valley Needlegrass Grassland
  - Valley Wildrye Grassland
  - Mule Fat Scrub
  - Buttonbush Scrub
  - Elderberry Savanna

  These habitat communities are often substantially affected by invasive, nonnative species, which can dominate the mix of plants in individual areas. While these grassland and scrub habitats do not represent a large portion of the Wildlife Area, they do provide important habitat to the resident wildlife species.

Habitats Types at the Water's Edge – In addition to creating a mosaic of riparian forest communities, the natural disturbance regime creates other critical habitats and habitat elements. Channel meander, flooding and aggradation create sloughs and side channels, sand and gravel bars, bare cut banks and shaded banks with vegetation and woody debris extending into the water. All of these features and the vegetation that they support play an integral role in the functioning of the riparian ecosystem.

- **The Open River Channel,** though technically outside of the Wildlife Area, is a key part of the riparian ecosystem. The river channel is the migratory route for the annual runs of multiple species of anadromous fish and it sustains the activities of many avian, reptilian, amphibian and mammalian species. The river channel provides great variation for the species that utilize this habitat. These variations include depth, velocity, cover and riverbed material. Important natural breaks in the consistency of the channel are often formed by vegetative materials that originate in the adjoining river corridor. Large woody debris, often composed of cottonwood or english walnut trees from eroding banks, has been identified as essential components of the habitat that supports fish species including the anadromous species.

- **Shaded Riverine Aquatic Habitat** is an important component of the Sacramento River ecosystem that is created as the river erodes into a bank supporting riparian forests. This is where "the adjacent bank is composed of natural, eroding substrate supporting riparian vegetation that overhangs or protrudes into the water " (U.S. Fish and Wildlife Service, 1992). It is characterized by "variable amounts of woody debris, such as leaves, logs, branches and roots, as well as variable depths, velocities and currents." Shaded riverine habitats with large woody debris provide feeding and cover for aquatic species such as salmon and vital nutrients to help maintain the

overall health of the ecosystem. They also play an important role in regulating water temperature (Triska and Cromack, 1980)

- **Cut Banks** are another important component of the riparian ecosystem along the Sacramento River. These nearly vertical banks, substantially free of plant cover, are found on the outside of meander bends where the river is actively eroding High Terraces. Cut banks support the majority of California's bank swallow colonies. The bank swallow is a migratory species that winters in Central and South America. It nests in the spring, mostly in freshly eroded earthen banks.

- **Sloughs, Side Channels and Oxbow Lakes** are created by channel movements and contribute substantially to the richness of the riparian ecosystem. They provide shelter from the fast currents of the main channel, creating habitat for many species such as beavers and northwestern pond turtles. They provide important rearing areas for fish species, notably chinook salmon, steelhead rainbow trout and Sacramento splittail (Limm and Marchetti, 2003). Sloughs and side channels often have shaded riverine aquatic habitat along their banks. Most heron rookeries are located in tall vegetation surrounding sloughs and oxbow lakes.

❖ Animal Species

Riparian habitats exhibit great diversity of animal species as compared to many other California terrestrial habitats. Most species are permanent residents, but a several species of fish and many avian species are migratory. A more complete listing of the animal species known or expected to exist in the Wildlife Area is included as Appendix E. Overviews of the wildlife and fish populations contained in this section were adapted from materials developed by the USFWS in conjunction with the draft *Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge* with the input of Department biologists and TNC science staff.

Though substantially fragmented, the existing riparian habitat provides an important migration corridor plus an equally important wintering and breeding habitat for migratory birds. The high value of riparian wetlands for neotropical migrants has been identified by both the Partners in Flight and the Riparian Habitat Joint Venture programs. Riparian vegetation is also home to a variety of mammals, such as the ringtail, which might not occur in the Sacramento Valley if these habitats were absent.

Riverine and lacustrine (related to the edge of a lake) habitats support a diversity of fish, amphibian, reptilian, avian and mammalian species. The aquatic habitats are especially important to anadromous fish species that utilize these habitats for migratory passage and rearing of young. Riparian vegetation that overhangs the river channel, sloughs and side channels in the Shaded Riverine Aquatic habitat is critically important for salmon.

Mammals – Most mammals (with the exception of bats) are year-round residents of the Wildlife Area. Beaver, muskrat, mink and river otter are found in close proximity to the river channel, sloughs, side channels, oxbow lakes and other wetland areas. Several species of bats are common including the red bat and Yuma myotis. Upland species in the riparian forests include rodents such as gray squirrel, deer mouse, ground squirrel, rat, shrew, pocket gopher, California vole and porcupine. Other mammals include the mule deer, black-tailed jackrabbit, desert cottontail, spotted and striped skunk, opossum, raccoon and ringtail. Carnivores include bobcat, the exotic red fox and the native gray fox and coyote.

Birds - Avian species are a major component of the wildlife resource in the riparian habitat. The Wildlife Area supports a wide variety of permanent resident and migratory species.

- **Waterfowl** use the wetland habitats of the Wildlife Area primarily for wintering during the months of August through March. Peak wintering populations occur in December and a small portion remains through the spring and summer months to nest. Common wintering duck species include northern pintail, mallard, wigeon, green-winged teal, gadwall, northern shoveler, wood duck, ring-necked duck, canvasback, redhead and ruddy duck. Common wintering goose species include lesser snow goose, Ross's goose, white-fronted goose and Canada goose. Mallard, cinnamon teal, gadwall, wood duck and lesser numbers of pintail and redhead ducks stay through the spring and summer to nest.

- **Shore birds** use the Wildlife Area in great numbers during their fall and spring migrations with peak populations in April. Common fall and spring migrants include western and least sandpipers, dunlin, dowitcher, black-necked stilt, American avocet, black-bellied and semi-palmated plovers, greater and lesser yellowlegs, long-billed curlew and whimbrel.

- **Wading and diving birds** use the Wildlife Area year-round, using wetland and riparian habitats for foraging, roosting and nesting. Species include great blue heron, green heron, black-crowned night heron, great, snowy and cattle egrets, American bittern, white-faced ibis, Virginia rail, sora, moorhen, American coot, pied-billed and western grebes and the double-crested cormorant. Other waterbirds that use the Wildlife Area during various times of the year include western and eared grebe and American white pelican.

- **Gulls and terns** occupy the Wildlife Area seasonally. Ring-billed and herring gulls are common from the fall into the spring. The black tern occurs during the spring and summer and nests in wetlands and nearby rice fields. Forster's terns occur infrequently, but are often seen in small numbers along the river during spring and fall migrations.

- **Raptors** are a very visible component of the avian population and they are often seen perching along the riparian corridor. Populations are greatest during the winter when the prey base is the greatest. The most abundant wintering species are red-tailed hawk and northern harrier, but bald and golden eagle, white-tailed kite, sharp-skinned hawk, rough-legged hawk, Cooper's hawk, peregrine falcon and short-eared owl occur regularly. Turkey vulture, red-tailed hawk, osprey, bald eagle, white-tailed kite, northern harrier, American kestrel, barn owl and great-horned owl are breeding species. Swainson's hawk is common during the spring and summer when they are nesting in riparian areas.

- **Game birds** inhabit the Wildlife Area year round. Common species include mourning doves, California quail and ring-necked pheasant. Wild turkey populations are also increasing to levels that may soon sustain hunting.

- **Landbirds** inhabit the Wildlife Area in great diversity and abundance. Both resident and migratory species are found. Common year-round wetland residents include marsh wren, Brewer's blackbird and black phoebe. Resident species that can be found in riparian forests include belted kingfisher, Nuttal's woodpecker, acorn woodpecker, northern flicker, California towhee, scrub jay, yellow-billed magpie, American crow, bushtit, Bewick's wren, mockingbird, northern shrike, starling, western meadowlark and house finch. Additional breeding species supported by

these habitats include yellow-billed cuckoo, western wood pewee, ash-throated flycatcher, western kingbird, house wren, American robin, black-headed grosbeaks, titmouse, and tree, violet-green, bank and barn swallows, which are found in riparian and adjoining upland areas during the nesting season. Wintering species include ruby-crowned kinglet, yellow-rumped warbler, lark sparrow, golden-crowned sparrow, white-crowned sparrow and lesser and American goldfinches, which may be found in wetland, riparian or upland areas during the winter. Other common migrants include Anna's hummingbird, downy and hairy woodpeckers, olive-sided flycatcher, horned lark, Wilson's warbler, song sparrow and Lincoln's sparrow.

Reptiles - Common reptile species in riparian areas include the common garter snake, gopher snake, common kingsnake, western fence lizard and alligator lizard. The western rattlesnake also occurs. The northwestern pond turtle and the red-eared slider are found in aquatic and wetland habitats and venture into upland habitats for nesting.

Amphibians - Amphibian species are limited in the Wildlife Area. Common species are the bullfrog, western toad and pacific tree frog.

Fish - Fish are found in the sloughs, side channels and oxbow lakes of the riparian habitat as well as in the adjoining Sacramento River. During periods of high water, species that are normally confined to the river channel occur within the flooded portions of the Wildlife Area. Resident species in these aquatic habitats include bluegill, carp, channel catfish, green sunfish, mosquitofish, Sacramento splittail, smallmouth bass and largemouth bass. Anadromous fish include American shad, chinook salmon, striped bass, green and white sturgeon, and steelhead rainbow trout. Four distinct runs of salmon use the river for access to upstream spawning areas, spawning and the rearing of young.

Invertebrates – Invertebrates are found in the greatest abundance and diversity in the aquatic habitats. They provide an important foodbase for many avian and fish species. Common aquatic invertebrates include waterfleas, snails, clams, dragonflies and damselflies, waterboatmen, backswimmers, beetles, midges, mosquito larva, crayfish and worms. Terrestrial invertebrates such as grasshoppers, beetles, butterflies, including the pipevine swallowtail, moths, midges and ants are an important food base for bats, neotropical migrant birds and waterfowl. The Valley Longhorn Elderberry Beetle nests exclusively within cavities in elderberry plants.

❖ Special Status Species

Adaptation to the riparian habitat has occurred over an extended period of time and each of the species in the Wildlife Area depends on different habitat types and components of the riparian ecosystem. As the habitat area has been reduced and fragmented, some species have been extirpated and others are in danger of being extripated from the riparian corridor of the Sacramento River, the State or becoming extinct. The least Bell's vireo was considered the most numerous songbird along the river in the 1940's, but it was completely absent by the early 1960's. The vireo depended upon the willow scrub riparian community created by river meander. It is thought that the willow scrub habitat declined following flood control projects, increasing the vireo's vulnerability to cowbird parasitism which eventually caused its elimination (Sacramento River Conservation Area Forum, 2002).

The bank swallow is another example of a species that depends entirely upon a specific habitat situation created by the dynamics of the river processes. The bank swallows make their nests in the eroding cut banks that result from the meandering of the river

channel and the river corridor has the greatest concentration of bank swallows in California. Unfortunately, this habitat is the location where landowners and governmental agencies have installed bank protection to prevent property from eroding. The placing of riprap on cut banks eliminates these vital nesting sites and this once common species has disappeared throughout much of its historic range. The Wildlife Area contains multiple sites where remaining cut banks support nesting populations of bank swallows.

Forty (40) Special Status Species are known or expected to occur in the Wildlife Area. Special Status Species are an important focus of this Plan and the management of the Wildlife Area. Under the Ecosystem Approach, management of the riparian habitat communities is directed to maximize benefits for the range of these species as opposed to management at the single-species level.

Table 4 lists the Special Status Species in the Wildlife Area, their State and federal listing status and a description of the habitat that they utilize. Federally-listed species include species that are listed as "Endangered" and "Threatened" pursuant to the federal Endangered Species Act as well as species that are fully protected under federal law. Federal "Species of Concern", as identified by the USFWS, are also noted. State-listed species likewise include species that are listed as "Endangered" and "Threatened" pursuant to the California Endangered Species Act as well as species that are fully protected under State law. Also included are "Species of Special Concern" as determined by the Department. These are species that are not State listed as Endangered or Threatened but, nonetheless, are:

1. Declining at a rate that could result in listing, or
2. Historically occurred in low numbers and known threats to their persistence currently exist.

State Species of Special Concern are divided into three categories. The criteria for these categories differ for each animal group, but generally they indicate the severity of the threat to the species. In Table 4, the numbers 1, 2 or 3 indicate the threat category with 1 being the highest and 3 the lowest. The Table incorporates the Special Status Species listings as of the completion of the Planning Process. It is expected that these listings will change over time as new species are listed and species are delisted as the result of successful conservation efforts.

This Plan addresses the recovery of Special Status Species and the support of other native and game species through an Ecosystem Approach to habitat management. Within this Chapter, threats to the habitats and species are identified and strategies to restore the habitats are established. In Chapter VI, Management Goals, specific Goals and Tasks are proposed to implement these strategies.

❖ Threats to the Habitats and Species

Numerous human activities in the Sacramento River watershed constitute some level of threat to the riparian habitat and the fish and wildlife that inhabit the area. Pollution of the air, the water and the food chain and the allocation of river flows for other uses are broad issues that are beyond the scope of this Plan. There are also direct, local threats to the viability of the riparian ecosystem that should be addressed in the context of this Plan.

Loss of Natural Riverine Processes - Natural processes of the Sacramento River have been greatly modified. The natural processes of erosion, deposition and seasonal

Table 4. Special Status Species Known or with Potential to Occur in the Wildlife Area

Species	Status			Habitat
	CNPS	State	Federal	
Fish				
Chinook salmon, Central Valley Sp.-run *Oncorhynchus tschawytscha*	-	ST	FT	Sacramento River and its tributaries for spawning and rearing
Chinook salmon, Sac. River W-run *Oncorhynchus tschawytscha*	-	SE	FE	Sacramento River and its tributaries for spawning and rearing
Chinook salmon, Central Valley F/late F-run *Oncorhynchus tschawytscha*	-	SC (2)	FC	Sacramento River and its tributaries for spawning and rearing
Central Valley steelhead *Oncorhynchus mykiss*	-	-	FT	Sacramento River and its tributaries for spawning and rearing
Green sturgeon *Ascipenser*	-	SC (1)	FC	Sacramento River for spawning and rearing
Hardhead *Mylopharadon conocephalus*	-	SC (3)	-	Sacramento River and its tributaries for spawning and rearing
River lamprey *Lampreta ayresi*	-	SC (3)	-	Sacramento River and its tributaries for spawning and rearing
Sacramento perch *Archoplites interruptus*	-	SC (2)	-	Sacramento River and its tributaries for spawning and rearing
Sacramento splittail *Pogonichthys macrolepidotus*	-	SC (1)	-	Shallow backwater areas for foraging and rearing
	-			
Wildlife				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	-	-	FT	Elderberries are the sole host plant for nesting
Giant garter snake *Thamnophis gigas*	-	ST	FT	Backwater areas / mashes with suitable prey, high ground for protection from floods
Northwestern pond turtle *Clemmys marmoratta marmoratta*	-	SC (2)	FC	Backwater areas and oxbow lakes with aquatic vegetation
Least bittern *Ixobrychus exilis*	-	SC (3)	FC	Marshes along ponds with tules, cattails and rushes
Bald eagle *Haliaeetus leucecophalus*	-	SFP	FT	Tall trees for nesting, protected sites with abundant populations of fish
Golden eagle *Aquila chrysaetos*	-	SC (3) SFP	PR	Tall trees and protected sites with plentiful small/medium -sized mammals for prey
Osprey Pabdion haliaetus	-	SC (2)	-	Tall trees for nesting, protected sites with abundant populations of fish
Northern harrier Circus cyaneus	-	SC (2)	-	Grasslands, meadows and marshes providing tall cover
Cooper's Hawk *Accipiter cooperii*	-	SC (2)	-	Nests in riparian forests and forages in open woodlands
American Peregrine Falcon *Falco peregrinus anatum*		SFP		Forages along rivers and wetlands
Merlin *Falco columbarius*	-	SC (1)	-	Forages along open grasslands, savannas and woodlands
Sharp-shinned hawk *Accipiter striatus*	-	SC (3)	-	Dense forest and riparian habitats
Swainson's hawk *Buteo swainsoni*	-	ST	-	Tall trees for nesting and near by open areas for foraging
Short-eared owl *Asio flammeus*	-	SC (2)	-	Freshwater marsh, lowland meadows with dense tules or grass for nesting and roosts

Long-eared owl *Asio otus*	-	SC (2)	-	Dense stands of cottonwoods and willows with adjacent open areas for foraging
American white pelican *Pelecanus erythrhycchos*	-	SC (1)	-	Sloughs and side channels with a prey base of small fish and amphibians
Double-crested cormorant *Phalacrocorax auritus*	-	SC (2)	-	Open water for foraging, nests in riparian forest or protected islands
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	-	SE	FC	Dense riparian forests with a thick understory of willows for nesting and cottonwood overstory for foraging
Willow flycatcher *Empidonax traillii*	-	SE	FC	Riparian areas with abundant willows for breeding
Bank swallow *Riparia riparia*	-	ST	-	Cut banks with sandy or sandy loam soil for nesting
Loggerhead shrike *Lanius ludovicianus*	-	SC (na)	FC	Open habitats with scattered shrubs, trees and other perches
Yellow warbler *Dendroica petechia bewersterii*	-	SC (2)	-	Riparian areas with willows, cottonwoods, sycamores or alders for nesting
Yellow-breasted chat *Icteria virens*	-	SC (2)	-	Riparian areas dominated by willows, alders, Oregon ash, tall weeds blackberry and grape for nesting
Tricolored blackbird *Agelaius tricolor*	-	SC (na)	-	Nests in dense colonies in emergent marsh vegetation, nesting habitat must be large enough to support 50 pairs
Towsend's big-eared bat *Corynorhinus towsendii pallescens*		SC (2)	FC	Forages along edges of riparian habitats, may roost in cavities in trees
Ringtail *Bassariscus astutus*	-	SFP		Riparian forest habitats
Plants				
Columbian watermeal *Wolffia brasiliensis*	CNPS 2	-	-	Marsh habitats
Four-angled spikerush *Eleocharis quadrangulata*	CNPS 2	-	-	Marsh habitats
Fox sedge *Carex vulpinoidea*	CNPS 2	-	-	Marsh and riparian habitats
Rose mallow *Hibiscus lasiocarpus*	CNPS 2	-	-	Wet banks, marshes and riparian habitats
Wright's trichocoronis *Trichocoronis wrightii*	CNPS 2	-	-	Marsh and riparian habitats

Status Key	California Native Plant Society	
	CSP 1	Plants rare, threatened, or endangered in California and elsewhere
	CSP 2	Plants rare, threatened, or endangered in California but more common elsewhere
	State of California	
	SE	State-listed, Endangered
	ST	State-listed, Threatened
	SC	State Species of Special Concern
	SFP	State Fully Protected
	Federal	
	FE	Federally-listed, Endangered
	FT	Federally-listed, Threatened
	FC	Federal Species of Concern
	PR	Protected under Golden Eagle Protection Act

flooding continually changed and enriched the riparian areas, creating and sustaining habitat. Human intervention has seriously interfered with this self-perpetuating system. The regulation of river for water supply, flood control and other purposes has changed the annual flow regime and bank protection has stalled channel meander. As a result, the Sacramento River has lost some capability to maintain existing habitats and create new ones.

The regulation of flows for water supply and flood control that is provided by Shasta Dam has a substantial impact on the riparian habitat. The flood flows are reduced in the winter and spring such that the frequency and duration of inundation are reduced. As a result, the natural distribution of sediment, seeds and other materials that helped to create and maintain habitat is altered. The rate of flow is greatly increased in the summer season and varied in response to water demand, especially those south of the Delta. When in contradiction to the natural regime, this operational control has been found to have negative impacts on the establishment of certain types of riparian vegetation (Roberts et al., 2003).

Bank protection can stall the meander function and with it the creation of habitat. Meander features such as sloughs, side channels and oxbow lakes are not developed, and a comparatively sterile environment can result. The natural variations in channel depth, velocity and vegetative matter are diminished. Areas of shaded riverine aquatic habitat are lost and the contribution of large woody debris to help sustain the downstream fishery is greatly reduced. These substantial impacts on the wildlife and fishery resources affect both the area where bank protection is applied and a substantial downstream reach (U.S. Fish and Wildlife Service, 2000). A portion of the Wildlife Area and a substantial portion of the surrounding banks have been lined with riprap to limit erosion and channel movement.

Habitat Loss and Fragmentation - The substantial reduction and disruption of the riparian habitat has had major negative impacts on the wildlife and fish populations of the Sacramento River riparian corridor. Research indicates that only about 10 % of the combined Valley Oak Woodland and Great Valley Riparian Forest in the river corridor between Colusa and Red Bluff remains (Golet et al., 2003). In addition the majority of the associated wetland basins that are located east and west of the river have been converted to agricultural and urban uses. The net effect is a huge reduction in the overall area of the habitats that once supported healthy and diverse populations of fish and wildlife.

A serious ramification of this habitat loss along the riparian corridor is habitat fragmentation. Habitat fragmentation occurs when large and contiguous tracts of natural vegetation are converted to other uses such that only fragments of the original habitat types remain. This fragmentation affects wildlife in various ways that include direct loss of habitat, increased edge effect and isolation effects. The species most effected are those with large home range requirements, species with narrow or very specific habitat needs and species that lack the ability to disperse and adapt. Habitat fragmentation also disrupts migration corridors along the river and connecting to its tributaries.

Each species requires a specific arrangement of food, water and cover to meet its biological needs. In addition, each species requires a minimum amount of suitable habitat area. For example, the western yellow-billed cuckoo requires dense deciduous forest with dense understory cover near slow-moving water. The species generally selects these habitats for nesting only if they are in contiguous stands of at least 25 acres in area and at least 300 feet in width (Gaines, 1974). Smaller and narrower sites are seldom used. When species minimum home range sizes are

greater than the available fragment sizes, they are frequently eliminated. Therefore, a consequence of habitat fragmentation is a reduction in richness and diversity of species with the greatest impact being observed in small or linear-shaped fragments.

For area-sensitive species like cuckoos, edge effects further reduce the viability of otherwise suitable habitat areas. Where one habitat type borders another, edge effect can be negative for species that require large blocks of contiguous habitat. The fragmentation of habitat tends to increase the amount of the edge relative to the amount of the interior space. The qualitative habitat reduction due to edge effects has been documented for birds in the riparian forest to include increased nest predation, interspecific competition and reduced pairing and nesting success. Edge effects have been documented to extend 150 to 1800 feet into the interior of fragmented forest habitats (Paton, 1994).

Isolation effects lessen a species ability to move between fragments of habitat. It is theorized that isolated fragments may support lower densities of species than similar sized areas of contiguous habitat and that the long-term potential for survival is less. Birds and bats generally have excellent dispersal capabilities while small mammals and some species of reptiles and amphibians typically have significantly poorer capability to disperse. The habitat surrounding the Wildlife Area has been substantially reduced in area and greatly fragmented.

Nonnative, Invasive Plant Species - Nonnative, invasive plant species that were not present prior to European settlement have become established along the Sacramento River. Some were imported for a variety of purposes that included erosion control, food crops, animal fodder and garden stock and accidental introduction. In some cases these plants displace or preclude the establishment of native plant communities. They also provide relatively low habitat value for the wildlife species that have adapted to the native species. Some "successful" invasive species feature adaptations such as the production of large amounts of seeds, fast growth, and the ability to reproduce from small pieces of the plant. Adding to this advantage is the frequent lack of natural herbivores, parasites, diseases and a release from the competitive pressure of plants from its native environment.

An example of such a species is giant reed (*Arundo donax*), a large bamboo-like plant. It is able to reroot from small pieces that are distributed by flood events. It is well adapted to alluvial deposits and often proliferates in the same locations that historically support willow scrub communities. It grows extremely fast (3 ½ inches per day under optimal conditions) and manual attempts to remove the plant often result in pieces floating downstream to form new stands. It burns easily and but will resprout vigorously after a fire. Such fires may, over time, eliminate any remaining riparian plant species.

Other invasive species such as tree of heaven (*Ailanthus altissima*) appear to "fit" into the riparian environment but provide poor habitat because they lack low cover value or structure or because the seeds that they produce are of low nutritional value. Some plants, such as edible fig, have the ability to produce chemicals (phytotoxins) that inhibit the germination of competing plant species. Nonnative invasive species that have particularly serious disruptive impacts to the riparian habitat include:

Ailanthus altissima	tree of heaven
Arundo donax	giant reed
Centaurea solstitialis	yellow starthistle
Ficus carica	edible fig
Rubis discolor	Himalayan blackberry

Sorghum halepense	johnson grass
Tamarix chinesis	salt cedar
Lepidium latifolium	perennial pepperweed

Some units of the Wildlife Area, especially on higher elevation locations where flooding is now less frequent, have become dominated by nonnative invasive species such as johnson grass and yellow starthistle. These exotic communities are acting to preclude the establishment of natural riparian vegetation such that, in some cases, the natural succession process of habitat communities appears to have effectively been stalled.

Fire – The potential for wildfires to substantially impact the riparian habitat is a possible, serious threat to the both the habitat and the related fish and wildlife species. Research has suggested that the lack of a natural flooding regime that formerly washed out vegetative materials from the riparian areas can result in increase in fire fuel. This greater fuel load might then support more intense fires, which could impact the composition and structure of habitat communities (Ellis 2001). Given the existing impairment of the natural riverine processes that historically created and renewed riparian habitat, the concern has been raised that future fires could severely damage natural riparian vegetation that could lack the natural means of regeneration. This situation could be worsened if nonnative species invade and proliferate in riparian areas following a fire.

The magnitude of this additional threat is not known. It is known that fire has impacted riparian habitat in the past although some impacts have been considered positive and some plants are adapted to respond positively to fire events. The riparian forest is a relatively moist environment compared to upland habitats. The impacts of fire should, however, be the subject of further monitoring and research and this Plan should be appropriately revised if there is documentation that the threat from wildfire is substantial. Regardless, a fire protection strategy should be maintained for the Wildlife Area for the protection of both the habitat resource and the adjoining property.

❖ Ecosystem Approach to Management

The Department, the SRCAF and the CALFED Program all support an Ecosystem Approach to the restoration and management of riparian habitat along the Sacramento River. This is the concept of achieving species management objectives by sustaining and enhancing the fundamental ecological structures and processes that contribute to the well being of the communities and species that depend on the habitats that are unique to this ecosystem. The basic objective is to restore and rehabilitate, where feasible, the natural processes that create and sustain the important elements of the ecosystem structure. The Ecosystem Approach differs fundamentally from the more traditional approach of species–based management, which seeks to manipulate specific environmental factors thought to limit target species populations at levels below management objectives. An example of species-based management would be the direct removal of predators from an environment to reduce predation levels on a target species. In the context of the Wildlife Area and the entire Sacramento River Conservation Area, the Ecosystem Approach seeks to restore and support natural riverine processes and resolve impediments to restoration through the application of the best available scientific information and Adaptive Management of the habitat.

Strategies to restore the riparian habitats are proposed in order to achieve the Purposes of this Plan, the Goal of the Sacramento River Conservation Area Forum

and the Restoration Priorities of the CALFED Program. It is recognized that the Department will implement these strategies in coordination with the managers of other public and private lands in order to meet these shared objectives. Specific Goals and Tasks to implement these strategies are contained in Chapter VI, Management Goals.

Restoration of Natural Riverine Processes – Restoration of natural riverine processes is the most important component of the Ecosystem Approach. This includes actions that permit the river to meander and create habitat through the natural processes of erosion and deposition. This involves permitting the river to erode the Wildlife Area and not placing artificial constraints in the way of that process. It may involve the removal of bank protection after appropriate analysis and socioeconomic consideration. It may also involve cooperation with flood damage reduction projects such as the proposed Hamilton City project where a new levee, located a distance from the river, would permit the improved passage of floodwaters. Habitat restoration is an important component of the proposed funding plan for the project. Support for flow regime modifications that are supportive of the natural recruitment of riparian vegetation is also important. Restoration of natural riverine processes will require the action of the Department in coordination with other public agencies and private conservation entities as well as other stakeholder groups along the river corridor.

Consistent with the SRCAF Principles, it is recognized that there may be some situations where bank protection may ultimately be required to protect major existing uses and investments such as buildings, pumping plants, bridges, etc.
Such determinations should be made on a site-specific basis, after thorough technical analysis, consideration of all practical alternatives and appropriate mitigation.

Reestablishment of the Habitat Corridor – The SRCAF has established a Goal and a process for the preservation and reestablishment of riparian habitat that has been endorsed by all of the County governments in the SRCA as well as the key State and federal agencies involved in conservation activities. Information, education and consensus building in regard to the value and importance of riparian habitat have been identified as major keys to the preservation of the habitat. Acquisition of habitat in fee title and conservation easement by the Department and other public agencies from willing sellers is included in the program to permit direct management of the habitat resource. Preservation and management of habitat by private landowners is also vital to the success of the effort. The SRCAF was established to serve as a means to coordinate this effort and involve the many persons who are stakeholders in the future of the Sacramento River corridor. This Plan proposes support for and coordination with all these forms and variations of habitat conservation planned for the SRCA.

The area surrounding the Wildlife Area has experienced both substantial habitat loss and habitat fragmentation. To help deal with the effects of habitat loss and fragmentation, the preservation and restoration of habitat should be directed to sites which are hydraulically and geomorphically connected to the river with a priority given to:

1. The assembly of large, contiguous areas, with high interior to edge ratios.
2. The preservation and restoration of sites which fill gaps and expand corridors of protected habitat.
3. The preservation of sites with significant existing habitat value.

This strategy will result in the greatest ecosystem benefit for the resources expended.

Control of Nonnative, Invasive Plant Species – The control of nonnative, invasive plant species is an important element of the maintenance and restoration of riparian habitat. Invasive species can dominate a site and preclude the natural recruitment of riparian vegetation. They can also diminish the habitat value of individual sites. Due to the presence of these species in the other areas of the river corridor and the interconnections that exist through flood flows, the control of invasive, nonnative species will be an ongoing concern.

All Units of the Wildlife Area should be initially evaluated for the presence of invasive, nonnative species and an initial treatment plan should be devised and implemented. Ongoing control will then be required as part of the maintenance of the Wildlife Area in order to preserve the quality of the habitat. Controls may involve mechanical removal, chemical control, burning or other methods. Control or eradication of invasive species should also continue to be a standard part of any future, active horticultural restoration projects.

Active Horticultural Restoration – The replanting of riparian vegetation may be required to restore some portions of the Wildlife Area to native riparian habitat. Within the Wildlife Area 505 acres of riparian habitat have been replanted with native species as listed on Table 5. The preferred method of restoration is to permit natural processes to restore the riparian habitat. In portions of the Wildlife Area, especially in Low Terrace locations that are frequently inundated, natural recruitment of riparian vegetation has occurred. The river has been actively reworking these areas and creating new habitat. However, it has been the experience of the public and private entities that manage habitat along the river that the natural processes have been so modified that natural restoration of habitat does not occur within a reasonable timeframe in some locations. This has particularly been the situation on High Terrace sites where three key factors appear to contribute the lack of adequate natural recruitment. These key factors that affect these natural processes are:

1. Bank protection has limited the meander of the river and the resultant creation of new habitat areas.
2. Changes to the flow and flooding regime have reduced the natural capability to recruit riparian vegetation.
3. Competition from nonnative, invasive vegetation has severely limited the establishment of riparian plants.

Table 5. Previous Active Horticultural Restoration Sites

Unit / Subunit	Year	Acres	Habitat Communities
Pine Creek - West	2003	235	Great Valley Riparian Forest & related communities
Jacinto	2000	38	Great Valley Riparian Forest & related communities
Beehive Bend	2000	58	Great Valley Riparian Forest & related communities
Princeton - North	1994	23	Great Valley Riparian Forest & related communities
- North	2000	27	Great Valley Riparian Forest & related communities
- East	1992	44	Great Valley Riparian Forest & related communities
- South	2001	34	Great Valley Riparian Forest & related communities
Moulton - North	2001	46	Great Valley Riparian Forest & related communities
Total	-	505	-

The previous restoration occurred as part of eight separate projects with the first occurring in 1992 and the most recent in 2002. In each area it was determined that the natural processes alone would not restore the area to riparian habitat of sufficient value in the near term. The planting followed a detailed scientific analysis of the site characteristics and the development of a plan for the planting and initial maintenance of the area. The planting was limited to native species in a design that responded to existing site characteristics that included soils, drainage, inundation frequency and surrounding land uses. Irrigation was generally provided for a three-year establishment period.

As part of the Site Inventory that was prepared for each Unit and Subunit of the Wildlife Area, an initial identification was made of sites that could benefit from active horticultural restoration. Six portions of the Wildlife Area, with a total area of approximately 432 acres, were identified for further evaluation. These were sites where natural processes had not resulted in substantial colonization by native riparian communities over substantial periods of time (from 10 to 25+ years). These sites, are listed on Table 6.

Table 6. Sites for Evaluation of Future Active Horticultural Restoration

Unit / Subunit	Approximate Area (ac.)	Description
Merrill's Landing	130	Former row crop and grassland area, dominated by invasive, nonnative species. No substantial recruitment for 25+ years.
Dicus Slough	80	Former row crop and almond orchard area, dominated by invasive, nonnative species. No substantial recruitment for 10+ years.
Wilson Landing	165	Former row crop and grassland area, dominated by invasive, nonnative species. No substantial recruitment for 25+ years.
Pine Creek – East	42	Abandoned walnut and almond orchard surrounded by riparian forest. No substantial recruitment for 12+ years.
Stegeman	10	Abandoned walnut orchard surrounded by riparian forest. No substantial recruitment for 13+ years.
Colusa - North	5	Abandoned walnut orchard surrounded by riparian forest. No substantial recruitment for 10+ years.
Total	432	-

To further evaluate the appropriateness of horticultural restoration on these sites soils stratigraphy and other physical factors should be studied as well as consideration of the cost effectiveness of the active horticultural restoration of these sites. Horticultural restoration is considered an appropriate method of restoration only in situations where there is strong evidence that the restoration of the site to valuable riparian habitat will not occur through natural processes alone in a reasonable timeframe. Appropriate restoration may include some combination of the following actions: control of invasive, nonnative species, removal of remnant orchard trees and replanting with natural riparian species. It is also possible that further analysis will conclude that active restoration strategies are not required on some sites. As with all

previous, active horticultural restoration projects, the design would incorporate the requirements of the Reclamation Board.

It is also possible that some areas of natural riparian vegetation may require active horticultural restoration in the future if key riverine processes that support the natural regeneration and maintenance of plant communities are not restored. The plants in the riparian habitat have evolved to adapt to the ongoing disturbance regime and to flourish in that environment. If the environment lacks the natural ranges of variability of physical processes, it is not known how the natural riparian vegetation will adapt to that change. If natural riparian vegetation is not sustained by the processes of erosion, deposition and flooding, natural recruitment may not occur in some areas. Such areas could be invaded by nonnative species that could have a substantially lower habitat value, which might not support Special Status Species, other native species and game species.

This scenario involves several unknowns. First, the extent of the restoration of the natural riverine process that will be accomplished in the future is unknown. Process restoration is the key strategy of this Plan, the SRCAF and the CALFED Program, but there are substantial social and economic considerations to be resolved. Second, it is unknown exactly how the riparian vegetation might respond to an altered environment over the long term. Finally, it is not known how the fish and animal species that inhabit the Wildlife Area will respond to any, as yet unknown, change in habitat composition. This potential for altered successional pathways and related impacts to the habitat and the fish and wildlife resources should be the subject of ongoing monitoring and research. This Plan should be appropriately revised if new, credible information indicates that the lack of natural riverine processes will require different, proactive restoration actions in the future.

IV COORDINATION WITH OTHER PROGRAMS

The Sacramento River is the largest and most important river in California. The river serves many purposes including water supply for agricultural, municipal and industrial uses, hydroelectric power, navigation and recreation. It produces the State's largest runs of salmon, sturgeon, striped bass and shad and it supports a substantial recreation and commercial fishery off the California coast. The river is vital to the well being of the State of California and determinations regarding the management of the river affect many people.

The preservation and enhancement of wildlife habitat along the Sacramento River is an expressed priority of the State of California, the United States and a wide range of private interests in California and the entire country. The Sacramento River Wildlife Area is an important part of this unique habitat resource. Appropriately, the Department is fully committed to a program of coordination and cooperation with local governments, other state and federal agencies, and the wide range of private stakeholders.

❖ Sacramento River Conservation Area Forum

The Sacramento River Conservation Area (SRCA) extends along 222 miles of the Sacramento River from its confluence with the Feather River, near Verona (RM 80), to Keswick Dam, just north of Redding (RM 302). The SRCA includes land in Shasta, Tehama, Butte, Glenn, Colusa, Sutter and Yolo Counties. The Wildlife Area lies roughly in the center of the SRCA, between RM 144 and RM 215 and it is limited to Colusa, Glenn, Butte and Tehama Counties. The SRCA is an outgrowth of an effort initiated through State Senate Bill 1086 in 1986. That legislation created an Advisory Council that completed the *Upper Sacramento River Fisheries and Riparian Habitat Management Plan* in 1989. The State Legislature received that *Plan* and directed its implementation through Senate Concurrent Resolution No.62 in 1989. Subsequent to the resolution and related actions, DWR developed the initial SRGIS. The Riparian Habitat Committee of the Advisory Council also conducted an extensive public process that resulted in the completion of the *Sacramento River Conservation Area Handbook* in 1999. The *Handbook* is an important document that established Basic Principles and management Guidelines for the SRCA. The Department took an active role in both the Advisory Council and the Riparian Habitat Committee.

The *Handbook* was developed as the basis for interagency cooperation and agreement on programs within the SCRA. A *Memorandum of Agreement Regarding the Sacramento River Conservation Area* was approved by all of the seven county governments that are included in the SCRA. It was also signed by the key state and federal agencies that are involved in management activities along the river. In the *Memorandum*, the parties committed to endorse the *1989 Plan*, the *Handbook* and formation of a nonprofit organization that would serve a wide range of coordination, liaison and implementation functions within the SRCA. The Department is a signatory to the *Memorandum of Agreement,* which is contained in Appendix J.

The proposed nonprofit corporation was formed in 2000 as the Sacramento River Conservation Area Inc.. The corporation, which now operates as the Sacramento River Conservation Area Forum, is a functioning organization with a 21 member Board of Directors that includes:

- One public interest and one landowner representatives appointed by the Board of Supervisors of each of the seven counties
- A public interest representative appointed by the Director of the Resources Agency
- Six ex-officio members representing the Bureau of Reclamation, the Army Corps of Engineers, the Fish and Wildlife Service and the State Department of Fish and Game, Department of Water Resources and Reclamation Board.

The Department is an ongoing, active participant in the activities of the SRCAF. The representative of the Director of the Department serves as the ex-officio member of the Board and DFG staff members are active in the various committees of the SRCAF.

The *Sacramento River Conservation Area Handbook* specifies the overall Goal for the SCRA:

Preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Redding and Chico and reestablish riparian vegetation along the river from Chico to Verona.

This Goal is supported by a set of Principles, Actions and Management Guidelines that detail a process to reach the Goal. Figure 3 depicts the structure of the SCRAF in a diagram taken from the *Handbook.* The *Handbook* also provides a detailed discussion of the dynamic river processes and the resulting habitat communities. The *Handbook* is available online at the SRCAF website (www.sacramentoriver.ca.gov) and it should be consulted for additional information regarding the SRCAF.

The *Handbook* incorporates other important policy directives. The Inner River Zone Guidelines was established to define an area in which to focus the programs of the SRCAF. The Zone consists of the 100-year meanderbelt, the area in which the river meandered between 1896 and 1991. It also includes the area that river is projected (by DWR) to erode over a 50-year term beginning in 1991. The combined areas of the meanderbelt and the erosion projections define the Inner River Zone Guidelines.
The *Handbook* also establishes priorities for restoration of the Inner River Zone. These priorities are:

- Protect physical processes where still intact.
- Allow riparian forests to reach maturity.
- Restore physical and succession processes
- Conduct reforestation activities.

Consistency with the Sacramento River Conservation Area Forum Principles - This Plan and the ongoing management of the Wildlife Areas are intended to be fully consistent with the stated Principles of the SRCAF as follows:

1. **Ecosystem Management –** This Plan incorporates an Ecosystem Approach to habitat management. It addresses recovery of Special Status Species through the preservation and restoration of natural riparian habitat. It emphasizes the use of

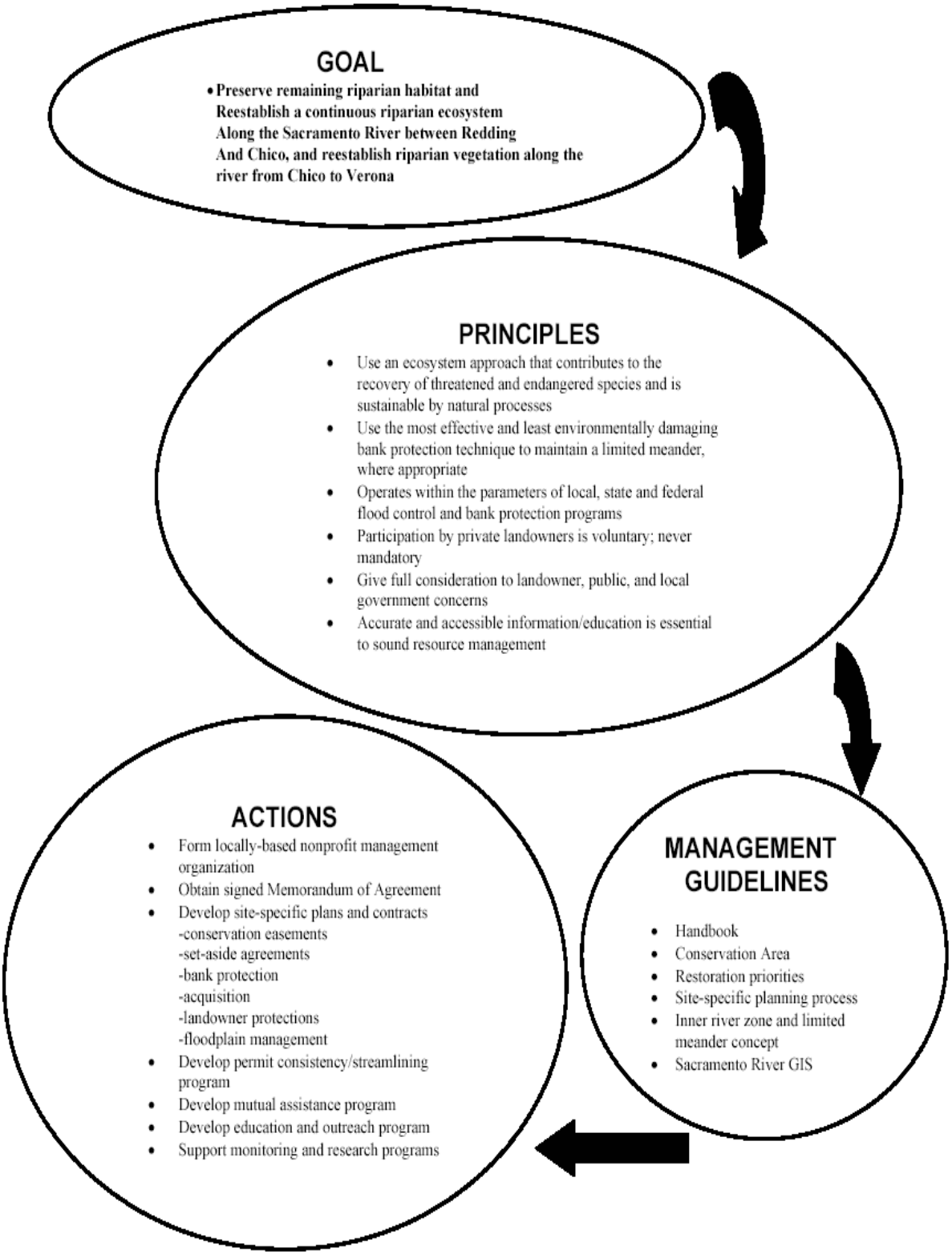

Figure 6. The Structure of the Sacramento River Conservation Area Program

*Illustration from the *Sactamento River Conservation Area Handbook.*

natural processes to create a sustainable system within the context of the physical environment, the biological environment and the human environment.

2. **Flood Management –** This Plan gives full consideration to the Sacramento River Flood Control Project and the modified flow regime that now applies to the Sacramento River. All past and any future actions by the Department will comply with the regulations of the Reclamation Board which is charged with maintaining the integrity of the flood control system.

3. **Voluntary Participation – Properties within the Wildlife Areas that have been acquired from private property owners (fee title** and conservation easement) have been purchased from willing sellers at fair market value based on appraisals approved by the State Department of General Services. These properties are highly flood prone areas where frequent innundation and other natural hazards makes other types of land use problematic.

4. **Local Concerns** – The Deparment is committed to giving full consideration to concerns of other landowners, local government and the general public. Active participation in the SRCAF as well as individual landowner contacts are pursued to help make reasonable accommodations to individual concerns as well as broad issues of shared concern.

5. **Bank Stabilization -** The Department recognizes the dual considerations of promoting ecosystem management through natural river processes and protecting critical facilities and major public investments through selective bank stabilization efforts. It is committed to the SRCA's Principles and site specific review of individual situations.

6. **Information and Education** – This Plan provides a substantial information baseline regarding the Wildlife Areas that can provide information to other landowners. The Department is committed to working through the SRCAF and with individual interests to share information regarding the Wildlife Areas and other areas of riparian habitat.

The Management Goals for the Wildlife Area, which are in Chapter VI of this Plan, incorporate specific Goals and Tasks that address these Principles.

The Planning Process included an initial information presentation to the SRCAF and the Technical Advisory Committee, periodic updates and a presentation on the draft plan. Interviews were also conducted with five members of the SRCAF Board who represent the counties in which the Wildlife Area is located and the manager of the SRCAF. Copies of the Draft Plan were also provided to all members of the SRCAF Board for their review and input.

❖ California Bay-Delta Program

The California Bay-Delta Program is a cooperative effort of state and federal agencies working with local communities to improve the quality and reliability of California's water supplies and revive the San Francisco Bay-Delta ecosystem. The established mission of the CALFED Program is:

"To develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta System"

The CALFED Program is intended to be a balanced, comprehensive approach to reduce conflicts over limited water supplies and to address the Program's four Objectives: Water Supply Reliability, Water Quality, Levee System Integrity and Ecosystem Restoration. It targets the Sacramento-San Joaquin Bay-Delta, the Sacramento Valley and the San Joaquin Valley. The program in California is guided by the California Bay-Delta Authority, which was established through SB 1653 in 2002. The Bill established the California Bay-Delta Authority to provide a permanent governance structure for the collaborative state-federal effort that began in 1994. The Director of the Department of Fish and Game is a member of the authority and the Department is an implementing agency for a number of programs including CALFED's Environmental Restoration Program, Environmental Water Account and Watershed Programs.

In August of 2000 the CALFED Program issued a *Programmatic Record of Decision* (ROD) that set forth a thirty-year plan to address ecosystem health and water reliability problems in the Bay-Delta area. The ROD specified specific investments and actions over the first seven-years (Stage 1) to meet program goals. Pursuant to the ROD, the *Ecosystem Restoration Multi-Year Program Plan (Years 4-7)* was released in August of 2003. That *Plan* included Restoration Priorities for the Sacramento Region.

Consistency with the Restoration Priorities for the Sacramento Region - This Plan and the ongoing management of the Wildlife Areas are intended to be fully consistent with the Restoration Priorities for the Sacramento Region as specified in the *Ecosystem Restoration Multi-Year Program Plan (Years 4-7)* as follows:

1. **Develop and implement habitat management and restoration actions in collaboration with local groups such as the Sacramento River Conservation Area Non-Profit Organization (SRCAF).**
   The Department has been an active participant in the SRCA since the initial implementation of SB 1086. It is committed to continue to participate in the activities of the SRCAF and to implement the Principles of the *Handbook* in the management of the Wildlife Area.

2. **Restore fish habitat and fish passage, particularly for spring-run chinook salmon and steelhead trout and conduct passage studies.**
   The restoration of riparian habitat and the related maintenance of natural river processes within the Wildlife Area are supportive of the recovery of Special Status fish species. Fish passage is not an issue on the mainstem of the river, but the impacts of diversions and pumping plants have been an issue in the reach of the Wildlife Area. Apart from the management of the Wildlife Area, the Department is deeply involved statewide with fish passage improvements on tributary streams and the monitoring and evaluation of fish passage.

3. **Conduct adaptive management experiments in regard to natural and modified flow regimes to promote ecosystem functions or otherwise support restoration actions.**
   The Management Goals for the Wildlife Area include the support of research related to modified flow regimes that will be supportive of restoration actions.

4. **Restore Geomorphic processes in stream and riparian corridors.**
   A key element of the ecosystem management approach incorporated in this Plan is the use of natural river processes to create and sustain riparian habitat. Management Goals for the Wildlife Area include multiple tasks that will help to restore geomorphic processes.

5. **Implement actions to prevent, control and reduce impacts of nonnative invasive species in the region.**
   The control of nonnative, invasive species is an important priority in this Plan. Control of invasive species will occur as part of both restoration projects and the ongoing maintenance activities.

6. **Continue major fish screen projects and conduct studies to improve knowledge of the implications of fish screens for populations.**
   While there are no water intakes or fish screen projects in the Wildlife Area, there are intakes and screening projects in the vincinty of the Wildlife Area. The Department is involved in the regulation of fish screens and in the monitoring and evaluation of the effectiveness of fish screens on the river and statewide.

7. **Develop conceptual models to support restoration of river, stream and riparian habitat.** The Management Goals for the Wildlife Area include support of research and modeling that provide new information, evaluation criteria and tools to support the restoration of riparian habitat.

The Planning Process included a meeting with the Department staff most closely involved with the CALFED Program and a meeting with the CALFED Ecosystem Restoration staff as well as periodic follow-up contacts. The Draft Plan was also provided to the CALFED Ecosystem Restoration staff for their review and input.

❖ Local Governments

The Wildlife Area includes parts of Colusa, Glenn, Butte and Tehama Counties. Each county is a multi-purpose government structure directed by an elected Board of Supervisors. There are also numerous special districts within each county, which are limited-purpose governmental agencies, such as fire districts, mosquito and vector control districts, irrigation districts and reclamation districts. The Wildlife Area does not include any part of an incorporated city although the City of Colusa is located about one mile from the Colusa-South Subunit.

Local land use policies are established in the general plans of each county, which are adopted by the respective Boards of Supervisors. The four counties' general plans designate the areas adjacent to the Sacramento River for agriculture and floodway related land uses as follows:

- **Tehama County** - The Wildlife Area is entirely within the "Habitat Reserve" land use designation and the "Primary Floodway" Zoning District. The land use policies of the County General Plan are supportive of the preservation of agriculture and there are also policies regarding conservation of habitat and Special Status Species.

- **Butte County** - The Wildlife Area property is entirely within the "Agricultural" land use designation and agricultural zoning districts. The land use policies of the County General Plan are strongly directed to the

preservation of agriculture and there is also policy regarding the protection of Special Status Species.

- **Glenn County** - The Wildlife Area property is entirely within the "Intensive Agriculture" Land use designation and the "AE – 40" Zoning District. The General Plan are primarily directed to the support of agricultural use in the rural area and there is also a policy specifying early consultation for projects involving Wildlife Management Agencies.

- **Colusa County** - The Wildlife Area property is entirely within the "Floodway" land use designation and the "Floodway" zoning district. The land use policies of the County General Plan are primarily directed to the support of agricultural use in the rural area and there are also policies regarding the value of natural resources.

The Planning Process involved specific outreach to local governments in the four counties that contain portions of the Wildlife Area. A member of the Board of Supervisors from each of the four counties is currently appointed as a public interest representative on the SRCAF Board of Directors. The SRCAF Board received several information presentations on the Plan. Additionally, information presentations were made directly to the various Boards of Supervisors and County Fish and Game Commissions. Interviews were also conducted with the supervisor from each county that sits on the SRCAF Board and the chief planning official in each county. Additional interviews were conducted with the managers of the Glen-Colusa, Provident and the Princeton-Codora Irrigation Districts.

❖ Other Habitat Conservation Programs

The Wildlife Area is intermixed with riparian habitat areas that are managed by other public agencies and private conservation organizations along the river. Close coordination with these entities during both the Planning Process and in the implementation of this Plan was deemed essential. Information regarding the various properties in this section is taken from the *Sacramento River Public Recreation Access Study*, supplemented by information from the various agencies.

California Department of Fish and Game

The Department has four additional properties that are within the SRCA that total 1462 acres. They are located within the NCNCR, a distance of fifty to seventy RM from the Sacramento River Wildlife Area. These properties are:

- Clover Creek Ecological Area – 45 acres at RM 283L.
- Anderson River Park Fishing Access – 264 acres at RM 282R.
- Mouth of Cottonwood Creek Wildlife Area - 571 acres at RM 273.5.
- Battle Creek Wildlife Area - 582 acres at RM 274.

These properties are managed by NCNCR. The Planning Process included numerous meetings with the staff of NCNCR and the Region staff reviewed a preliminary draft of this Plan.

California Department of Parks and Recreation

DPR has three properties along the Sacramento River in close proximity to the Wildlife Area that total 626 acres. These facilities are:

- Woodson Bridge State Recreation Area located three miles north of the Merrill's Landing Unit – 325 acres at 218.5L.
- Bidwell-Sacramento River State Park, adjacent to the Pine Creek Unit – 243 acres at RM193L to 200R

- Colusa-Sacramento River State Recreation area, which is downstream from the Colusa Unit – 67 acres at RM 144R.

These three sites provide recreation facilities such as campgrounds, nature trails and boat ramps. They also include riparian habitats similar to the Wildlife Area.

DPR was involved in developing a new General Plan for the Bidwell-Sacramento River State Park in a time period that overlapped the Planning Process. Members of the two planning teams met on several occasions to discuss matters of mutual concern and shared information in the development of their respective plans and other ongoing opportunities for mutual cooperation. DPR District staff also reviewed a preliminary draft of this Plan.

California Reclamation Board

In addition to its regulatory role, the Reclamation Board has jurisdiction over 14 properties along the river between Red Bluff and Colusa. The total record area of these properties is 1365 acres and the sites are located between RM 145.5 and 192.5. The majority of these properties are riparian habitat. These include mitigation sites and locations where the maintenance of the riparian vegetation was identified as having important channel stabilization and levee protection benefits. (Murray, Burns and Kienlen, 1987).

The Reclamation Board does not have an active habitat management program because habitat management and the provision of public recreation are not part of its mission. No specific policy regarding public use of the sites has been established. The only site that has land access is the former Cruise and Tarry Marina site near Colusa, which is leased by Colusa County. The Reclamation Board's General Manager sits on the SRCAF as an ex-officio member and the Board staff was consulted as part of the Planning Process.

US Fish and Wildlife Service

USFWS manages the Sacramento River National Wildlife Refuge which currently includes approximately 10,128 acres of habitat and land that is planned to be restored to riparian habitat. The SRNWR is located along the river between RM 163 and 239.5 in a total of 22 separate units. The USFWS has a goal of acquiring a total of 18,000 acres of land for habitat conservation along the river. Much of the SRNWR area is located adjacent to the Wildlife Area and it contains many similar habitat communities.

The USFWS was in the process of developing its Comprehensive Conservation Plan for the SRNWR concurrent with the Planning Process. The majority of the SRNWR is closed to public use pending the adoption of the Comprehensive Conservation Plan. If and when these lands are open to public use, following adoption of the Plan, there will be considerable opportunity for increased public access to both SRNWR and Wildlife Area via access across adjoining property, which is managed by the other agency. The two plans were closely coordinated, many meetings occurred and substantial information was shared between the two planning teams. The USFWS staff from the SRNWR also reviewed a preliminary draft of this Plan.

Bureau of Land Management

The Bureau of Land Management administers two parcels of riparian habitat along the river that total 347 record acres. The two properties are Foster Island at RM 217R and Todd Island at RM 238L. Both sites are limited to river access. The Bureau has considered transferring these two properties to the USFWS following the completion of the Comprehensive Conservation Plan (EDAW,

2003). The Bureau staff was consulted during the Planning Process, but detailed interaction did not occur due to the potential transfer of the two sites to the USFWS.

River Partners

River Partners (formerly Sacramento River Partners) is a private nonprofit corporation based in Chico, California. The conservation organization focuses on the acquisition and restoration of wildlife habitat. Staff members have also conducted scientific research projects to support the restoration of riparian habitats. River Partners has completed the restoration of 454 acres of the Wildlife Area under contract to the Department as well as restoration projects for other agencies. River Partners currently owns three properties along the river that total approximately 316 acres. The Planning Process included an interview with the President of River Partners as well as subsequent discussions with River Partners staff during the Planning Process.

The Nature Conservancy

TNC is a private, nonprofit corporation that has operated its Sacramento River Project for approximately 15 years. TNC has a permanent science staff at its project office in Chico, California that has managed and conduct numerous scientific research and planning projects along the river corridor. It has completed subreach plans for the Chico Landing and Beehive Bend Subreaches and will initiate the Colusa Subreach planning in 2004. TNC has also been active in the acquisition and restoration of habitat property for ultimate transfer to the Department, DPR and USFWS. TNC currently owns approximately 3100 acres of property along the river, which is planned to be transferred to these agencies for long-term management.

The Department formed a partnership with TNC for the development of this Plan. The Project Planner for the Planning Process was a TNC employee. Other TNC staff members representing ecology, hydrology, restoration science and government relations were additionally involved in the development of the Site Inventory as well as the preparation and review of this Plan.

❖ Memorandum of Understanding with DPR and USFWS

The Department entered into a Memorandum of Understanding with DPR and USFWS in 2001 that formally documents the agreement of the three agencies to, "manage, monitor, restore and enhance lands for fish, wildlife and plants along the Sacramento River in Tehama, Butte, Glenn and Colusa Counties." The agreement defines a Scope of Actions which includes:

- General management
- Public use
- Acquisition
- Maintenance
- Biological data
- Permits
- Law enforcement
- Coordination

The Memorandum of Agreement serves as a basis for many, ongoing cooperative actions, including this Planning Process. Appendix I contains the full text of this document.

V COMPATIBLE PUBLIC USE

The Department of Fish and Game manages Wildlife Areas to protect and enhance the riparian habitat for wildlife species and to provide the public with compatible recreational uses. The key consideration in regard to public use is compatibility with the primary function of the Wildlife Area, which is the protection and enhancement of wildlife habitat. The compatibility factor is critical because some public uses have the potential to degrade the habitat to the point that the wildlife species are harmed.

The Sacramento River Wildlife Area is a beautiful, natural area that is attractive for a range of public uses. These uses have generally been related to the wildlife and fish that inhabit the property and the adjoining Sacramento River. Historically, the most common uses have been hunting and fishing and these uses are projected to continue to be popular. Surveys of recreation demand in California also indicate that other uses related to wildlife and the natural environment, such as wildlife viewing and photography will grow at a rapid rate in the coming years (EDAW Inc., 2003). The responsibility of the Department through this Planning Process is to evaluate the demand for various public uses and evaluate the potential of such uses to impact the riparian habitat resource. In addition the Department will pursue the provision of Americans with Disabilities Act (ADA) accommodations within its programs and facilities.

❖ Evaluation of Public Use

The Planning Process included the evaluation of the public demand for use of the Wildlife Area and the compatibility of such use with the protection and enhancement of wildlife habitat. This compatibility evaluation focused on three principal factors:

1. The potential for the uses to unreasonably impact the habitat and the fish and wildlife that inhabit the area.
2. The potential for the uses to unreasonably impact adjoining land uses.
3. The anticipated resources of the Department to manage the potential uses.

Information was obtained through analysis of the *Sacramento River Public Recreation Access Study – Red Bluff to Coulsa*. This Study was particularly valuable to the Planning Process because it was a very recent analysis that was structured to anticipate the information needs of the Planning Process. It involved an extensive public input component as well as substantial involvement by all of the agencies that manage public habitat along the river. The information gathering process for this Plan also involved interviews with representatives of various recreation interest groups and meetings with Department, DWR and USFWS staff members familiar with recreation use of public lands along the river.

The Wildlife Area is a low-lying, natural area that is subject to frequent flooding. Permanent buildings within the floodplain would be subject to frequent flood damage and are practically precluded by regulations promulgated through the Federal Emergency Management Agency and the Reclamation Board. Other substantial, permanent recreation improvements would likewise be subject to frequent inundation

and damage. The majority of the Area is covered by dense riparian forest without substantial open areas. It was determined that many traditional outdoor recreation uses, such as sports which require facilities or play fields were not physically appropriate for the Wildlife Area and were not consistent with the mission of the Department.

The potential use of the Wildlife Area is additionally affected by the limited access to the Units. The current legal access for fourteen of the nineteen separate Units and Subunits is only from the river. The Wildlife Area is legally accessible from the land at five locations, however, the character of the riparian habitat is such that these access points only permit reasonable access to a portion of those Units. This limitation is due to the presence of water features (sloughs, side channels and oxbow lakes) and dense riparian forests that make pedestrian passage extremely difficult. This access limitation does function, however, to regulate the level of human activity and help to ensure that the habitat value of the Wildlife Area is not substantially diminished by public use.

Eight activities were determined to be compatible public recreation uses that should be supported in the management of the Wildlife Area as depicted in Figure 8. These uses were: hunting, fishing, hiking, beach activities, wildlife observation, photography, environmental education and interpretation. Table 4 indicates the compatibility of these nine public uses for each Unit and Subunit of the Wildlife Area. These site-specific compatibility determinations were primarily a function of the physical composition of each site. For example, a site that lacks gravel bars would not be compatible with beach activities. Figure 9 depicts public recreation uses occurring along the Sacramento River.

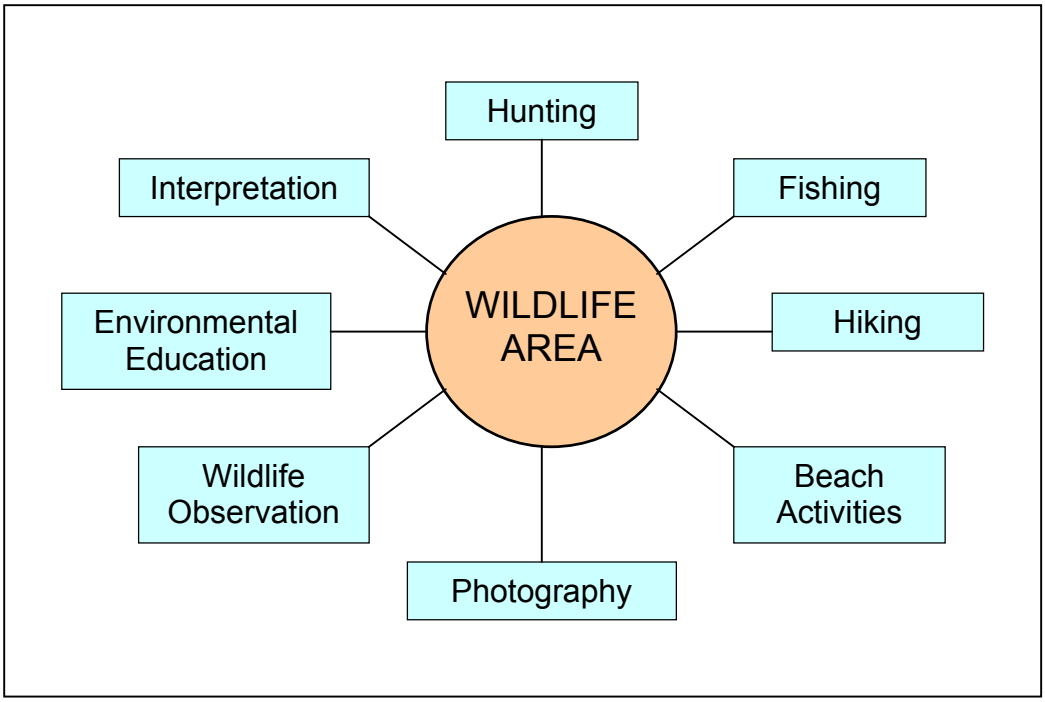

Figure 8. Compatible Public Uses

TABLE 7 - COMPATIBLE PUBLIC USE MATRIX

Unit / Subunit	River Access	Land Access	Hiking	Fishing	Hunting	Beach Activities	Wildlife Observation	Photography	Environmental Education	Interpretation
			Compatible Uses							
Merrill's Landing	Yes	Yes	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r
Dicus Slough	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Wilson Landing	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Pine Creek - North	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
- West	Yes	Yes	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r	C/C-r
- East	Yes	Yes	C	C	C	C	C	C	C	C
Shannon Slough	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Ord Bend	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Jacinto	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Oxbow	Yes	No	N	C-r	C-r	N	C-r	C-r	C-r	N
Beehive Bend	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Princeton - North	Yes	Yes	C	C	C	C	C	C	C	C
- East	Yes	Yes	C	C	C	N	C	C	C	C
- South	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Stegeman	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
Moulton - North	Yes	No	C-r	C-r	C-r	N	C-r	C-r	C-r	C-r
- South	Yes	No	C-r	C-r	C-r	N	C-r	C-r	C-r	C-r
Colusa - North	Yes	No	C-r	C-r	C-r	C-r	C-r	C-r	C-r	C-r
- South	Yes	No	N	C-r	C-r	N	C-r	C-r	C-r	N

Abbreviation Key:

"River" Means that legal, public access to the Unit or Subunit is only possible from the Sacramento River.

"Land" Means that legal, public access to the Unit or Subunit is possible from the Sacramento River and from the land at the location specified below. It is important to note that legal land access to a portion of the Unit of Subunit may not permit practical access to the entire area due to dense vegetation and water features.

"C" Means that the use is generally compatible with the characteristics of the respective site with legal access possible from the land at the location specified below or from the Sacramento River.

"C-r" Means that the use is generally compatible with the characteristics of the respective site with legal access possible only from the Sacramento River.

"C/C-r" Means that the use is generally compatible with the characteristics of the respective site with legal access to a small portion of the site possible at the location specified below and access to the majority of the site possible only from the Sacramento River.

"N" Means that the use is not compatible with the characteristics of the respective site.

Public Road Access Locations:

Princeton - East -	In Glenn County, along Road XX, south of the Princeton ferry site
Princeton - North -	In Glenn County, E. side of Highway 49, 1.3 mi. N. of Princeton.
Pine Creek - East -	In Butte County, from River Road, .45 miles north of Sacramento Avenue
Pine Creek - West -	In Glenn County, at the east end of Road 23
Merrill's Landing -	In Butte County, from Ballard Road, on the south side of the Butte-Tehama county line

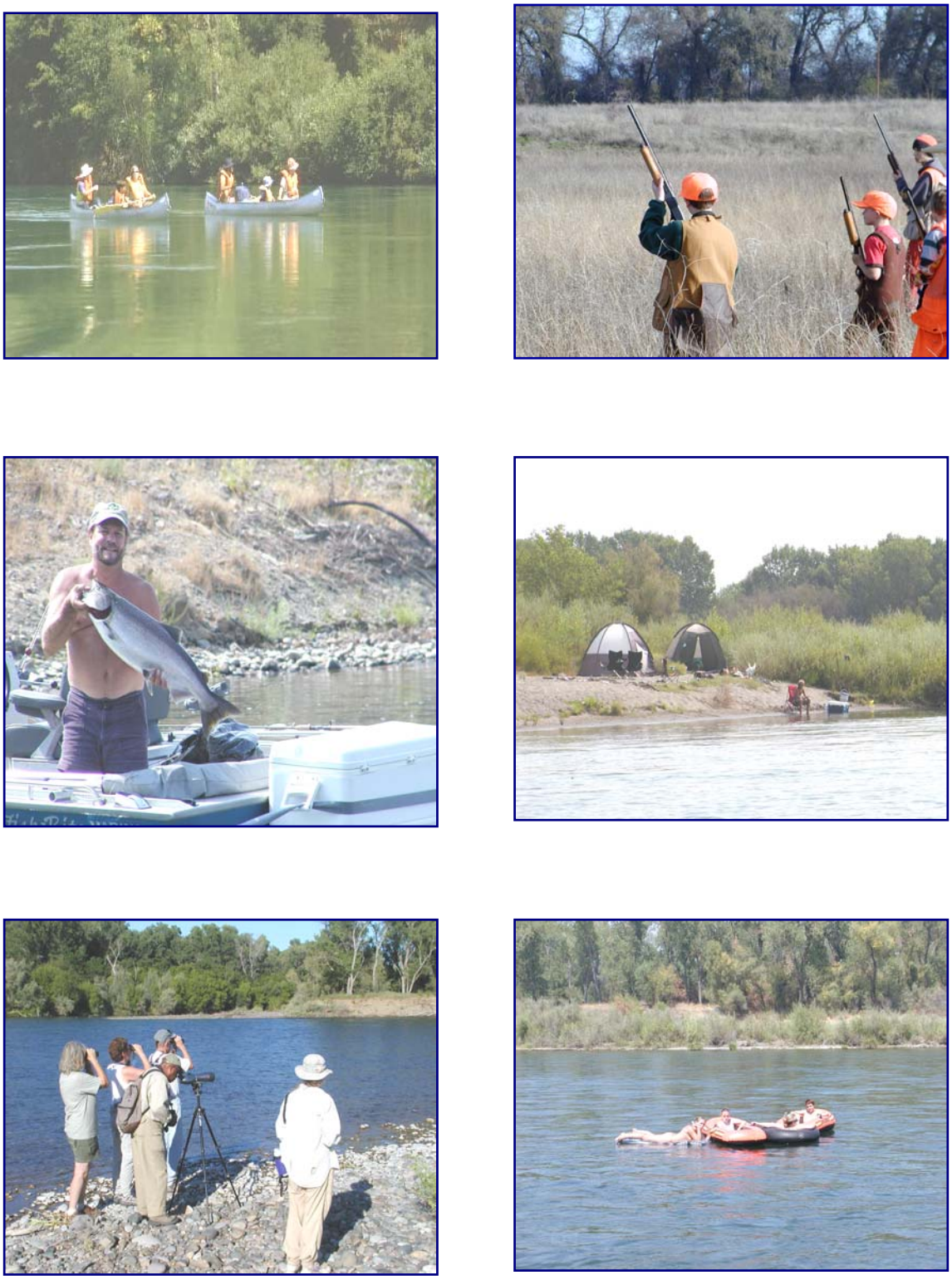

Figure 9. Public Recreation Uses along the Sacramento River

Hunting – Hunting has historically been a popular seasonal use of the Wildlife Area. Principal game species include mule deer, various species of ducks and geese, mourning doves, ring-necked pheasants and California quail. The potential for a Spring turkey season has also been noted by the public and Department staff. The use or possession of rifles and pistols is not permitted because of the close proximity to other properties and of boats on the river. At the current time the hunting season runs from the opening of deer season through January 31. The Wildlife Area has limited opportunity for "walk in" hunting from the land and most access is gained from the river via boats. Access to the Wildlife Area for hunting is permitted from the river during low flow and high flow conditions when all or part of the land area may be flooded subject to established hunting regulations.

Fishing – Fishing on the Wildlife Area focuses on the adjoining Sacramento River although there are additional fishing opportunities in the oxbow lakes of the Beehive Bend, Wilson Landing and Merrill's Landing Units. Seasonal fishing for the anadromous species, chinook salmon, steelhead rainbow trout, striped bass, sturgeon and American shad, attracts the most interest. Resident species including largemouth and smallmouth bass, bluegill, green sunfish, channel catfish and brown bullhead also provide considerable recreation. The Wildlife Area has limited opportunity for "walk in" fishing from the land and most activity is from boats on the river.

Hiking – While the water features and dense vegetation on many parts of the Wildlife Area limits hiking options, there are substantial opportunities available in the grassland areas, large gravel bars and where primitive pathways exist. The attractiveness of hiking is greatly enhanced by the opportunity for wildlife viewing and general appreciation of the beauty of the river and the riparian habitat.

Beach Activities – The gravel bar portions of the Wildlife Area, especially those composed of fine grain materials are attractive for a combination of related activities that include sunbathing, swimming and picnicking. These activities are often combined with fishing, hiking, photography and wildlife viewing. As with other uses, the lack of land accessibility acts to limit and regulate this activity and the potential impacts.

Photography – The Wildlife Area offers the opportunity for photography related to wildlife species and the general riparian environment. The riparian forest provides a substantial and diverse range of photography possibilities. As with other uses, the limited accessibility of the Wildlife Area affects the relative attractiveness of the photography opportunity.

Wildlife Observation – The opportunity for wildlife viewing is substantial. The rich environment of the riparian forest supports a very wide range of wildlife species. The potential for birding is especially great given the variety of species that frequent the area. Limited accessibility of the Wildlife Area makes it more difficult to access most Units, but the relative lack of human activity also results in an enhanced quality of wildlife viewing.

Environmental Education – Environmental education opportunities are substantial in the Wildlife Area. Class field trips ranging from local elementary schools to area universities can permit a "hands on" appreciation of the riparian ecosystem including wildlife, vegetation and geomorphic processes. Management support to this use will largely depend on future staffing and funding determinations. The limited access to the Wildlife Area will in turn limit the locations for this use.

Interpretation – The Wildlife Area has the potential to support a modest interpretive program on site. Interpretive kiosks at key public access locations could provide both regulatory and interpretive information. Staffed interpretive programs will be a function of future staffing and funding availablity. The potential of a multi-agency visitor/interpretive center in the Pine Creek/Hamilton City has been raised (EDAW Inc., 2003). This concept would permit the Department to work cooperatively with other key agencies (DPR, USFWS, etc.) and the local community to combine their resources and expertise to offer a substantial interpretive program to the public.

Other Public Use – One additional use, boat camping, was evaluated and is recommended for detailed review by the Department as a potential amendment to the Wildlife Area regulations. Camping is not currently permitted in the Wildlife Area**.** For the riparian forest areas, this is a practical standard because the dense forest is not a particularly attractive location for camping. Additionally, traditional drive up camping could result in problems with vehicular degradation of habitat, fire hazard and littering. An opportunity does exist, however, for camping, with access limited to boats, on large gravel bars adjoining the river. The *Sacramento River Public Recreation Access Study – Red Bluff to Coulsa* documented the public interest in boat camping and the potential of establishing a "boating trail" along the river. Boat camping on gravel bars would not raise the same issues as camping in the riparian forest areas and it would combine well with other uses such as fishing and beach activities.

The potential for the use of small portions of the Wildlife Area for related recreation uses such as boat ramps, picnic areas and other small-scale recreation facilities was also reviewed. It was determined that these uses could be accommodated under the existing Wildlife Area regulation under the authority of either the Regional Manager or the Wildlife Conservation Board. These type of uses will likely require the establishment of a partnership with another agency for development and operation of such facilities and they can be considered on an individual basis.

Other public use options were evaluated as part of the Planning Process but were determined to be incompatible with the Wildlife Area for various reasons. Such potential public uses were variously determined to be:

- Potentially detrimental to the riparian habitat and the wildlife and fisheries resource (e.g. off road vehicle use).
- Not physically suitable to the frequently flooded, riparian environment (i.e. uses requiring buildings).
- Outside of the mission of the Department (e.g. improved park and sports facilities).

❖ Wildlife Area Regulations

The regulations that direct the public use of the Wildlife Area are contained in Title14 (Natural Resources) of the California Code of Regulations. Division 1 of Title 14 contains regulations that have been formally adopted by the California Fish and Game Commission, reviewed and approved by the Office of Administrative Law, and filed with the Secretary of State. The current regulations applicable to the Wildlife Area include Regulations for General Public Use Activities (Section 550) which are applicable to all Wildlife Areas. They also include Hunting, Firearms, and Archery Equipment and Permit Requirements (Section 551) which contain hunting regulations that relate to all wildlife areas as well as use regulations that apply specifically to the Sacramento River Wildlife Area. In addition, standard hunting and fishing regulations apply to the Wildlife Area.

Although the regulations that govern public use of the Wildlife Area are expected to change over time, a summary of the current regulations is provided to inform the reader as to the current situation. The following summary of the regulations that apply to the Wildlife Area does not reflect all requirements in detail. The then-current and complete regulations should be consulted for any determination related to the use of the Wildlife Area.

General Public Use Activities (Section 550) – These general requirements set basic standards for protection of all wildlife areas and protection of public safety. The Regional Manager has authority to establish additional regulations for the Wildlife Area that are not otherwise provided for in Sections 550 and 551. The following Regulations for General Public Use Activities are currently applicable to all wildlife areas including the Sacramento River and Merrill's Landing Wildlife Areas. Where regulations require a specific action by the Department to be applicable, the status of any such action is noted in Italics.

- The Department may specify entry locations, limit entry or close wildlife areas to protect resources or public safety. Specified public notice is required of such entry limitations or closure. *No entry locations, limitations or closures have been established.*
- Use permits are required for organized events or gatherings.
- Motor driven vehicles and trailers are not permitted except on public roads, parking areas or other trails designated by the Department. *No such trails have been designated.*
- Drivers must comply with all posted traffic signs.
- The Department may restrict the use and operations of boats. *No such restrictions have been established.*
- Certain activities are not permitted for the protection of the Wildlife Area and protection of public safety. These prohibited uses include:
  - Damage or removal of property owned by others.
  - Deposit of litter, rubbish, toxic substances or other materials.
  - Damage to plant materials.
  - Removal of soil, sand, gravel, rock etc.
  - Collection, disturbance or removal of bottles or other artifacts.
  - Camping, except in designated areas. *No such areas have been designated.*
  - Open fires from April 30 through October 30.
  - Livestock grazing, except with a permit. *No such permits have been granted.*
  - Taking fish or frogs for commercial purposes.
  - Possession of alcohol in the field, except for designated parking areas.
- Hunting and fishing is permitted subject to regular open seasons and regulations and the special provisions of Section 551.
- Dogs are allowed only for hunting or only when under immediate control. The Department may prohibit or restrict the use of dogs. *No such prohibition or restriction has been established.*
- The Department may eject a person from the Wildlife Area for specified reasons.
- Users are responsible for knowing area-specific regulations in Section 551.

Hunting, Firearms, and Archery Equipment and Permit Requirements (Section 551) – This section contains general regulations related to hunting and firearms that apply to wildlife areas in general. It also contains specific regulations that apply to the Sacramento River Wildlife Area. These specific regulations are in addition to the other requirements of Section 550 and 551. They are intended to respond to the unique characteristics of the Wildlife Area. No specific regulations have been established for the Merrill's Landing Wildlife Area. The general regulations applicable to all wildlife areas include:

- Raptors may be used to take legal game in accordance with general hunting regulations.
- Except for designated shooting areas or with a special permit, possession and use of firearms and archery equipment is permitted only for hunting purposes. *No areas have been designated for shooting.*

The specific regulations that apply to the Sacramento River Wildlife Area include:

- No rifles or pistols may be used or possessed.
- Hunting is permitted daily from the opening of deer season through January 31 during open seasons for authorized species. All otherwise legal species are authorized.
- Camping and trailers are not permitted.

As previously noted, it is anticipated that the current regulations will change in the future as the Department continues to monitor the public use of the Wildlife Area and proposes appropriate responses to changed circumstances.

❖ Coordination to Support Public Use

Because the Wildlife Area is part of a mosaic of publicly managed habitat property, coordination with other agencies is a key to providing the best and most cost-effective public use opportunities in the Wildlife Area and along the river corridor in general. While the various agencies have different functional niches and procedures, a cooperative environment has been established. The Memorandum of Understanding between the Department, DPR and USFWS can serve as a basis for greater coordination and efficiencies in the future. The need for a permanent management coordination organization was established in the *Sacramento River Public Recreation Access Study – Red Bluff to Coulsa* and the formation of such an entity should be pursued by the Department in conjunction with other agencies.

Consistent Regulations – Regulatory consistency is an important objective for the Wildlife Area. This includes consistency between the public use regulations that currently apply to the Sacramento River and Merrill's Landing Wildlife Areas. It also includes consistency with the regulations that govern the public use of other publicly managed habitat properties. This may involve transfer of some properties and consolidation of ownership or management and it should involve the greatest practical consistency between the regulations that the various agencies apply to public use. The development of the Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge, concurrent with this Planning Process, offers the opportunity to make the public use of the Wildlife Area and the National Wildlife Refuge as seamless as possible. Department staff and USFWS staff have initiated a joint review of regulations as part of the coordination between the two planning efforts.

Pine Creek/Hamilton City Multi-agency Master Plan – The *Sacramento River Public Recreation Access Study – Red Bluff to Coulsa* also identified the potential to develop a joint master plan for the Pine Creek/Hamilton City area. This area contains approximately 3800 acres of land that is publicly owned or is scheduled to be transferred to public agencies. A major flood damage reduction project is proposed with habitat restoration as a major component. The habitat management entities include the Department, DPR, DWR, USFWS, TNC and River Partners and all have initially expressed an interest in joining together to plan a complex of properties that can offer the combination of effective habitat preservation and extensive public recreation. Continued support for this effort is incorporated into this Plan.

Large-Scale Public River Events – Large scale tubing events on the river, below the Gianella Bridge on Highway 32, have become a tradition for college students and others. The largest concentration of people is typically on the Labor Day weekend when crowds have been estimated to be up to 20,000 persons. Smaller numbers of people have congregated in the area on the Memorial Day and July 4th holidays. This very large concentration of people results in significant problems that include parking violations, public intoxication, huge amounts of litter and habitat degradation. Because a popular takeout and recreation point for the event has been the gravel bar on the Pine Creek-South Subunit, commonly known as "Beer Can Beach", the Department has been closely involved with the annual multi-agency law enforcement and management effort. The purpose of the coordination is to protect the habitat resources and to ensure reasonable safety for the many participants.

The natural recruitment of riparian vegetation on the subject gravel bar may act to discourage the use of the Pine Creek-South area over time. If this occurs, it is likely that the activity focus will move to another site in the Wildlife Area or to an adjoining public habitat property. It is imperative that the Department plan and manage for the long-term impact of these events on the habitat resource and continue to be a part of the combined law enforcement and management team.

❖ Management Support of Public Use

As the population of the four counties surrounding the Wildlife Area and California in general continues to increase, the demand for public recreation use of the Wildlife Area will continue to grow (EDAW Inc., 2003). This Plan anticipates the opportunities and issues that will arise and identifies the management actions that will be required to adequately support compatible public recreation use of the Wildlife Area. A complete program of Goals and follow-up Tasks is contained in Chapter VI.

Regulation Adjustments – As the circumstances surrounding the Wildlife Area change over time, adjustment of the regulations that govern public uses will be required. The revision of these regulations requires approval of the State Fish and Game Commission. Detailed evaluation of the following regulation changes is proposed following adoption of this Plan:

- Combine the Sacramento River and Merrill's Landing Wildlife Areas with one set of regulations for the entire area.
- Permit boat camping on gravel bar areas not covered by riparian vegetation.
- Permit a spring turkey hunting season.

An biennial review of the regulations by management staff assigned to the Wildlife Area is appropriate for the future to ensure that regulations remain current.

Public Information – A common theme that was raised by the public during the public outreach for both the Planning Process and the *Sacramento River Public Recreation Access Study – Red Bluff to Coulsa* was that access information is needed to permit people to better utilize the Wildlife Area for compatible recreation uses. Information to improve public use opportunities on the Wildlife Area should be coordinated with other public land management agencies to include:

- Online information regarding access, locations and compatible public uses (a website was established in the fall of 2003 at www.sacramentoriver.org).
- A hardcopy brochure to identify public access lands and compatible public uses along the river.

- A coordinated signing program to physically identify the Wildlife Area and key regulations.

Access improvements – Improved and expanded access opportunities are also needed to support compatible public use. This need was commonly expressed as part of public input meetings and interviews that were included in the Planning Process. Consistent with the Purposes of this Plan, improvements should include:

- Additional land access points where a substantial public use potential exists.
- Primitive parking areas and pedestrian use of primitive access roads connecting to the river at key locations.
- Coordination of primitive access roads to connect to those on adjoining publicly owned property and as part of future restoration projects.

The primary purpose of the Wildlife Area is the conservation of riparian habitat for fish and wildlife species and very limited public improvements are proposed. The riparian habitat is composed of frequently flooded property with irregular contours and very dense vegetation, where access is practically limited and difficult for all persons. All Units, as well as habitat properties managed by other public agencies along the river, offer the same basic opportunity to experience the riparian environment and access the Sacramento River. In compliance with applicable State and federal law, the Department will evaluate the provision of access for persons with disabilities, within the Wildlife Area, including all public access programs and improved facilities. This Plan proposes that the Department will also work cooperatively with the managers of other similar public habitat property in the river corridor (ex. DPR and USFWS) to seek to ensure that appropriate accessibility to the experience of the riparian habitat is provided for all persons.

The Wildlife Area has been unbudgeted in the past. In order to fully support compatible public uses and concurrently protect the habitat and wildlife resources, designated staffing and an operations and maintenance budget will be required. Chapter VII proposes the resources needed to support the anticipated public use and other management needs of the Wildlife Area.

Cooperation with Neighbors – During the public outreach component of the Planning Process neighbors of the Wildlife Area and representatives of agricultural interests expressed concerns that public use of the Wildlife Area could result in negative impacts on adjoining private land. The potential for trespass, vandalism and other illicit activity was raised as an issue. In response to these concerns, Chapter VI includes a number of strategies to mitigate the type of concerns that were raised. These actions will include direct communication with neighbors, continued communication through the SRCAF, signing of the Wildlife Area, access controls and coordinated design of future restoration projects. The Department is also working as part of the SRCAF to develop a Good Neighbor Policy to address these concerns.

VI MANAGEMENT GOALS

The central focus of this Plan is an Ecosystem Approach to management of the Great Valley Riparian Habitat communities in the Wildlife Area. This focus is implemented through these Management Goals. These Goals are drawn from the information generated through the Planning Process and express the direction that ongoing operation of the Wildlife Area will take. Policy direction is organized into Biological, Public Use, Facility Maintenance and Management Coordination Elements. Goals are established to provide broad policy parameters and individual Tasks direct specific actions to implement the various Goals.

It is important to note, however, that the implementation of many of the Tasks that are identified in this Plan is dependent upon the availability of additional staff to perform those respective Tasks. The establishment of an adequate operations and maintenance budget is also required to support the management of the Wildlife Area. The Wildlife Area is currently not budgeted and new resources will be required in order to accomplish the tasks identified in this Chapter. Chapter VII identifies the specific resources that will be required to manage the Wildlife Area in the future.

❖ Definition of Management Terms

The Comprehensive Management Plan is intended to be compatible with the Department's standardized format for management plans. The latest version of that format is: *A Guide and Annotated Outline for Writing Land Management Plans,* dated March 2002. This basic format compatibility will facilitate efficient use by Department personnel and assist comparisons with other management plans. Accordingly, a consistent terminology is employed in the expression of management Goals. To acquaint the reader with this terminology, the following terms and meanings are established for use in this plan:

Element: refers to any biological unit, public use activity, facility maintenance or management coordination program as defined below for which Goals have been prepared and presented within this Plan.

Biological Element: refers to habitat communities for which specific management Goals have been developed within this Plan.

Public Use Elements: refers to any recreational use or other activity, appropriate to and compatible with the purposes for which this property was acquired.

Facility Maintenance Element: refers to the maintenance and administrative program that helps provide for orderly and beneficial management of the Wildlife Area.

Management Coordination Element: refers to the management programs that are supportive of the Sacramento River Conservation Area and compatible with the activities of other public and private conservation agencies.

Biological Goal: refers to a statement of the intended long-range results of management based upon the feasibility of maintaining, natural riverine processes, enhancing or restoring species populations and/or habitat.

Public Use Goal: refers to a statement of the desired type and level of public use compatible with the Biological Element Goals previously specified within this Plan and the actions required to support such use.

Facility Maintenance Goal: refers to a statement of the desired type and level of facility maintenance that are required to achieve the Biological Element Goals previously specified within this Plan.

Management Coordination Goal: refers to a statement of the desired type and level of management coordination activities that are required to achieve the Biological Element Goals previously specified within this Plan.

Tasks: refers to an individual project or work element that implements the Goals and is useful in planning operation and maintenance budgets.

The Management Goals are organized into Elements, Goals and Tasks, which establish a hierarchy of management direction for the Wildlife Area. Figure 9 depicts this hierarchical relationship. Elements relate to the broad categories of consideration, Goals define objectives within the Elements and Tasks establish specific actions to attain the Goals. Together these Elements, Goals and Tasks express the policy direction that will guide the management of the Wildlife Area.

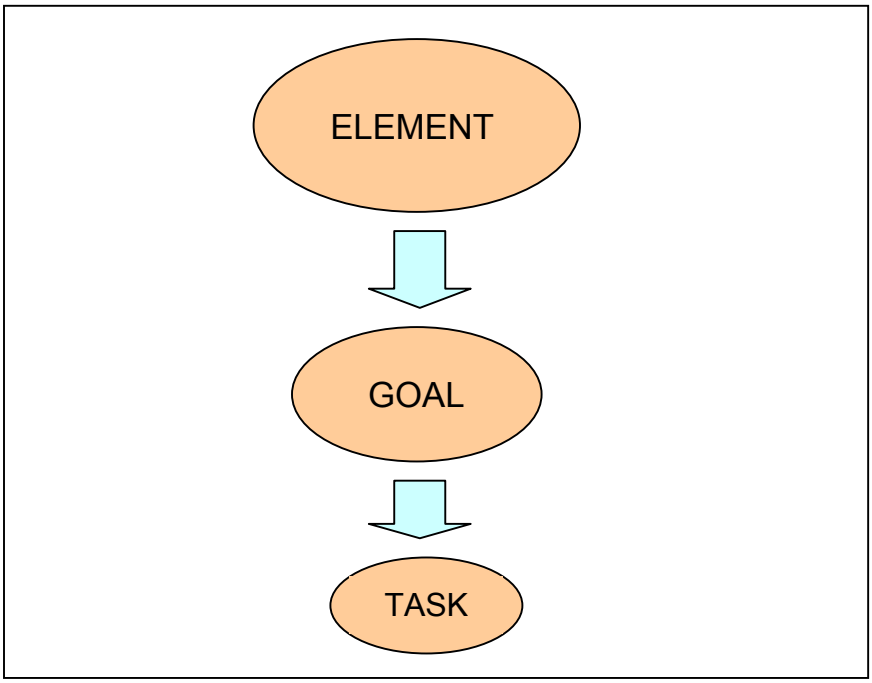

Figure 9. Management Goals Hierarchy

❖ Biological Element: Goals and Management Constraints

Great Valley Riparian Habitat - Under the Ecosystem Approach to management of the Wildlife Area, a single Biological Element is established to incorporate the wide range of actions that are proposed to implement this Plan. The Sacramento River Wildlife Area features the Great Valley Riparian Forest community according to the Natural Diversity Database (NDDB) / Holland (California Department of Fish and Game, 2002). This categorization includes the following natural communities:

- **Coastal and Valley Freshwater Marsh**
- **Great Valley Cottonwood Riparian Forest**
- **Great Valley Mixed Riparian Forest**
- **Great Valley Valley Oak Riparian Forest**
- **Great Valley Willow Scrub**

The Coastal and Valley Freshwater Marsh and the Great Valley Riparian Scrub communities do not technically fall into the Great Valley Riparian Forest community according to NDDB) / Holland. They are included in this Element because they are serial communities that often succeed to the Great Valley Cottonwood Forest. For the purposes of this Plan, these communities are treated as components of the Great Valley Riparian Forest series.

All of the Special Status Species occurring in the Wildlife Area are positively associated with the Great Valley Riparian Habitat. Consistent with the Ecosystem Approach to management, the preservation and restoration of the Great Valley Riparian Habitat is the central management strategy for the mutual benefit of Special Status Species, game species and other native species. This management approach is also beneficial for the support of wildlife-related public recreation uses in the Wildlife Area. The following Goals and Tasks are established to support the continued viability of the Great Valley Riparian habitat communities.

Biological Element Goals

1. ***Contribute to the Overall Goal of the Sacramento River Conservation Area: "Preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Red Bluff and Chico and reestablish riparian vegetation along the river from Chico to Verona."***

   The Department is involved in a partnership to preserve and restore the ecosystem along the river that involves numerous local, State, federal and private entities. The Department will continue to contribute to this broad goal through strong participation in the SRCAF as well as its own direct efforts to preserve and reestablish this important ecosystem.

   Tasks

   a. Support the SRCAF through ongoing participation in its programs and activities.
   b. Manage the Wildlife Area under an Ecosystem Approach through an adaptive management process.
   c. Coordinate habitat management activities with other public and private conservation agencies.
   d. Support a flow regime for the river that is supportive of natural riparian habitat and Special Status Species to the maximum extent practical.

e. Continue to acquire key habitat properties, from willing sellers, with the objective of establishing substantial contiguous areas of permanent habitat conservation.

2. Maintain and Enhance Habitat for Special Status Species.

The Ecosystem Approach to managing the Wildlife Area is based on the concept that the enhancement of the quality and quantity of riparian habitat will result in the promotion of species diversity. This enhancement will be the result of the natural riverine processes that create and maintain riparian habitat communities. Compliance with State and federal endangered species regulations will be a key test for all proposed management actions within the Wildlife Area. This compliance will be directed by consultation with the USFWS and NOAA fisheries regarding federally listed species and internal coordination within the Department for the California Endangered Species Act.

Tasks

a. Evaluate all future management programs for potential impacts on Special Status Species and consult with appropriate agencies.
b. Continue to monitor the status of Special Status Species in cooperation with other land management and conservation entities.
c. Monitor public uses for potential impacts to Special Status Species and take appropriate actions to mitigate impacts such as seasonal closures of selected areas, etc.
d. Evaluate the reintroduction of extirpated, native species.

3. Support the Natural Processes that Result in the Creation and Enhancement of Habitat.

The continued viability of the riparian habitat for Special Status Species, other native species and game species is dependent upon the natural processes of river meander, erosion, deposition and flooding. Consistent with the Principles of the SRCAF, the maintenance and enhancement of these natural processes are vital to meeting the objectives of this Plan and the SRCAF. Where physical changes are proposed to support natural processes, appropriate analysis is required to determine that such actions will not cause significant adverse effects to private property, major public investments or public safety.

Tasks

a. Allow the natural river meander process to modify the configuration of the sites in the Wildlife Area to the maximum extent practical.
b. Preclude bank protection in the Wildlife Area except in extreme, isolated situations where it is determined that protection of major public investments or public safety require such measures with appropriate mitigation.
c. Evaluate bank protection projects in the vicinity of the Wildlife Area to ensure that they will not have negative impacts on the Wildlife Area.
d. Implement a limited river meander through the removal of artificial impediments to the natural riverine processes (bank protection, small private levees, etc.), where contiguous areas of permanent habitat conservation are conducive to such actions.

e. Evaluate proposed changes to the river's flow regime to determine any potential negative impact on habitat or wildlife.

4. Maximize the Habitat Value of Wildlife Area Property.

The Wildlife Area can effectively serve Special Status Species, other native species and game species under the Ecosystem Approach to management only if natural, riparian habitat communities exist. In some locations, active horticultural restoration is required to reestablish riparian habitat communities where human-induced changes have precluded the natural process required for successful recruitment, establishment and succession of native riparian communities. These changes include the modification of the river's natural flow regime of the river and competition from nonnative, invasive vegetation. Thorough scientific analysis of the need for and appropriate form of active horticultural restoration should continue as standard procedure. Compatibility with the Sacramento River Flood Control Project should also continue to be a requirement of any restoration project.

Tasks

a. Facilitate the natural restoration and maintenance of habitat through control of nonnative, invasive vegetation as part of ongoing management.
b. Evaluate, in detail, the need for restoration of the remaining areas that are dominated by nonnative, invasive vegetation and have the potential to support diverse native riparian communities. Prioritize the restoration of these areas and actively pursue funding.
c. Evaluate, in detail, the need for restoration of future additions to the Wildlife Area that lack natural riparian vegetation. Actively pursue the required restoration of such areas.
d. Evaluate, in detail, the need for restoration of natural riparian areas where the restoration of natural riverine processes is insufficient to support the continued viability of the habitat. Actively pursue the required restoration of any such areas.
e. Eradicate or control nonnative, invasive vegetation as part of all restoration activities.
f. Design restoration projects to be compatible with the Sacramento River Flood Control Project and consistent with the standards of the Reclamation Board.
g. Design habitat restoration projects to address considerations of adjoining private landowners consistent with the Goals of this Plan.
h. Include professional cultural resources analysis of all restoration areas as part of the restoration Planning Process and protect significant cultural resources.

5. Support Scientific Research and Monitoring.

Scientific information is the basis for good management decisions regarding the Wildlife Area. An important role of the Department is to maintain and expand its research and monitoring activities and to support research activities by educational institutions, conservation organizations and other entities. An important focus of research should be the evaluation of active horticultural restoration and other management actions to support Adaptive

Management of the Wildlife Area in coordination with the CALFED Program.

Tasks

a. Pursue additional funding and partnerships for research and monitoring activities, especially those involving the CALFED Program.
b. Expand Department research and monitoring activities commensurate with available resources.
c. Implement a program to regularly monitor public use impacts on habitats, Special Status Species, other native species and game species.
d. Support the use of the Wildlife Area for scientific research and monitoring activities by outside entities.
e. Support research that includes the following:
   - Flow regime options intended to support ecosystem functions.
   - Conceptual models to support restoration of habitat.
   - The development of indicators of ecosystem function.
   - Monitoring and evaluation of restoration efforts and other management actions.
   - The value of riparian vegetation to aquatic organisms.
   - The potential threat to the ongoing viability of the riparian habitat from wildfires.

6. Support the Conservation of Wildlife Habitat on Privately owned Land along the Sacramento River.

A substantial area of natural riparian habitat is located on privately owned land along the river in the vicinity of the Wildlife Area. These private lands are an important part of the ecosystem that supports the wide range of wildlife species. The policy of the Department is to encourage and support the maintenance of this habitat resource.

Tasks

a. Provide technical information and advice to private landowners regarding habitat conservation.
b. Continue to pursue conservation easements, from willing sellers, as a means of ensuring permanent preservation of privately owned habitat property.
c. Annually monitor compliance with conservation easements held by the Department.

Management Constraints on the Biological Element

The Goals of the Biological Element are constrained by a range of natural and human-induced factors. Effective management of the Wildlife Area requires that these factors be identified and considered. This Plan recognizes that the Wildlife Area exists within the context of the many values and needs that are important to the neighbors of the Wildlife Area, the recreational users of the Wildlife Area and the people of California in general. Important constraints that impact the Biological Element include:

Environmental factors

- The modification of the river's flow regime, bank stabilization and other existing physical constraints limit river meander and the resulting natural creation of habitat.
- An extensive network of small private levees has altered the natural frequency and duration of flooding of riparian communities in the floodplain.

- The altered flow regime of the river and nonnative, invasive vegetation limit the natural recruitment of native vegetation.
- Impacts from neighboring land uses such as chemical over-spray and runoff may conflict with habitat and wildlife species.
- A wide range of factors including habitat fragmentation, water pollution and competition from introduced flora and fauna negatively impact populations of Special Status Species, game species and other species.

Legal, political or social factors

- Removal of physical constraints to river processes that could have beneficial effects on habitat creation and maintenance may impact other property outside of the Wildlife Area.
- Some entities hold deeded rights for access, utility lines, water conveyance, levee maintenance and other uses on Wildlife Area property.
- A standardized approach to active horticultural restoration has not yet been developed and approved by the Reclamation Board. Continued post project monitoring is necessary to provide additional information regarding the degree to which restoration actually alters flood flows.

Financial factors

- Limited funding for ongoing staffing and operations and maintenance is the greatest existing management constraint for the Wildlife Area.
- Funding is competitive for active horticultural restoration projects. This factor has delayed the improvement of habitat values.

❖ Public Use Element: Goals and Management Constraints

Compatible public use of all portions of the Wildlife Area has been permitted since initial acquisition of the Wildlife Area. This provision of compatible public use is consistent with the Mission of the Department and the Purpose of wildlife areas. Such uses are generally low intensity and low impact recreation uses that are related to the wildlife that inhabits the Wildlife Area and the adjacent Sacramento River. They include hunting, fishing, hiking, boat camping, beach activities, wildlife observation, photography, interpretation and environmental education. These uses help to support the local economy. This Public Use Element incorporates management actions that are supportive of the public recreation use of the Wildlife Area. This Element also addresses cooperation and compatibility with Wildlife Area neighbors.

Public Use Goals

1. ***Support Compatible Public Use through Consistent Regulations.*** Public use of the Wildlife Area is regulated by the Department pursuant to the California Code of Regulations, Title 14, Division 1, Sections 550 to 552. These regulations currently differentiate between the Sacramento River Wildlife Area and the Merrill's Landing Wildlife Area. The consolidation of the regulations for these two Wildlife Areas as well as other actions to make the public use regulations along the Sacramento River as "seamless" as possible are proposed by this Plan.

   Tasks

   a. Establish consistent regulations for the existing Sacramento River and Merrill's Landing Wildlife Areas as a single Wildlife Area.
   b. Evaluate the revision of Wildlife Area Regulations to:

- Combine the Sacramento River and Merrill's landing Wildlife Areas with consistent regulations.
- Permit boat camping on gravel bars outside of riparian vegetation.
- Establish a spring turkey hunting season.

c. Biennially review the regulations for the Wildlife Area to ensure that regulations are supportive of the goals of this Plan and assist in the:
   - Recovery of Special Status Species.
   - Maintenance of healthy and sustainable populations of game species and other species.
   - Protection of the public health and safety.
   - Maintenance of cooperative relationships with adjoining landowners.

d. Coordinate the Wildlife Area regulations with those of the USFWS, DPR and other managers of public land along the Sacramento River, as appropriate.

2. Inform the Public of Compatible Recreation Use Opportunities.

Multiple forms of public communication are required to inform the public of the recreation opportunities that exist in the Wildlife Area. This information may take the form of online data in websites and hard copy information in published documents. The combining of access and public use information with the other public property managers along the river is necessary to provide the information to the public in an effective and cost efficient manner.

Tasks

a. Continue to support the provision of user friendly, online information regarding access, locations, compatible uses and use regulations for public access lands along the river.
b. Develop a brochure with mapping to identify public access lands along the river.
c. Whenever possible, develop and present materials in conjunction with other public property managers along the river.
d. Design communications to emphasize legal access and discourage trespass in all information dissemination.

3. Identify the Wildlife Area through a Signing Program.

The Units of the Wildlife Area should be clearly identified to the public in order to facilitate compatible public use and to help control related impacts on adjoining properties. A coordinated signing program is required to adequately identify the Wildlife Area. Signing compatibility with other public properties along the river is important for maximum public utility.

Tasks

a. Develop and implement a coordinated signing program for the Wildlife Area to:
   - Identify the Wildlife Area at legal land access locations and provide generalized use regulations.
   - Identify the Wildlife Area at locations where trespass across adjoining property becomes an issue.
   - Identify the Wildlife Area on the river at upper and lower limits of sites and at .25 mile intervals along the river and provide generalized use regulations.

- Identify the Wildlife Area at all gates to the Wildlife Area and explain the vehicular access prohibition.
- Coordinate signing design with other public property managers.

b. Provide interpretive displays at key public access locations.
c. Annually inventory all signing following the high flow season.

4. *Expand Opportunities for Public Access.*

Existing access to the Wildlife Area is primarily from the river. Additional compatible recreation use can be facilitated through the acquisition of new public, land access rights and use of land access across other public properties. Primitive parking areas and trails to connect from parking areas to the river are also needed to facilitate public use. The Department should take a lead role in working with other public habitat managers to establish additional access to public habitat areas.

Tasks

a. Pursue the acquisition of additional land access rights from willing sellers where substantial compatible public use potential exists.
b. Identify opportunities for public access to the Wildlife Area across other publicly owned lands in information provided to the public.
c. Pursue partnerships for maintenance of public access such as the Site 21 Fishing Access maintained by Glenn County.
d. Provide primitive parking areas at public land access points.
e. Provide primitive pedestrian pathways to the river at key locations with public land access.
f. Incorporate primitive pedestrian pathways to the river and other desired destinations as part of restoration projects.
g. Coordinate primitive pedestrian pathway connections with pathways on adjoining publicly owned property.
h. Pursue opportunities within the Wildlife Area to provide ADA accessibility in all programs and facilities and cooperate with other public habitat managers to provide appropriate accessibility to the riparian habitat experience for all persons, including persons with disabilities.

5. *Support Environmental Education.*

The Wildlife Area can serve as a "living classroom" for science and environmental education purposes. Within the limits of staffing and resources, support will be provided to educational uses of the Wildlife Area.

Tasks

a. Support environmental educational use of the Wildlife Area through staff assistance, interpretive materials and the provision of permits for group activities.
b. Support the development of multi agency visitors / interpretive centers.

6. *Provide Law Enforcement to Protect Habitat and Wildlife and to Help Mitigate Impacts on Adjacent Landowners.*

One way that the Department protects the Wildlife Area's habitat and wildlife resources of the Wildlife Area through wildlife protection officers. To accomplish this end, patrol of the Wildlife Area from both the land and water is necessary. Coordination with other public habitat managers along

the river may also provide the opportunity to expand service in the most cost-effective manner.

Tasks

a. Patrol the Wildlife Area regularly from the land and the river to enforce Wildlife Area regulations.
b. Assist adjoining landowners in the resolution of trespassing and other mutual concerns.
c. Continue to coordinate with other law enforcement agencies to manage large, public river float events.
d Pursue joint law enforcement patrols with other public habitat managers along the river.

Management Constraints on the Public Use Element

The Goals of the Public Use Element are constrained by a range of natural and human-induced factors. Effective management of the Wildlife Area requires that these factors be identified and considered. This Plan recognizes that the Wildlife Area exists within the context of the many values and needs that are important to the neighbors of the Wildlife Area, the recreational users of the Wildlife Area and the people of California in general. Important constraints include:

Environmental factors

- There is the potential for degradation of vegetation and habitat resources by vehicular, pedestrian and riding activity (horses and mountain bikes).
- There is the potential for disturbance of animal species by human activities and by pets.

Legal, political or social factors

- The public agencies and private entities that manage habitat property along the river have different missions, objectives and procedures that must be recognized and accommodated.
- Public use involves the potential for trespass and other related impacts on adjoining property if adequate public information and education is not provided.
- Cultural features require protection from vandalism, collecting and destruction as part of projects involving physical changes.

Financial factors

- Limited funding for staffing, operations and maintenance is a substantial constraint for expanded public use of the Wildlife Area. Appropriate management of public recreation use will require additional resources.

❖ Facility Maintenance Element: Goals and Management Constraints

The effective management of the Wildlife Area will require that a regular maintenance program be established to accommodate the Goals and Tasks of the Biological and Public Use Elements. This Maintenance Element identifies the basic direction that such a program should take and the components that it should include.

Facility Maintenance Goals

1. Secure the Habitat from Vehicular Trespass.

The riparian habitat can be substantially damaged and degraded by uncontrolled

vehicular traffic. It is necessary that the Wildlife Area be gated, signed and monitored to protect the habitat and wildlife resources.

Tasks

a. Install gates and fencing or other physical access controls, where necessary, at all property entrances, primitive roads and locations where unapproved, vehicular access occurs on a regular basis.
b. Install signing at all property entrances, primitive roads and locations to provide notice that vehicular access is not permitted.
c. Regularly monitor and maintain access controls.
d. Install and maintain vehicular access controls as part of all restoration projects.
e. Following implementation of access control and signing aggressively enforce the vehicular prohibition on the Wildlife Area.

2. *Control Invasive, Nonnative Plant Species.*

Nonnative, invasive plant species such as johnson grass, Ailanthus and Arundo can dominate the vegetation in localized areas and they provide poor wildlife habitat value. Concentrations of these plants can effectively suspend the normal succession patterns and preclude the natural processes of habitat creation and improvement. Ongoing control of invasive species, which may involve physical removal, chemical treatments and burning, is necessary in order to achieve the Goals of the Biological Element.

Tasks

a. Initially evaluate all Units to determine problem sites and determine cost efficient controls of invasive species.
b. Initially treat identified problem sites in coordination with the Department's Pesticide Unit.
c. Subsequently treat identified problem sites as required.
d. Annually evaluate the status of invasive species on each Unit.
e. Coordinate the control of invasive species with the CALFED Environmental Restoration Program.

3. *Maintain Management Area Signing.*

The coordinated signing program identified in the Public Use Element will have substantial benefits. These benefits will be realized only if there is a regular, ongoing signing maintenance program to deal with the effects of flooding and vandalism.

Tasks

a. Establish a monitoring and maintenance program for all signing.
b. Install additional signing in areas where habitat degradation, trespass or other problems occur.
c. Annually evaluate the effectiveness of the coordinated signing program and modify as required.

4. *Maintain Access Improvements.*

The Public Use Element proposes additional public, land access, primitive parking areas and primitive trails connecting to the river. These new improvements will increase the utility of the Wildlife Area for public use but they will require regular maintenance.

Tasks

a. Establish a regular monitoring and maintenance program for all access improvements maintained by the Department.
b. Annually grade as required and trim primitive trails to maintain pedestrian access.
c. Maintain fire access and breaks and buffers installed in conjunction with restoration projects.

5. Control Dumping of Refuse and Vehicles.

Dumping of refuse and vehicles is a minor problem in the Wildlife Area that has the potential to grow rapidly as it has in other natural areas. A regular control program is required to identify problems and quickly remove materials so that dumping does not appear to be an accepted activity.

Tasks

a. Establish a regular monitoring program to address dumping.
b. Promptly remove any refuse, vehicles or other dumped materials.
c. Install additional signing in areas where repeated dumping occurs.
d. Aggressively enforce the littering and antidumping regulations.
e. Promote and support volunteer cleanup and maintenance projects.

Management Constraints on the Facility Maintenance Element

The Goals of the Facility Maintenance Element are constrained by the natural disturbance regime of the river as well as social factors and budgetary limitations. Effective management of the Wildlife Area requires that these factors be identified and considered. This Plan recognizes that these factors impact the maintainability of the Wildlife Area and the limited improvements that are proposed. Important constraints the Facility Maintenance Element include:

Environmental factors

- Annual flooding along the river and the related damage to improvements practically limits the nature of potential recreation improvements.
- Annual flooding along the river will remove and damage signing and other improvements increasing maintenance costs.
- The relative isolation of some Units makes close monitoring of regulation violations difficult.

Legal, political or social factors

- The addition of signing and access improvements to the Wildlife Area will result in public expectations for maintenance of these improvements.
- The illegal use of four-wheel drive vehicles and all terrain vehicles increases the potential for habitat degradation.
- The physical accessibility of the Wildlife Area from some adjoining properties facilitates vehicular traffic in violation of the Wildlife Area regulations.

Financial factors

- Limited funding for staffing and O& M is a substantial maintenance constraint.

❖ Management Coordination Element: Goals and Management Constraints

The Sacramento River Conservation Area Forum is a multi-agency effort to restore the ecosystem along the river. In order to ensure that the actions of the various agencies are compatible and consistent and to maximize the effectiveness of individual actions, there is a need for ongoing management coordination. The recommendations of the *Sacramento River Public Recreation Access Study,* which incorporated input from the various public agencies, were evaluated for incorporation in this Plan. This Management Coordination Element establishes Goals and Tasks to define the Department's role in this cooperative effort. This coordination includes both public agencies and private landowners and interests.

Management Coordination Goals

1. Cooperate with Adjacent, Private Landowners to Address Mutual Concerns.

About 40 % of the Wildlife Area adjoins privately owned, agricultural land. It is important that the Department communicate with its neighbors to help identify any issues at an early stage and attempt to resolve concerns in a mutually satisfactory manner. Physical changes to the Wildlife Area should also be subject to early notice, information exchange and appropriate mitigation of impacts. The Department is involved with the development of a Good Neighbor Policy by the SRCAF, which is intended to establish additional standards and processes for resolution of interface issues.

Tasks

a. Maintain contact with adjacent neighbors to discuss mutual concerns and opportunities.
b. Implement improvements and operational revisions to resolve issues with adjacent landowners that are consistent with the Goals of this Plan and compatible with the funding available to the Wildlife Area.
c. Design habitat restoration projects to address considerations of adjoining landowners consistent with the Goals of this Plan, including but not limited to:
   - Provision of access controls and access for emergency and utility services
   - Consideration of appropriate fire access and breaks
   - Consideration of appropriate buffers where new planting directly adjoins agricultural crops.
   - Use of natural predation control strategies
d. Continue to consult with adjoining landowners as part of the development of plans for proposed restoration projects and other physical changes to the Wildlife Area.
e. Continue to participate in the activities of the SRCAF including information presentations and solicitation of input regarding proposed restoration projects and other physical changes to the Wildlife Area.
f. Commission field surveys as needed to identify specific property boundaries where uncertainty has contributed to substantive violations of Wildlife Area regulations.

2. Participate in an Ongoing Management Coordination Structure for Habitat and Recreation Lands along the River.

In order to maximize the environmental and public benefit of the multiple agency ownership of land along the Sacramento River, the various public and private entities have identified the need to establish an ongoing management coordination organization as part of the *Sacramento River Public Recreation Access Study*. This action would further the objectives of the Memorandum of Understanding between the Department, DPR and USFWS that was executed in 2001.

Tasks

a. Take a lead role in the formation and functioning of a permanent management coordination structure for habitat conservation and recreation agencies along the river.

3. *Support the Hamilton City Flood Damage Reduction and Ecosystem Restoration Project.*

The ongoing levee relocation project in the Hamilton City area has the potential of providing major flood damage reduction benefits to that community, coupled with major ecosystem restoration benefits. The Department has the opportunity to support this US Army Corps of Engineer's project through long-term ownership and management of over 500 acres of potential riparian habitat adjacent to the Pine Creek - West Subunit. These properties have been largely acquired with public funds and it is anticipated that additional public funding will be available for the restoration of riparian vegetation so that the net cost to the Department will be very small in comparison to the benefit to the ecosystem. This project area combines properties managed by several agencies, has broad local support and provides an important opportunity to demonstrate the compatibility of flood protection and environmental benefits. It can also add substantial area for public recreation use at a location that has excellent access from both the river and the land. Additionally, the concentration of almost 4000 acres of habitat land, managed by six government and nonprofit agencies, offers the unique opportunity for these groups to work together to develop a coordinated plan for habitat conservation, public recreation and environmental education.

Tasks

a. Actively support the Hamilton City project subject to review of the final configuration of the project and the related impacts on and benefits to wildlife habitat.
b. Plan to expand the Wildlife Area by the addition of available property adjacent to the Pine Creek – West Subunit.
c. Support the restoration of riparian habitat proposed in conjunction with the Hamilton City project.
d. Support the development and implementation of a multi-agency master plan for the large concentration of publicly owned habitat property in the Pine Creek / Hamilton City area.

4. *Coordinate with Other Law Enforcement Agencies*

Law enforcement needs and jurisdiction along the river overlap and resources of each agency are limited. Various services are provided by the four counties, the California Highway Patrol, USFWS, DPR and NOAA Fisheries. Through greater coordination and the potential provision of joint services, improved and expanded service may be possible.

Tasks

a. Meet regularly with law enforcement staff from County Sheriff Departments, DPR, USFWS, and other agencies as appropriate to coordinate law enforcement activities and explore options for cooperative programs.
b. Continue to coordinate with other law enforcement agencies to manage large, public river float events.
c. Pursue joint funding requests with other law enforcement entities to address law enforcement concerns along the river.
c. Pursue joint law enforcement patrols with other public habitat managers along the river.

5. *Coordinate with Local Public Service Agencies.*

The Wildlife Area is adjacent to private land holdings and coordination with local fire protection and mosquito and vector control agencies is necessary to help ensure that public safety is protected and that the Wildlife Area is a good neighbor to adjoining landowners.

Tasks

a. Communicate regularly with local fire protection agencies and coordinate reasonable fire protection strategies consistent with the Goals of this Plan.
b. Communicate regularly with local mosquito and vector control agencies and coordinate reasonable mosquito and vector control strategies consistent with the Goals of this Plan.

6. *Share Resources and Equipment with Other Public Habitat Management Agencies.*

The Memorandum of Understanding between the Department, DPR and USFWS provides for sharing of equipment and resources for the lands that they manage along the river. Continued implementation of this policy is important. There may also be an opportunity to expand this cooperation to other agencies including the counties that maintain facilities along the river.

Tasks

a. Continue to implement the existing Memorandum of Understanding and evaluate additional opportunities for sharing of equipment and resources.
b. Evaluate the potential to include additional agencies in an agreement for sharing of equipment and resources.

7. *Pursue Alternative Management Mechanisms and Property Transfers and with other Public Property Management Agencies.*

Along the river there are situations where the configuration and location of individual properties does not lend itself to efficient land management. These situations include Department properties, and the properties managed by other agencies. In order to maximize the benefits of public lands and provide more cost-effective service, transfers of property ownership and/or transfers of management responsibility should be evaluated. Appendix H, Land Management Alternatives identifies specific options for management of the Wildlife Area.

Tasks

a. Consolidate the Sacramento River and Merrill's Landing Wildlife Areas as a single Wildlife Area under the management of one Region.
b. Evaluate the transfer of public property to or from the Department in order to facilitate more efficient management areas, including but not limited to the following:
   - The transfer of Reclamation Board and State Lands Commission property management along the river to the Department to permit habitat management as part this Plan or by the USFWS.
   - The transfer *(fee or management agreement)* of the Pine Creek East Subunit to the Department of Parks and Recreation to facilitate management as part of the Bidwell - Sacramento River State Park.
c. Evaluate alternatives for a consolidated land management function in the Pine Creek / Hamilton City area where a multi-agency master plan is proposed.
d. Evaluate, where appropriate, the potential for management of property within the Wildlife Area on an interim or permanent basis by other agencies or nonprofit entities.

Management Constraints on the Management Coordination Element

The Goals of the Management Coordination Element are constrained by a range of environmental social and financial factors. Effective management of the Wildlife Area requires that these factors be identified and considered. This Plan recognizes that these factors affect the potential for maximized management coordination. Important constraints that impact the Management Coordination Element include:

Environmental factors

- The various agencies that provide services along the river have different locations for their service centers and coordination of some services may be limited by the physical location of existing service infrastructure.

Legal, political or social factors

- The public agencies and private entities that manage habitat property along the river have different missions, objectives and procedures that must be recognized and accommodated.
- The SRCAF is working to develop a Good Neighbor Policy to address the interface between habitat and other land uses.

Financial factors

- While management coordination is intended to result in long term efficiencies, an initial and ongoing investment of staff time and management focus is required, though not currently funded.

❖ Environmental Impacts

The Comprehensive Management Plan was evaluated for its potential impact on the environment in accordance with the provisions of the California Environmental Quality Act (CEQA). An Initial Study / Negative Declaration was prepared in accordance with the State CEQA Guidelines, which is included as Appendix K. The Initial Study concluded that this Plan, as proposed, will not have a potentially significant impact on the environment. Accordingly, a

proposed Negative Declaration, a finding that the project will not have a potentially significant impact on the environment, was prepared.

As required by the State CEQA Guidelines, the proposed Negative Declaration was forwarded to the State Clearinghouse for circulation and review by State agencies. Additionally, the document was provided to identified, interested parties, organizations and local agencies that request a copy of the document during a thirty-day public review period. A Notice of Intent to Adopt a Negative Declaration was filed with the County Clerks in each of the four counties and published as required by the State CEQA Guidelines. All written comments received to the proposed Negative Declaration are included in the Appendix B of this Plan. The proposed Negative Declaration was approved by the Director of the Department in conjunction with the approval of this Plan.

VII OPERATIONS AND MAINTENANCE

The implementation of this Plan will require additional staffing and resources to accomplish the Tasks that are established in Chapter VI. The Wildlife Area is not currently assigned specific staff time or budget. This Plan proposes proactive application of the ecosystem approach to the management of the riparian habitat at a level that is more intense than the past. This will require a commitment of additional budgetary resources if the Goals of this Plan are to be achieved. This Chapter contains an identification of the anticipated staffing and budgetary needs of the Wildlife Area. It is intended to serve as a resource in the development of future Department budgets in regard to the Wildlife Area.

In addition to financial resources, this Plan will require management focus to ensure that it is kept appropriately current and revised as necessary to respond to changing situations. It is fully expected that the ongoing, adaptive management of the Wildlife Area and advancement of scientific knowledge regarding the riparian corridor will result in new techniques and opportunities for more effective management of the riparian habitat. Procedures to help keep this Plan current and relevant are included in this Chapter.

❖ Existing Staff and Additional Personnel Needs

Currently, there are no Department staff specifically budgeted to the Wildlife Area. Existing staff positions do, however, provide services to the Wildlife Area including the following:

- Approximately 10 to 15% of an Associate Wildlife Biologist's time
- Approximately 30 to 40% of a Fish and Game Warden's time

No maintenance staff is assigned to the Wildlife Area and no budget is established for operations and maintenance of the property. This provides for a relatively low level of management activity.

An additional amount of Department staff time devoted to planning and coordination activities along the river. These include participation in SRCAF programs and committees, CALFED Program activities and other planning and coordination activities related to the Sacramento River corridor. These activities require a portion of the time of a Deputy Director, Supervising Wildlife Biologist and Associate Fisheries Biologist as well as other positions on an occasional basis.

To appropriately support the Wildlife Area and to perform the tasks identified in this Plan, a combination of program management, site management, maintenance and warden staffing is required. The staffing program proposed in this Plan incorporates permanent staffing augmented by seasonal labor.

Program Management – Senior Wildlife Biologist position (1.0 PY)
The direction of the Wildlife Area as well as staffing of Department planning and coordination activities along the river requires a Senior Wildlife Biologist position. The individual will serve as the manager of the Wildlife Area, perform technical tasks and give direction to the maintenance staff. The individual will

serve as the Department's principal representative at SRCAF committees and will coordinate with other agencies and interests. This person will have the principal responsibility for implementation of this Plan.

Site Management - Habitat Supervisor I position (1.0 PY)
Day to day field operations will require a Habitat Supervisor I position. The individual will act as the field manager for the Wildlife Area, performing the basic communications, monitoring and support functions. The individual will also assist and direct regular Department staff, seasonal labor and volunteers performing maintenance tasks as directed by this Plan.

Maintenance – Tractor Operator / Laborer position (2.0 PY) and seasonal labor positions (3.0 PY)
Under the direction of the Habitat Supervisor I, two skilled positions will be required to operate machinery and perform maintenance tasks related to signing, access improvements, control of invasive, nonnative species and other habitat improvement projects. Additional seasonal laborer time (equivalent to 3.0 PY) will be required to complete the range of tasks that must be accomplished outside of the winter flood season.

Law Enforcement – Fish and Game Warden (1.0 PY)
A full Fish and Game Warden position will be required to patrol the Wildlife Area to protect the habitat, fish and wildlife resources. The individual will provide a frequent presence to deal with fish and game violations and enforce other Wildlife Area regulations including those related to vehicular use, vandalism and dumping. The individual will also assist wildlife area neighbors with related concerns regarding trespass and vandalism.

The Department will still devote additional management resources to the SRCAF and to related CALFED Project programs, but this time will be substantially reduced from the current commitment due to the proposed staffing program.

❖ Operations and Maintenance Cost

The proposed staffing of the Wildlife Area and the requirements of an annual operations and maintenance budget has been evaluated in order to establish the annual cost of the operation of the Wildlife Area. The annual cost of the proposed Wildlife Area function (salary, benefits, materials and supplies) is estimated to be approximately $457,000 in 2003 dollars.

Staffing
The annual cost of the proposed staffing program is as follows:

Position	PY's	Salary
Senior Wildlife Biologist	1.0	$ 70,400
Habitat Supervisor I	1.0	$ 46,600
Tractor Operator/Laborer	2.0	$ 90,200
Fish and Game Warden	1.0	$ 53,200
Seasonal Labor(s)	3.0	$ 34,800
Total Staffing	8.0	$ 295,200

Materials and Supplies
A materials and supplies budget will be required to provide office supplies, materials, fuel and small tools, etc. to support the management and maintenance activities. Cost considerations will include replacement signs, fences and gates, herbicides for control or invasive species, gravel, etc. On the basis of comparison with other, similar riparian habitat maintenance operations, an annual budget requirement of $75,000 is proposed.

Capital Equipment
Initial equipment that would be required for the proposed staffing program will include:

- One operations vehicles (1/2 or ¾ ton 4wd pickup)
- Two maintenance vehicles (1/2 or ¾ ton 4wd pickup with crew cab)
- One warden's vehicle (1/2 or ¾ ton 4wd pickups)
- Two tractors with a backhoe and/or front loader and a trailer
- One jet boat with trailer for patrol and operations
- Office equipment

On the basis of discussions with Department and USFWS staff, an initial capital cost of $300,000 is proposed.

❖ Future Revisions to this Plan

All planning documents eventually become dated and require revision so they can continue to provide practical direction for operational activities. A common and unfortunate situation is that the revision of planning documents is often neglected because the process for revision is considered too involved and too cumbersome. To address this problem, this Chapter incorporates a hierarchy of revision procedures in which the level of process and required involvement is proportionate to the level of change that is proposed. This Plan reflects the best information available during the Planning Process, but it is understood that new information will become available over time and there will be the need to make adjustments to keep this Plan current. Such new information may include any of the following:

- ♦ Feedback generated by adaptive management of the Wildlife Area.
- ♦ Other scientific research that directs improved techniques of habitat management.
- ♦ Documented threats to the habitats and/or fish and wildlife species.
- ♦ New legislative or policy direction.

When the new information dictates a change to this Plan, it is important that there is an appropriate process established. Public outreach and public input will be necessary in proportion to the proposed change to the policy established by this Plan. Unless a reasonable and clear revision process exists, this Plan, like plans in many organizations will become outdated and irrelevant.

Minor Revisions – A process is required to accommodate minor revisions to this Plan that may include the addition of new property to the Wildlife Area or the adoption of limited changes to the Goals and Tasks that are directed through adaptive management, by other scientific information or by legislative direction. This procedure will be applicable to revisions which meet the following criteria:

- No change is proposed to the overall Purposes of this Plan.
- CEQA documentation (if required) is prepared and approved
- Appropriate consultation within the Region and with the Lands and Facilities Branch occurs.
- Appropriate consultation with other agencies occurs.

- Adjoining neighbors are consulted regarding the revision, if the revision is related to a specific location or the acquisition of additional area.
- An information presentation is made to the SRCAF.

The Minor Revision may be prepared by the staff assigned to Wildlife Area or with other Department resources and requires approval by Regional Manager.

Major Revision or a New Comprehensive Management Plan – New policy direction or a new comprehensive management plan requires a procedure comparable to the Planning Process, but also proportionate to the level of policy change that is proposed. This procedure will be applicable to revisions which meet the following criteria:

- Substantial revision is proposed to this Plan or the adoption of a complete new plan is proposed.
- Appropriate CEQA documentation is prepared and approved.
- Appropriate consultation within the entire Department occurs.
- Appropriate coordination and consultation with other agencies occurs.
- A public outreach program is conducted proportionate to the level of the proposed revision.
- An information presentation is made to the SRCAF.

The Major Revision or New Plan may be prepared utilizing available Department resources. The Major Revision or New Plan requires recommendation by the Regional Manager and approval by the Director of the Department.

If the appropriate procedure for a particular, proposed revision is not apparent, the determination of which of these procedures to use shall be made by the Regional Manager in consultation with the Lands and Facilities Branch.

Five Year Plan Status Reports - Periodic evaluation is important to help ensure that the Purposes and Goals of the Plan are being met. Chapter VI, Management Goals contains many specific Tasks that involve monitoring of the Wildlife Area and evaluation the adequacy of the Area's management. Cumulatively these efforts will provide feedback regarding the success of the overall management effort. Periodic and detailed analysis of this feedback data will, however, be necessary to assess the status of this Plan.

An exhaustive review of the achievement of the Goals of the Plan should be prepared every five years following the date of adoption of this Plan. A Status Report documenting this review should include the following elements:

- ♦ Evaluation of the achievement of the Purposes and Goals of this Plan.
- ♦ Evaluation of the completion or annual completion, as appropriate, of the each Task contained in this Plan.
- ♦ Evaluation of the effectiveness of the Department's coordination efforts with the SRCAF, CALFED, local government and other property management and regulatory agencies involved in the river corridor.
- ♦ Notation of important, new scientific information that has bearing on the management of the Wildlife Area.
- ♦ Recommendation for revisions to this Plan to incorporate new information and improve its effectiveness.

The Status Report should be prepared by the project manager. It should be submitted to the Lands and Facilities Branch for review and comment, approved by the Regional Manager and submitted to the Director of the Department. This Report should serve as a basis for revision of this Plan and appropriate adjustment to ongoing management practices.

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Appendix A

PUBLIC OUTREACH SUMMARY

The Planning Process included a substantial Public Outreach Program. Materials that document and summarize this Program and the public input that was received are incorporated in this Appendix A. This Appendix includes the following materials:

A-1 Public Outreach Program

A-2 News Release for the Public Input Meetings

A-3 Summary of the April 1, 2003 Public Input Meeting

A-4 Summary of the April 3, 2003 Public Input Meeting

A-5 Fact Sheet Distributed at Public Input Meetings and Interviews

A-6 Summary of Interviews

A-7 List of Public Presentations

A-8 News Release for the Draft Plan

It should be noted that the size of fonts and graphics in the original documents has been modified from their original format to conform to the format of this Plan. These adjustments result in some distortions, smaller print and modified graphics, from the original documents.

A-1 Public Outreach Program

COMPREHENSIVE MANANGEMENT PLAN FOR THE SACRAMENTO RIVER WILDLIFE AREA

Public Outreach Program

(Approved by the Steering Committee on November 20, 2002)

Consistent with other planning efforts in the Sacramento River Conservation Area, this Public Outreach Program is intended to ensure that the Planning Process incorporates the desires of the public in conjunction with the primary consideration of ecosystem management and the operational needs and resources of the Department. Other recent planning efforts in the Conservation Area have included the solicitation of public input regarding the use of conservation lands. Much information was developed as part of those efforts that can be incorporated into this project. Therefore, this Public Outreach Program is directed to utilize this existing information whenever possible, while providing for additional public input opportunities regarding this Plan.

The Public Outreach Program incorporates the following components:

1. Review and consideration of public input received as part of other recent planning projects:
   - The Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge, currently in preparation by the USFWS.
   - The *Sacramento River Public Recreation Access Study*, currently in preparation by The Nature Conservancy.

2. Targeted interviews with representatives of local government, organizations and interest groups active in the Sacramento River corridor. Such interviews would include, but not be limited to, individuals representing the following interests:
   - Local governments (County Supervisor members of the SRCAF, planning directors)
   - Hunting, fishing, bird watching, boating
   - Scientific study
   - Property ownership
   - Conservation organizations
   - Water supply and flood control

3. At least two formal presentations to and the solicitations of input from both the Sacramento River Conservation Area Forum and its Technical Advisory Committee (TAC). Periodic, informal updates on the Management Plan process will also be given to the Forum and the TAC

.

4. An informational presentation to the Board of Supervisors of each of the four counties included in the Wildlife Area

5. At least two public outreach meetings to facilitate direct input from both organized groups and individuals interested in the Wildlife Area. These meetings are planned as follows:
   a. General input meeting(s) to be held at one or more locations in reasonable proximity to the Wildlife Area, following the preparation of an Overview Report that will identify the Wildlife Area, its history and the Management Plan process. The purpose of this meeting will be to receive input as to the desired content and public use provisions of the Management Plan.
   b. Public review meeting at a central location, in proximity to the Wildlife Area, to be held during the State Clearinghouse review of the environmental assessment for the Plan. The purpose of this meeting will be to receive input on the draft Plan and the environmental assessment prepared for this Plan.

A-2 News Release for the Public Input Meetings

FISH AND GAME

NEWS

RELEASE

Sacramento Valley & Central Sierra Region Field Office
1701 Nimbus Road, Ste A
Rancho Cordova, CA 95670
(916) 358-2938
March 17, 2003

Contact: Gregg Werner, Project Planner for the Nature Conservancy (530) 897-6370
Patrick Foy, DFG Information Officer (916) 358-2938

DFG Schedules Public Input Meetings for the Sacramento River Wildlife Area Plan

The Department of Fish and Game (DFG) wants your input for the development of the Sacramento River Wildlife Area (SRWA) Management Plan. The SRWA is located between Woodson Bridge and Colusa on the Sacramento River. Two meetings are scheduled to receive public input. The first meeting will be on Tuesday, April 1 in Chico and the second will be Thursday, April 3 in Colusa. Both meetings will begin at 7 p.m.

The Wildlife Area contains over 3,600 acres of riparian wildlife habitat in 13 sites along a 70-mile stretch of the Sacramento River. "We have a tremendous resource out on the river and we want to involve the public in planning how to make the most of it," said Paul Hofmann, a Wildlife Biologist with the DFG. "The Wildlife Area supports populations of threatened and endangered species as well as game animals and fish. It is a beautiful, natural area that has always been open to public use. Uses have included hunting, fishing, boating, bird watching and just enjoying the natural environment."

DFG has entered into a partnership with The Nature Conservancy to develop the new plan. The DFG will direct the plan process and will be responsible for the ultimate content of the plan. The Nature Conservancy will coordinate the development of scientific information and the public outreach program. Gregg Werner, the project planner, noted that the planning process will focus on:

- Outreach to local governments, property owners, recreation interests and the general public
- Identifying compatible public recreation opportunities
- Coordinating with managers of other conservation properties in the river corridor
- Developing a strong science base to guide future habitat management

The development of the management plan will be coordinated with the Sacramento River Conservation Area Forum and with the ongoing planning activities of the US Fish and Wildlife Service and the California Department of Parks and Recreation on the Sacramento River.

The initial meeting in Chico will be held on Tuesday April 1 at 7 p.m. at the Chico Masonic Family Center, located at 1110 W East Ave. The second meeting in Colusa will be held on Thursday April 3 at 7 p.m. in the Colusa Industrial Properties meeting room at 100 Sunrise Boulevard.

For further information regarding these meetings or the planning process contact either Paul Hofmann at 530-934-9309, phofmann@dfg.ca.gov or Gregg Werner at 530-897-6374, gwerner@tnc.org.

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A-3 Summary of the April 1, 2003 Public Input Meeting

Location: Chico Masonic Family Center 7:00 p.m.
Project Staff: P. Hofmann & P. Ward (DFG) – G. Werner & T. McCubbins (TNC)
Public Attendance: 30 persons

The meeting began with an introduction by Paul Hofmann, followed by a PowerPoint presentation given by Gregg Werner that overviewed the Wildlife Area, the need for the Comprehensive Management Plan and the Planning Process. Comments and questions were solicited from the audience. Hofmann, Ward and Werner provided responses to the questions.

A summary of the comments received is listed below. References are provided in bold italics to the provisions of this Plan which specifically respond to the comments received. References to information or discussion in this Plan are related to the Chapter in which they are addressed. For example, "Ch II" indicates that a comment is addressed in Chapter II. References related to proposed actions are related to the Management Elements contained in Chapter VI as follows:

"B" refers to the Biological Element
"PU" refers to the Public Use Element
"FM" refers to the Facility Maintenance Element
"MC" refers to the Management Coordination Element

References also indicate the Goal number within each Element and the Task letter within each Goal, as appropriate, that respond to the comment. For Example, "PU-2-b" indicates that Task b of Goal 2 of the Public Use Element responds to a specific comment. References are not provided to all comments because all comments were not incorporated in this Plan. A wide range of comments was received, some comments conflicted with each other and some conflicted with scientific information or Department policy. Additionally, some comments were not within the scope of this Plan.

- There is a lack of mapping and signing to help the public locate the property. Both mapping and signage will help to reduce inadvertent trespass. ***Ch II, PU-2***

- There is too much public access along the river. Public access along the river leads to trespass and vandalism. The Department needs to address trespass and landowner concerns. ***PU-6, MC-1***

- More public access locations are needed on the river and on the land. With more public access locations, the impacts will be spread out and impacts to any one area will be reduced. ***PU-4***

- Big public events like the Labor Day float cause problems with litter and other impacts. ***MC-4-b***

- The plan needs adequate information regarding hunting and fishing regulations. ***Ch V***

- How will the Department control the area with more public use? ***Ch VII***

- It is important to make clear the differences between the Department and DPR. ***Ch-4***

- Restoration projects have been inundated and washed away. Let the river and the property restore itself. More grasslands are needed along the river. ***Ch III***

- Local government lacks the money to provide adequate law enforcement along the river.

- Operating funds and staffing for law enforcement need to be addressed in the plan. ***Ch VII***

- A vision is needed for the river to maximize economic benefits. Perhaps the SRCAF could serve as a forum for such an approach.

A-4 Summary of the April 3, 2003 Public Input Meeting

Location: Colusa Industrial Properties meeting room 7:00 p.m.
Project Staff: P. Hofmann & P. Ward (DFG) – G. Werner & T. McCubbins (TNC)
Public Attendance: 19 persons

The meeting began with an introduction by Paul Hofmann, followed by a PowerPoint presentation given by Gregg Werner that overviewed the Wildlife Area, the need for the Comprehensive Management Plan and the Planning Process. Comments and questions were solicited from the audience. Hofmann, Ward and Werner provided responses to the questions and comments

A summary of the comments received is listed below. References are provided in bold italics to the provisions of this Plan which specifically respond to the comments received. References to information or discussion in this Plan are related to the Chapter in which they are addressed. For example, "Ch II" indicates that a comment is addressed in Chapter II. References related to proposed actions are related to the Management Elements contained in Chapter VI as follows:

"B" refers to the Biological Element
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- The plan needs to clearly define what public use in the Wildlife Area means and be clear as to what is permitted. ***Ch V***

- Maps are needed to help prevent trespass on to private property. ***Ch II, PU-2***

- The Department and TNC need to keep in close contact with County governments. ***Ch IV***

- The plan needs to differentiate between State wildlife areas, State parks and other public areas. ***Ch IV***

- The lack of access to USFWS lands is an issue and a roadblock to seamless management of the river area. ***Ch IV***

- The various State and federal agencies working along the river need to have consistent regulations. ***Ch IV, PU-1***

- Recreation activities such as fishing are economically important to communities like Colusa. The plan needs to analyze the economic impact of recreation dollars along the river.

- How will neighbors be protected from damages caused by the public and by wildlife along the river? The Department needs to develop landowner assurances before a plan is adopted. ***PU-6, MC-1***

- There is a perception that the Department is promoting endangered species. Is this the case? ***Ch III***

- The plan needs to address channel maintenance issues. ***Ch II, Ch III***

- Buffer strips are a technique to help prevent impact on adjacent property from habitat areas. ***B-4, MC-1-c***

- Restoration should include trail access to the river. Better access is needed to have more people use the area. But with more people will come more litter, vandalism, etc. The area can deteriorate. ***PU-4-e***

- There is a concern about endangered species and how they may impact farming and recreation activities such as boating.

- The plan needs to assess the cumulative impact of all agency decisions on properties along the river.

- There is a concern that restoration will affect river flows. Hydraulic issues need to be addressed. ***Ch III, B-4-f***

- There is a concern that habitat management will result in the more stumps and snags in the river. Boats cannot safely travel up the river from Colusa any more. ***Ch III***

- Fire is a concern if riparian areas are replanted or allowed to regenerate on their own. ***MC-5-a***

- There needs to be a balance between management for ecosystems and management for other uses like agriculture, boating, hunting , fishing, etc. ***Ch VI***

- The plan needs to fully address maintenance and monitoring issues. ***B-2, B-5, FM***

A-5 Fact Sheet Distributed at Public Input Meetings and Interviews

Project Fact Sheet

COMPREHENSIVE MANAGEMENT PLAN
FOR THE STATE OF CALIFORNIA
SACRAMENTO RIVER WILDLIFE AREA

Project: The California Department of Fish and Game (DFG) is developing a new management plan for the Sacramento River Wildlife Area (see reverse side for map).

Project Area: The Sacramento River Wildlife Area includes over 3,600 acres in thirteen separate units (see attached map). It extends along the Sacramento River for 70 miles (from River Mile 145 near Colusa to River Mile 215, just south of Woodson Bridge). The property was acquired by the State of California for the conservation of riparian wildlife habitat.

Purpose:

- To effectively guide the Department of Fish and Game's management of the Wildlife Area, consistent with the mission of the Department and the principles of the Sacramento River Conservation Area Handbook
- To provide for public recreation use of the Wildlife Area while maintaining the habitat values of the Area.

Project Development: DFG has entered into a partnership with The Nature Conservancy (TNC) to help develop the Comprehensive Management Plan. DFG and TNC will pool their resources to develop the plan. DFG will make all decisions regarding the content of the Plan. TNC will draw from the scientific information and data that it has developed over the past fifteen years as part of its Sacramento River Project to assist DFG in developing a plan that reflects the ecosystem management objectives of the Sacramento River Conservation Area.

Public Outreach: The project will include public input meetings, interviews with interest group and property ownership representatives, presentations to local government and coordination with other public agencies and private entities that manage property along the river.

Schedule: The project was initiated in the August of 2002 and completion is scheduled for February of 2004.

Project Contacts:

Department of Fish and Game		
Paul Hofmann, Region 2	phofmann@dfg.ca.gov	530-934-9309
Paul Ward, Region 2	pward@dfg.ca.gov	530-895-5015
Teresa Le Blanc, Lands and Facilities	tlablanc@dfg.ca.gov	916-445-3499
The Nature Conservancy		
Gregg Werner, Project Planner	gwerner@tnc.org	530-897-6374
500 Main Street		
Chico CA, 95928		

A-6 Summary of Interviews

A series of 27 interviews (36 total persons) were conducted by the Project Planner to gather additional public input from stakeholders in regard to the Wildlife Area and the Comprehensive Management Plan. These interviews focused on representatives of local government, the SRCAF, landowner organizations, recreation enthusiasts, agencies active along the river, conservation organizations and other identified stakeholders.
Most interviews were conducted in person. Telephone interviews were conducted in situations where schedules precluded in-person meetings. Each interview included a set of 14 standard questions developed in conjunction with the Core Work Group. The opportunity to explore individual concerns of the interviewees was also provided. The list below identifies the name, representation and date of each interview.

Name	Representation(s)	Date
Christy Leighton	Glenn County Planning Division	January 27, 2003
Steve Hackney	Colusa County Dept. of Planning and Building	January, 29, 2003
Burt Bundy	SRCAF, Manager	January 29, 2003
George Robson	Tehama County Planning Dept.	January 29, 2003
John Merz	Sacramento River Preservation Trust	February 10, 2003
Pat Kittle	Kittle's Outdoor & Sport Co. Colusa Co. Fish & Game Com.	February 12, 2003
Yvonne Christopher	Butte County Department of Development Services	February 19, 2003
Bill Borror	SRCAF Board, Tehama County Board of Supervisors	February 19, 2003
Van Tenny	Glenn County Irrigation Dist.	February 20, 2003
Denny Bungarz	SRCAF Board, Glenn County Board of Supervisors	February 24, 2003
Lance Boyd, Gene Clark, Matt Southam, Jerry Southam	Princeton–Codora Irrigation Dist., Provident Irrigation District	February 24, 2003
Dave Wombol	SRCAF Board, Colusa County Board of Supervisors	February 24, 2003
Sam Castillo, Steve Owen, Kent Harrison, Joe Powell	Department of Fish and Game Wardens	February 26, 2003
Stacy Cepello	Department of Water Resources	February 27, 2003
Rich Bottini, Sue Sutton, Jeffrey Sutton	Family Water Alliance	March 7, 2003
Jane Dolan	SRCAF Board, Butte County Board of Supervisors	March 17, 2003
Donald Odell, Ren Fairbanks	Deseret Farms	March 26, 2003

John Scott	Scotty's	March 26, 2003
Frank Townley	No Cal Guides Association	April 2, 2003
Pat Fitzmorris	Ducks Unlimited	April 3, 2003
Brendon Flynn	SRCAF Board, Sacramento Valley Landowners Association	April 7, 2003
Leo Edson	Central Valley Bird Club	April 9, 2003
Rob Capriola	California Waterfowl Association	April 11, 2003
Bob Strickland	United Anglers	April 15, 2003
Mitch Faro	Pacific Coast Federation of Fisherman's Associations	April 16, 2003
John Carlon	River Partners	April 16, 2003
Don Anderson	SRCAF Board	May 6, 2003

A summary of the responses received to the standard questions is provided below. This summary is not intended to represent a scientific sampling of public opinion or an exhaustive listing of all interview comments. The interview process was intended to convey information regarding the Planning Process and to generate ideas from representative stakeholders. It should be noted that all interviewees did not give specific responses to all questions. Responses noted as "*multiple responses"* were given by two to five persons and responses notes as "*many responses"* were given five or more times. Responses with no notation were single responses.
References are provided in bold italics to the provisions of this Plan which specifically respond to the comments received. References to information or discussion in this Plan are related to the Chapter in which they are addressed. For example, "Ch II" indicates that a comment is addressed in Chapter II. References related to proposed actions are related to the Management Elements contained in Chapter VI as follows:

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References also indicate the Goal number within each Element and the Task letter within each Goal, as appropriate, that respond to the comment. For Example, "PU-2-b" indicates that Task b of Goal 2 of the Public Use Element responds to a specific comment. References are not provided to all comments because all comments were not incorporated in this Plan. A wide range of comments was received, some comments conflicted with each other and some conflicted with scientific information or Department policy. Additionally, some comments were not within the scope of this Plan.

1. **Are you familiar with ecosystem management programs in the Sacramento River Conservation Area?**
   - Yes (*many responses*) ***Ch III***
   - Somewhat familiar *(multiple responses)* ***Ch III***
   - No *(many responses)* ***Ch III***

2. **Are you familiar with the Sacramento River Wildlife Area?**
   - Very familiar *(many responses)* ***Ch II***
   - Generally familiar (*many responses*) ***Ch II***

- Vaguely aware *(multiple responses)* ***Ch II***
- Not familiar *(multiple responses)* ***Ch II***
- The general public sees public habitat lands as all one area ***Ch IV***

3. What are important considerations that should be addressed in the Comprehensive Management Plan?

- More public access to Units (*many responses*) ***PU-4***
- Need an information baseline ***Ch II***
- Identify Special Status Species ***Ch III***
- Sanitation at Units ***Ch V***
- Compatible uses ***Ch V***
- Habitat restoration to benefit anadramous fish ***Ch III***
- Habitat restoration to benefit wildlife, not just plants ***Ch III***
- Enhancement of fish and wildlife ***Ch III***
- Coordination with other agencies ***Ch IV***
- Maintain fishing ***Ch IV***
- Snags in the river ***Ch III***
- Fire suppression plans ***MC-5-a***
- Understanding the natural river processes ***Ch II***
- Don't make it too complicated
- Concerned about conflicts between hunting and non consumptive uses – may need to separate spatially or temporally ***Ch V***
- Should be special consideration for special status species ***B-2***
- Trespass and vandalism on adjoining private land (*multiple responses*) ***PU-6, MC-1***
- Potential flooding impacts of restoration – cumulative impacts *(many responses)* ***Ch III, B-4-f***
- How much habitat is enough ***Ch IV***
- Tax impact on local governments and local economic impact (*multiple responses*)
- Impact on local sheriff departments (*multiple responses*) ***PU-6, MC-4***
- Defining boundaries ***Ch II***
- Enforcement and monitoring ***PU-6***
- Depredation of adjoining crops (*multiple responses*) ***MC-1***
- Concern with potential limitations on spraying adjoining lands (*multiple responses*) ***MC-1***
- Concern with potential spread of endangered species ***MC-1***
- Problem with not removing abandoned orchards ***Ch III, B-4***
- Dumping ***PU-6, FM-5***
- Meth labs ***PU-6, MC-4***
- Review the Wildlife Area regulations ***Ch V***
- Include all DFG properties in SRCA in the plan

4. What individual, groups or agencies should be included in the Comprehensive Management Plan process?

- Numerous individuals and groups were recommended ***Ch I***
- Chico-based public access group ***Ch I***
- Local Boards of Supervisors (*multiple responses*) ***Ch I, Ch IV***
- County Fish and Game Commissions (*multiple responses*) ***Ch I, Ch IV***
- Local irrigation and drainage districts ***Ch I***
- State and federal legislators
- Family Water Alliance ***Ch I***
- Farm Bureau
- Nor Cal Guides ***Ch I***
- Sportsman's groups ***Ch I***
- PRBO
- Boy Scouts

5. Do you have any concerns with the past management of the Sacramento River Wildlife Area?

- No (*multiple responses*)
- There has been a lack of management (*multiple responses*)
- Not much proactive management ***Ch VI***
- Lack of funding (*multiple responses*) ***Ch VII***
- A public outreach program is needed ***Ch I, Ch V, PU-2***
- Lack of site access - more land access needed ***PU-4***
- Lack of access control ***FM-1***
- Absentee ownership
- Restoration planting ***Ch III***
- Illegal hunting and dumping ***PU-6, FM-5***
- Increased public access and use has caused problems ***PU-6, MC-1***
- DFG's partnering with TNC is a concern ***Ch I***
- Lack of notice to neighbors & local Boards of Supervisors ***Ch I, Ch IV, MC-1***
- Less problems with DFG – can work out problems with wardens
- Need more wardens – poaching a problem (*multiple responses*) ***Ch VII, PU-6,***
- Inability to control access ***FM-1***
- Need more public information on regulations ***Ch V, PU-2***
- Not familiar with past management ***Ch V, Ch VII***

6. Public uses in the Wildlife Area must be balanced against the preservation of the habitat values in the Area. Has this balance been appropriately struck in the past?

- Reasonably balanced (*many responses*)
- Balanced as far as I know
- DFG has done better in the past than other agencies
- Need to limit public access ***Ch V***
- Perception has been that benefit is for habitat not for people ***Ch V***
- Water flows have been neglected by DWR and Bureau of Reclamation
- There is very little public knowledge or access ***Ch V, PU-2***

7. What public uses do you think should be permitted in the Sacramento River Wildlife Area?

- Permit a wide range of uses (*multiple responses*) ***Ch V***
- Fishing *(many responses)* ***Ch V***
- Hunting (*many responses*) ***Ch V***
- Spring turkey hunting (*multiple responses*) ***Ch V***
- Hiking (*multiple responses*) ***Ch V***
- Bird watching (*multiple responses*) ***Ch V***
- Picnicking ***Ch V***
- Photography ***Ch V***
- Non consumptive recreation uses (*multiple responses*) ***Ch V***
- Keep hunting reasonable ***Ch V***
- Annual equestrian event by permit ***Ch V***
- Overnight camping (*multiple responses*) ***Ch V***
- Family type recreation ***Ch V***
- Depends on the site access ***Ch V***
- Appropriate as is – keep existing uses (*multiple responses*) ***Ch V***

8. What public uses do you think should be precluded in the Sacramento River Wildlife Area?

- Vehicular access (*many responses*) ***FM-1***
- Motorcycles and ATVs (*multiple responses*) ***Ch V***
- Camping, except on gravel bars (*multiple responses*) ***Ch V***
- Appropriate as is ***Ch V***
- Intense recreation ***Ch V***
- Continue to limit hunting to archery and shotguns (*multiple responses*) ***Ch V***
- Preclude hunting in the Pine Creek East Subunit

- Fires, except on gravel bars ***Ch V***
- Mountain bikes, except on trails
- Horses
- Concern with deer hunting
- Preclude rifles in the Merrill's Landing Wildlife Area ***PU-1-a***
- Personal watercraft
- Group activities ***Ch V***
- Things that require lighting or electricity

9. Of the 21 separate properties in the Wildlife Area, all are accessible from the river and five of the properties are accessible by public road. Is more public access needed? If "Yes", what kind and where?

- Yes (*many responses*) ***Ch V, PU-4***
- No more access (*multiple responses*)
- Limiting access will help retain environmental quality (*multiple responses*)
- Look on a case-by-case basis (*multiple responses*) ***Ch V, PU-4***
- Access needed to demonstrate benefits to locals ***Ch V, PU-4***
- Both good and bad – problems with trash and parking ***Ch V, PU-4***
- Concerned about agricultural spraying and notice
- Leave it up to the adjoining owners who sell the access rights ***PU-4-a***

10. The Sacramento River Wildlife Area is almost completely unimproved. Should recreation improvements be provided? If "Yes", what kind of improvements?

- No improvements (*many responses*) ***Ch V***
- Depends on the site (*multiple responses*) ***Ch V, PU-3, 4***
- Yes – improvements need publicity ***PU-2***
- Not something that government needs to provide
- Signing is needed, on land and on the river (*multiple responses*) ***PU-3***
- Primitive parking areas – trailheads (*multiple responses*) ***PU-4-d***
- Primitive trails (*multiple responses*) ***PU-4-e***
- Consider Americans with Disabilities Act impact ***Ch V, PU-4-h***
- Be selective – put improvements near population (*multiple responses*) ***Ch V, PU-4***
- One site should have access and facilities
- Let public use dictate ***Ch V, PU-4***
- Possibly provide restrooms at key locations
- Trashcans
- Floating restrooms, like lakes
- Only improvements that can tolerate flooding ***Ch V***
- Combination visitors / interpretive center ***MC-2-b***
- Facilities for canoes ***Ch V***
- More boat ramps needed ***Ch V***
- State DPR should do that , not DFG ***Ch IV***

11. Should native, riparian vegetation be restored on parts of the Sacramento River Wildlife Area that are not now in such vegetation, in order to better support the wildlife that depends on this habitat?

- Yes (*many responses*) ***Ch III, B-4***
- Yes, in the Inner River Zone ***Ch III, B-4***
- Very important for fish ***Ch III***
- Need grasslands – not all jungle ***Ch III***
- OK if not good economic units for farming & not affecting other landowners negatively
- Replicating native habitats is not the best way to go
- If affordable and practical
- Depends on the location ***Ch III***
- Too expensive

- No restoration outside of the levees ***Ch II***
- No restoration until baseline and cumulative impact studies are completed
- Need to prioritize restoration of existing lands ***Ch III, B-4***
- No increase in flood levels should be permitted ***Ch III, B-4-f***
- Think that the habitat will restore itself without replanting projects – let nature take its course (*multiple responses*) ***Ch III***
- No more restoration until mitigation through a good neighbor policy
- Concerned about potential flooding impact (*many responses*) ***Ch-III, B-4-f***
- Need to allow natural river meander ***B-3***
- Opposed to more river meander
- Restoration should be restricted like agriculture

12. Should additional flood-prone land along the river be acquired from willing sellers to expand the Wildlife Area?

- Yes (*many responses*) ***Ch III, B-1***
- Yes, if the site has public access ***Ch III, B-1***
- Yes, within 2.5 year floodplain ***Ch III, B-1***
- Yes, consistent with the Handbook ***Ch III, B-1***
- Acquisitions need to be linked to other lands and activities ***Ch III***
- No (*multiple responses*)
- Only from willing sellers ***Ch II, B-1***
- There needs to be a plan for the use of the site first ***Ch V***
- Need to take care of existing land first ***Ch I & VII***
- Mixed feelings
- Not without guaranteed in-lieu property tax payments
- Needs more public input and County Board of Supervisors review (*multiple responses*) ***MC-1***
- Should have seller sign a statement indicating why sold
- Keep multiple agency ownership ***Ch IV***
- Would like to see a program for private owners to maintain habitat ***B-6***
- Must be open to public use ***Ch V***

13. If you could direct any change to the management of the Sacramento River Wildlife Area what would it be?

- Increase Public access to build a constituency ***PU-4***
- Need adequate funding for management of the Wildlife Area (*multiple responses*) ***Ch VII***
- Need regular staffing ***Ch VII***
- Need to ensure in-lieu tax payments to local governments
- Need to replace cash flow for farmers and local economy
- Wildlife Area managers need more expertise and oversight ***Ch VII***
- Ensure dependable, consistent river flow (*multiple responses*) ***Ch III, B-1-d***
- Better monitoring and management ***Ch VI***
- Centralize under one manager ***Ch VII***
- Area needs a dedicated warden ***Ch VII***
- Area needs a maintenance budget ***Ch VII***
- Need more public review ***Ch I, B-1-a, MC-1***
- Need more concern for neighboring landowners ***MC-1***
- Don't infringe on adjoining landowners ***MC-1***
- Move cautiously with major changes
- DFG doing a good job (*multiple responses*)
- Need signage to identify sites (*multiple responses*) ***PU-3***
- Open all areas to public use and put in facilities where reasonable ***Ch V***
- Provide money for fire and flood damage
- Replace lost local revenues
- Provide more support for recreation uses and tourism ***Ch V, Ch VII***

14. Do you have any other comments or ideas regarding the Wildlife Area?

- Need to integrate all DFG lands in the plan (Mouth of Cottonwood Creek and Battle Creek Wildlife Areas) ***Ch IV***
- Need to duplicate and expand the salmon rearing habitats ***B-4***
- Develop some high intensity areas for locals
- Need maps, brochures to get the word out and help people locate areas (*multiple responses*) ***PU-2***
- Don't advertise the area too much
- Develop a specific plan for each site
- Need more coordination between the agencies ***Ch IV***
- Only local people should be considered stakeholders
- Find it irregular and inappropriate to have TNC prepare the plan for DFG
- Need more boat ramps ***Ch V***
- Concerned that DFG may put wells in the Wildlife Area
- DFG needs a good description of the property it owns ***Ch II***
- Money can best be spent on multi-species vs. single species approach ***Ch III***

A-7 List of Public Presentations

Nine public information presentations were made on the Comprehensive Management Plan to various local government bodies and local organizations. These presentations included a narrated PowerPoint presentation, or if timing did not permit, the narrated presentation of a hard copy of the PowerPoint. Questions and comments were solicited. Each presentation was attended by the Project Planner and either a Wildlife or Fisheries Biologist.

The following presentations occurred during the Planning Process:

Audience	Date
SRCAF Board of Directors	March 3, 2003
SRCAF Technical Advisory Committee	April 4, 2003
Glenn County Board of Supervisors	April 15, 2003
Tehama County Board of Supervisors	April, 22, 2003
Colusa County Board of Supervisors	May 6, 2003
Tehama County Fish and Game Commission	May 13, 2003
Glenn County Fish and Game Commission	June 12, 2003
Colusa County Fish and Game Commission	July 1, 2003
Butte County Fish and Game Commission	July 7, 2003
SRCAF Board of Directors	December 4, 2003

A-8 News Release for the Draft Plan

FISH AND GAME NEWS RELEASE

Sacramento Valley & Central Sierra Region Field Office
1701 Nimbus Road, Ste A
Rancho Cordova, CA 95670
(916) 358-2938
November 17, 2003

Contact: Gregg Werner, Project Planner for The Nature Conservancy (530) 897-6374
Patrick Foy, DFG Information Officer (916) 358-2938

DFG Releases Draft Comprehensive Management Plan for the Sacramento River Wildlife Area for Public Review and Schedules Public Input Meetings

The California Department of Fish and Game (DFG) wants your input on the draft Comprehensive Management Plan for the Sacramento River Wildlife Area (SRWA). The SRWA is a 3770 acre natural area located along the Sacramento River between Woodson Bridge and Colusa. The draft Plan is available on line at the DFG website (www.dfg.ca.gov) and at public libraries in the communities of Colusa, Princeton, Oroville, Chico, Willows, Orland, Corning and Red Bluff. The public review period for the draft Plan will extend until December 17, 2003.

The draft Plan focuses on preserving riparian habitat for fish and wildlife while providing compatible public recreation. The Wildlife Area includes thirteen sites that are home to special status species such as eagles and ospreys as well as many game species such as mule deer, quail, ducks and doves. The area also provides important spawning and rearing habitat for annual runs of chinook salmon and steelhead trout. DFG Associate Wildlife Biologist Paul Hofmann, the Department lead for the project stated, "This property is a rich and diverse area where we can preserve the natural environment and also accommodate public recreation." The draft Plan proposes to keep the area entirely open to public access for hunting, fishing, beach activities, photography, wildlife observation, environmental education and interpretation.

Because the public has been keenly interested in habitat conservation along the Sacramento River, DFG directed an exhaustive, public outreach process to develop information for the draft Plan. That process included interviews with stakeholder representatives, presentations to local government bodies, presentations to the Sacramento River Conservation Area Forum and advertised public input meetings. "We did a lot of talking and a lot more listening, and the public gave us many good ideas," said Hofmann. The draft plan features:

- A strong science base and an explanation of the natural processes that create and sustain the riparian habitat and its unique mix of fish and wildlife species.
- Extensive coordination with the other public and private agencies that are active in the conservation of wildlife habitat along the river, especially the Sacramento River Conservation Area Forum.
- A focus on public uses that are compatible with the natural character of the area.

Public Input Meetings are scheduled for:

Monday, December 1 at 7 p.m. Chico City Council Chambers 421 Main Street Chico, California	Thursday, Dec 4 at 7 p.m. Colusa Industrial Properties meeting room 100 Sunrise Blvd Colusa, California

Written comments regarding the Comprehensive Management Plan and the proposed Initial Study / Negative Declaration for the project will also be accepted until December 17, 2003.

For further information regarding the draft plan or the public input meetings contact Paul Hofmann at (530) 934-9309, phofmann@dfg.ca.gov or Gregg Werner at (530) 897-6374, gwerner@tnc.org.

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Appendix B

PUBLIC REVIEW COMMENTS TO THE DRAFT PLAN

The Planning Process included a public review period of one month in length. This period was concurrent with the review period established by the State Clearinghouse for the Initial Study/Negative Declaration. During this public review period, project staff members were available for informational presentations and questions regarding the Draft Comprehensive Management Plan. Two public input meetings on the Draft Plan were held in the latter part of the public review period and a presentations to the SRCAF Board of Directors was also made. Appendix B documents the comments that were received including the following materials:

B-1 Summary of the December 1, 2003 Public Input Meeting on the Draft Plan .

B-2 Summary of the December 4, 2003 Public Input Meeting on the Draft Plan.

B-3 Written comments received regarding the Draft Plan and the Initial Study / Negative Declaration.

- Denny Bungarz, Chairman, Glenn County Board of Supervisors
- Burt Bundy, Manager, Sacramento River Conservation Area Forum
- Jim Dwyer, Chico, California
- Jeffrey P. Sutton, Executive Director, Family Water Alliance
- William Hagen, Chico, California
- Mark Hennelly, Deputy director Governmental Affairs, California Waterfowl Association
- John Merz, President, Sacramento River Preservation Trust
- Steve Shaffer, Director, Department of Food and Agriculture

B-1 Summary of the December 1, 2003 Public Input Meeting

Location: Chico City Council Chambers @ 7:00 p.m.
Project Staff: P. Hofmann, P. Ward & H. Lomeli (DFG) – G. Werner (TNC)
Public Attendance: 23 persons

The meeting began with a welcome and introduction by Paul Hofmann. A PowerPoint presentation was then given by Gregg Werner that overviewed the Draft Comprehensive Management Plan. Questions regarding the Draft Plan were solicited from the audience. Questions and related discussions included the following topics:

- The contents of the Draft Plan.
- The process for final revision, approval and implementation of the Plan
- The current State budget situation and the potential for funding of Wildlife Area operations in the future.
- The status of the Comprehensive Conservation Plan for the Sacramento River National Wildlife Refuge and coordination between the Department and USFWS.

The project team provided responses to the questions and substantial discussion with the audience occurred.

Comments regarding the contents Draft Plan were then solicited and related discussion occurred. A summary of the substantive comments received is listed below.

- The proposed regulation change to permit camping on gravel bars should be addressed and accommodated as soon as possible. Regulation from other rivers in the west should be consulted as examples. A maximum standard of distance from the river should be considered as part of the regulation change.

- An overall policy should be included in the Plan to provide for a balance of resources to be devoted to the various functions of the Wildlife Area management in the future.

- The Plan should establish clearly defined priorities for available budgetary resources that are predetermined and available for use by the Department.

- The Plan should be reviewed and approved by the State Fish and Game Commission.

- A list of potential volunteer improvement or maintenance projects should be developed and maintained for the Wildlife Area to accommodate and encourage volunteer efforts by various conservation organizations such as fly fishing clubs.

A substantial discussion of these comments occurred and the meeting extended until approximately 9:00 p.m. when it was adjourned.

B-2 Summary of the December 4, 2003 Public Input Meeting

Location: Colusa Industrial Properties Meeting Room @ 7:00 p.m.
Project Staff: P. Hofmann, H. Lomeli (DFG) – G. Werner (TNC)
Public Attendance: 14 persons

The meeting began with a welcome and introduction by Paul Hofmann. A PowerPoint presentation was then given by Gregg Werner that overviewed the Draft Comprehensive Management Plan. Questions regarding the Draft Plan were solicited from the audience and numerous questions were raised including the following:

- The contents of the Draft Plan.
- The location of the Wildlife Area properties.
- The potential for expansion of the Wildlife Area in the future.
- The process for acquisition of properties by the Department and The Nature Conservancy.
- Provisions for access to and signing of Wildlife Area properties.
- Vegetation clearance that occurs as part of levee maintenance.
- Hydrologic analysis and review of restoration projects by the Reclamation Board.
- The planting process for restoration of properties.

The project team provided responses to the questions and substantial discussion with the audience occurred.

Comments regarding the contents Draft Plan were then solicited and related discussion occurred. A summary of the substantive comment received is listed below.

- The Plan should contain a specific mechanism to resolve impacts on agricultural properties that are related to the Wildlife Area or restoration of habitat..

A substantial discussion of this comment occurred and reference was made to the ongoing attempts to deal with "Good Neighbor" concerns through the SRCAF and the CALFED Program. A discussion of a specific situation involving depredation of an orchard area followed

The meeting extended until approximately 9:15 p.m. when it was adjourned.

Appendix C

SITE INVENTORY

A detailed Site Inventory was developed for each Unit and Subunit of the Wildlife Area to establish an information baseline for the Planning Process. Information was drawn from Department records, the SRGIS, a literature search and site analysis. The Site Inventory for each Unit and Subunit consists of:

- A standardized text format 2 to 3 pages in length
- An aerial photo excerpt of the site with the current site boundaries indicated
- A USGS topographic map excerpt with the current site boundaries indicated

Appendix C is intended to be a permanent record for the Department in a format that can be duplicated if new properties are added to the Wildlife Area in the future.

This Appendix C contains the entire Site Inventory. .

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Merrill's Landing Wildlife Area **Parcel History No.** 820432 **Inventory Date:** 9/14/03

Location: **River Mile:** 212.5-214.5L **County:** Tehama

DFG Record Area: 295.52 acres **Estimated Actual Area:** 281 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 091-090-003, 006, 007,

- **Generalized Legal Description:**

Section	Township	Range
1-2	23N	02W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Red Bluff to Chico Landing Reach (Woodson Bridge Subreach)

150 Year Meander Belt Relationship: The Wildlife Area is entirely within the DWR 150 Year Meander Zone which defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access **- River Access:** The Wildlife Area is accessible from the river along several narrow beach areas.

- Public Road Access: The site has no public road access. Public access to the Wildlife Area is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	restored riparian, open	USFWS
S	river/gravel bar, riparian	State, private
E	rparian	DFG, private
W	riparian	DFG

Physical Description: The Wildlife Area is an irregular shape lying on the north side of the river. A low terrace, oxbow area borders a higher central area on the east, west and north. The central area consists of a high terrace that occupies the south half of the site with low terrace areas generally occupying the north portion of the site. Several swales cross the site from west to east. The oxbow ceased to be the main channel in the late 1970's. It holds a permanent pool of water in the easterly area and the pool is no longer connected to the river during normal flows.

- **River Channel Meander History / 25 & 50-Year Projections:** The river moved progressively across the north half of the Wildlife Area over the past century. The oxbow area was the only river channel until 1974 when the river cut across the neck of the bend. Despite the efforts of the Corps of Engineers to block the cut off the channel, it became permanent after the floods of the late 1970's. The Unit is not within the 25 or 50-year erosion areas as projected by DWR and the site is expected to expand substantially to the south as the river channel moves to the south.

- **Inundation Frequency:** The Wildlife Area has a projected inundation frequency of from one to two and one half years per the DWR GIS. Inundation frequency is generally a function of elevation.

- **Soils:** Columbia series soils are mapped in the high terrace areas and in the oxbow areas. The remaining low terrace areas are depicted as riverwash.

Vegetation:

- **Habitat Types as of**: (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	25 ac.
Disturbed (gravel mound)	1 ac.
Gravel*	52 ac.
Herbaceous Layer	3 ac.
Mixed Riparian Forest	76 ac.
Open Water	3 ac.
Riparian Scrub	5 ac.

**Gravel includes gravel bars, sand bars and channel material.

- **Existing Vegetation Comments:** Following the cutoff of the oxbow in the late 1970's riparian vegetation has steadily expanded on the site. The oxbow area has gradually filled to support a dense, mixed riparian forest.

- **Existing and Historical Agriculture:** The high terrace areas in the southwest portion of the site were farmed for row crops until access from the Tehama County side of the river was severed in the late 1970's.

- **Vegetation Succession Projection:** The oxbow area is anticipated to transition to a Mixed Riparian Forest. The evolution of the central, high terrace area has been suspended by invasive species domination.

- **Restoration History:** There is no history of restoration on the site.

- **Analysis of Restoration Potential:** The central, high terrace is dominated by yellow starthistle. It appears to have dry, shallow soils and there is no existing vehicular access to the site. It is, however, a large area with very limited habitat value at present. Restoration of the 130 +/- acre area, potentially including a burning program to control star thistle, should be evaluated

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

Parcel History No.	Year	Acres	Funding Source
820432	1979	295.52	Fund 742 – Urban & Coastal Park Fund (1976) (federal) – Land and Water Conservation Fund (51% of cost)

Specific Management Issues / Concerns: The Wildlife Area directly adjoins the Merrill's Landing Unit of the Sacramento River Wildlife Area. Management as a single DFG property should be established.

Potential for Coordinated Management with Adjacent Properties: The Wildlife Area lies to the east and west of the Merrill's Landing Unit of the Sacramento River Wildlife Are that is managed by DFG Region 2. These two DFG areas should be managed as one site. Immediately north of the Merrill's Landing property is the U.S. Fish and Wildlife Service's 420-acre Rio Vista Unit. The USFWS and DFG properties should either be managed in a coordinated manner or managed by one entity as one area

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820432. Sacramento, California.

- Greco, Steven E., 1999. Monitoring Riparian Landscape Change and Modeling Habitat Dynamics of the Yellow-billed Cuckoo on the Sacramento River, California - A Dissertation in Ecology for the Office of Graduate Studies, University of California, Davis, Davis, California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Merrill's Landing Unit **Parcel History No.** 820990, 821456 **Inventory Date:** 9/1403

Location: **River Mile:** 213-215.5L **County:** Butte

DFG Record Area: 173.26 acres **Estimated Actual Area:** 192 Acres (west parcel: 165 acres)
(southeast parcel: 1 acre)
(northeast parcel: 26 acres)

Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 047-010-007, 018, 010 **USGS Topo Quad:** Corning

- **Generalized Legal Description:**

Section	Township	Range
1,2,3	23N	02W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Red Bluff to Chico Landing Reach (Woodson Bridge Subreach)

150 Year Meander Belt Relationship: The majority of the Unit is within the DWR 150 Year Meander Belt which defines the Inner River Zone of the Sacramento River Conservation Area. This area includes the entire west parcel and the portion of the southeast and northeast parcels that are within the oxbow areas. The portions of the southeast and northeast parcels that lie between the oxbow area and Ballard Road are outside of the 150-Year Meander Belt.

Site Access **- River Access: The** west parcel is accessible from the river along a large point bar, The southeast and northeast parcels are not accessible from the river

- Public Road Access: The southeast and northeast parcels are accessible from Ballard Road. The west parcel site has no public road access. Public access to the west parcel is only from the river.

Adjoining Property:	Direction	Land Use	Ownership
(west parcel)	**N**	restored riparian	USFWS
	S	river/orchards	private
	E	riparian	DFG (Merrill's Landing W. A)
	W	river/riparian, orchards	State, private
(SE and NE parcels)	**N**	restored riparian, vacant	USFWS. private
	S	riparian	private
	E	road/orchards	County/private
	W	riparian	DFG (Merrill's Landing W. A)

Physical Description: The Unit is composed of three parcels, described as the west, southeast and northeast parcels. The larger west parcel is an irregular shape lying on the north and east sides of the river. It is a low terrace that has expanded to the south as the point bar has grown. It also includes a portion of the oxbow area that is adjacent to the east. The southwest parcel is a very small parallelogram -shaped area that adjoins Ballard Road. It includes a high terrace area with a rip rapped face and a portion of the adjacent oxbow lake. The northwest parcel also fronts on Ballard Road and is a roughly triangular area. It also includes a high terrace area and a portion of the adjacent oxbow. The oxbow ceased to be the main channel in the late 1970's. It holds a permanent pool of water in the easterly area and the pool is no longer connected to the river during normal flows. There are no roadways or paths on the site with the exception of a short primitive roadway on the southeast parcel

- **River Channel Meander History / 25 & 50-Year Projections:** The river mover progressively southwest over the west parcel over the past century. The oxbow area was the only river channel until 1974 when the river cut across the neck of the bend. Despite the efforts of the Corps of Engineers to block the cutoff the channel, it became permanent after the floods of the late 1970's. The west parcel is not within the DWR projected 25 or 50-year erosion areas and the area is expected to continue to expand to the southeast**.** The southeast and northeast parcels are not projected to be within the 25 or 50-year erosion areas.

- **Inundation Frequency:** The west parcel has a one-year inundation frequency per the DWR GIS. The high terrace areas of the southeast and northeast parcels have a five-year frequency of inundation while the oxbow areas are believed to have a one-year frequency.

- **Soils:** The west parcel is primarily riverwash with about 15% of the area in the oxbow mapped a Columbia series soils. The southeast and northeast parcels are mapped as a combination of Gianella and Maywood series soils.

Vegetation:

- **Habitat Types:** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	36 ac.
Marsh	3 ac.
Gravel*	54 ac.
Herbaceous Layer	3 ac.
Mixed Riparian Forest	85 ac.
Riparian Scrub	11 ac.

*Gravel includes gravel bars, sand bars, and channel material.

- **Existing Vegetation Comments:** Following the cutoff of the oxbow in the late 1970's riparian vegetation has steadily expanded on the site. The oxbow area has gradually filled to support a dense, mixed riparian forest. The southeast parcel contains several, nonnative fruit and ornamental trees suggesting that it may have been a home site in the past. The west parcel is dominated by black walnuts in the oxbow area.

- **Threatened, Rare or Endangered and Special Concern Species:** See standard species for the Wildlife Area.

- **Existing and Historical Agriculture:** There is no identified history of agricultural activity within the boundaries of the Unit.

- **Vegetation Succession Projection:** given the erosion projected for the west parcel and relative lack of flooding of the southeast and northeast parcel, no substantial change is anticipated.

- **Restoration History:** There is no known history of restoration on the site.

- **Analysis of Restoration Potential:** The west parcel is in undisturbed, natural riparian vegetation and the only desirable restoration is the control of black walnuts. The southeast parcel is dominated by nonnative tree species and substantially disturbed but it is a very small site that is likely not economically viable for traditional restoration. Removal of the non-native species would increase the habitat value. The northwest parcel is in dense riparian vegetation and no restoration is required.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site. The southwest parcel shows signs that it may have been a home site in the past.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

Parcel History No.	Year	Record Ac.	Funding Source
820990	1991	165.50	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
821456	1995	1.0	Trade for a 1.7 ac portion of the Stegeman Unit

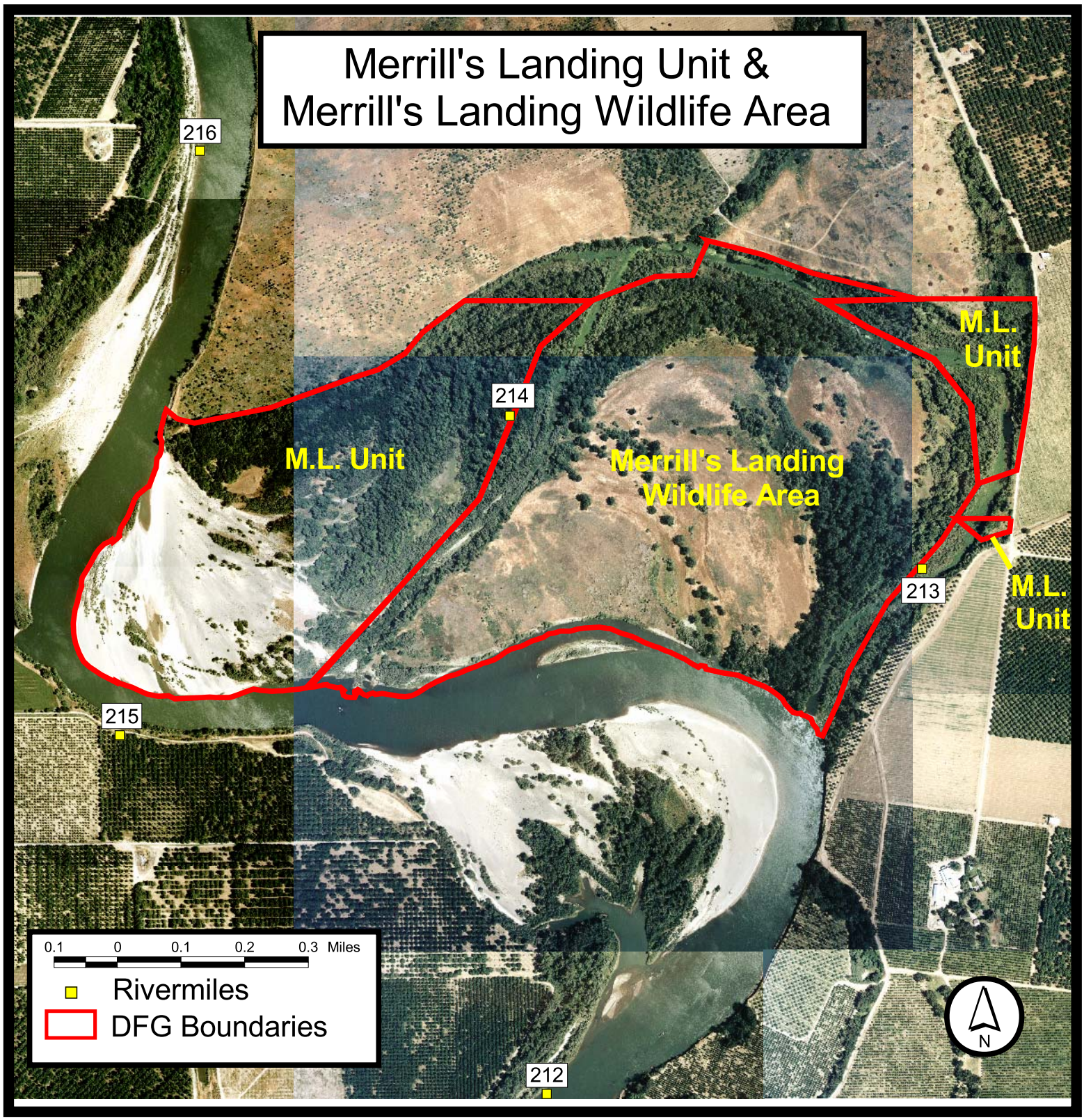
Specific Management Issues / Concerns: The southeast and northeast parcels are accessible from Ballard Road. While the northwest parcel is relatively unaffected, the southwest parcel is degraded by frequent vehicular access and dumping of various materials. Signing and a physical barrier to access are needed to control the degradation of the area.

Potential for Coordinated Management with Adjacent Properties: The Unit lies to the east and west of the Merrill's Landing Wildlife Area that is managed by DFG Region 1. These two DFG areas should be managed as one site. Immediately north of the Merrill's Landing property is the U.S. Fish and Wildlife Service's 420-acre Rio Vista Unit. The USFWS and DFG properties should either be managed in a coordinated manner or managed by one entity as one area.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820990 and 821456. Sacramento, California.

- Greco, Steven E., 1999. Monitoring Riparian Landscape Change and Modeling Habitat Dynamics of the Yellow-billed Cuckoo on the Sacramento River, California - A Dissertation in Ecology for the Office of Graduate Studies, University of California, Davis, Davis, California.


Merrill's Landing Unit &
Merrill's Landing Wildlife Area
216
214
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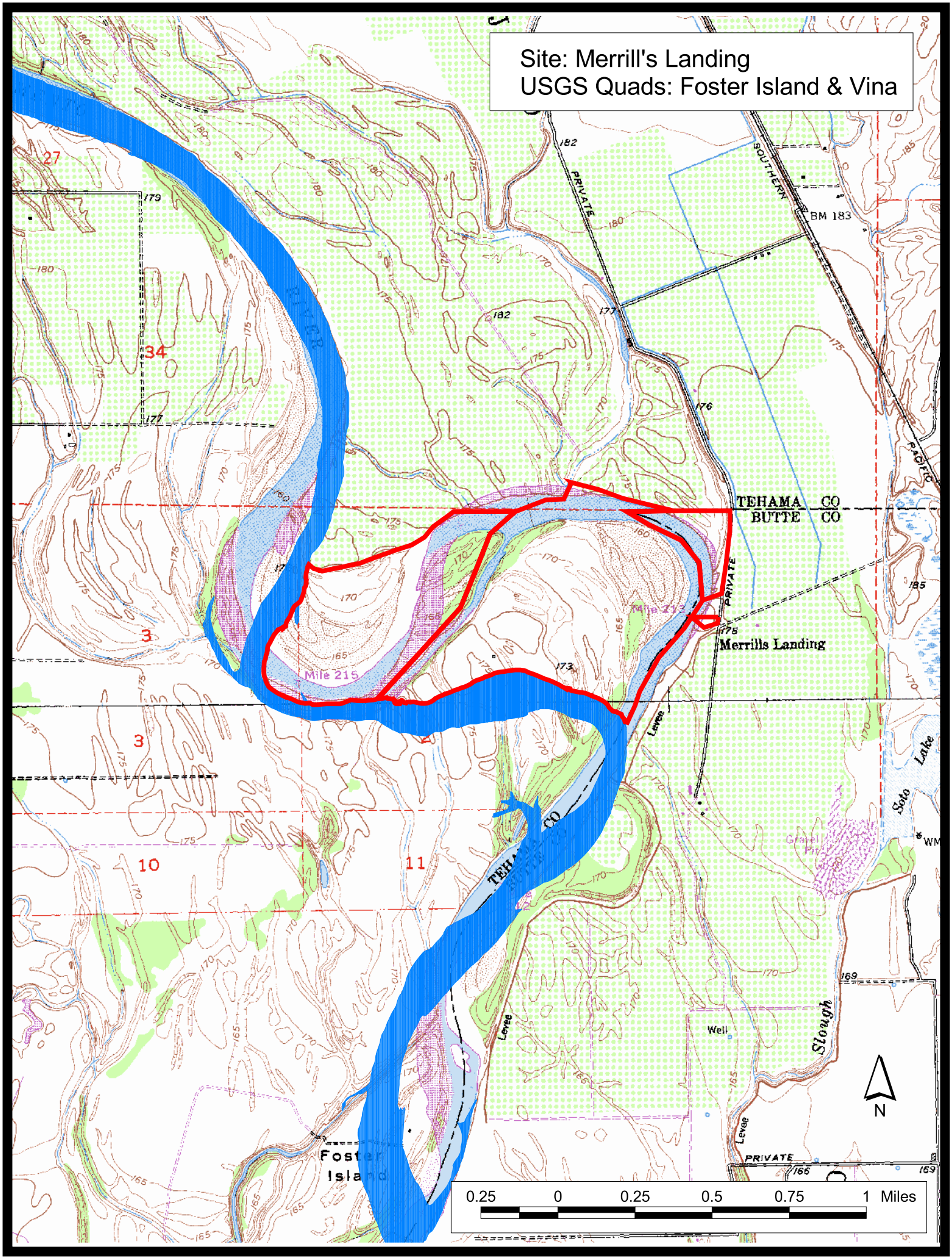

Site: Merrill's Landing
USGS Quads: Foster Island & Vina
TEHAMA CO
BUTTE CO
Merrills Landing
Mile 215
Mile 213
Foster Island
Slough
Lake
Levee
PRIVATE
SOUTHERN
PACIFIC
BM 183
Well
Gravel Pit
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Dicus Slough **Parcel History No.** 820902, 821123, 821239 **Inventory Date:** 9/14/03

Location: River Mile: 209 **County:** Butte

Unit Area: **Record Area:** 143.8 acres **Estimated Actual Area:** 155 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 047-020-016, 018, 019 **USGS Topo Quad:** Foster Island

- **Generalized Legal Description:**

Section	Township	Range
23, 24	23N	02W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Woodson Bridge Subreach

- **150 Year Meander Belt Relationship:** The westerly 70% Unit is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

- **Site Access - River Access:** Easy river access available via gravel bar on the southwest shore

  - Public Road Access: No public road access. Public Access via River Only

Adjoining Property:

Direction	Land Use	Ownership
N	riparian, orchard	private
S	river, riparian, orchard, 1 residence	State, private
E	orchard	private
W	river, riparian, row crops	State / private

Physical Description: The west 10% +/- of the site is a low terrace with the remainder a high terrace. Dicus Slough holds a permanent pool of water on the southeast boundary and a shallow swale crosses the center of the Unit from north to south. An expanding gravel bar occupies the southwest boundary of the Unit.

- **River Channel Meander History / 25 & 50-Year Projections:** The river channel has moved westward since before 1900. DWR erosion projections indicate that approximately 40% of the site, on the west, will erode within the within the 50-year term. However, historic movement of the channel does not substantiate that projection which may be a data anomaly.

- **Inundation Frequency:** Flood frequencies generally increase with distance from the river with the exception of the Dicus Slough area. The Unit lies within 1 to 5 year recurrence zones.

- **Soils:** About 1/3 of the site consists of Columbia Sand. This soil is found along both the current river channel and within those portions of the sloughs found within the unit's boundary. The remaining 2/3 of the unit's soils consist of Maywood fine sandy loam soil

Vegetation:

- **Habitat Types** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	25 ac.
Gravel	16 ac.
Marsh	2 ac.
Mixed Riparian Forest	18 ac.
Open Water	4 ac.
Riparian Scrub	90 ac.

- **Existing Vegetation Comments:** The portion of the site where orchards were removed is substantially dominated by invasive species, principally johnson grass, but including tree of heaven and himalayan blackberry, which have substantially limited natural recruitment of native species.

- **Existing and Historical Agriculture:** The majority of the site was used for agriculture in the past. An 64-acre Almond orchard and a 34-acre area cleared for row crops existed when the majority of the site was acquired in 1992. The almond orchard was removed in 1993 but, no restoration has taken place.

- **Vegetation Succession Projection:** The former orchard and crop areas exhibit limited recruitment of native oak species as well as black walnut and peach trees from former root stock. In the majority of this area invasive species, principally johnson grass and tree of heaven, dominate. It is anticipated these species will continue to preclude substantial natural recruitment of riparian vegetation.

- **Restoration History:** The almond orchard on the site was removed in 1993. No replanting has occurred.

- **Analysis of Restoration Potential:** The former orchard and row crop areas, which total about 80 acres, have adequate soils and reasonable access to permit restoration planting and no natural limitations have been identified. Restoration of the 80 +/- acre area should be evaluated in detail.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site. There is an existing well and electrical service in the east central portion of the site. The owner of the adjoining walnut orchard to the east has the right to continue its use.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring activities have been identified.

Acquisition:

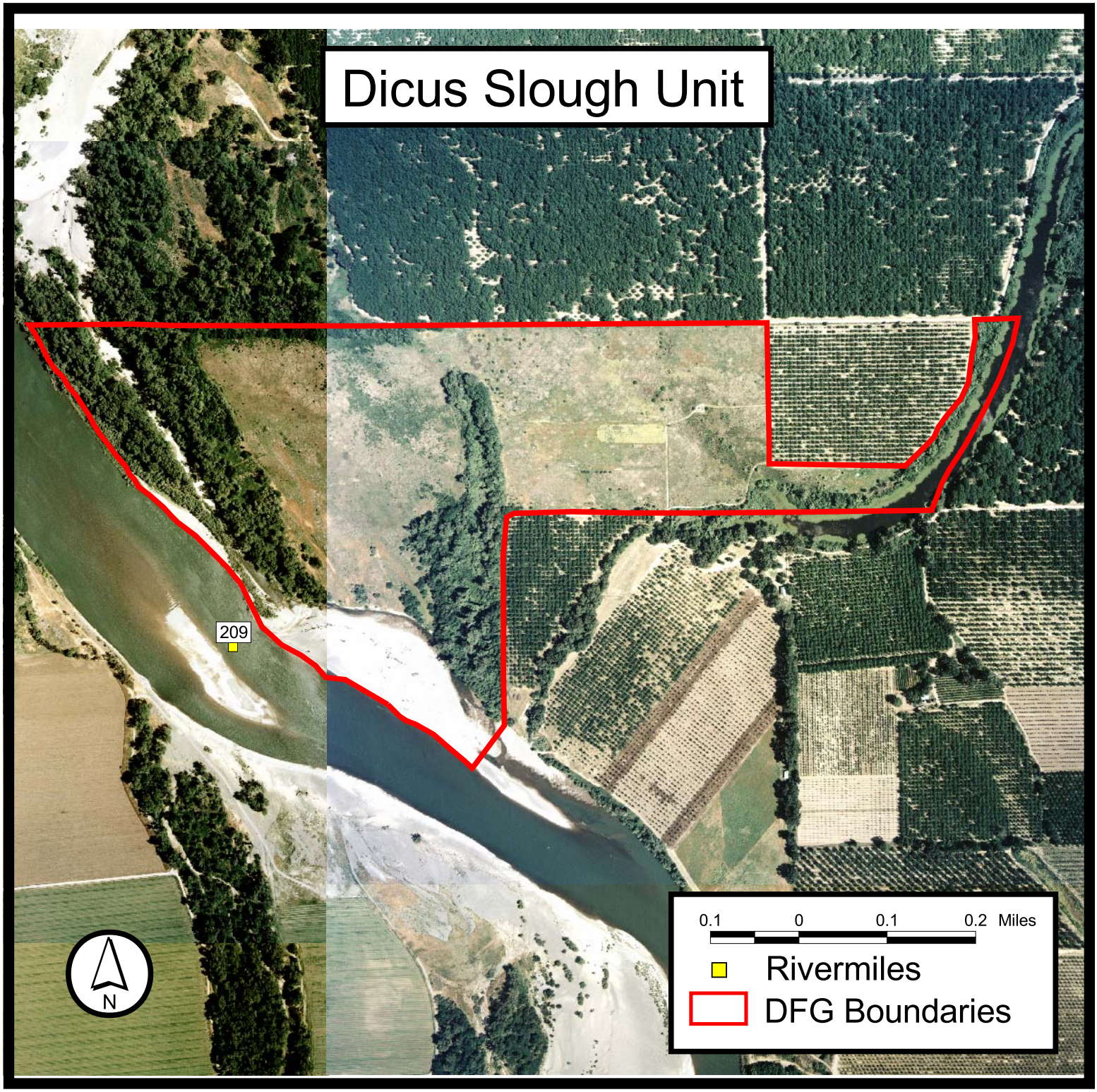
Parcel History No.	Year	Acres	Funding Source:
820902	1989	20.08	Fund 140 - Environmental License Plate
821123	1991	25.0	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
821239	1993	98.72	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

Specific Management Issues / Concerns: Visible, signs of unauthorized vehicular access to and across the site from Department access point. Gating and signing to preclude unauthorized access should be provided.

Potential for Coordinated Management with Adjacent Properties: There are no adjacent conservation agency properties or unusual management coordination opportunities available in the area..

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820902, 821123 and 821239. Sacramento, California.


Dicus Slough Unit
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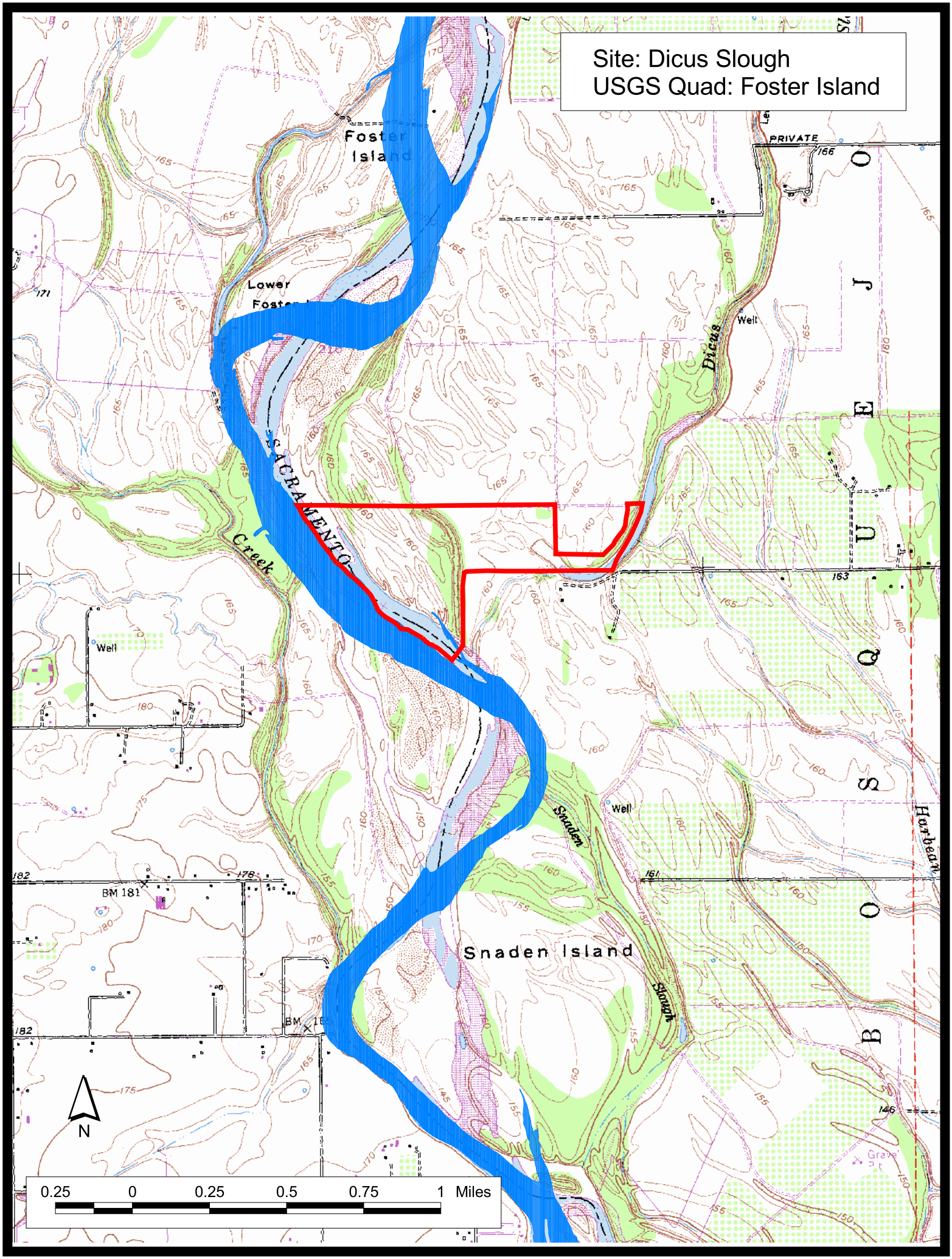
Site: Dicus Slough
USGS Quad: Foster Island
Foster Island
Lower Foster
PRIVATE
Well
Dicus
SACRAMENTO
Creek
Well
Well
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Harbeart
BM 181
Snaden Island
Slough
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SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Wilson Landing **Parcel History No.** 820825 **Inventory Date:** 9/14/03

Location: **River Mile:** 203 to 205L **County:** Glenn

Record Area: 285.45 acres **Estimated Actual Area:** 338 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 037-010-003, 110-003 **USGS Topo Quad:** Corning

- **Generalized Legal Description:**

Section	Township	Range
6	22N	1W
1	22N	2W
31	23N	1W
36	23N	2W

- **Survey Status:** There is no known property survey.

Sacramento River Conservation Area Subreach: Red Bluff to Chico Landing Reach (Woodson Bridge Subreach)

150 Year Meander Belt Relationship: The entire Unit is within the DWR 150 Year Meander Belt.

Site Access **-River Access:** The site is accessible from the river at a point bar along the southwest edge of the site.

-Public Road Access: The Subunit has no public road access. Public Access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	riparian, orchards	private
S	Orchards/Cultivated Land	private
E	river / orchards, riparian	private
W	river / riparian, orchards	private

Physical Description: The Subunit is an irregular oval lying on the east side of the river. The site was located on the west side of the river until 1970 when the neck of the bend was cut and an oxbow was formed. It is composed of a central high terrace with a low terrace area to the east, surrounded on three sides by an oxbow that occupies a low terrace. The oxbow has permanent water along the east perimeter of the site though the lake area does not connect to the river during normal flows. A more recently created gravel bar occupies the southwest corner of the property and it is separated from the bulk of the site by a secondary channel. A primitive roadway extends from the northwest boundary to the center of the site.

River Channel Meander History / 25 & 50-Year Projections: With the exception of the high terrace area in the west central portion of the site, the entire Unit has been within the river channel in the past century. The channel moved progressively northeast over the low terrace area during the 1900's. The river cut off the neck of the bend in 1970 and the reallocated main channel has moved to the southwest since that time. The DRW erosion projections anticipate the erosion of approximately 40 % of the southern portion of the site in the 25-year term and 60 % in the 50-year term. However, given the major, recent public investment in the GCID pumping plant upstream of the Unit, it is likely that steps may be taken to preclude meander in the area that would jeopardize that facility. Such steps could substantially reduce the projected erosion of this Subunit.

Inundation Frequency: The central portion of the site has an inundation frequency of 2.5 years or less. It is believed that the oxbow area is inundated annually.

Soils: Approximately 40% or of the unit's total area contains soils in the Columbia series. These soils are located north of the river in the high terrace areas. The remaining area, outside of the oxbow, consists largely of gravel and channel material. Soils information for the oxbow area is not available.

Vegetation:

- **Habitat Types:** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	40 ac.
Gravel	16 ac.
Herbaceous Layer	183 ac.
Marsh	5 ac.
Mixed Riparian Forest	40 ac.
Open Water	12 ac.
Riparian Scrub	42 ac.

- **Existing Vegetation Comments:** Following the cutoff of the oxbow in the late 1970's riparian vegetation has steadily expanded on the site. The oxbow area has gradually filled to support a dense, cottonwood riparian forest. The vegetation on the central portion of the site is reportedly impacted by relatively frequent fires. In 2002, the site reportedly had fires two fires.

- **Existing and Historical Agriculture:** The west central portion of the site was farmed for row crops until shortly after the channel relocation eliminated land access from Glenn County.

- **Vegetation Succession Projection:** Lacking restoration of the interior area, continued domination by invasive species is anticipated and no substantive change is anticipated.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** The majority of the central portion of the Unit has not reverted to natural riparian vegetation over the past 25 plus years. This may be due to a combination of the modified flow regime on the river, competition from invasive species and frequent fires on the site. The site has a good potential for restoration of riparian vegetation, especially in the west central area where Columbia soils are mapped. Other areas could be restored with vegetation suited to the soil and drainage conditions and/or control of invasive species. One important consideration is that temporary access would have to be acquired across property to the north and east to permit an efficient site preparation and planting operation. Restoration of the 165 +/- acre area should be evaluated in detail.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring has been identified.

Acquisition:

Parcel History No.	Year	Acres	Funding Source:
820825	1986	285.45	Fund 140 – Environmental License Plate

Specific Management Issues / Concerns: Wilson Landing Road is a dead end at the oxbow lake on the east side of the Unit. The terminus is often used for drinking, shooting and dumping of trash, although this may not be directly related to the presence of the DFG property across the oxbow lake. The adjoining property managers report that these activities are a source of ongoing problems. They also indicated that there is frequent trespass across their property to access the Unit. Site inspection confirms that vehicles frequently access the Unit from the adjoining property and drive across the Unit such that a defined roadway exists. Installation of barriers and signing should be implemented to protect the Unit from such misuse. Gating and signing of the Unit to preclude unauthorized dumping and access should be implemented.

The adjoining property managers have also suggested abandonment of the westerly portion of Wilson Landing Road that connects to the oxbow and facilitates the trespass and vehicular access to the Unit. Such closure would require

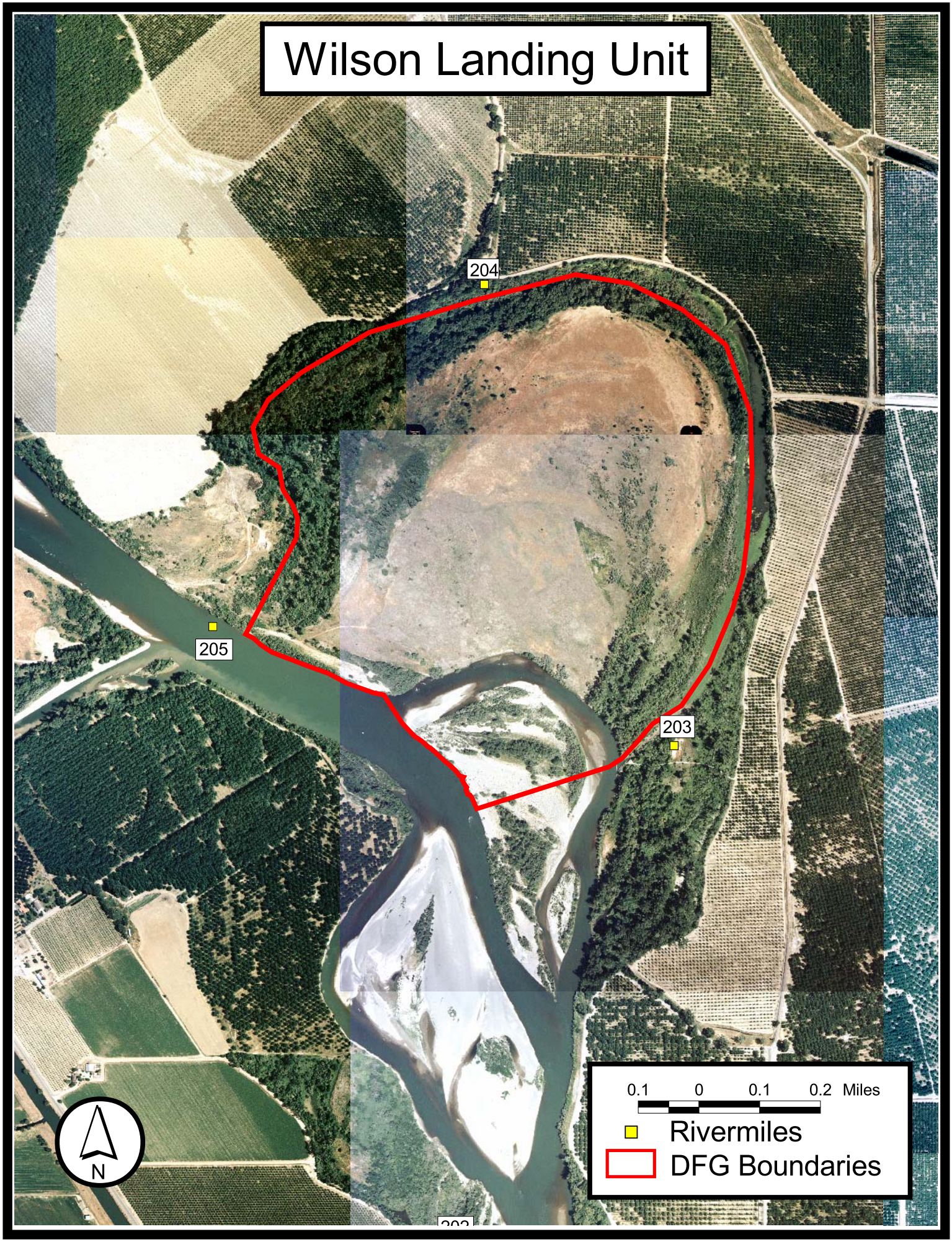
official action by Butte Count. The Department should evaluate the merits of supporting a request for such abandonment.

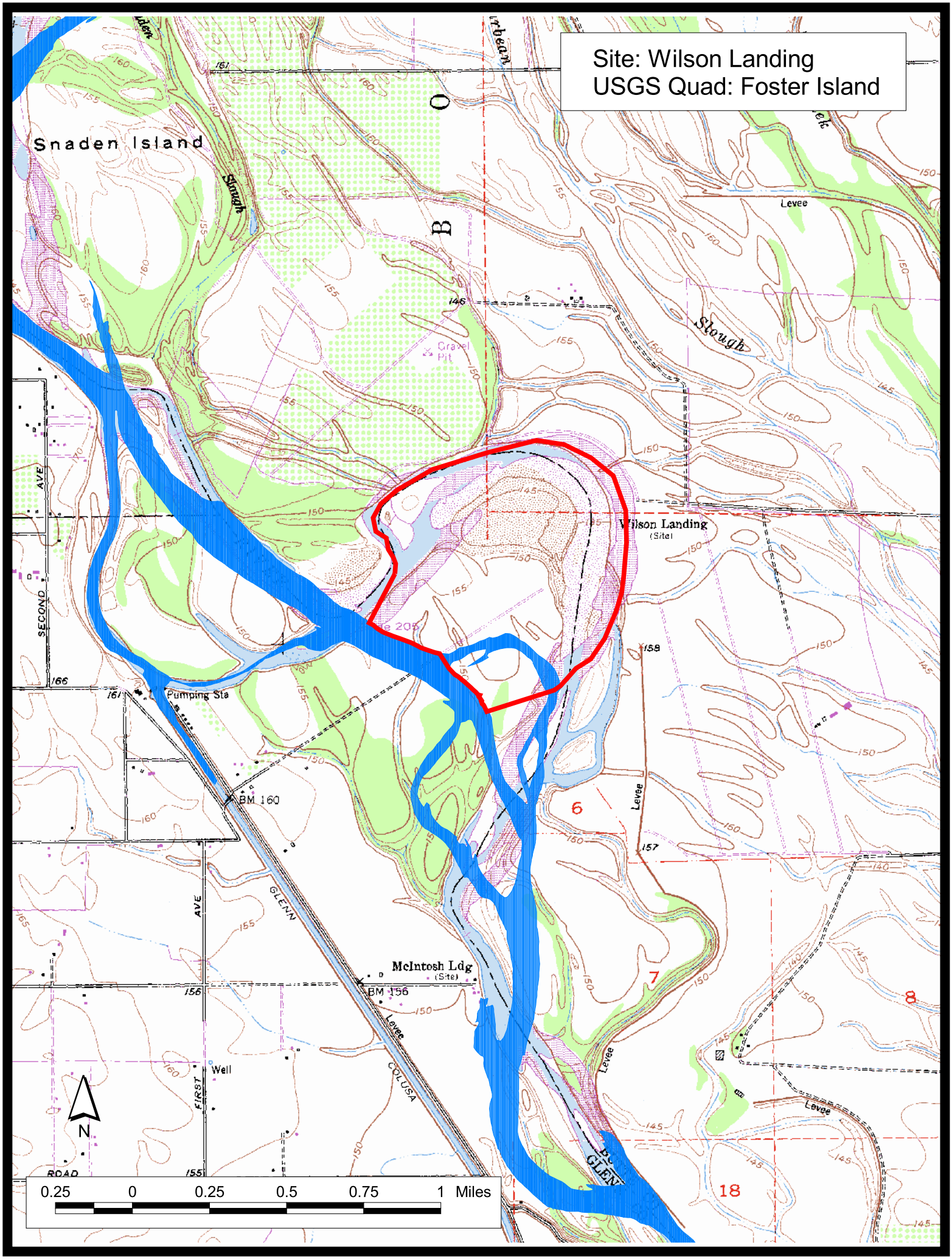
Potential for Coordinated Management with Adjacent Properties: The Unit is located about two miles south of the Dicus Slough Unit. There are no adjacent conservation agency properties or unusual management coordination opportunities.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820825. Sacramento, California.

- Greco, Steven E., 1999. Monitoring Riparian Landscape Change and Modeling Habitat Dynamics of the Yellow-billed Cuckoo on the Sacramento River, California - A Dissertation in Ecology for the Office of Graduate Studies, University of California, Davis, Davis, California.


Wilson Landing Unit
204
205
203
0.1 0 0.1 0.2 Miles
Rivermiles
DFG Boundaries
N


Site: Wilson Landing
USGS Quad: Foster Island
Snaden Island
Slough
Levee
Gravel Pit
Wilson Landing
(Site)
Pumping Sta
BM 160
McIntosh Ldg
(Site)
BM 156
Well
GLENN
COLUSA
SECOND
AVE
FIRST
ROAD
6
7
8
18
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Pine Creek-North **Parcel History No.** 820691 **Inventory Date:** 9/14/03

Location: **River Mile:** 196 to 198L **County:** Glenn

Record Area: 371.67 acres **Estimated Actual Area:** 331 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 032-270-005, 280-007, 013 **USGS Topo Quad:** Ord Ferry

- **Generalized Legal Description:**

Section	Township	Range
21,22	22N	01W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Reach (Subreach):** Red Bluff to Chico Landing Reach (Chico Landing Subreach)

- **150 Year Meander Belt Relationship:** The entire Subunit is entirely within the DWR 150 Year meander belt that defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access **- River Access:** The site is accessible from the river at a point bar along the west portion of the site.

- Public Road Access: The Subunit has no public road access. Public Access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	restored riparian	USFWS
S	river / orchards, riparian	State / TNC, DFG
E	riparian	DPR
W	river / orchards	State / TNC

Physical Description: The property lies on the north and east side of the river and the shape is an irregular rectangle. The area abuts Pine Creek on the east and a levee is located along the west half of the north property line. It is primarily a low terrace area with several swales running west to east. There are no roadways or pathways on the site.

River Channel Meander History / 25 & 50-Year Projections: The river channel has moved progressively south over the area since about 1940. About one acre of the Subunit, located in the northwest corner of the parcel closest to the current river channel, is within the DWR projected 50-year erosion zone. No portion of the property is within the projected 25-year erosion zone. The potential removal of riprap on the Gunhill property to the south could substantially increase erosion on the Pine Creek – West Subunit across the river. Erosion of that Subunit would be approximately offset by accretion to the Pine Creek – North Subunit. This renewal of natural process could have a major habitat expansion benefit.

Inundation Frequency: The Subunit generally has a flood frequency of one to 2.5 years depending upon elevation. The extreme northeast corner of the site is estimated by DWR to have a five-year inundation frequency although USGS topo maps do not show elevation to justify such greater frequency.

Soils: Columbia series soils dominate the southern half of the north parcel and the northern half of the property is identified as containing Maywood Fine Sandy Loam.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	117 ac.
Gravel*	20 ac.
Herbaceous Layer	48 ac.
Marsh	9 ac.
Mixed Riparian Forest	95 ac.
Open Water	4 ac.
Riparian Scrub	38 ac.

*Gravel includes gravel bars, sand bars, and channel material.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The Subunit is a recently deposited area that has not been in agricultural use.

- **Vegetation Succession Projection:** Over time the site is expected remain or transition to Great Valley Mixed Riparian Forest and Great Valley Cottonwood Riparian Forest.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** The site is entirely is riparian vegetation and no restoration is required.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring activities have been identified.

Acquisition:

Parcel History No.	Year	Record Ac.	Funding Source
820691	1986	351.67	Fund 447 Wildlife Restoration Fund (1944)

Specific Management Issues / Concerns: Pedestrian access to the Subunit may be available from the north in the future, across the adjoining Pine Creek Unit of the Sacramento River National Wildlife Refuge and properties now owned by TNC, which abut Highway 32. It is anticipated that the TNC properties are planned to be transferred to DPR (the west 20 acres adjoining the river) and the USFWS (the remainder). When such transfers are made and these adjoining properties are opened to public access, provision for land access to this Subunit should be made. Additionally, the southeast gravel bar in the southeast corner of the Subunit, known locally as “Beer Can Beach”, has had major, short term impact from annual tubing events.

Potential for Coordinated Management with Adjacent Properties: The Subunit is adjacent to the Pine Creek Unit of the Sacramento River National Wildlife Refuge and a restored Reclamation Board mitigation site on the north as well as the Pine Creek Landing portion of the Bidwell- Sacramento River State Park across Pine Creek to the east. The Subunit is a part of the more than 3000 acres of conservation land in the Pine Creek / Hamilton City area. The large area offers the potential for a masterplanned habitat and recreation complex with public access and visibility from Highway 32 and county roads in both Butte and Glenn County.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820691. Sacramento, California.

- Greco, Steven E., 1999. Monitoring Riparian Landscape Change and Modeling Habitat Dynamics of the Yellow-billed Cuckoo on the Sacramento River, California - A Dissertation in Ecology for the Office of Graduate Studies, University of California, Davis, Davis, California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Pine Creek-West **Parcel History No.** 820771, 821122, 821252, 821257 **Inventory Date:** 9/14/03

Location: **River Mile**: 194 to 196.5R **County**: Butte, Glenn

Record Area: 471.12 acres **Estimated Actual Area:** 463 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 039-590-022, 023 (Butte) 032-030-006, 011, 280-011, 014(Glenn) **USGS Topo Quad:** Ord Ferry

- **Generalized Legal Description:**

Section	Township	Range
22, 26, 27, 43, 35	22 N	01 W

Survey Status: There is no known property survey.

Sacramento River Conservation Area Reach (Subreach): Chico Landing to Colusa Reach (Chico Landing Subreach)

150 Year Meander Belt Relationship: The entire Subunit is within the DWR 150 Year meander belt that defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access **- River Access:** The site is accessible from the river with a point bar on the northeast corner of the area.
- Public Road Access: The site has public road access at the east end of County Road 23, which connects to Highway 45 to the west.

Adjoining Property:

Direction	Land Use	Ownership
N	river / riparian	State / DFG
S	levee / orchards	TNC
E	river / riparian	State / DFG
W	levee / orchards	TNC

Physical Description: The Subunit is located south and west of the river and the shape is an irregular oval. A levee is located along the and south boundary and there is riprap along the north river bank. The site is generally a low to high terrace area that was leveled for agriculture with a more recently deposited low terrace and point bar in the northeast portion of the site. A swale runs along the west and south edge of the site just below the levee. Riprap is existing along the riverbank at the northwest edge of the Subunit. The site has primitive roadways across the site related to the restoration activity.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved across the entire site over the last 100 years and substantial erosion is projected by DWR in the future 50 years. DWR erosion projections anticipate the progressive erosion of 20 percent of the east central portion of the site over the 50-year tern. The potential removal of riprap on the Gunhill property to the northeast could substantially increase erosion on the north portion of the site. Because the property across the river to the north is owned by DFG, erosion of this Subunit would be approximately offset by accretion to the Pine Creek – North Subunit. This renewal of natural process could have a major habitat expansion benefit.

- **Inundation Frequency:** The Subunit has a flood frequency of one to 2.5 years depending upon elevation.

- **Soils:** The Subunit has Columbia series soils in the northern area, Gianella series within Jenny Lind Bend and riverwash in the low terrace area to the northwest.

Vegetation:
- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Blackberry Scrub	1 ac.
Cottonwood Forest	55 ac.

Gravel*	52 ac.
Herbaceous Layer	18 ac.
Marsh	7 ac.
Mixed Riparian Forest	30 ac.
Open Water	10 ac.
Riparian Scrub	49 ac.
Restored riparian forest	239 ac (planted in 2002)

*Includes gravel bars, sandbars, and channel material.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture**: By the early 1950's the site was farmed for row crop use and 163 acres were later planted to almond. prune and walnut orchards. When DFG acquired the property in 1991, the row crop use had been discontinued due to flooding, erosion and pest problems.

- **Vegetation Succession Projection:** With growth of the restoration planting, the site is expected to remain or transition to a Great Valley Mixed Riparian Forest with localized areas adapted to the site-specific conditions.

- **Restoration History:** Approximately 239 acres of the Subunit were restored under contract to Sacramento River Partners in 2002. The planting mix featured six distinct communities. The planting featured valley oak, sycamore and Fremont cottonwood as the dominant tree forms with a midstory of box elder, several willow species and range of understory species including coyote bush, wild rose, blackberry, mugwort and native grasses. Localized soil and drainage conditions dictated the detailed placement of plant species

- **Analysis of Restoration Potential:** Assuming successful growth of the restoration plantings, the site is considered fully restored.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by River Partners in 2003 to 2006.

Acquisition:

Parcel History No.	Year	Record Ac.	Funding Source
820771	1987	118.33	Fund 140 – Environmental License Plate Fund
821252	1987	7.9	Fund 140 – Environmental License Plate Fund
821257	1991	159.34	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
821122	1991	185.551	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

Specific Management Issues / Concerns: The property is accessible from the terminus of Road 23 which has facilitated dumping, littering and off road vehicle use. Signing and access control is required to limit the problems.

Potential for Coordinated Management with Adjacent Properties: The Subunit is adjacent to the Capay Unit of the Sacramento River National Wildlife Refuge on the south and anticipated future riparian restoration areas owned by TNC on the west. The Subunit is a part of the more than 3000 acres of conservation land in the Pine Creek / Hamilton City area. The large area offers the potential for a master planned habitat and recreation complex with public access and visibility from Highway 32 and county roads in both Butte and Glenn County.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820771, 821252 821257 and 821122. Sacramento, California.

- Sacramento River Partners, 2003. Riparian Restoration Unit Plan for the Pine Creek Unit, Upper Sacramento River Wildlife Area, Glenn County, California, Draft Report. Dan Efseaff, Erin McKinney and Helen Swagerty. Chico California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Pine Creek-East **Parcel History No.** 821149, 821150 **Inventory Date:** 9/14/03

Location: **River Mile**: 194.5 to 195.5L **County:** Butte, Glenn

Record Area: 218.56 **Estimated Actual Area:** 197acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s)**: 039-590-007(Butte), 032-030-002 (Glenn) **USGS Topo Quad:** Ord Ferry

- **Generalized Legal Description:**

Section	Township	Range
27	22N	01W

- **Survey Status:** There is no known property survey.

Sacramento River Conservation Area Reach (Subreach): Red Bluff to Chico Landing (Chico Landing Subreach)

150 Year Meander Belt Relationship: The entire Subunit is within the DWR 150 Year meander belt that defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access

- River Access: The Subunit is accessible from the river with a large point bar along the south portion of the site.

- Public Road Access: The Subunit can be accessed from River Road across the Bidwell-Sacramento River State Park on the north side of the Park office compound, .2 miles south of Sacramento Avenue on River Road.

Adjoining Property:

Direction	Land Use	Ownership
N	riparian, orchard	DPR, private
S	riparian, river	DPR, State
E	riparian	DPR
W	river / riparian	State / DFG

Physical Description: The Subunit is located on the east side of the river and roughly an oval shape with a point extending to the northwest. It is composed of a high terrace interior surrounded by an oxbow that has permanent water along the central portion of the east boundary. A large point bar occupies the southwest portion of the site. A primitive pathway onto the site extends from the north side of the State Park office compound.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has occupied all of the area over the past 100 years and the river occupied the oxbow area until some time between 1923 and 1946. DWR erosion projections anticipate erosion at both the north and south ends of the site with over half of the site progressively eroded over the 50-year term.

- **Inundation Frequency:** The Subunit has a flood frequency of one to 2.5 years depending upon elevation.

- **Soils:** The interior, high terrace area has a combination of Columbia and Horst series soils with channel materials and riverwash in the oxbow and riverwash on the point bar to the southwest.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	7 ac.
Gravel	30 ac.
Herblaceous Layer	14 ac.

Marsh	5 ac.
Mixed Riparian Forest	80 ac.
Riparian Scrub	17 ac
Open Water	2 ac.
Abandoned almond & walnut orchards	42 ac.

- **Existing Vegetation Comments:** The Subunit has substantial areas of invasive species including Johnson Grass, fig and Himalayan Blackberry.

- **Existing and Historical Agriculture**: The interior of the site was used for agriculture when it was physically connected to Glenn County. When acquired by DFG in 1992, it contained 42 acres of almond and walnut orchards. The orchards have not been removed.

- **Vegetation Succession Projection:** The presence of the abandoned orchard has severely retarded the recruitment of natural vegetation and will do so in the foreseeable future. The remainder of the site is expected remain or transition to Great Valley Mixed Riparian Forest.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** The former orchard area (42 acres) is a potential restoration site. It features good soils, reasonable access, practical size and inadequate natural recruitment of riparian vegetation. Restoration of the area should be evaluated in detail.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site. The site has a house in very poor condition located in the orchard area.

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- CSU-Chico of vegetation and neotropical migrant survey in 2002.

Acquisition:

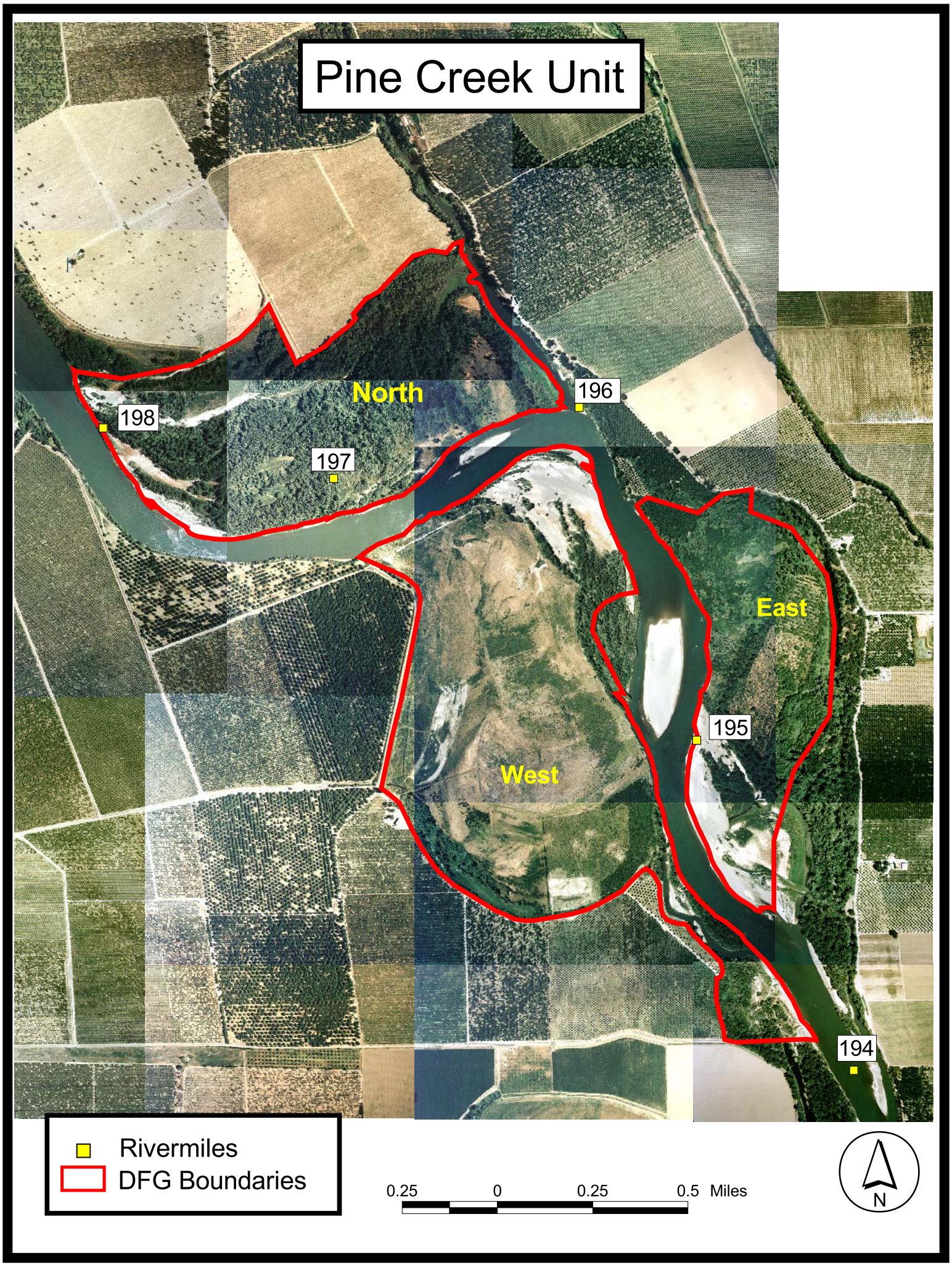
Parcel History No.	Year	Record Ac.	Funding Source
821149	1991	20	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
821150	1991	20	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

Specific Management Issues / Concerns: The Subunit is commonly accessed for hunting and other purposes across DPR property where hunting and firearms are not permitted. This conflict with DRP regulations should be addressed. The existing house in the interior of the site is in very poor condition and it should be removed.

Potential for Coordinated Management with Adjacent Properties: The Subunit is adjacent to and can be accessed across the Bidwell - Sacramento River State Park that is actively staffed and managed. Management by DPR or transfer of ownership to DPR should be evaluated. One potential issue is that the area is now used by the public for hunting and DPR does not permit hunting in the State Park. The area is also portion of the more than 3000 acres of conservation land in the Pine Creek / Hamilton City area. The large area offers the potential for a master planned habitat and recreation complex with public access and visibility from Highway 32 and county roads in both Butte and Glenn County.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821149 and 821150. Sacramento, California.


Pine Creek Unit
North
West
East
198
197
196
195
194
Rivermiles
DFG Boundaries
0.25
0
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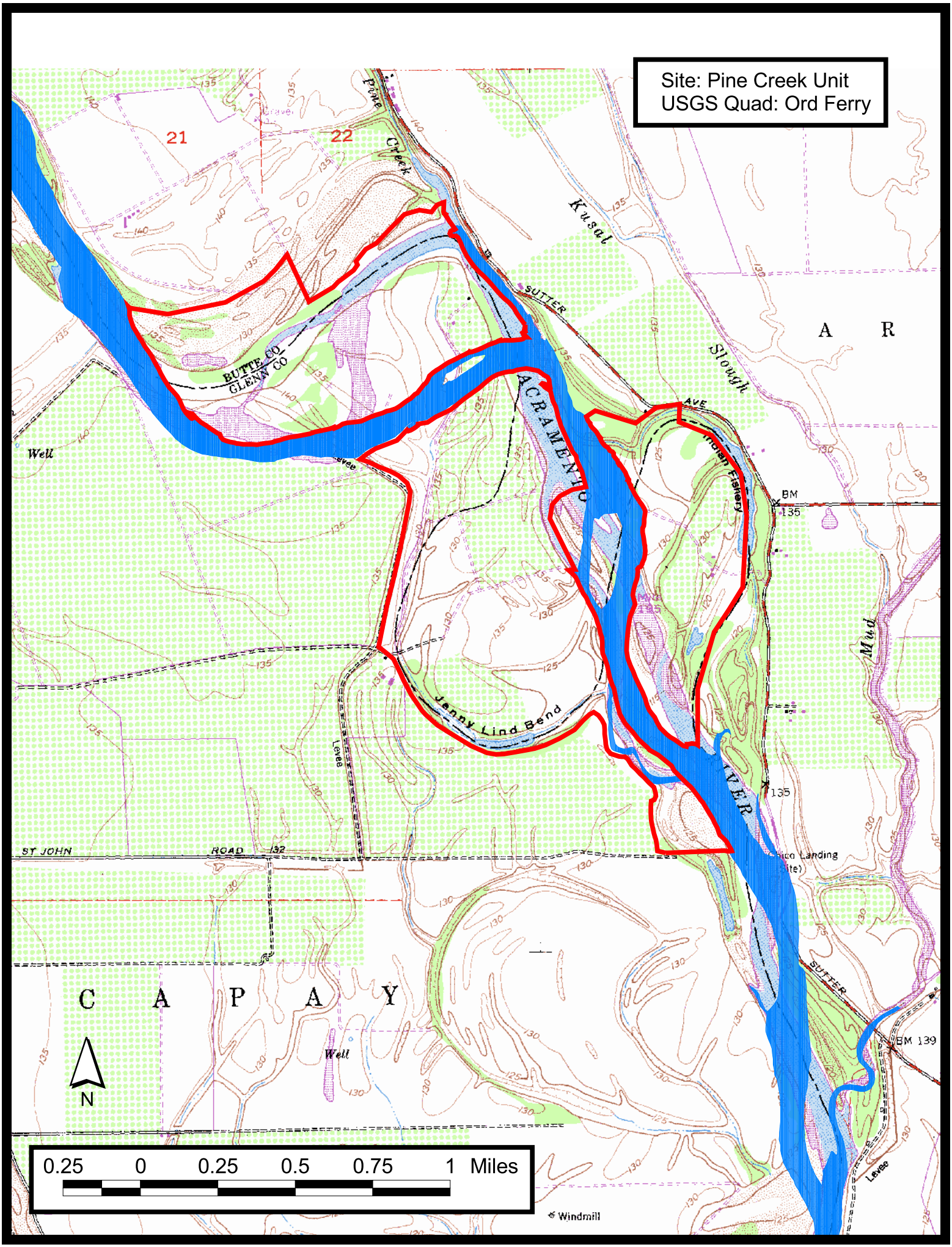
0.5
Miles
N


Site: Pine Creek Unit
USGS Quad: Ord Ferry
21
22
Pine Creek
Kusal Slough
SUTTER
BUTTE CO
GLENN CO
SACRAMENTO RIVER
Indian Fishery
Jenny Lind Bend
Levee
Well
BM 135
135
ST JOHN ROAD
132
Mud
SUTTER
BM 139
Windmill
C A P A Y
A R
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Shannon Slough **Parcel History No.:** 820413 **Inventory Date:** 9/14/03

Location: **River Mile:** 187R **County:** Glenn

Record Area: 150 acres **Estimated Actual Area:** 144 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 023-030-320, 330,340 **USGS Topo Quad:** Ord Ferry

- **Generalized Legal Description:**

Section	Township	Range
06, 07	21N	01W

- **Survey Status:** The Unit was surveyed to determine acreage prior to purchase, map indicates "drawn by C. Conley", dated June, 1978.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Chico Landing Subreach)

- **150 Year Meander Belt Relationship:** The entire Unit is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

- **Site Access** **- River Access:** The site is accessible from the river.

  - Public Road Access: The site has no public road access. Legal public access is only from the river.

Adjoining Property: Direction	Land Use	Ownership
N	river / riparian	State / private, DWR
S	orchards, riparian	private
E	river / riparian	State / private
W	riparian	DWR, private

Physical Description: The Unit has a rounded, triangular shape. It is located on the west side of the river with a private levee located just outside of the site. The site is a high terrace on the south with a swale, known as Shannon slough, running along the inside of the levee. A slough with a permanent pool of water bisects the site from northwest to southeast and a low terrace extends from the slough to an expanding point bar on the east. The southwest portion of the site has been used for small-scale gravel removal up to the present. There are no roadways or pathways on the site except for the gravel roadway on the adjacent levee for which DFG has access rights.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved across the site over the last 70 years. DWR erosion projections anticipate the erosion of approximately the westerly 25% of the site in the next 25 years and 35% of the site over the next 50 years. Because there is a recent history of intervention to preclude such erosion along the easterly extension of Road 29, it is uncertain if such erosion will occur as projected.

- **Inundation Frequency:** The entire Unit has an inundation frequency of one year or less.

- **Soils:** The majority of the site is riverwash, gravel and other channel materials. An area of Columbia soils runs through the site in the Shannon Slough area.

- **Vegetation:**
- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos) Herbland Cover

Cottonwood Forest	24 ac.
Gravel*	37 ac.
Mixed Riparian Forest	44 ac.
Herbaceous Layer	4 ac.
Open Water	4 ac.
Giant Reed (arundo)	10 ac.
Riparian Scrub	21 ac.

*Gravel includes gravel bars as well as channel material along side the current channel and within abandoned channels.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** There is no known record of agricultural activity on the property.

- **Vegetation Succession Projection:** It is anticipated that the site will continue to transition to a Mixed Riparian Forrest.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** The southwest corner of the site has been degraded by recent gravel removal and agricultural planting. While soils are of a poor quality in the area, the need for limited restoration activity should be reviewed when the degradation activities are terminated.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

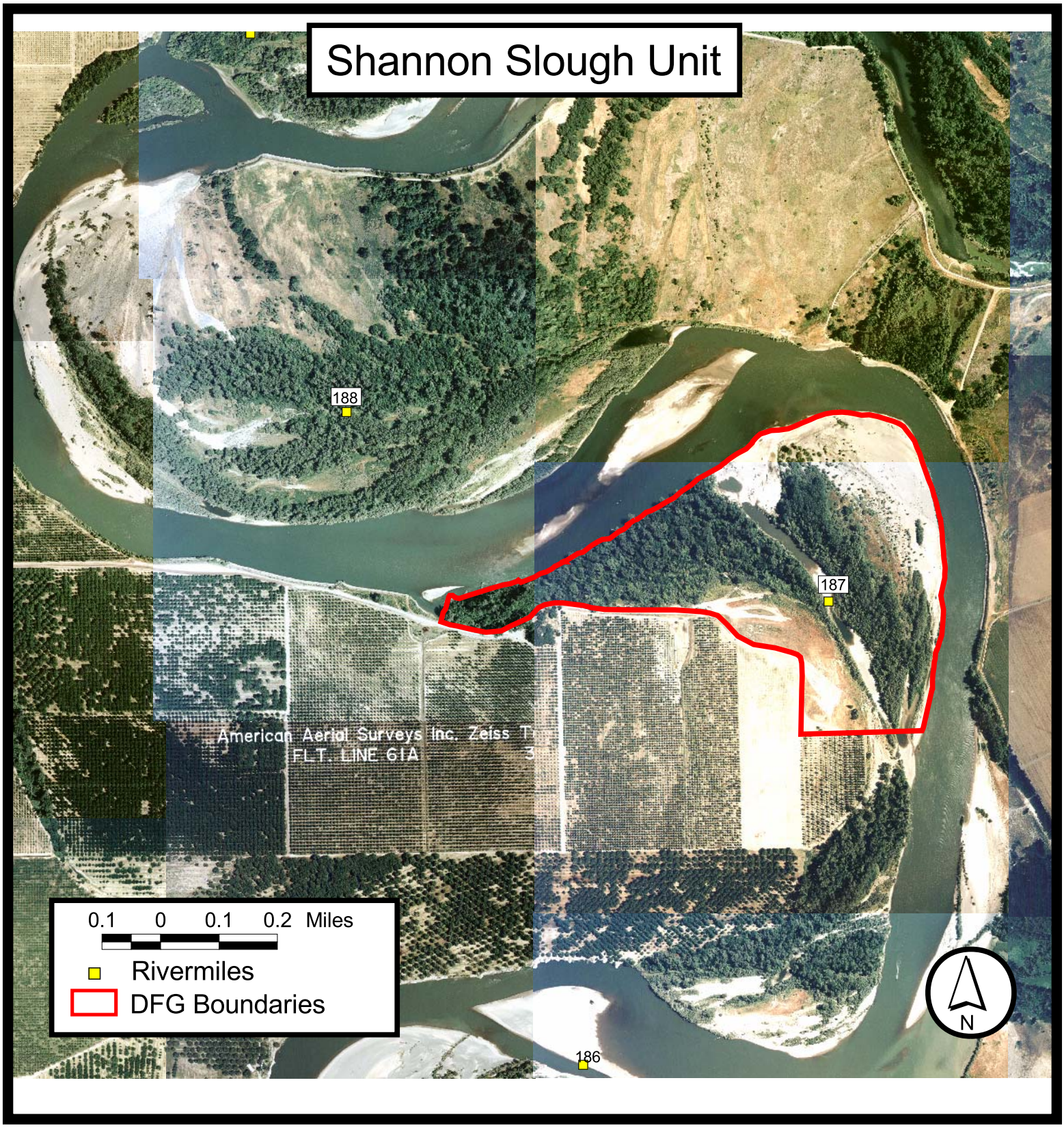
Parcel History No.	Year	Record Ac.	Funding Source
820413	1978	150.0	Fund 733 – Beach, Park, Recreation and Historical Facilities Fund (1974)

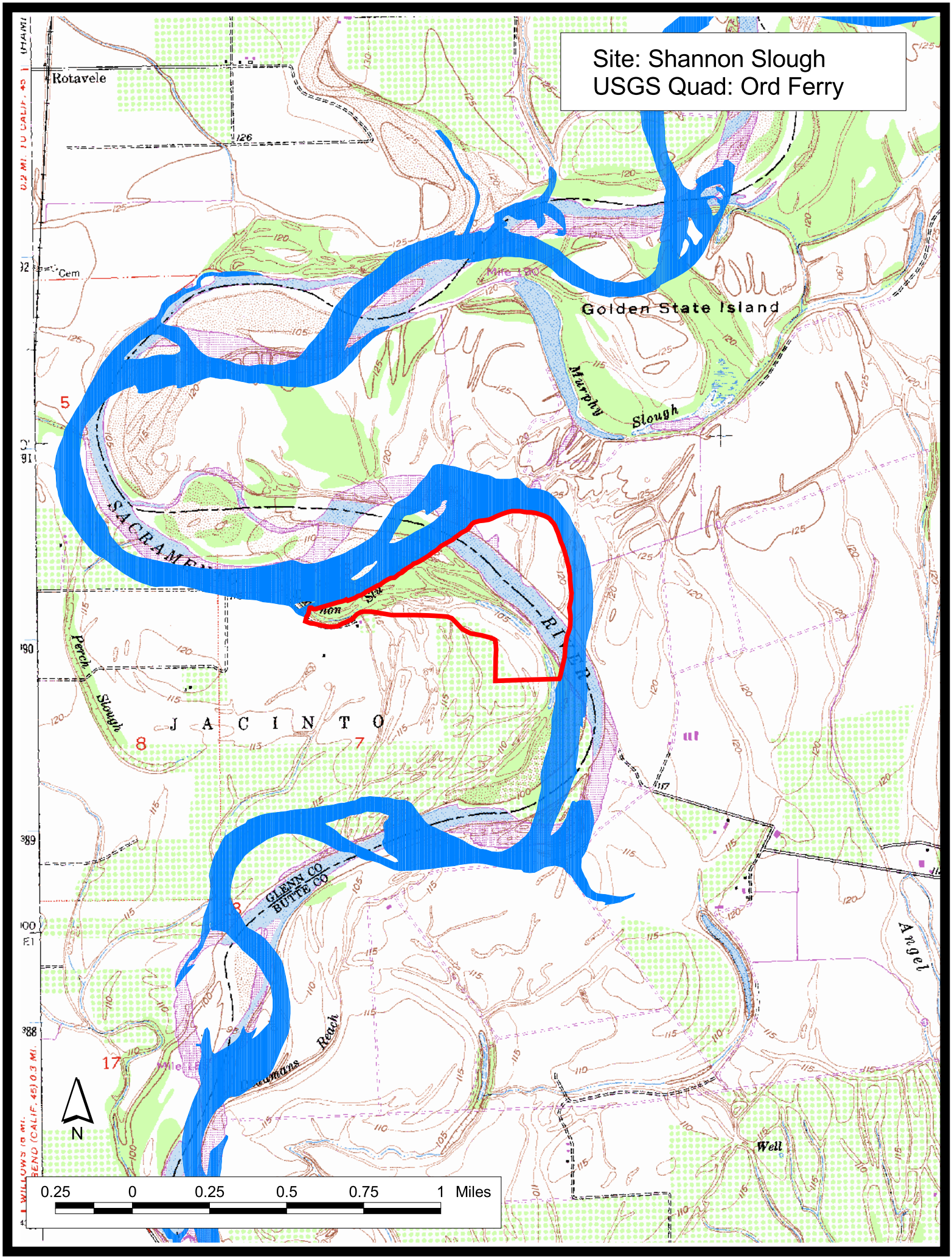
Specific Management Issues / Concerns: Questions regarding the public access rights to the Unit need to be resolved. The removal of gravel by the adjacent landowner for levee and access road maintenance and the planting of adjacent small areas should be reviewed and resolved.

Potential for Coordinated Management with Adjacent Properties: Across the river to the north is a large property owned by DWR/Sacramento and San Jaoquin Drainage District. Approximately .2 mile to the South is the Jacinto Unit of the Sacramento River National Wildlife Refuge. Up and down the river there are disconnected areas of public and private riparian habitat and no unusual potential for coordinated management of these habitat areas exists.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820413. Sacramento, California.


Shannon Slough Unit
188
187
186
American Aerial Surveys Inc. Zeiss
FLT. LINE 61A
0.1 0 0.1 0.2 Miles
Rivermiles
DFG Boundaries
N


Site: Shannon Slough
USGS Quad: Ord Ferry
Rotavele
Golden State Island
Murphy Slough
Perch Slough
J A C I N T O
GLENN CO
BUTTE CO
Angel
Well
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Ord Bend **Parcel History No.:** 821107 **Inventory Date:** 9/14/03

Location: **River Mile:** 183R **County:** Glenn

Record Area: 112.18 acres **Estimated Actual Area:** 136 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 019-310-020 **USGS Topo Quad:** Llano Seco

- **Generalized Legal Description:**

Section	Township	Range
04,05	20N	01W

- **Survey Status:** The Unit was surveyed by Roger L. Ackerman, LS 4495, for the USFWS dated March, 1991.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Beehive Bend Subreach)

- **150 Year Meander Belt Relationship:** The entire Unit is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

- **Site Access** **- River Access:** The site is accessible from the river.

  - Public Road Access: The site has no public road access. Legal public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	river / gravel bar	State / private
S	river / riparian	State / private
E	river / riparian	State / private
W	riparian	USFWS, private

Physical Description: The Unit has a rounded, triangular shape irregular shape located on the west side of the river. The site is a low terrace with an expanding point bar on the east. A shallow overflow channel runs along the west edge of the site. There are no roadways or pathways on the site.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved across the site over the last 70 years. DWR erosion projections do not anticipate any further erosion of the Unit in the next 25 or 50 years. The river channel is projected to continue its easterly movement and with the site is continuing to expand to the southeast.

- **Inundation Frequency:** The entire Unit has an inundation frequency of one year or less.

- **Soils:** The Unit is composed of riverwash, gravel and other channel materials.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	40 ac.
Gravel*	57 ac.
Herbland Cover	37 ac.
Marsh	1 ac.
Mixed Riparian Forest	1 ac.

*Gravel includes gravel bars as well as channel material along side the current channel and within abandoned channels.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** There is no known record of agricultural activity on the property.

- **Vegetation Succession Projection:** The site is projected to remain in approximately its current condition due to the poor soil quality and its low lying nature which accommodates frequent scouring.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** There is a substantial open area in the west central portion of the subunit, which is dominated by invasive species; star thistle, pepperweed, arunda and tamarisk with very limited recruitment of willows and elderberry. Given that the soils in the area are dominated by riverwash, a physical and chemical eradication program for nonnative invasives should be considered to facilitate recruitment of natural species of greater habitat value.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

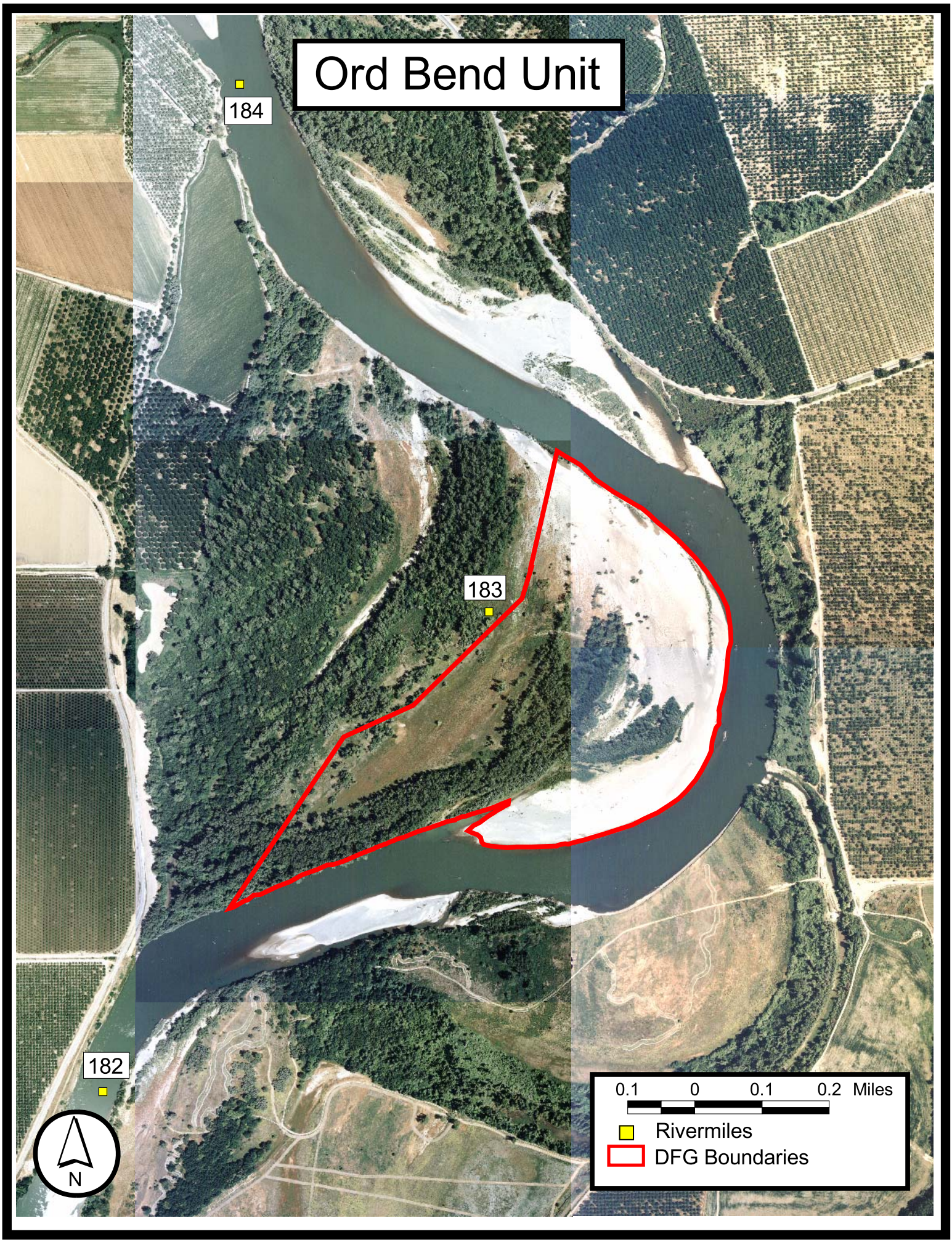
Parcel History No.	Year	Record Ac.	Funding Source
821107	1991	88.33	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

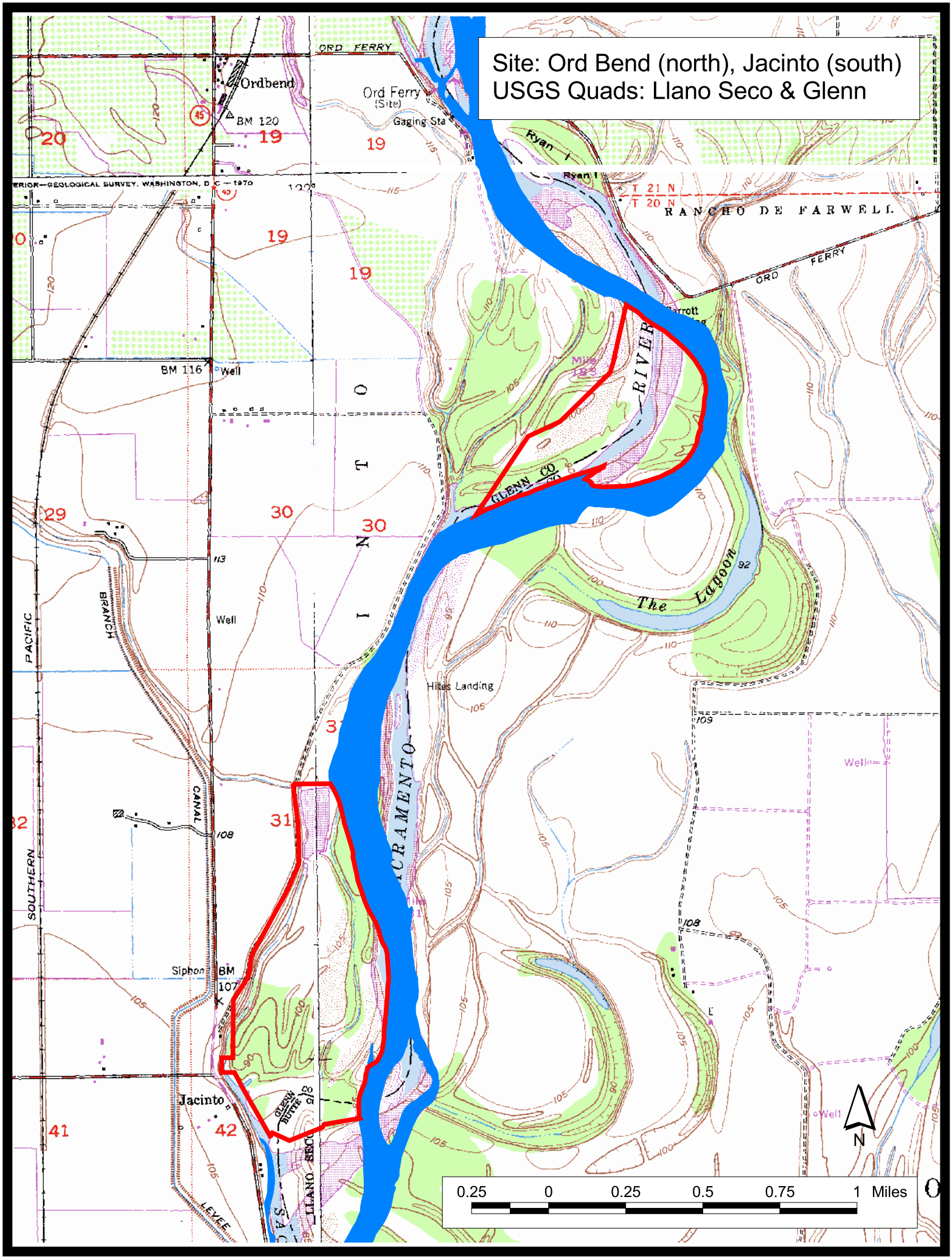
Specific Management Issues / Concerns: The Unit is reportedly accessed frequently from the river due to its close proximity to the Ord Bend boat ramp but, no signs of vehicular access or degradation are visible. No specific management issues or concerns have been identified.

Potential for Coordinated Management with Adjacent Properties: The Unit adjoins the South Ord Unit of the Sacramento River National Wildlife Refuge to the west. To the north .7 miles is the Ord Bend Unit of the Refuge and the Jacinto Unit of the Wildlife Area is 1.1 miles to the south. The potential for closely coordinated or combined management with the adjacent South Ord Unit should be evaluated.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821107. Sacramento, California.


Ord Bend Unit
184
183
182
N
0.1
0
0.1
0.2
Miles
Rivermiles
DFG Boundaries


Site: Ord Bend (north), Jacinto (south)
USGS Quads: Llano Seco & Glenn
ORD FERRY
Ordbend
Ord Ferry
(Site)
Gaging Sta
BM 120
Ryan
T 21 N
T 20 N
RANCHO DE FARWELL
ORD FERRY
BM 116
Well
RIVER
GLENN CO
The Lagoon
Hites Landing
SACRAMENTO
PACIFIC
BRANCH
CANAL
SOUTHERN
Siphon
BM
107
Jacinto
GLENN BUTTE
LLANO SECO
LEVEE
Well
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Jacinto **Parcel History No.:** 820401, 920919 **Inventory Date:** 9/14/03

Location: **River Mile:** 180 to 181R **County:** Glenn

Record Area: 282.96 acres **Estimated Actual Area:** 242 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 016-030-025,026, 040-028,035 **USGS Topo Quad:** Llano Seco, Glenn

- **Generalized Legal Description:**

Section	Township	Range
31, 42	T20N	R1W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Beehive Bend Subreach)

- **150 Year Meander Belt Relationship:** Essentially the entire site is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access
- River Access: The site is accessible from the west bank of the river at cut banks and a narrow gravel bar.
- Public Road Access: The site has no public road access. Legal public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	row crops	TNC
S	riparian	USFWS
E	river / riparian	private (USFWS easement)
W	levee, restaurant, sf residence, orchards	private

- **Physical Description:** The site is located on the west side of the river and it is a distorted rectangular shape. It is a high terrace with a distinct channel that runs along the base of the levee. This channel appears to hold perennial water. Two smaller swales cross the site from northeast to southwest and a small point bar has expanded along the east central shoreline. A primitive roadway crosses the high terrace portion of the site.

- **River Channel Meander History / 25 & 50-Year Projections:** The river channel was adjacent to the levee through the first half of the 1900's and it has moved subsequently to the east and south. Over the last 25 years the river has eroded the northeast and southeast corners a distance of approximately .1 mile. DWR erosion projections indicate continued river movement and reduction of the property in the northeastern quadrant. Erosion of approximately 20 acres is projected in the 25-year forecast with 40 acres in the 50-year forecast.

- **Inundation Frequency:** Inundation frequency decreases across the parcel from east to west with the exception of channel and swale areas. Almost half of the parcel's total area is within the 1-year inundation frequency zone. The remaining area is projected to be inundated in the 2 to 2.5 year frequencies.

- **Soils:** Soils include Columbia series (about half of the total area), which occur, in the central and western portions of the Unit, a small strip of Zamora soils representing approximately 10% of the area along the property's western boundary and riverwash which is found along the eastern portion of the site.

Vegetation:
- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)
  Blackberry Scrub 4 ac.

Cottonwood Forest	35 ac.
Gravel	15 ac.
Exotics	2 ac.
Herbland Cover	3 ac.
Marsh	6 ac.
Restored riparian forest	38 ac.
Mixed Riparian Forest	130 ac.
Stream Channels/Open Water	2 ac.
Riparian Scrub	7 ac.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** A portion of the site was planted to a walnut orchard in the mid 1070's and part of the site was uses for pasture. The orchard was cut down in 1993 but black walnuts sprouted from the stumps until restoration.

- **Vegetation Succession Projection:** With growth of the restoration planting, the vegetation on the site is expected to remain or transition to Great Valley Mixed Riparian Forest and Great Valley Valley Oak Riparian Forest.

- **Restoration History**: A 38-acre portion of the site was restored under contract to the Sacramento River Partners in 2000. The planting mix featured six distinct communities based on localized conditions. The planting featured valley oak, sycamore and Fremont cottonwood as the dominant tree forms with a midstory of box elder, several willows and range of understory species including coyote bush, wild rose, blackberry and elderberry. Localized soil and drainage conditions dictated the detailed placement of plant species

- **Analysis of Restoration Potential:** Assuming successful growth of the restoration plantings, the site is considered fully restored.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by River Partners from 2000 to 2003
- Monitoring of owl boxes to characterize small mammal distribution, by TNC in 2003

Acquisition:

Parcel History No.	Year	Record Ac.	Funding Source:
820401	1978	183.1	Fund 733 Beach, Park, Recreational & Historical Facilities Fund (1974)
820919	1989	99.9	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

Specific Management Issues / Concerns: Two abandoned automobiles were noted on or adjacent to the site in 8/03.

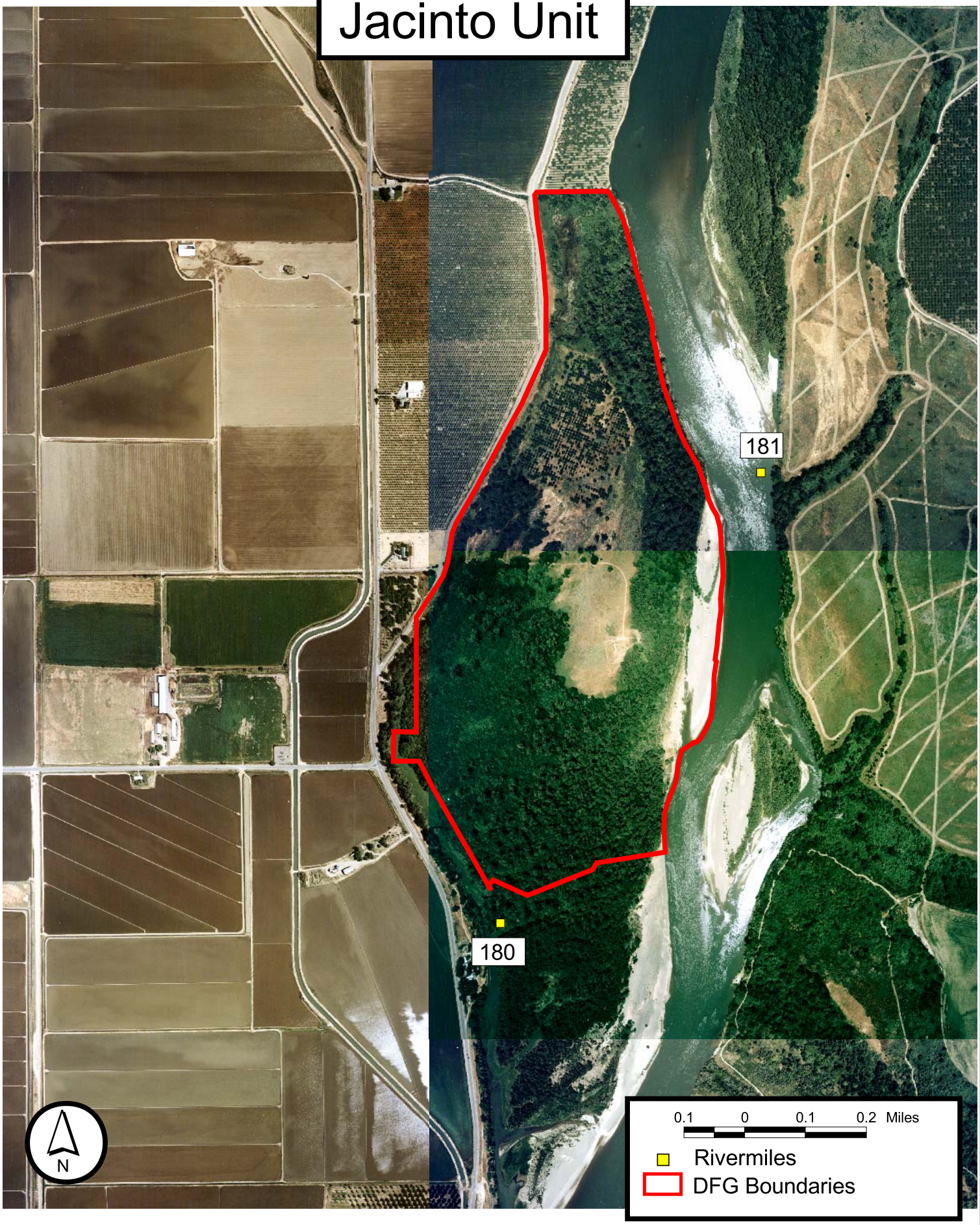
Potential for Coordinated Management with Adjacent Properties: The Unit adjoins the Lano Seco Unit of the Sacramento River National Wildlife Area to the south and the Shawhi property owned by TNC to the north. It is anticipated that the Shawhi property will be restored and transferred to the Jacinto Unit. Up and down the river there are disconnected areas of public and private riparian habitat and no unusual potential for coordinated management exists.

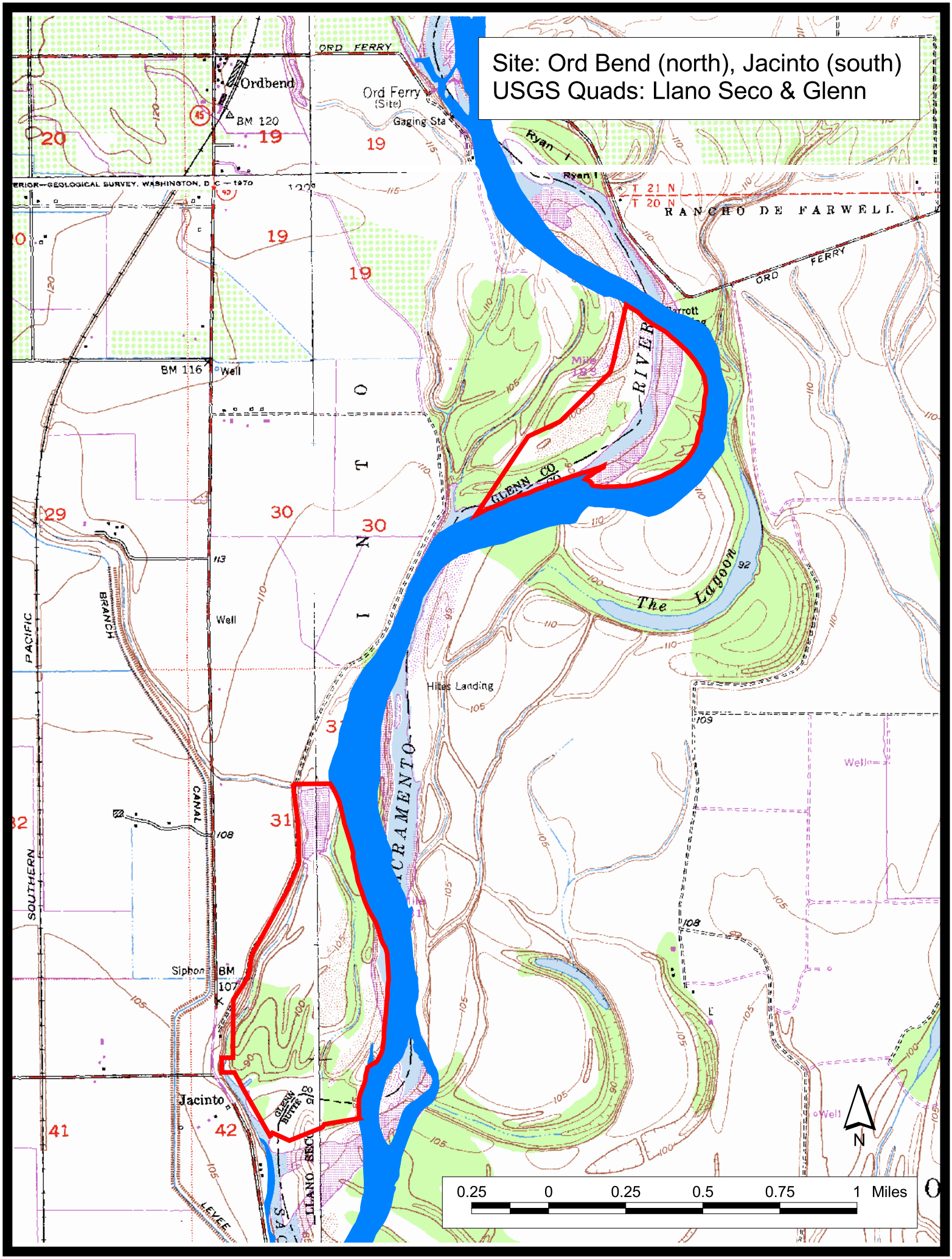
Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820401 and 820919. Sacramento, California.

- Sacramento River Partners 2003. Riparian Restoration Plan for the Jacinto Unit, Upper Sacramento River Wildlife Area, Glenn County, California. Erin McKinney, Dan Efseaff and Helen Swagerty, Chico, California.

Jacinto Unit




Site: Ord Bend (north), Jacinto (south)
USGS Quads: Llano Seco & Glenn
ORD FERRY
Ordbend
Ord Ferry
(Site)
Gaging Sta
BM 120
Ryan
T 21 N
T 20 N
RANCHO DE FARWELL
ORD FERRY
BM 116
Well
RIVER
GLENN CO
The Lagoon
Hites Landing
SACRAMENTO
PACIFIC
BRANCH
CANAL
SOUTHERN
Siphon
BM
107
Jacinto
GLENN BUTTE
LLANO SECO
LEVEE
Well
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Oxbow **Parcel History No**.: 821148 **Inventory Date**: 9/1403

Location: **River Mile:** 175L **County:** Glenn

Record Area: 94.1 acres **Estimated Actual Area:** 76 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 016-0520-029 **USGS Topo Quad:** Llano Seco

- **Generalized Legal Description:**

Section	Township	Range
05	19N	01W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Beehive Bend Subreach)

- **150 Year Meander Belt Relationship:** The entire Unit is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

- **Site Access - River Access:** The site is accessible from the east bank of the river at a cut bank.

  - Public Road Access: The site has no public road access. Public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	riparian	USFWS
S	riparian, orchards	TNC, private
E	riparian, orchards	USFWS, private
W	river / gravel bar, riparian	private

Physical Description: The Unit is an irregular shape located on the east side of the river. It is a high terrace surrounded by an oxbow on three sides. There are no roadways or pathways on the site.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved across the site over the last century. The DWR erosion projections do not project any further erosion of the next 25 or 50 years.

- **Inundation Frequency:** The site has a flood frequency of one to four years depending upon elevation.

- **Soils:** Approximately 18 acres of the Unit is classified as Columbia soils along the west central portion of the area and the remainder consists of riverwash and channel materials.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	24 ac.
Herbaceous Layer	22 ac.
Mixed Riparian Forest	28 ac.
Open Water	2 ac.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** There is no known record of agricultural activity on the property.

- **Vegetation Succession Projection:** No substantial change is anticipated given the poor quality of the soils in the center of the site.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** The open areas in east central portion of the site are mapped as riverwash soil type. Given that the subunit is isolated and not accessible by vehicles, restoration is not considered feasible. The site should be evaluated in detail for control of invasive species to assist the recruitment of native vegetation.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

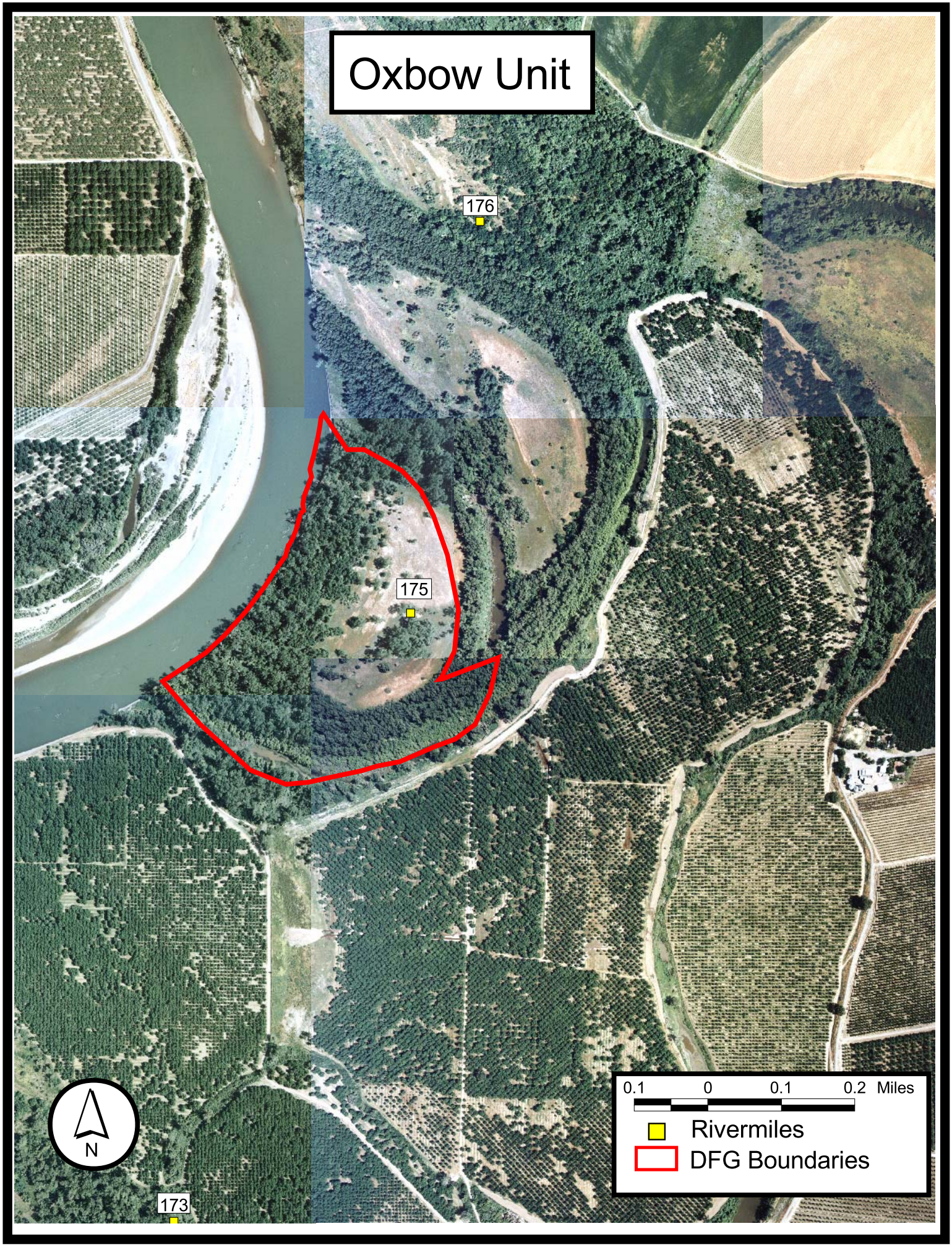
Parcel History No.	Year	Record Ac.	Funding Source
821148	1991	88.33	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

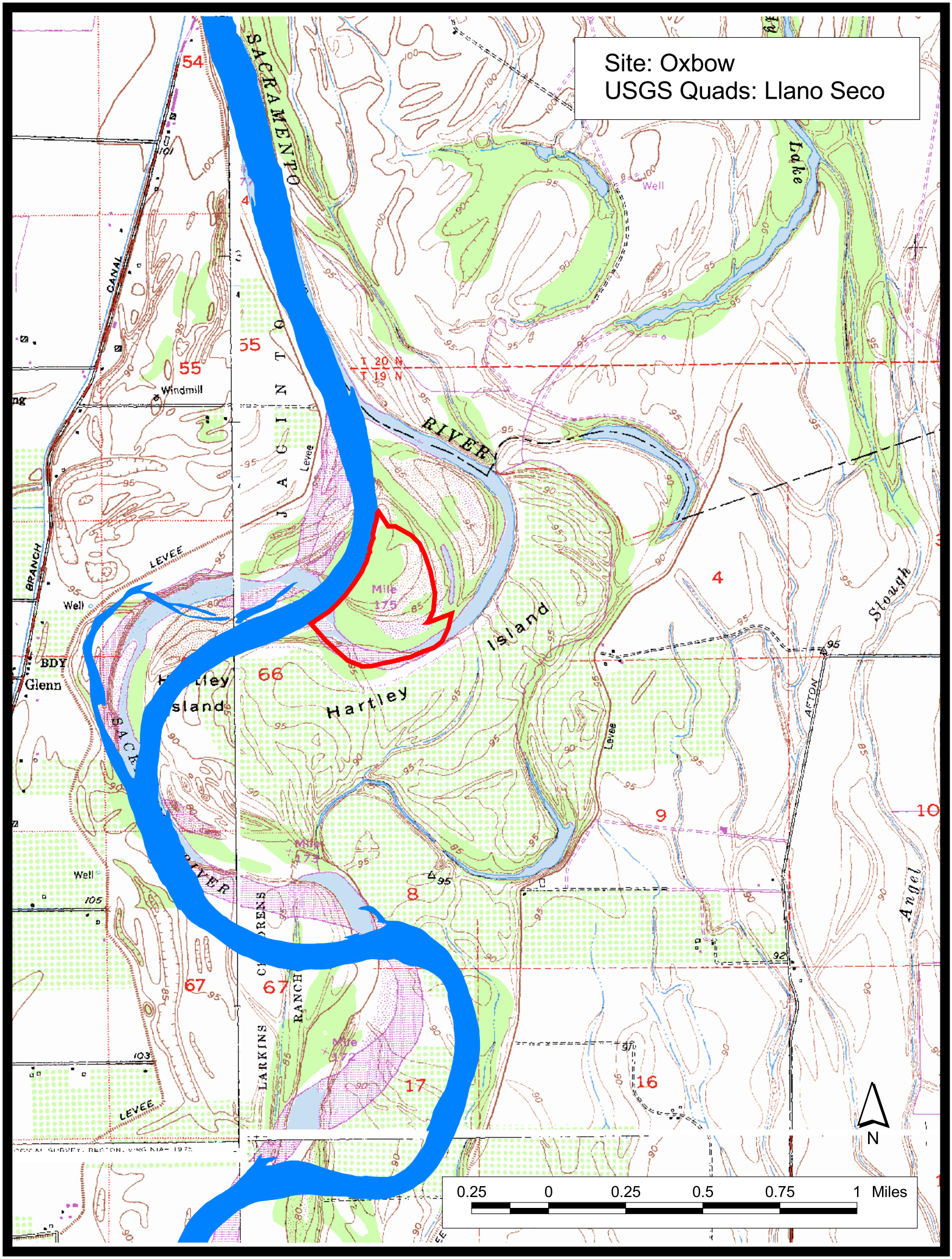
Specific Management Issues / Concerns: The Unit is relatively isolated, difficult to penetrate and very rarely accessed. No management issues or concerns have been identified for the Unit.

Potential for Coordinated Management with Adjacent Properties: The Unit is adjacent to the Llano Seco Unit of the Sacramento River National Wildlife Refuge on the north. To the southwest is the Hartley Island property, which is owned by TNC and it, is planned to be transferred to the USFWS. The Oxbow Unit is part of a major complex of intermixed, public conservation lands that stretch for a distance of almost five miles along the river. The area should either be managed in a coordinated manner or managed by one entity as one area.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821148. Sacramento, California


Oxbow Unit
176
175
173
N
0.1
0
0.1
0.2
Miles
Rivermiles
DFG Boundaries


Site: Oxbow
USGS Quads: Llano Seco
SACRAMENTO
RIVER
Hartley Island
Lake
Slough
Angel
Levee
Windmill
Well
Glenn
BDY
CANAL
BRANCH
LEVEE
LARKINS
RANCH
AFTON
T 20 N
T 19 N
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Beehive Bend **Parcel History No.:** 821100, 821015 **Inventory Date**: 9/14/03

Location: **River Mile:** 170 – 171R **County:** Glenn

Record Area: 197.9 acres **Estimated Actual Area:** 269 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 016-050-019, 060-002, 290-007, 009, 012 **USGS Topo Quad:** Princeton, Butte City

- **Generalized Legal Description:**

Section	Township	Range
19,20,29,30	19N	01W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Beehive Bend Subreach)

- **150 Year Meander Belt Relationship:** The Beehive Bend oxbow area and the gravel bar between the oxbow are within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access **- River Access:** The site is marginally accessible from the river on the gravel bar on the east bank, although access to the remainder of the site would require use of the adjoining DWR or USFWS property. In the future, it may be practically accessible by crossing the Sul Norte Unit of the Sacramento River National Wildlife Refuge if that area is opened to public access.

- Public Road Access: The site has no public road access. Public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	orchards	private
S	orchards, restoration in process	private, USFWS
E	orchards, restoration in process	private, USFWS
W	Levee / orchards	private

Physical Description: The site is on the west side of the river and it is an irregular shape; a hollow circle on the north with a triangular area projecting to the south and a detached, narrow triangular area farther south. The circular area is composed of an oxbow lake with standing water known as Beehive Bend, and a gravel bar adjacent to the river. The triangular projection is a high terrace with a swale located adjacent to the levee on the west. The southerly triangle is the west half of a low terrace that holds permanent water, known as Razor Slough. A primitive roadway crosses the restoration area and connects to similar roadways on the USFWS property.

- **River Channel Meander History / 25 & 50-Year Projections:** The Beehive Bend oxbow area was in the river channel until about 1900 when the channel cut the neck of the oxbow and moved to the east. The remainder of the site has been outside of the channel since before that time. The DWR erosion projections predict about 5 acres of erosion at the extreme northeast corner of the site and about 20 acres in the 50-year term.

- **Inundation Frequency:** The Beehive Bend oxbow area and the gravel bar adjoining the river have a one-year flood frequency. The remaining portions of the site have a flood frequency of one to four years depending upon elevation.

- **Soils:** The majority of the soils within the Beehive Bend Subunit or about 75% of the unit's total land area consist of those in the Columbia series. There is a small amount of riverwash adjacent to the river and there are approximately 15 acres of Zamora soils are mapped in a strip along the parcel's western boundary.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Blackberry Scrub	1 ac.
Cottonwood Forest	25 ac.
Gravel*	35 ac.
Herbland Cover	3 ac.
Marsh	3 ac
Restored riparian forest	58 ac. (planted to riparian vegetation in 2000)
Mixed Riparian Forest	76 ac.
Open Water	40 ac.
Riparian Scrub	28 ac.

*Gravel includes gravel bars as well as channel material along side the current channel and within abandoned channels.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The Beehive Bend and Razor Slough portions of the site have not been used for agriculture. Portions of the triangular area lying south of Beehive Bend were in agriculture since at least the 1950's. About 21 acres of the site were planted to prunes in the 1980's but the orchard was subsequently removed. The entire area was in row crops when it was acquired in 1991.

- **Vegetation Succession Projection:** Over time and with growth of the restoration planting, the vegetation on the site is expected to remain or transition to Great Valley Mixed Riparian Forest and Great Valley Oak Riparian Forest.

- **Restoration History:** Approximately 58 acres were restored in 2000 under contract to Sacramento River Partners. The planting featured valley oak, sycamore and Fremont cottonwood as the dominant tree forms with a midstory of box elder, Black willow and arroyo willow and range of understory species including coyote bush, wild rose and blackberry. Localized soil and drainage conditions dictated the detailed placement of plant species

- **Analysis of Restoration Potential:** Assuming successful growth of the restoration plantings, the site is considered fully restored.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site.

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by River Partners from 2000 to 2003.

Acquisition:

Parcel History No.	Year	Acres	Funding Source
821015	1990	88.33	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
821100	1991	109.56	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

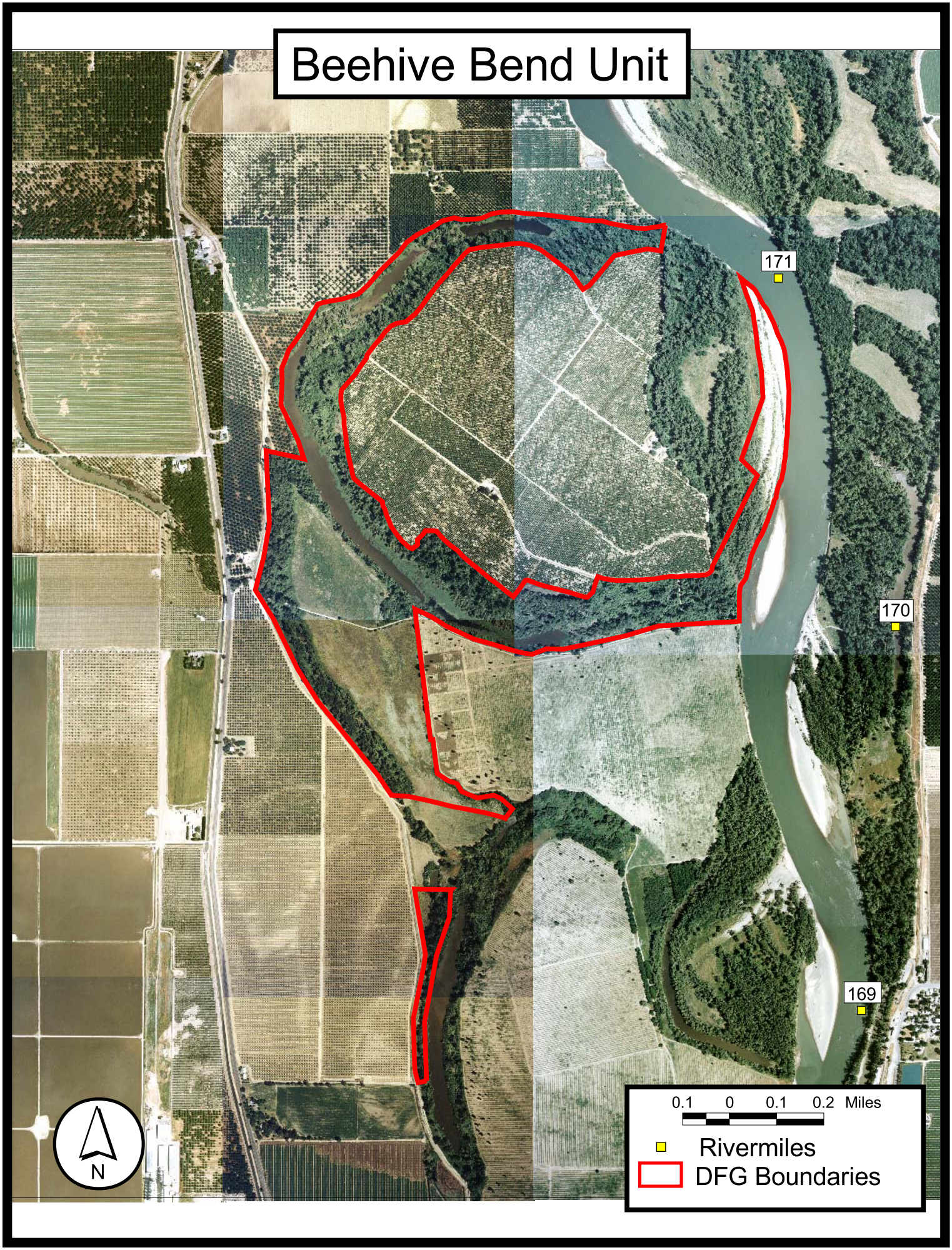
Specific Management Issues / Concerns: The Unit will have the potential for access from the river and the land if the adjoining Sul Norte Unit of the Sacramento River National Wildlife Refuge is opened to public access in the future. If the USFWS Unit is opened to public access, cross access to the Beehive Bend Unit should be permitted.

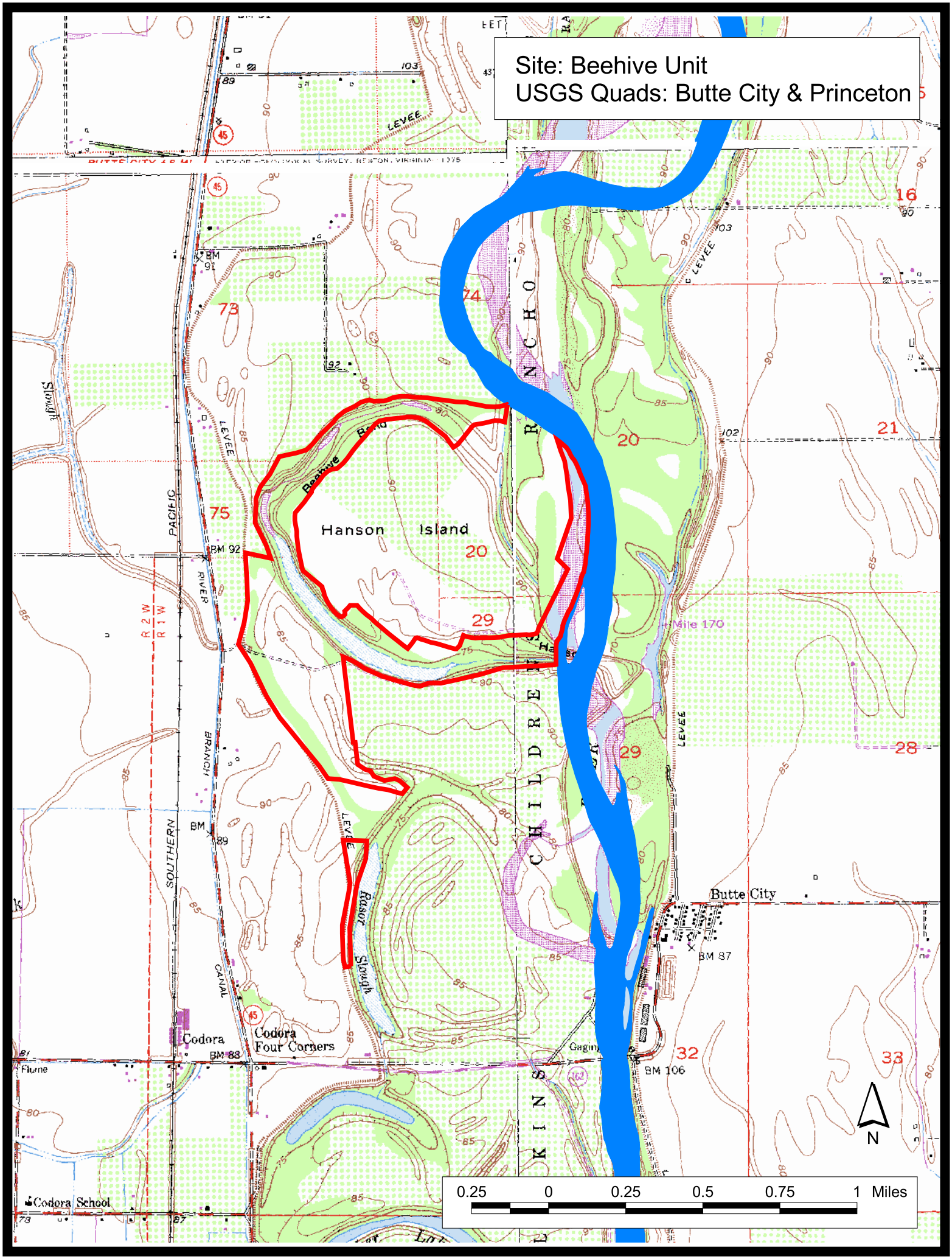
Potential for Coordinated Management with Adjacent Properties: The Unit is adjacent to the Sul Norte Unit of the Sacramento River National Wildlife Refuge on the south and east and the MBK Site 24 property owned by the Sacramento and San Jaoquin Drainage District (SSJDD / State Reclamation Board) lying west of the gravel bar area adjacent to the river. Additional SSJDD property lies across the river to the east of the southerly section of Beehive Bend. The Beehive Bend Unit is part of a major complex of intermixed, public conservation lands that stretch for a distance of five miles along the river. The area should either be managed in a coordinated manner or managed by one entity as one area.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821015 and 821100. Sacramento, California.

- Sacramento River Partners, 1999. Riparian Restoration Plan for River Mile 169.5-R, Beehive Bend Unit, the California State Department of Fish and Game, Glenn County, California. Gregory A. Treber. Chico California.


Beehive Bend Unit
171
170
169
N
0.1 0 0.1 0.2 Miles
Rivermiles
DFG Boundaries


Site: Beehive Unit
USGS Quads: Butte City & Princeton
Hanson Island
Beehive Pond
Razor Slough
Butte City
Codora
Codora Four Corners
Codora School
Mile 170
LEVEE
PACIFIC
SOUTHERN
BRANCH
CANAL
RIVER
R 2 W
R 1 W
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Princeton - North **Parcel History No.:** 820202, 821058, 821356 **Inventory Date:** 9/14/03

Location: **River Mile:** 166R **County:** Glenn

Record Area: 120.1 acres **Estimated Actual Area:** 86 acres.
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 013-140- 006, 009, 015,016 **USGS Topo Quad:** Princeton

- **Generalized Legal Description:**

Section	Township	Range
6, 7, 8	18N	01W

- **Survey Status:** There is no known property survey

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Beehive Bend Subreach)

- **150 Year Meander Belt Relationship: Approximately** 90% of the Subunit is within the 150 year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area. The area excluded is a narrow strip along the levee.

- **Site Access - River Access:** Subunit is accessible from the west bank of the river at cut banks.

  - Public Road Access: The site is accessible from highway 45 via a paved turnoff, approximately 1.3 miles north of the town of Princeton. The access is referred to as the Site 21 Fishing Access.

Adjoining Property:

Direction	Land Use	Ownership
N	riparian (planted in 2000)	USFWS
S	riparian, gravel bar	private
E	river / gravel bar, riparian	State / TNC
W	levee / highway /orchard, row crops	State / private

Physical Description: The site is roughly triangular and is located on the west side of the river. It is primarily a high terrace area that is bisected by a swale that runs from northeast to southwest across the site. It includes a portion of an expanding point bar at the southeast corner of the property. A paved turnout from Highway 45 and a short, paved access road at the southwest corner of the site provides for public access to the Subunit. Glenn County maintains this access (Site 21 fishing Access) under an Operating Agreement with the State that was extended for 25 years in 2001. A primitive road extends from the parking area to the river.

- **River Channel Meander History / 25 & 50-Year Projections:** The river near the Subunit has eroded to the west over the past century removing adjoining properties to the east and giving the site a river frontage. The DWR erosion projections indicate that the bend adjoining the site will continue to extend to the west eroding about 80% of the site over the next 25 years and 90% of the site over the next 50 years. The remaining areas after 50 years are projected to be a strip along the levee and the extreme southeast corner of the site.

- **Inundation Frequency:** Inundation frequency generally increases with distance west from the river as modified by site elevation. The DWR estimated flood frequency varies from one year to five years on the highest portions of the property.

- **Soils:** The northern approximate 55% portion of the site is dominated by soils in the Columbia series with Zamora Clay Loam is found on about 15% of the parcel's land area. Riverwash and channel materials are found within the remaining 30% of the property area.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	3 ac.
Marsh	3 ac.
Restored riparian forest	50 ac.
Mixed Riparian Forest	30 ac.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The northwest portion of the site was in historical agricultural use that included a dairy operation, orchards and row crops. Records indicate that the agricultural use was abandoned in the 1980's.

- **Vegetation Succession Projection:** Erosion of the majority of the site is projected in the next 25 years. Except for the growth of the restored area, no major change is anticipated.

- **Restoration History:** An initial restoration project was conducted under contract to The Nature Conservancy in 1994 on the northerly 23 acres of the site, which was known as the Lohman property. The restoration incorporated a predominate mix of cottonwood, willow and elderberry with Valley oak, sycamore and Box elder in addition to various shrub species. A second restoration project under contract to the Sacramento River Partners occurred in 2000 on a 27 acre area to the south of the original restoration which is referred to as the Thomas property. The planting mix was similar to that utilized in the prior, Lohman restoration.

- **Analysis of Restoration Potential:** Assuming successful growth of the restoration plantings, the site is considered fully restored.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site. A residential home and related out buildings are located near the west boundary of the site. The home is located on a 1.5-acre parcel owned by DFG but it is subject to a life estate to the benefit of the former property owner.

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by TNC from 1994 to 1997
- Monitoring of restoration planting by River Partners in 2000 to 2003
- Monitoring of owl boxes to characterize small mammal distribution, by TNC in 2003

Acquisition:

Parcel History No.	Year	Acres	Funding Source:
820202	1958	50	Fund 447- Wildlife Restoration fund (1944)
821058	1991	46.8	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
821356	1994	23.3	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

Specific Management Issues / Concerns: The access control gate to the public access point is occasionally opened and vehicles drive to the river in violation of Wildlife Area regulations. The pathway from the parking area to the river appears to cross adjoining property, although the crossing may be within the public trust easement.

Potential for Coordinated Management with Adjacent Properties: The site adjoins the Packer Lake Unit of the Sacramento River National Wildlife Refuge to the north and the Head Lama property owner by TNC is located to the east across the river. The USFWS also holds an option on the Zumwalt property which is located to the southeast across the river. The Subunit is part of a major complex of intermixed, public conservation lands that stretch for a distance of five miles along the river and the area should either be managed in a coordinated manner or managed by one entity as one area.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820202, 821058, 821356 and J00274. Sacramento, California.
- The Nature Conservancy, 1994. Lohman Restoration Unit Plan. Sacramento River Project Staff. Chico, California.
- The Sacramento River Partners, 1999. Restoration Plan, River Mile 166.5R, Thomas Unit, Department of Fish and Game. Gregory A. Treber. Chico, California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Princeton - East **Parcel History No.** 821093 **Inventory Date:** 9/14/03

Location: **River Mile:** 164L **County:** Colusa

Unit Area: **Record Area:** 102.3 acres **Estimated Actual Area:** 95 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 013-016-016, 029 **USGS Topo Quad:** Princeton, Butte City

- **Generalized Legal Description:**

Section	Township	Range
17, 18	18N	01W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)

- **150 Year Meander Belt Relationship:** Less than 3 % of the Subunit directly adjacent to the river are within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

Site Access **- River Access:** Subunit is accessible from the east side of the river at a 20-foot high cut bank.

- Public Road Access: The site has public road access from Road XX, which crosses the site.

Adjoining Property:

Direction	Land Use	Ownership
N	open, riparian	USFWS
S	riparian, orchard	private
E	levee / row crops	private
W	river / highway / orchard	State / private

Physical Description: The site is generally rectangular and is located on the east side of the river. It is composed of a high terrace that rises from the river at a cut bank of about 20 feet in height. A slight swale crosses the site in a crescent shape. River Road crosses the site at an angle, approximately 100 to 350 feet east of the riverbank.

- **River Channel Meander History / 25 & 50-Year Projections:** The river channel has been very stable adjacent to the site with no substantial movement over the past century. No portion of the site is with in the 25 or 50 year erosion projection and the site area is not expected to change.

- **Inundation Frequency:** Inundation frequency generally increases from east to west with the lower areas mapped at a one year frequency increasing to a four year frequency for the highest portions of the site.

- **Soils:** The soils within the site are in the Columbia series.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Restored riparian forest	44 ac. (planted to riparian vegetation in 1992)
Mixed Riparian Forest	20 ac.
Herbland Cover	2 ac.
Channels	1 ac.
Riparian Scrub	9 ac.
Riparian Scrub	19 ac.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The site accommodated agricultural activities in the past. When the site was acquired in 1991, 42 acres had been cleared for dry farming use.

- **Vegetation Succession Projection:** Over time and with growth of the restoration planting, the vegetation on the site is expected to remain or transition to a Great Valley Oak Riparian Forest.

- **Restoration History:** Approximately 44 acres were restored in 1992 under contract to The Nature Conservancy.
  The planting features an "upland" mix included Valley oak, California sycamore, box elder and Oregon ash as well as Mexican elderberry and California rose. The "lowland" mix in which willows and cottonwoods predominated was applied to the swale areas. The restoration did not include the approximate 8 acres that lie west of River Road.

- **Analysis of Restoration Potential:** The site is considered fully restored.
-

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site. River Road bisects the site from north to south just east of the river. The site of the former Princeton ferry is adjacent to the northwest corner of the property.

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by TNC from 1992 to 1995
- Monitoring of the growth and survival of Valley oaks in the restoration planting by TNC and CSU, Chico in 2001
- Monitoring of owl boxes to characterize small mammal distribution, by TNC in 2003

Acquisition:

Parcel History No.	Year	Acres	Funding Source:
821093	1991	227.8	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

*The WCB funded the acquisition of 60.7 acres of riparian habitat. The remaining 42.1 acres were funded by DWR as a mitigation for a river bank protection project.

Specific Management Issues / Concerns: Given the accessibility of the site, dumping of materials is a potential problem. Ongoing discussions with Glenn County have focused on the potential use of a portion of the area west of River Road for a parking lot to support a new boat ramp at the former Princeton Ferry site.

Potential for Coordinated Management with Adjacent Properties: The property adjoins the Drumheller Slough Unit of the Sacramento River National Wildlife Refuge to the north. and south and across the river to the east. The Princeton-North Unit is located about one mile to the north and the Princeton-South Unit is located about one half mile to the south. Up and down the river there are disconnected areas of public and private riparian habitat and the potential for coordinated management of habitat areas with the Refuge exists.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821093. Sacramento, California.

- The Nature Conservancy, January 1996. Princeton Ferry Restoration Unit Completion Report 1992-1995. Chico California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Princeton -South **Parcel History No.** 821230 **Inventory Date:** 9/14/03

Location: **River Mile:** 161.5 -163R **County:** Colusa

Unit Area: **Record Area:** 227.8 acres **Estimated Actual Area:** 194 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 012-090-023, 120,038 **USGS Topo Quad:** Princeton

- **Generalized Legal Description:**

Section	Township	Range
19	18N	01W
30	18N	01W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)

- **150 Year Meander Belt Relationship:** Approximately 70 % of the parcel is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area. The excluded area is the west central, highest portion of the site.

- **Site Access** **- River Access:** Subunit is accessible from the west bank of the river at cut banks and point bars.

  - Public Road Access: The Subunit has no public road access. Legal public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	riparian, open	private
S	riparian	private
E	river / riparian, gravel bar	State / private
W	levee / orchard	private

Physical Description: The site is generally rectangular and is located on the west side of the river. It is composed of a central high terrace with low terrace areas to the north and south. A swale diagonally crossing the northeast corner of the site contains a permanent pool of water. A large gravel bar occupies the northeast corner of the site and high cut banks extend along the river to the south.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved over and deposited the low terrace areas on the north and south portions of the Subunit over the last century. In both the DWR 25 and 50 year erosion projections, an area of about 45 acres is projected to be eroded along the outside of the bend that adjoins the central portion of the site.

- **Inundation Frequency:** Inundation frequency generally increases from east to west with the lower areas mapped at a one year frequency increasing to a four year frequency for the highest, west central portion of the site.

  Soils: The soils within the Subunit consist of about 15% Moonbend series in the west central area, about 65% Vina series to the north and south, a small area of Columbia soils and the remainder in gravel and channel material

Vegetation:

- **Habitat Types:** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)
  Restored riparian forest 34 ac. (planted to riparian vegetation in 2001)

Cottonwood Forest	81 ac.
Gravel*	20 ac.
Exotics	1 ac.
Herbland Cover	2 ac.
Marsh	1 ac.
Mixed Riparian Forest	40 ac.
Riparian Scrub	15 ac.

*Gravel includes gravel bars, sand bars, and channel material.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The site accommodated various agricultural activities in the past. The most recent plantings were english and black walnut orchards that occupied only a small part of the property. These were removed in 2000 in preparation for restoration.

- **Vegetation Succession Projection**: Over time and with growth of the restoration planting, the vegetation on the site is expected remain or transition to a Great Valley Mixed Riparian Forest.

- **Restoration History:** Approximately 34 acres were restored in 2001 under contract to Sacramento River Partners. The planting featured valley oak, sycamore and fremont cottonwood as the dominant tree forms with a midstory of box elder, black willow and arroyo willow and range of understory species including coyote bush, wild rose and blackberry. Localized soil and drainage conditions dictated the detailed placement of plant species

- **Analysis of Restoration Potential:** Assuming successful growth of the restoration plantings, the site is considered fully restored.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by River Partners from 2001 to 2004
- Monitoring of owl boxes to characterize small mammal distribution, by TNC in 2003

Acquisition:

Parcel History No.	Year	Acres	Funding Source:
821230	1992	227.8	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70,1988)

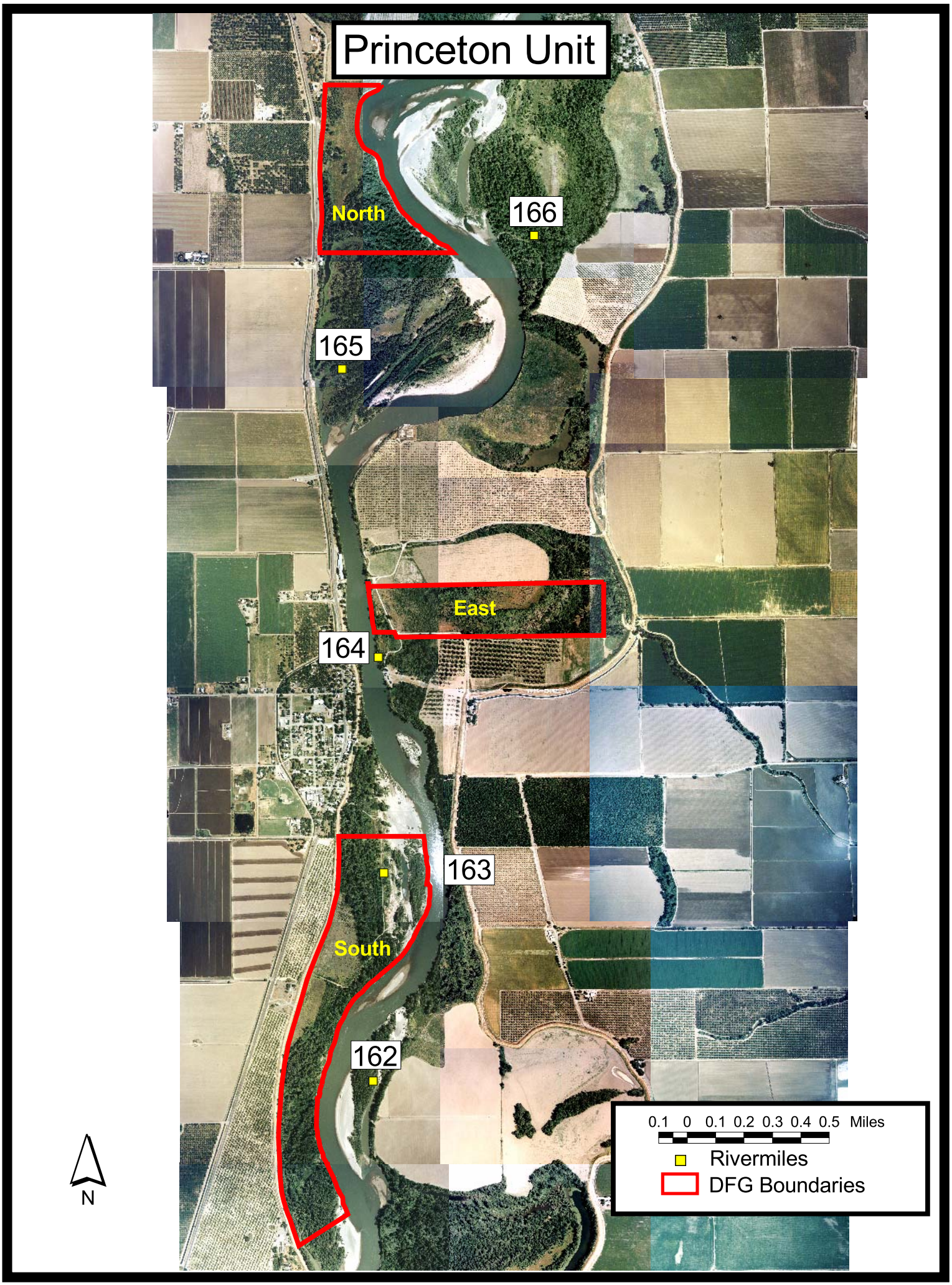
Specific Management Issues / Concerns: The site is frequently accessed by vehicles and no effective access limitation exists. Though the northern boundary is unsurveyed, it appears that unauthorized uses have included pumping of water from the pool on the site to irrigate an adjoining garden area and the access of the northeast corner of the site by vehicles for boat launching. Specific delineation and marking of the northern boundary line is needed to help resolve these issues.

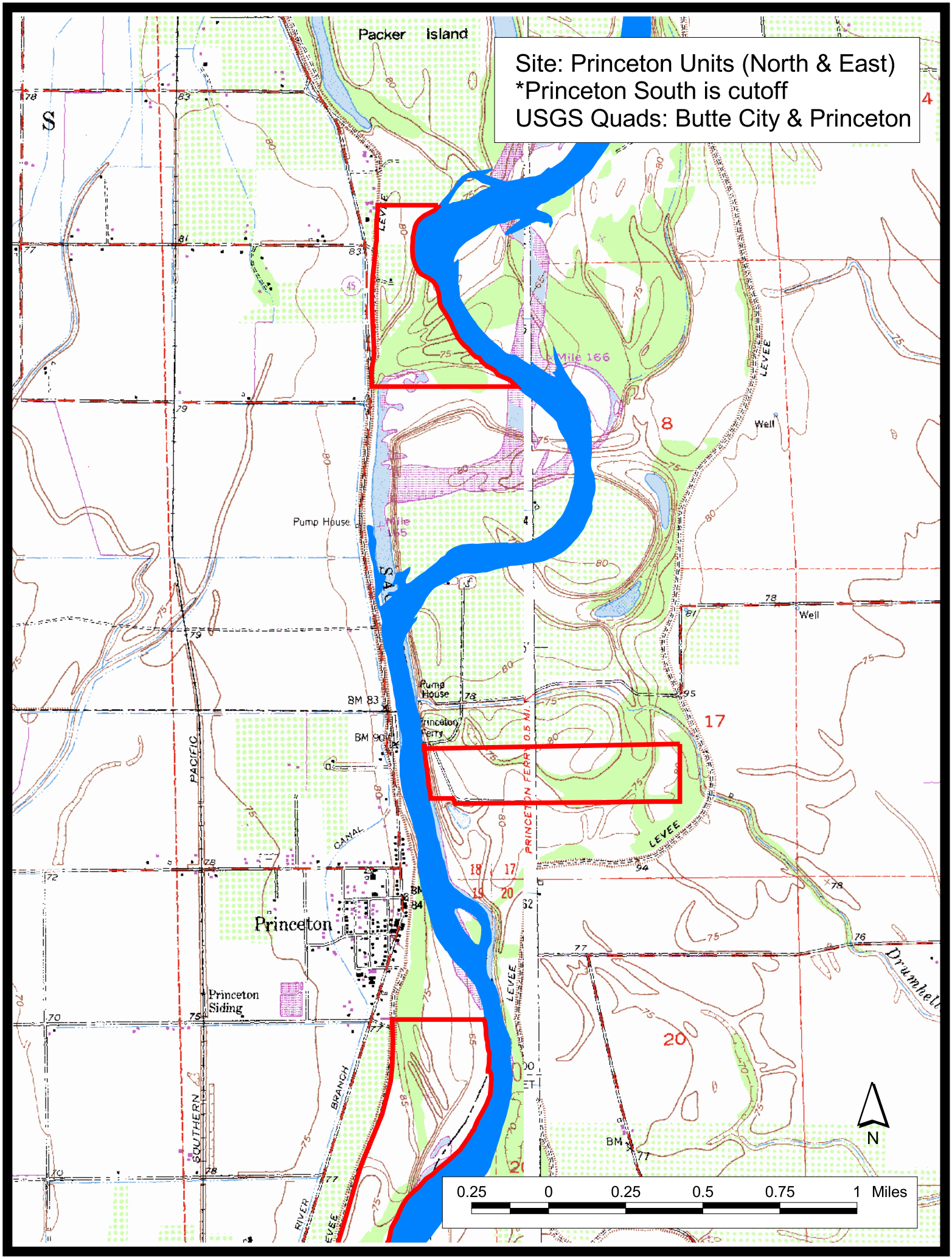
Potential for Coordinated Management with Adjacent Properties: The property adjoins large privately owned riparian areas to the north and south and across the river to the east. There are no adjacent public or private ownership conservation lands although the Princeton-East Unit is located about one half mile to the north and the Stegeman Unit is located about one mile to the south. Up and down the river there are disconnected areas of public and private riparian habitat no unusual potential for coordinated management of habitat areas exists.

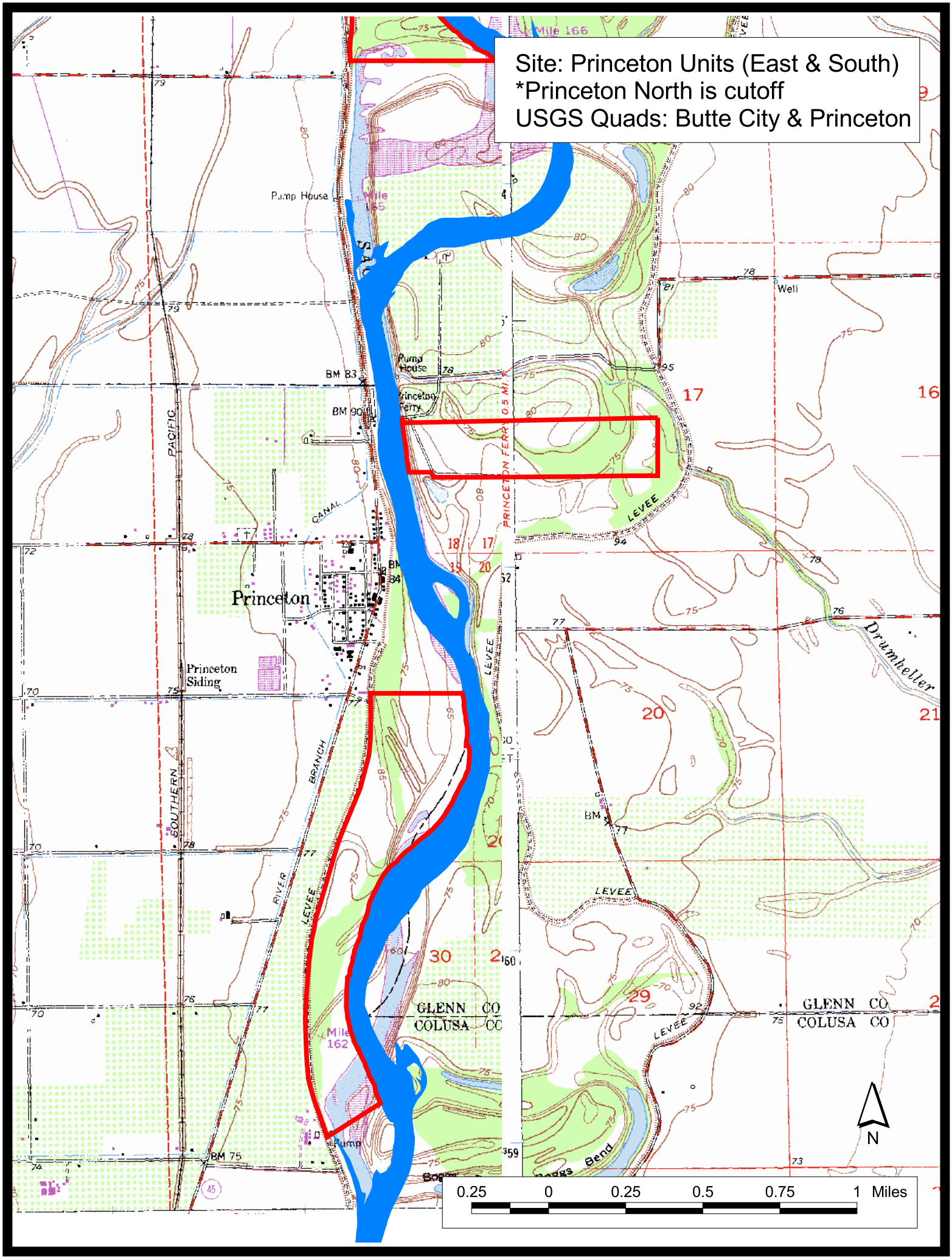
Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821230. Sacramento, California.

- Sacramento River Partners, 2002. Riparian Restoration Plan for the Princeton Unit, Sacramento River Wildlife Area, Colusa County, California, Draft Report. Dan Efseaff and Helen Swagerty. Chico California.


Princeton Unit
North
166
165
East
164
163
South
162
0.1 0 0.1 0.2 0.3 0.4 0.5 Miles
Rivermiles
DFG Boundaries
N


Site: Princeton Units (North & East)
*Princeton South is cutoff
USGS Quads: Butte City & Princeton
Packer Island
Mile 166
Mile 165
Pump House
Well
LEVEE
PRINCETON FERRY 0.5 MI.
Princeton Ferry
BM 83
BM 90
PACIFIC
CANAL
Princeton
Princeton Siding
SOUTHERN
BRANCH
RIVER
Drumhell
N
0.25 0 0.25 0.5 0.75 1 Miles


Site: Princeton Units (East & South)
*Princeton North is cutoff
USGS Quads: Butte City & Princeton
Mile 165
Pump House
Mile 165
Well
Pump House
BM 83
Princeton Ferry
BM 90
PACIFIC
CANAL
PRINCETON FERRY 0.5 MI.
LEVEE
Princeton
Princeton Siding
SOUTHERN
BRANCH
RIVER
LEVEE
Drumheller
BM
LEVEE
LEVEE
GLENN CO
COLUSA CO
GLENN CO
COLUSA CO
Mile 162
Pump
BM 75
Bend
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Stegeman **Parcel History No.** 820962, 820976 **Inventory Date:** 9/14/03

Location: **River Mile:** 159 – 160R **County:** Colusa

- **Unit Area:** **Record Area:** 154.5 **Estimated Actual Area:** 194 acres (north parcel: 69 acres) (south parcel: 125 acres)
  Basis: 1999 Sacramento River Aerial Atlas
- **APN(s):** 012-160-064, 012-160-066 **USGS Topo Quad:** Moulton Weir
- **Generalized Legal Description:**

Section	Township	Range
06	17N	01W
01	17N	02W

- **Survey Status:** The south parcel was surveyed by Lux Engineering & Surveying Inc., Colusa, CA, dated October 28, 1994. The north parcel was included in Parcel Map No. 90-1-2, County of Colusa, dated March 1990
- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)
- **150 Year Meander Belt Relationship: Approximately** 95% of the north parcel and about 85% of the south parcel are within the 150 Year Meander Belt which defines the Inner River Zone of the Sacramento River Conservation Area. The areas outside of the 150-Year Meander Belt are along the west boundary of the Unit.
- **Site Access - River Access:** The Subunit is accessible from the west bank of the river at a large point bar.

  -Public Road Access: The Unit has no public road access. Legal public access is only from the river.

Adjoining Property: Direction	Land Use	Ownership
N	orchard	private
S	riparian, river / riparian	private
E	river / field crops, orchard	private
W	orchard, row crops	private

Physical Description: The Unit is located on the west side of the river and it is composed of two parcels which are separated by a strip of private ownership that is about 600 feet wide. The north parcel is triangular and the south parcel has the shape of an irregular parallelogram. The west portion of the Unit is a high terrace with a shallow swale adjacent to the west boundary and the east portion is a low terrace that includes a large point bar at the southeast corner of the site. A small, former gravel pit occupies an area at the southeast corner of the north parcel. The entire site is within the levee that abuts the northerly portion of the north parcel and the southerly portion of the south parcel.

- **River Channel Meander History / 25 & 50-Year Projections:** The majority of the Unit has been within the river channel during the past century as the river has moved to the south and east. The DWR 25 and 50-Year erosion projections suggest that the river will erode to the south of the property, which will add area to the site on the south.
- **Inundation Frequency:** Within both the north and south parcels the DWR estimated flood recurrence intervals decreases from east to west with an annual frequency in the lowest areas increasing to a five year frequency in the highest areas.

- **Soils:** Along the current river channel, soils within the north parcel consist of about 3 acres of soils in the Moonbend series; 18 acres of Tujunga Loam; and 4 acres of Riverwash. Behind this riverside material are about 44 acres of Vina Loam. Within the south parcel there is about 58 acres of riverwash and old channel material on the point bar. Behind the riverbank area lies roughly 16 acres of Tujunga Loam; 42 acres of Vina Loam; and about 9 acres of soils in the Moonbend series which are adjacent to the parcel's western boundary.

Vegetation:

- **Habitat Types:** (adapted from DWR GIS, per Chico St. analysis of 1999 aerial photos)

	North Parcel	South Parcel
Cottonwood Forest	7 ac.	-
Gravel*	3 ac.	28 ac.
Herbland Cover	15 ac.	9 ac.
Mixed Riparian Forest	30 ac	48 ac.
Riparian Scrub	4 ac.	40 ac.
Abandoned walnut orchard	10ac	-

*Gravel includes gravel bars, sand bars, and channel material.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** There is a 10-acre english walnut orchard in the northwest corner of the north parcel. Maintenance of the orchard was discontinued about 1990.

- **Vegetation Succession Projection:** With the exception of the english walnut orchard, the vegetation on the site is expected to remain or slowly transition to a Great Valley Mixed Riparian Forest. The transition may be limited in areas where soils are inadequate to support dense forest growth.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** The north parcel contains about 10 acres of abandoned english walnut orchard with good Vina loam soil. The area would be conducive to restoration although such a small a project may not be cost efficient. TNC has acquired the adjoining 60-acre Thousand Acre Ranch property that is planned to be restored and eventually transferred to DFG as part of this unit. As the walnut orchard area is only about 800 feet away from the TNC property along an existing primitive road it is possible that the restoration of this area may be cost efficient as part of a combined project. Such restoration should be evaluated in detail. If full restoration does not prove to be cost efficient, the existing walnut trees should be removed.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

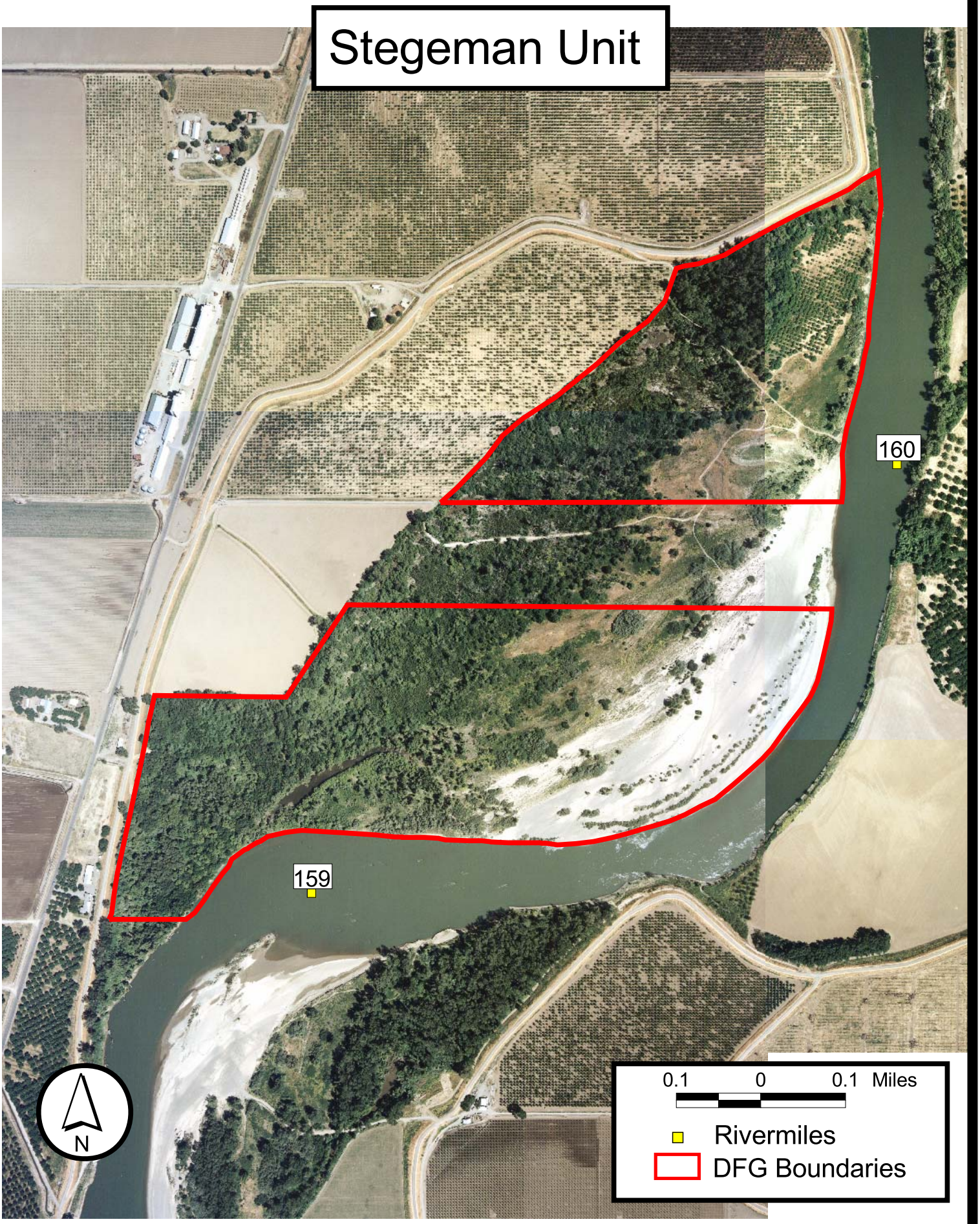
Parcel History No.	Year	Acres	Funding Source:
820962	1990	124.5	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)
820976	1990	66.2	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

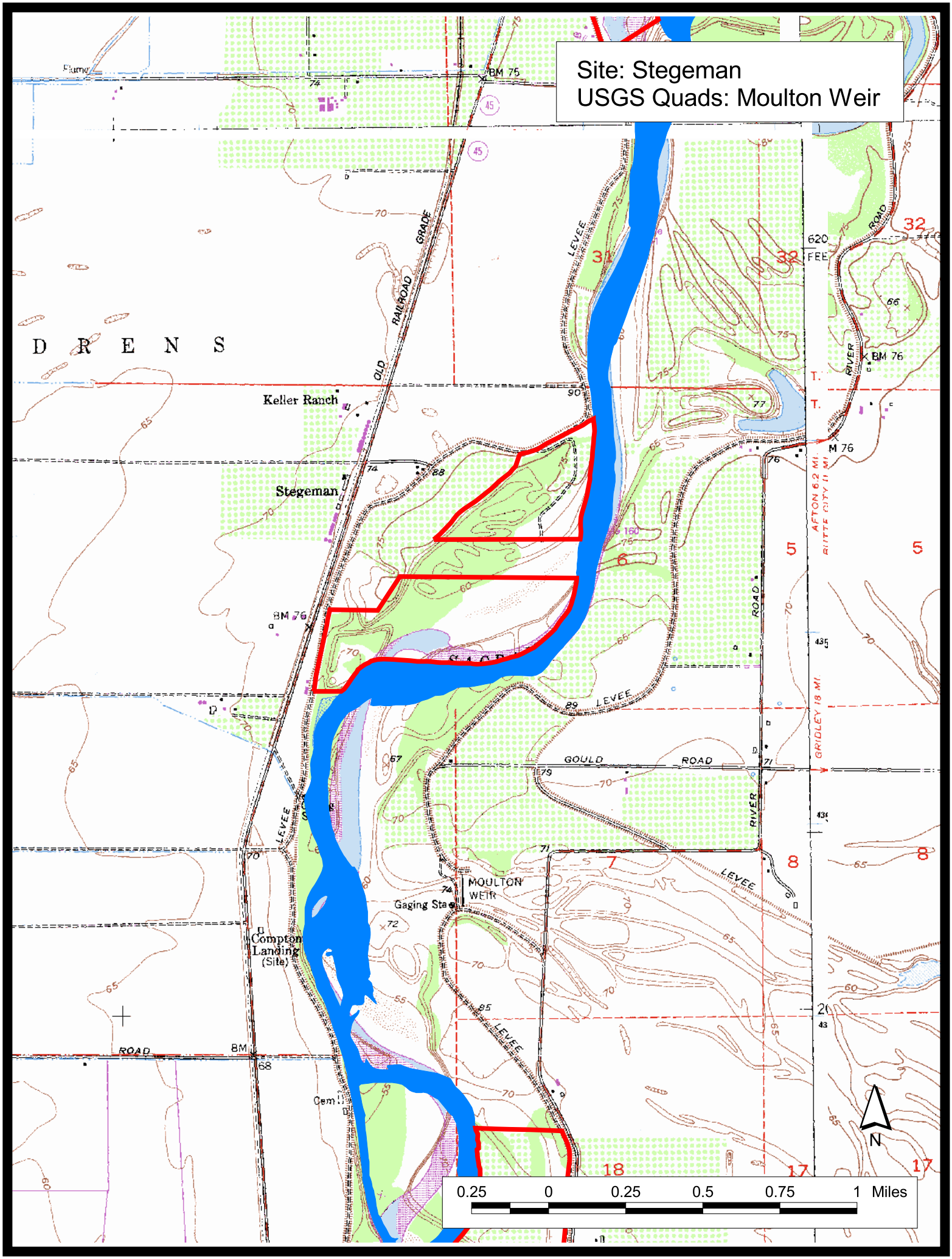
Specific Management Issues / Concerns: The primitive road across the north parcel shows signs of frequent vehicular traffic across the site and the gate controlling access was not secured.

Potential for Coordinated Management with Adjacent Properties: The Unit is located about 1 mile south of the Princeton-S. Unit and about one mile north and across the river from the Moulton-N. Unit. It is also about 2/3-mile south and across the river from the Jensen property is owned by TNC. Up and down the river there are disconnected areas of public and private riparian habitat and no unusual potential for coordinated management exists.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820962 and 820976. Sacramento, California.


Stegeman Unit
160
159
N
0.1
0
0.1
Miles
Rivermiles
DFG Boundaries


Site: Stegeman
USGS Quads: Moulton Weir
D R E N S
Keller Ranch
Stegeman
OLD RAILROAD GRADE
LEVEE
GOULD ROAD
RIVER ROAD
MOULTON WEIR
Gaging Sta
Compton Landing (Site)
ROAD
Cem
BM 75
BM 76
M 76
AFTON 6.2 MI.
BITTE CITY 11 MI.
GRIDLEY 18 MI.
N
0.25 0 0.25 0.5 0.75 1 Miles

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Moulton - North **Parcel History No.** 821121 **Inventory Date:** 9/14/03

Location: **River Mile:** 157L **County:** Colusa

Unit Area: **Record Area:** 106 Ac. **Estimated Actual Area:** 74 Ac.
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 012-220-019 **USGS Topo Quad:** Moulton Weir

- **Generalized Legal Description:**

Section	Township	Range
18	17N	01W
13	17N	02W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)

- **150 Year Meander Belt Relationship:** The westerly 50% is within the 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area.

- **Site Access** **- River Access:** There is limited access from the east bank of the river at a 15-foot high cut bank**.**

  - Public Road Access: The Subunit has no public road access. Legal public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	row crops	private
S	riparian, row crops	private
E	levee / orchard	private
W	river / gravel bar, riparian	State / private

Physical Description: The site is located on the east side of the river and it is roughly a rectangular shape. It is a high terrace that rises about 15 feet above the river at a cut bank and extends east to the project levee. A pronounced swale runs along the levee from north to south and a shallow swale crosses the site from northwest to southeast. There is a primitive roadway across the south edge of the site that supports the restoration activity.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved progressively to the east reducing the size of the property from a record area of 106 acres to approximately 74 acres in 1999. The river is projected by DWR to continue to move to the east and continue to reduce the property area over the future 25 and 50-year periods. Approximately 15 acres are projected to erode in the next 25 years and an additional 20 acres is projected to erode over the next 50 years. It appears, however, that the westerly river that lies near the west levee has become the main channel of the river. If this situation continues, the eastward erosion of the site may not occur as projected.

- **Inundation Frequency:** The site has a DWR estimated flood frequency of two years on the west increasing to four years on the east. Topographic mapping indicates that the swale area near the levee is likely flooded more frequently than the estimated four-year interval.

- **Soils:** The entire area is classified as silt loams within the Moonbend series

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)
  Restored Riparian Forest 46 ac. (planted to riparian vegetation in 2001)
  Mixed Riparian Forest 20 ac.
  Riparian Scrub 8 ac.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The majority of the site was a walnut orchard from the 1950's until 1991 when the trees were cut down. The stumps were removed as part of restoration in 2001.

- **Vegetation Succession Projection:** Over time and with growth of the restoration planting, the vegetation on the site is expected to remain or transition to a Great Valley Mixed Riparian Forest.

- **Restoration History:** Approximately 46 acres were restored in 2001 under contract to Sacramento River Partners. The planting features Valley Oaks and Sycamores on the higher portions of the site with a mix of willows and cottonwoods in the lower areas and random clusters of willows, cottonwoods and shrubs (including blackberries and Coyote Bush.

- **Analysis of Restoration Potential:** Assuming successful growth of the restoration plantings, the site is considered fully restored.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2003.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site

Research and Monitoring Activities: Identified research and monitoring activities in addition to standard DFG monitoring have included:

- Monitoring of restoration planting by River Partners in 2001 to 2004
- Monitoring of owl boxes to characterize small mammal distribution, by TNC in 2003

Acquisition:

Parcel History No.	Year	Acres	Funding Source:
821121	1991	106	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

Specific Management Issues / Concerns: An area property owner raised concerns about deprivation of a young orchard by deer from the area around the Subunit.

Potential for Coordinated Management with Adjacent Properties: The property adjoins large privately owned riparian areas to the south and across the river to the west. There are no adjacent public or private ownership conservation lands although the Moulton –South Unit is located about one half mile to the south. Up and down the river there are disconnected areas of public and private riparian habitat and no unusual potential for coordinated management of habitat areas exists.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821121. Sacramento, California.

- Sacramento River Partners, 2002. Riparian Restoration Plan for the Moulton Weir Unit, Sacramento River Wildlife Area, Colusa County, California, Draft Report. Dan Efseaff and Helen Swagerty. Chico California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Moulton -South **Parcel History No.** 820963 **Inventory Date:** 9/14/03

Location: **River Mile:** 155 - 156R **County:** Colusa

Unit Area: **Record Area:** 131 acres **Estimated Actual Area:** 125 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 012-210-028 **USGS Topo Quad:** Moulton Weir

- **Generalized Legal Description:**

Section	Township	Range
19	17N	1W
24	17N	2W

- **Survey Status:** Parcel Map No. 90-2-1, Landon Engineering and Surveying Inc, Willows, CA, April, 1990.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)

- **150 Year Meander Belt Relationship:** Approximately 95% of the Subunit is within the DWR 150 Year meander belt which defines the Inner River Zone of the Sacramento River Conservation Area. The only excluded area is the northwest corner of the site.

- **Site Access - River Access:** Subunit is accessible accessible from the west bank of the river at cut banks and small point bars.

  - Public Road Access: The Subunit has no public road access. Legal public access is only from the river.

Adjoining Property:

Direction	Land Use	Ownership
N	orchard, river / gravel bar	private, State/private
S	orchard / riparian	State / private
E	river / orchard, riparian	State / private
W	levee / row crops. orchard	private

Physical Description: The site is located on the west side of the river and it is roughly a triangular shape. A narrow neck extends easterly inside a tight bend of the river and an overflow channel is developing in this area. The site is composed of a high terrace in the west and central portion of the site with low terraces adjoining the river in the northcentral and southeast areas. There are cut banks along the shore at inside bends with small gravel bars along the outside of the bend to the east. A small area south of the river in the north central portion of the site appears to be a former gravel pit. There are no roadways or pathways across the site.

- **River Channel Meander History / 25 & 50-Year Projections:** The channel has moved across the site over the past century. The channel north of the site has moved aggressively south and begun to erode the property. The river has also irregularly eroded and expanded the property to the south of the eastwardly extending neck. It is projected that the neck area will be eroded and breached by the river in the next 25 years and continually eroded over the next fifty years. In conjunction with that cutoff, the area below the cutoff is projected to expand to the south and east.

- **Inundation Frequency:** The site has a DWR estimated flood frequency of one and two years in the east increasing to four and five years at the northwest corner.

- **Soils:** The soils consist almost entirely of those in the Vina Loam series. Small areas of riverwash and Tujunga Loam overwash soils are found within frequently flooded portions of the parcel adjacent to the river.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	58 ac
Gravel	9ac
Herbland Cover	10 ac
Mixed Riparian Forest	37 ac
Riparian Scrub	11 ac

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The majority of the Subunit has been within the river channel over the past century. In the past approximately five acres in the extreme north central portion of the site was part of a walnut orchard.

- **Vegetation Succession Projection:** The vegetation on the site is expected to remain or transition to either a Great Valley Cottonwood Forest or a Great Valley Mixed Riparian Forest.

- **Restoration History:** No known restoration activity has occurred on the site.

- **Analysis of Restoration Potential:** Approximately 90% of the site is in natural riparian vegetation. The portion of the site, which is not in riparian vegetation, is projected to be eroded during the next 25 years and therefore restoration is considered not to be cost effective.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

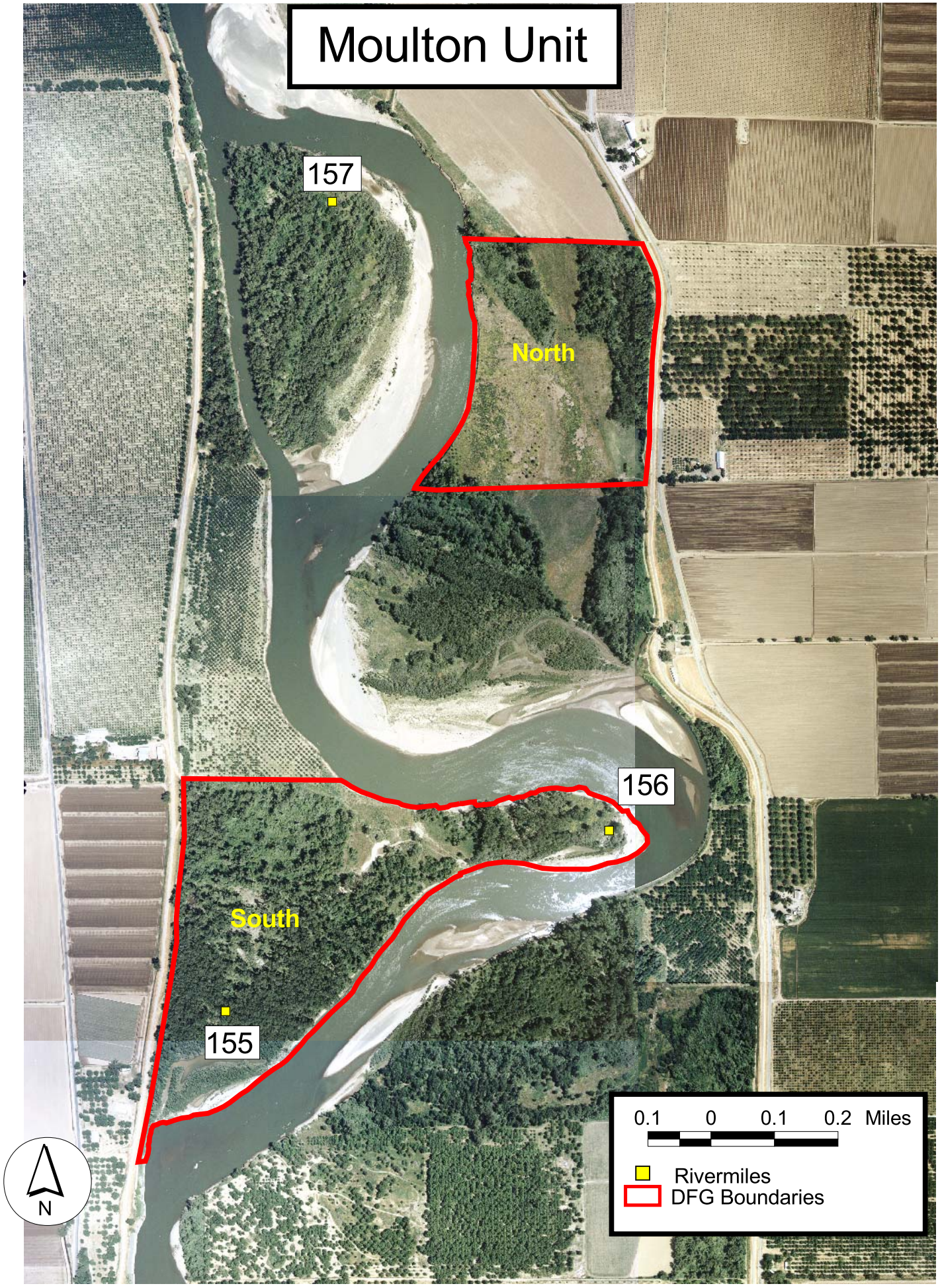
Parcel History No.	Year	Acres	Funding Source:
820963	1989	131	Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

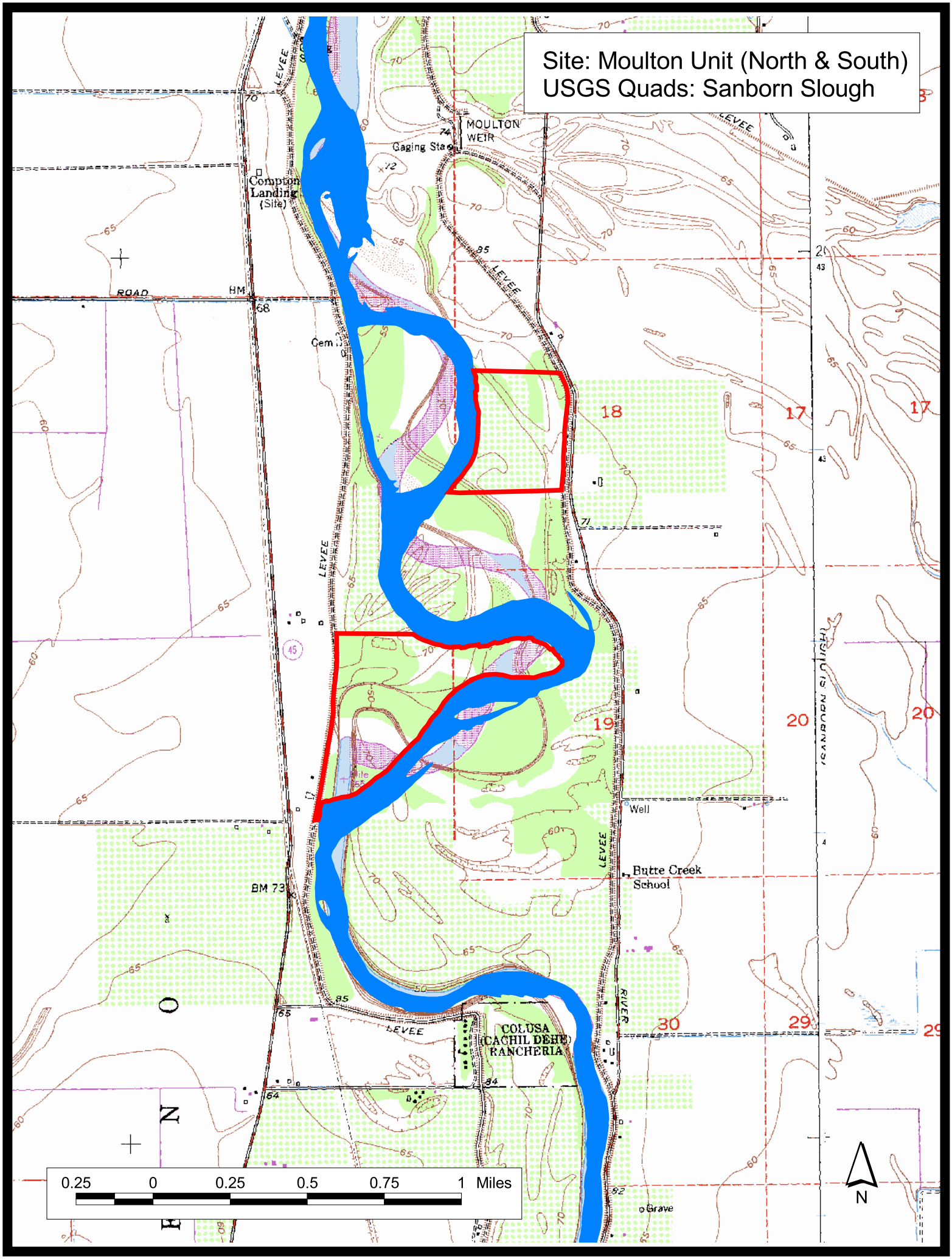
Specific Management Issues / Concerns: Pathways indicate that the site is occasionally accessed across the property to the north. If and when the river breaches the neck of land area as projected by DWR, the ownership of the land east of the cutoff should be legally reviewed and determined.

Potential for Coordinated Management with Adjacent Properties: The site lies across the river from substantial privately owned riparian areas to the northeast and southeast. Directly adjacent lands are all in agriculture. There are no adjacent public or private ownership conservation lands although the Moulton -North Unit is located about one half mile to the north. Up and down the river there are disconnected areas of both public and private riparian habitat and no unusual potential for coordinated management of these habitat areas exists.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 820963. Sacramento, California.


Moulton Unit
157
North
156
South
155
0.1 0 0.1 0.2 Miles
Rivermiles
DFG Boundaries
N


Site: Moulton Unit (North & South)
USGS Quads: Sanborn Slough
MOULTON WEIR
Gaging Sta
Compton Landing (Site)
ROAD
BM
Cem
LEVEE
18
17
19
20
Well
Butte Creek School
BM 73
COLUSA (CACHIL DEHE) RANCHERIA
RIVER
30
29
Grave
0.25 0 0.25 0.5 0.75 1 Miles
N

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Colusa - North **Parcel History No.** 821359 **Inventory Date:** 9/14/03

Location: **River Mile:** 146 to147.5R **County:** Colusa

Unit Area: **Record Area:** 118 acres **Estimated Actual Area:** 136 acres
Basis: 1999 Sacramento River Aerial Atlas

- **APN(s):** 015-070-114 **USGS Topo Quad:** Colusa, Meridian

- **Generalized Legal Description:**

Section	Township	Range
08,17,18	16N	01W

- **Survey Status:** There is no known property survey.

- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)

- **150 Year Meander Belt Relationship:** 131 acres or approximately 97% of the area is within the DWR 150 Year meander belt that defines the Inner River Zone of the Sacramento River Conservation Area.

- **Site Access - River Access: The** Subunit is accessible from the west bank of the river with a large point bar occupying the east central portion of the site.

  - Public Road Access: The Subunit has no public road access. Legal public access is only from the river.

Adjoining Property: Direction	Land Use	Ownership
N	riparian, river	private, State
S	orchard, row crops, river	private, State
E	river/ orchard, riparian	private, DWR
W	riparian, orchard	private

Physical Description:
The irregular site lies on the west side of the river. A large point bar adjacent to the river has expanded substantially over the past 25 years. The remainder of the site is primarily a high terrace with a swale running along the western third of the site. An unimproved pathway connects to the site from the adjoining property to the north, although there are no related access rights.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has moved progressively east along the central portion of the site and this movement is projected to continue expanding the point bar to the southeast. The river is projected to continue slowly eroding the southern portion of the site on the outside of the bend. The DWR 25-year erosion projection indicates that approximately five acres will be eroded in this area with minimal additional erosion over the 50-year term.

- **Inundation Frequency:** Inundation frequency varies with elevation above the normal surface of the river. DWR estimated frequency varies from annual along the point bar and low lying slough areas to a two to four year interval on the high terrace portions of the area.

- **Soils:** The majority of the site is classified as Vina Loam and the point bar area is classified as river wash.

Vegetation:

- **Habitat Types:** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	76 ac.
Abandoned walnut orchard	5 ac.
Gravel*	32 ac.
Herbland Cover	2 ac.
Marsh	3 ac.
Mixed Riparian Forest	2 ac.
Riparian Scrub	16 ac.

*Gravel includes gravel bars, sand bars, and channel material.

- **Existing Vegetation Comments:** No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The majority of the Subunit has been within the river channel over the past century and consequently only a small portion of the area was planted. Approximately 5 acres in the north central portion of the Subunit are abandoned black walnut orchard that appears to have grown from rootstock.

- **Vegetation Succession Projection:** Except for the black walnut orchard area the vegetation on the site is expected to remain or transition to either a Great Valley Cottonwood Forest or a Great Valley Mixed Riparian Forest.

- **Restoration History:** No known restoration activity has occurred on the site

- **Analysis of Restoration Potential:** The relatively small area of black walnuts (5 ac.) is likely too small for a cost efficient restoration project, however, removal of the trees and rootstock would benefit natural recruitment of riparian vegetation. In order to access the orchard area for removal a new roadway would have to be cleared through approximately 700 feet of riparian forest. The viability and impacts of such roadway clearance should be evaluated against the benefits of the tree removal.

Special Status Species: See standard species for the Wildlife Area.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

Parcel History No.	Year	Acres	Funding Source:
821359	1994	118	Fund 262 - Habitat Conservation Fund (Prop. 117) 58% Fund 447 – Wildlife Restoration Fund

Specific Management Issues / Concerns: Tracks indicate occasional ATV access onto the point bar in violation of DFG regulations, from the adjacent land to the north.

Potential for Coordinated Management with Adjacent Properties: The adjoining 81 acres to the west are subject to a conservation easement to the benefit of DFG. Removal of habitat is precluded but public access is not permitted. To the south along the river is the 264-acre Ward property, which is owned by TNC. It is anticipated that the area will be transferred to the State Department of Parks and Recreation as an expansion of the adjoining Colusa – Sacramento River State Recreation Area. Such expansion would permit legal pedestrian access to the subject site across the Recreation Area. Across the river from the Ward property is the Colusa-South Subunit. To the southeast across the river is a 52-acre island parcel owned by the Sacramento and San Joaquin Drainage District and farther east is the Colusa Weir area, which is managed by DFG for hunting purposes. Discussions with DWR/Reclamation Board should address the transfer of the island area to DFG for management as part of the Colusa Unit. This large concentration of publicly owned riparian habitat, extending four miles along the river, offers the potential for coordinated management of this relatively large area.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821359. Sacramento, California.

SACRAMENTO RIVER WILDLIFE AREA - SITE INVENTORY

Unit: Colusa-South **Parcel History No.** 821334 **Inventory Date:** 9/14/03

Location: **River Mile:** 145L **County:** Colusa

- **Unit Area:** **Record Area:** 44.5 acres **Estimated Actual Area:** 42 Acres
  Basis: 1999 Sacramento River Aerial Atlas
- **APN(s):** 015-070-112 **USGS Topo Quad:** Colusa, Meridian

Generalized Legal Description:	**Section**	**Township**	**Range**
	19/20	16N	01W

- **Survey Status:** A parcel map, titled Tract Map No. 82-12-3, for the Subunit was prepared in December of 1982 by Lux Engineering and Surveying Inc. of Colusa.
- **Sacramento River Conservation Area Subreach:** Chico Landing to Colusa Reach (Colusa Subreach)
- **150 Year Meander Belt Relationship:** About 95% of the Subunit is within the DWR 150 Year Meander Belt that defines the Inner River Zone of the Sacramento River Conservation Area.
- **Site Access** - **River Access:** The Subunit is accessible from east bank of the river at a cut bank
  - **Public Road Access:** The site has no public road access. Legal public access is only from the river.

Adjoining Property:	**Direction**	**Land Use**	**Ownership**
	N	open, riparian	private
	S	riparian	private
	E	row crops	private
	W	river/riparian	State, TNC

Physical Description: The Subunit is roughly a rectangle located on the east side of the river. A swale lies along the east boundary of the site, which rises to a high terrace midsite with a low terrace near the river. The combination of the swale and the thick riparian jungle make the site very difficult to penetrate. There are no roadways or pathways across the site.

- **River Channel Meander History / 25 & 50-Year Projections:** The river has occupied almost the entire site over the past century with the channel moving to the west. No substantive change to the site is projected by DWR over the 25 and 50-year projection periods.
- **Inundation Frequency:** The site has a DWR estimated inundation frequency of one to two years.
- **Soils:** With the exception of a small area of channel material, almost 100% of the soil within the south parcel area consist of Vina Loam.

Vegetation:

- **Habitat Types :** (adapted from DWR GIS / Chico St. analysis of 1999 aerial photos)

Cottonwood Forest	31 ac.
Gravel	1 ac.
Riparian Scrub	10 ac.

- **Existing Vegetation Comments:** The site is dense riparian habitat dominated by tall cottonwoods. No unusual or significant vegetation has been identified.

- **Existing and Historical Agriculture:** The Subunit has been within the river channel over the past century and there is no known history of agricultural use.

- **Vegetation Succession Projection:** The vegetation on the site is expected to either remain a Great Valley Cottonwood Forest or transition to a Great Valley Mixed Riparian Forest.

- **Restoration History:** No known restoration activity has occurred on the site

- **Analysis of Restoration Potential:** The site is entirely in riparian vegetation and no need for restoration exists.

Special Status Species: See standard species for the Wildlife Area.

- The joint DFG/SFWS survey recorded a Bank Swallow colony on the site in 2002.

Cultural Features: No significant cultural features or recorded archaeological sites have been identified on the site

Research and Monitoring Activities: No research or monitoring activities other than standard Department monitoring have been identified.

Acquisition:

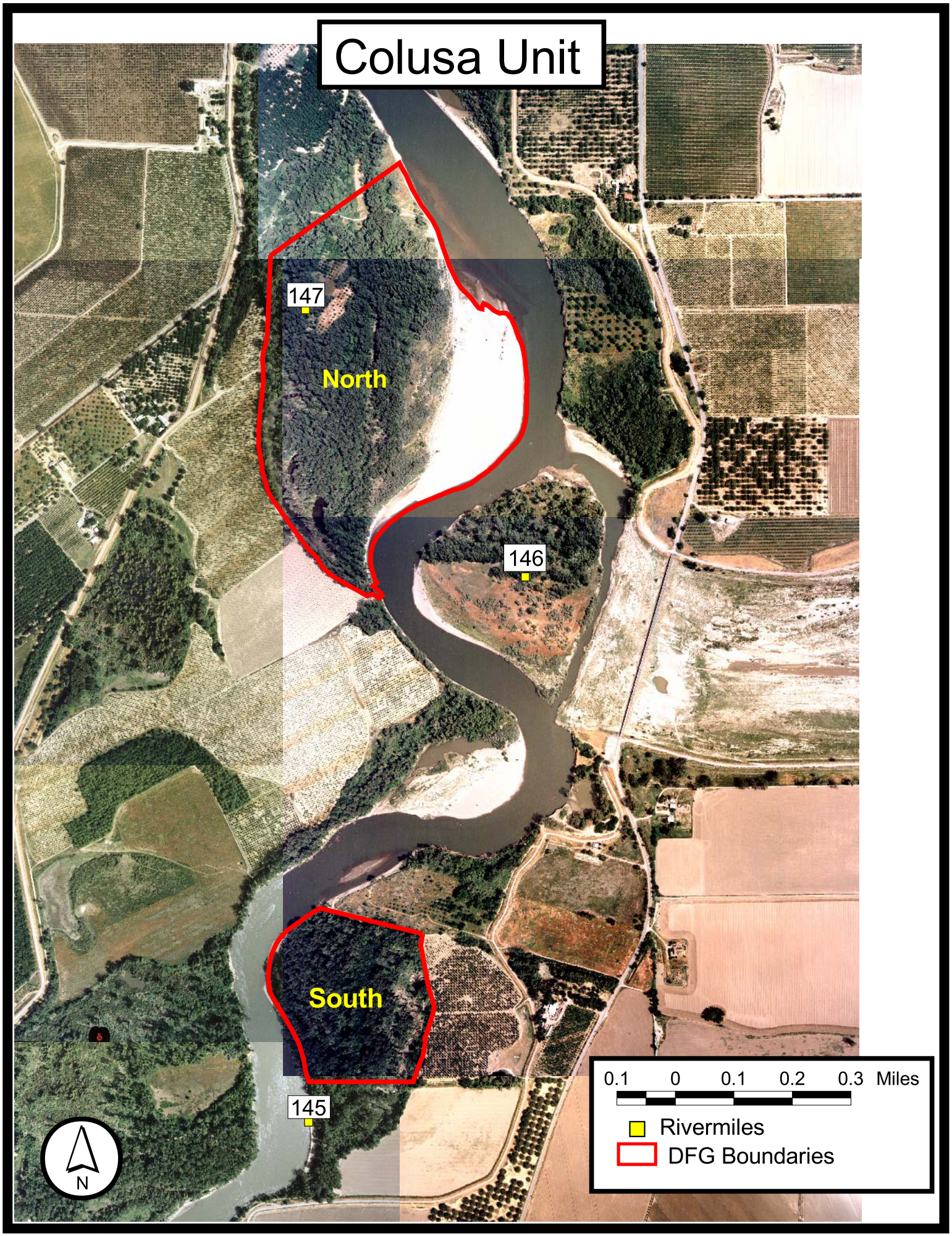
Parcel History No.	Year	Acres	Funding Source:
821334	1994		Fund 786 - Ca. Wildlife, Coastal & Parkland Cons. Act (Prop. 70, 1988)

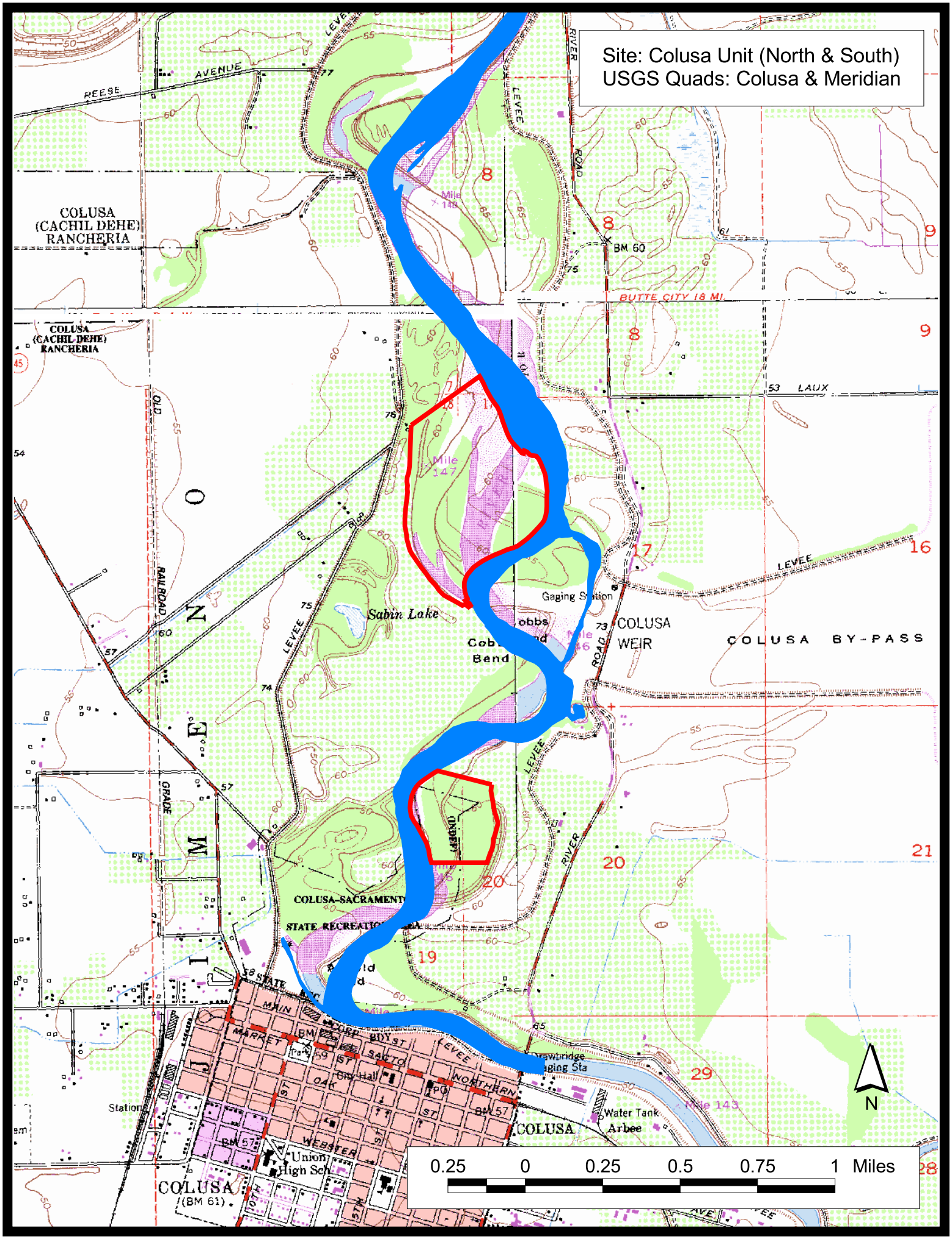
Specific Management Issues / Concerns: None have been identified.

Potential for Coordinated Management with Adjacent Properties: The adjoining 23 acres of row cropland to the east are subject to a conservation easement to the benefit of DFG. Development is precluded but public access is not permitted. To the west across the river is the 264-acre Ward property, which is owned by TNC. It is anticipated that the area will be transferred to the State Department of Parks and Recreation as an expansion of the adjoining Colusa – Sacramento River State Recreation Area. Approximately one-half mile to the north is the Colusa-North Subunit on the west side of the river, on the east side is a 52-acre island parcel owned by the Sacramento and San Joaquin Drainage District and farther east is the Colusa Weir area which is managed by DFG for hunting purposes. This concentration of publicly owned riparian habitat offers the potential for coordinated management of this relatively large area.

Other Reports / Data Available:

- California Department of Fish and Game, Property Inventory Form, Property # 02397, Parcel History 821334. Sacramento, California.


Colusa Unit
147
North
146
South
145
N
0.1 0 0.1 0.2 0.3 Miles
Rivermiles
DFG Boundaries


Site: Colusa Unit (North & South)
USGS Quads: Colusa & Meridian
COLUSA (CACHIL DEHE) RANCHERIA
REESE AVENUE
LEVEE
RIVER ROAD
BM 60
BUTTE CITY 18 MI.
LAUX
Mile 147
Sabin Lake
Cobb Bend
Gaging Station
COLUSA WEIR
COLUSA BY-PASS
OLD RAILROAD GRADE
COLUSA-SACRAMENTO
STATE RECREATION
Drawbridge
Gaging Sta
Water Tank
Arbee
COLUSA
Union High Sch
Station
(BM 61)
N
0.25 0 0.25 0.5 0.75 1 Miles

Appendix D

PLANT SPECIES LIST

This Appendix contains a listing of vascular plant species found or expected in the Sacramento River Wildlife Area. The listing was compiled from existing species lists for the Wildlife Area and other similar riparian habitats along the Sacramento River. It was edited in consultation with DFG staff. Nomenclature for these species was taken from The Jepson Manual, 1996.

Explanation of Symbols

SSS - indicates a Special Status.
NN - indicates plants known to be non native (alien) to the Wildlife Area
\- - - indicates plants known to be native to the Wildlife Area
? - indicates plants of uncertain origin

Common Name	Scientific Name	Symbol
Ferns and Fern Allies		-
Equisetaceae (Horsetail Family)		
Horsetail	*Equisetum spp.*	-
Horsetail	*Equisetum arvense*	-
Western scouring rush	*Equisetum hyemale ssp. affine*	-
Dicotyledons		
Aceraceae (Maple Family)		
Box elder	*Acer negundo var. californicum*	-
Amaranthaceae (Amaranth Family)		
Tumbleweed	*Amaranthus albus*	NN
Prostrate pigweed	*Amaranthus blitoides*	-
Mat pigweed	*Amaranthus retroflexus*	NN
Anacardiaceae (Poison Oak Family)		
Poison oak	*Toxicodendron diversilobum*	-
Apiaceae (Carrot Family)		
Poison-hemlock	*Conium maculatum*	NN
Aristolochiaceae (Birthwort Family)		
Dutchman's pipe	*Aristolochia lingustifolia*	-
Asteraceae (Sunflower family)		
Wright's trichocoronis	*Trichocoronis wrightii*	SSS
Betulaceae (Birch Family)		
	Alnus incana var. *tenuifolia*	-
Boraginaceae (Forget-Me-Not Family)		
Heliotrope	*Heliotropium europaeum*	NN
Brassicaceae (Mustard Family)		

	Sinapsis arvensis	NN
Shepard's purse	*Capsella spp.*	NN
Calycanthaceae (Calycanthus Family)		
Spice-brush	*Calycanthus occidentalis*	-
Caprifoliaceae (Honeysuckle Family)		
Blue elderberry	*Sambucus mexicana*	-[1]
Caryophyllaceae Pink Family)		
Common chickweed	*Stellaria media*	NN
Chenopodiaceae (Saltbush Family)		
Pigweed, lamb's-quarters	*Chenopodium album*	NN
Mexican-tea	*Chenopodium ambrosioides*	NN
Winged pigweed	*Cycloloma atriplicifolia*	NN
Russian thistle	*Salsola australis*	NN
Compositae (Daisy Family)		
Western ragweed	*Ambrosia psilostachya*	
Mayweed	*Anthemis cotula*	NN
Douglas' mugwort	*Artemesia douglasiana*	-
Chaparral broom	*Baccharis pilularis*	
Mule fat	*Baccharis viminea*	-
Stick-tight	*Bidens frondosa*	-
Yellow statthistle	*Centaurea solstitialis*	NN
Golden aster	*Heterotheca oregana* var. *compacta*	-
Chicory	*Cichorium intybus*	NN
Canada thistle	*Cirsium arvense*	NN
Horseweed	*Conyza canadensis*	-
Western goldenrod	*Euthamnia occidentalis*	-
Weedy cudweed	*Gnaphalium luteo-album*	NN
Everlasting	*Gnaphalium palustre*	-
Gum plant	*Grindelia camporum*	-
Sneezeweed	*Helenium spp.*	-
Common spikeweed	*Hemizonia pungens*	-
Prickly lettuce	*Lactuca serriola*	NN
Common groundsel	*Senecio vykgaris*	NN
Sow thistle	*Sonchus asper*	NN
Cocklebur	*Xanthium strumarium*	-
Cucurbitaceae (Gourd Family)		
Wild cucumber	*Marah fabaceus*	-
Elatinaceae (Waterwort Family)		
Waterwort	*Bergia texana*	-

[1]Blue elderberry is the host plant for the valley elderberry longhorn beetle which is federally listed as Threatened.

Euphorbiaceae (Spurge Family)		
Turkey-mullein	*Eremocarpus setigerus*	-
	Euphorbia ocellata	-
Fabaceae (Pea Family)		
Ferris's milk-vetch	*Astragalus tener var. ferrisiae*	SSS
Bird's foot trefoil	*Lotus corniculatus*	NN

Black medick	*Medicago lupilina*	NN
Sweet-clover	*Melilotus albus*	NN
Sweet-clover	*Melilotus indicus*	NN
Vetch	*Vicia spp.* (spp. dependent)	- or NN
Fagaceae (Beech Family)		
Valley oak	*Quercus lobata*	
Geraniacaea (Geranium Family)		
Round-leaved filaree	*Erodium macrophyllum*	SSS
Hypericaceae (St. John's Wort Family)		
Klamath weed	*Hypericum perforatum*	NN
Juglandaceae (Walnut Family)		
Walnut	*Juglans spp.*	**?**
Walnut	*Juglans californica var. hindsii*	-
Lamiaceae (Mint Family)		
Water horehound	*Lycopus americanus*	-
Horehound	*Marrubium vulgare*	NN
Tule mint	*Mentha arvensis*	-
Peppermint	*Mentha piperita*	NN
Loasaceae (Loasa Family)		
Blazing-star	*Mentzelia laevicaulis*	-
Lythraceae (Loosestrife Family)		
Valley redstem	*Ammannia cocina*	-
Tooth-cup	*Rotala ramosior*	-
Moraceae (Mulberry Family)		
Common fig	*Ficus carica*	NN
Malvacae (Malow Family)		
Rose mallow	*Hibiscus lasiocarpus*	SSS
Oleaceae (Olive Family)		
Oregon ash	*Fraxinus latifolia*	-
Onagraceae (Evening Primrose Family)		
Boisduvalia	*Epilobium densiflorum*	-
Willow-herb	*Epilobium ciliatum ssp. ciliatum*	-
Water primrose	*Ludwigia peploides*	-
Water purslane	*Ludwigia palustris*	-
Orobanchaceae (Broom-Rape Family)		
Valley broom-rape	*Orobanche vallicola*	-
Plantaginaceae (Plantain Family)		
Common plantain	*Plantago major*	NN
Platanaceae (Sycamore Family)		
Sycamore	*Platanus racemosa*	-
Polygonaceae (Buckwheat Family)		
Knotweed	*Polygonum hydropiperoides*	-

Willow weed	*Polygonum lapathifolium*	-
Layd's thumb	*Polygonum persicaria*	NN
Dock	*Rumex californicus*	-
Clustered dock	*Rumex conglomeratus*	NN
Curly dock	*Rumex crispus*	NN
Fiddle dock	*Rumex pulcher*	NN
Ranunculaceae (Buttercup Family)		
Clematis	*Clematis ligusticifolia*	-
Rosaceae (Rose Family)		
California rose	*Rosa californica*	-
California blackberry	*Rubus vitifolius*	-
Rubiaceae (Madder Family)		
Buttonbrush	*Cephalanthus occidentalis* var. *californicus*	-
Bedstraw	*Galium aparine*	-
Salicaceae (Willow Family)		
Fremont cottonwood	*Populus fremonti*	-
Willow	*Salix sp*	-
Sandbar willow	*Salix exigua*	-
Arroyo willow	*Salix lasiolepis*	-
Dusky willow	*Salix melanopsis*	-
Scrophulariaceae (Monkey-Flower Family)		
Snapdragon	*Antirrhinum cornutum*	-
Monkey-flower	*Mimulus aurantiacus*	-
Fluellin	*Kickxia elatine*	NN
Hairy monkey flower	*Mimulus pilosos*	-
Water speedwell	*Veronica anagallis aquatica*	-
Solanaceae (Nightshade Family)		
Jimson weed	*Datura wrightii*	-
Tobacco	*Nicotiana bigelovii*	-
Nightshade	*Solanum nodiflorum*	NN
Urticaceae (Nettle Family)		
Silky stinging nettle	*Urtica dioica holosericea*	-
Vitaceae (Grape Family)		
Wild grape	*Vitis californica*	-
Monocotyledons		
Alismataceae (Water-Plantain Family)		
Water-plantain	*Alisma trivale*	-
Bur head	*Echinodorus rostratus*	-
Tule potato	*Sagittaria latifolia*	-
Cyperaceae (Sedge Family)		
Sedge	*Carex barbarae*	-
Fox sedge	*Carex vulpinoidea*	SSS
Sedge	*Cyperus difformis*	NN
Sedge	*Cyperus eragrostis*	-
Sedge	*Cyperus niger*	-

Sedge	*Cyperus strigosus*	-
Spike-rush	*Eeleocharis macrostachya*	-
Four-angled spikerush	*Eeleocharis quadrangulata*	SSS
Hair sedge	*Bulbostylis capillaris*	-
	Lipocarpha micrantha	-
Bulrush	*Scirpus spp.*	-
Common tule	*Scirpus acutus*	-
	Scirpus koilolepis	-
Gramineae (Grass Family)		
Giant Reed	*Arundo donax*	NN
Wild oat	*Avena fatua*	NN
Ripgut grass	*Bromus diandrus*	NN
Soft chess	*Bromus mollis*	NN
Swamp timothy	*Crypsis schoenoides*	NN
Bermuda grass	*Cynodon dactylon*	NN
Crab grass	*Digitaria sanguinalis*	NN
Barnyard grass	*Echinochloa crusgallia*	NN
False daisy	*Eclipta prostrata*	-
Blue wildrye	*Elymus glaucus*	-
Love grass	*Eragrostis pilosa*	-
Velvet grass	*Holcus lanatus*	NN
Foxtail barley	*Hordeum jubatum*	-
Rice cutgrass	*Leersia oryzoides*	-
Sprangletop	*Leptochloa fasicularis*	-
Italian ryegrass	*Loliium multiflorum*	NN
Panic grass	*Panicum capillare*	-
Dallis grass	*Paspalum dilatatum*	-
Common reed	*Phragmites australis*	-
Beard grass	*Polypogon monspeliensis*	NN
Yellow foxtail	*Setaria glauca*	NN
Johnson grass	*Sorghum halepense*	NN
Juncaceae (Rush Family)		
Rush	*Juncus acuminatus*	-
Baltic rush	*Juncus balticus*	-
Lemanceae (Duckweed Family)		
Duckweed	*Lemna minor*	?
Columbian watermeal	*Wolffia brasiliensis*	SSS
Potamogetonaceae (Pondweed Family)		
Crisp pondweed	*Potamogeton crispus*	NN
Typhaceae (Cat-tail Family)		
Soft-flat cat-tail	*Typha latifolia*	?

Appendix E

ANIMAL SPECIES LIST

This Appendix contains a listing of vertebrate animal species found or expected in the Sacramento River Wildlife Area. The listing was compiled from existing species lists for the Wildlife Area and other similar riparian habitats along the Sacramento River. It was edited in consultation with Department Wildlife and Fisheries Biologists and TNC science staff

Explanation of Symbols for Amphibians, Reptiles, Mammals and Fish

SSS - indicates a Special Status Species
NN - indicates animals known to be non-native

Common Name	Scientific Name	Symbol
Amphibians		
Plethodontidae		
California slender salamander	*Batrachoseps attenuatus*	_
Bufonidae		
Western toad	*Bufo boreas*	_
Hylidae		
Pacific tree frog	*Pseudscris regilla*	_
Ranidae		
Bullfrog	*Rana catesbeiana*	NN
Reptiles		
Testudinidae		
Red-eared slider	*Chrysemys scripta*	NN
Northwestern pond turtle	*Clemmys marmorata*	SSS
Iguanidae		
Western fence lizard	*Sceloporus occidentalis*	-
Scincidae		
Gilbert's skink	*Eumeces gilberti*	-
Western skink	*meces skiltonianus*	-
Teiidae		
Western whiptail	*Cnemidophorus tigris*	-
Anguidae		
Southern alligator lizard	*Gerrhonotus multicarinatus*	-
Colubridae		
Coachwhip	*Masticophis flagellum*	-
Common garter snake	*Thamnophis sirtalis*	-
Common kingsnake	*Lampropeltis getulus*	-

Giant garter snake	*Thamnophi gigas*	SSS
Gopher snake	*Pituophis melanoleucus*	-
Long-nosed snake	*Rhinocheilus lecontei*	-
Night snake	*Hypsiglena torquata*	-
Racer	*Coluber constrictor*	-
Ringneck snake	*Diadophis punctatus*	-
Sharp-tailed snake	*Contia tenuis*	-
Striped racer	*Masticophis lateralis*	-
Western aquatic garter snake	*Thamnophis couchi*	_
Western terrestrial garter snake	*Thamnophis elegans*	-
Viperidae		
Western rattlesnake	*Crotalus viridis*	-
Fish		
Acipenseridae		
Green sturgeon	*Acipenser medirostris*	SSS
White sturgeon	*Acipenser transmontanus*	-
Clupeidae		
American shad	*Alosa sapidissima*	NN
Threradfin shad	*Dorosoma petenense*	NN
Salmonidae		
Chinook (king) salmon	*Oncorhynchus tshawytscha*	SSS
Steelhead rainbow trout	*Oncorhynchus mykiss*	SSS
Cyprinidae		
Carp	*Cyprinus carpio*	NN
Goldfish	*Carassius auratus*	NN
Hardhead	*Mylopharodon conocephalus*	SSS
Hitch	*Lavinia exilicauda*	-
Sacramento splittail	*Pogonichthys macrolepidotus*	SSS
Pike minnow	*Ptychocheilus grandis*	-
Catostomidae		
Sacramento sucker	*Catostomus occidentalis*	-
Ictaluridae		
Brown bullhead	*Ictalurus nebulosus*	-
Channel catfish	*Ictaluru punctatus*	NN
White catfish	*Ictaluru catus*	NN
Gasterosteidae		
Threespine stickleback	*Gasterosteus aculeatus*	-
Percichthyidae		
Striped bass	*Morone saxatilis*	NN
Petromyzontidea		
River lamprey	*Lampetra ayresi*	SSS
Centrarchidae		
Bluegill	*Lepomis macrochirus*	NN
Green sunfish	*Lepomis cyanellus*	NN
Largemouth bass	*Micropterus salmoides*	NN

Sacramento perch	*Archoplites interruptus*	SSS
Smallmouth bass	*Micropterus dolomieui*	-
Embiotocidae		
Tuleperch	*Hysterocarpus traski*	-
Cottidae		
Prickly sculpin	*Cottus asper*	-
Mammals		
Marsupialia		
Didelphidae		
Opossum	*Didelphis virginiana*	NN
Insectivora		
Soricidae		
Ornate shrew	*Sorex omatus*	-
Talpidae		
Broad-footted mole	*Scapanus latimanus*	-
Chiroptera		
Vespertilionidae		
Big brown bat	*Eptesicus fuscus*	-
California myotis	*Myotis californicus*	-
Hoary bat	*Lisiuurs cinereus*	-
Pallid bat	*Antrozous pallidus*	-
Red bat	*Lisiuurs borealis*	-
Townsend's big-eared bat	*Plecotus townsendii*	SSS
Western pipistrelle	P*ipistrellus hesperus*	-
Yuma myotis	*Myotis yumanensis*	-
Molossidae		
Brazilian free-tailed bat	*Tadarida brasiliensis*	-
Lagomorpha		
Leporidae		
Desert cottontail	*Sylvilagus audibonii*	-
Black-tailed jackrabbit	*Lepus californicus*	-
Rodentia		
Sciuridae		
California ground squirrel	*Otospermophilus beecheyi*	-
Western gray squirrel	*Sciurus griseus*	-
Geomyidae		
Botta pocket gopher	*Thromomys bottae*	-
Heteromyidae		
Little pocket mouse	*Perognathus longimembris*	-
San Joaquin pocket mouse	*Perognathus inornatus*	-
Castoridae		

Beaver	*Castor canadenenis*	-
Cricetidae		
Brush mouse	*Peromyscus boylii*	-
California vole	*Microtus californicus*	-
Deer mouse	*Peromyscus maniculatus*	-
Dusky-footed woodrat	*Neotoma fuscipes*	-
Muskrat	*Ondatra zibethicus*	NN
Western harvest mouse	*Reithrodontomys megalotis*	-
Muridae		
Black rat	*Rattus rattus*	NN
House mouse	*Mus musculs*	NN
Norway rat	*Rattus norvegicus*	NN
Erethizontidae		
Porcupine	*Erethizon dorsatum*	-
Carnivora		
Canidae		
Coyote	*Canis latrans*	-
Gray fox	*Urocyon cinereoargenteus*	-
Red fox	*Vulpes vulpes*	NN
Procyonidae		
Raccoon	*Procyon lotor*	-
Ringtail	*Bassarscus astutus*	SSS
Mustelidae		
Badger	*Taxidea taxus*	-
Long-tailed weasel	*Mustela frenata*	-
Mink	*Mustela vison*	-
River otter	*Lutra canadensis*	-
Spotted skunk	*Spilogale gracilis*	-
Striped skunk	*Mephitis mephitis*	-
Felidae		
Bobcat	*Linx rufis*	-
Artiodactyla		
Cervidae		
Mule deer	O*docoileus hemionus*	-

Birds

Explanation of Symbols for Birds

The following designations for the seasonal status of birds are adapted from the Wildlife Habitat Relationship Systems from the California Department of Fish and Game

SSS	- indicates a special status species
sp, su, f, and/or w	- indicates that the species is present in the spring, summer, fall and/or winter.
r	- indicates a bird species is a year-round resident

Species		Seasonal Status	Symbol
Anseriformes (Geese, Swans and Ducks)			
Anatidae			
Anserinae			
Greater white-fronted goose	*Anser albifrons*	f, w	-
Snow goose	*Chen caerulescens*	f, w	-
Ross's goose	*Chen rossii*	f, w	-
Canada goose	*Branta canadensis*	f, w	-
Tundra swan	*Cygnus columbianus*	f, w	-
Anatinae			
Wood duck	*Aix sponsa*	r	-
Gadwall	*Anas strepera*	r	-
Eurasian wigeon	*Anas penelope*	w	-
American wigeon	*Anas americana*	r	-
Mallard	*Anas platyrhynchos*	r	-
Blue-winged teal	*Anas discors*	f, w	-
Cinnamon teal	*Anas cyanoptera*	r	-
Northern shoveler	*Anas clypeata*	r	-
Northern pintail	*Anas acuta*	f, w	-
Green-winged teal	*Anas crecca*	f, w	-
Canvasback	*Aythya valisineria*	f, w	-
Redhead	*Aythya americana*	r	-
Ring-necked duck	*Aythya collaris*	f, w	-
Lesser scaup	*Aythya affinis*	f, w	-
Common goldeneye	*Bucephala clangula*	f, w	-
Common merganser	*Mergus merganser*	r	-
Hooded merganser	*Lophodytes cucullatus*	w	-
Ruddy duck	*Oxyura jamaicensis*	r	-
Galliformes (Upland Game Birds)			
Phasianidae			
Phasianinae			
Ring-necked pheasant	*Phasianus colchicus*	r	NN
Meleagridinae			
Wild turkey	*Meleagris gallopvo*	r	NN
Odontophoridae			
California quail	*Callipepla californica*	r	-

Podicipediformes (Grebes)			
Podicipedidae			
Pied-billed grebe	*Podilymbus podiceps*	r	-
Eared grebe	*Podiceps nigricollis*	f, w	-
Western grebe	*Aechmophorus occidentali*	sp,f, w	-
Pelecaniformes (Pelicans and Cormorants)			
Pelecanidae			
American white pelican	*Pelecanus erythrorhynchos*.	r	SSS
Phalacrocoracidae			
Double-crested cormorant	*Phalacrocorax auritus*	f, w	SSS
Ciconiiformes (Wading Birds and Vultures)			
Ardeidae			
American bittern	*Botaurus lentiginosus*	r	-
Least bittern	*Ixobrychus exilis*	sp, su	SSS
Great blue heron	*Ardea herodias*)	r	-
Great egret	*Casmerodius albus*	r	-
Snowy egret	*Egretta thula*	r	-
Cattle egret	*Bubulcus ibis*	f, w	-
Green heron	*Butorides striatus*	r	-
Black-crowned night heron	*Nycticorax nycticorax*	f, w	-
Treskiornithidae			
White-faced ibis	*Plegadis chihi*	r	-
Cathartidae			
Turkey vulture	*Cathartes aura*	r	-
Falconiformes (Hawks, Eagles and Falcons)			
Accipitridae			
Pandioninae			
Osprey	*Pandion haliaetus*	r	SSS
Accipitrinae			
White-tailed kite	*Elanus leucurus*	r	-
Bald eagle	*Haliaeetus leucocephalus*	r	SSS
Northern harrier	*Circus cyaneus*	r	SSS
Sharp-shinned hawk	*Accipiter striatus*	w	SSS
Cooper's hawk	*Accipiter cooperii*	r	SSS
Red-shouldered hawk	*Buteo lineatus*	r	-
Swainson's hawk	*Buteo swainsoni*	sp, su	SSS
Red-tailed hawk	*Buteo jamaicensis*	r	-
Ferruginous hawk	*Buteo regalis*	w	-
Rough-legged hawk	*Buteo lagopus*	w	-
Golden eagle	*Aquila chrysaetos*	r	SSS
Falconidae			
Falconinae			
American kestrel	*Falco sparverius*	r	-
Merlin	*Falco columbarius*	w	SSS
Peregrine falcon	*Falco peregrinus*	sp, f, w	-
Prairie falcon	*Falco mexicanus*	sp, f, w	-

Gruiformes (Rails, Morhens and Coots)			
Rallidae			
Virginia rail	*Rallus limicola*	r	-
Sora	*Porzana carolina*	r	-
Common moorhen	*Gallinula chloropus*	r	-
American coot	*Fulica americana*	r	-
Charadriiformes (Shorebirds, Gulls and Terns)			
Charadriidae			
Charadriinae			
Black-bellied plover	*Pluvialis squatarola*	r	-
Semipalmated plover	*Charadrius semipalmatus*	sp, f	-
Killdeer	*Charadrius vociferus*	r	-
Recurvirostridae			
Black-necked stilt	*Himantopus mexicanus*	sp, su	-
American avocet	*Recurvirostra americana*	r	-
Scolopacidae			
Scolopacinae			
Greater yellowlegs	*Tringa melanoleuca*	r	-
Lesser yellowlegs	*Tringa flavipes*	r	-
Spotted sandpiper	*Actitis macularia*	r	-
Solitary sandpiper	*Tringa solitaria*	sp, f	-
Whimbrel	*Numenius phaeopus*	sp	-
Long-billed curlew	*Numenius americanus*	sp, f	-
Western sandpiper	*Calidris mauri*	r	-
Pectoral sandpiper	*Calidris melanotos*	sp, s, f	-
Dunlin	*Calidris alpina*	sp, f	-
Long-billed dowitcher	*limnodromus scolopaceus*	sp, f	-
Common snipe	*Gallinago gallinago*	sp, f	-
Phalaropodinae			
Wilson's phalarope	*Phalaropus tricolor*	sp, f	-
Red-necked phalarope	*Phalaropus lobatus*	sp, f	-
Laridae			
Larinae			
Ring-billed gull	*Larus delawarensis*	r	-
California gull	*Larus californicus*	r	-
Herring gull	*Larus argentatus*	r	-
Sterninae			
Caspian tern	*Sterna caspia*	sp, su	-
Forster's tern	*Sterna forsteri*	sp, su	-
Black tern	*Chlidonias niger*	sp, su	-
Columbiformes (Pigeons and Doves)			
Columbidae			
Band-tailed pigeon	*Columba fasciata*	sp	-
Mourning dove	*Zenaida macroura*	r	-

Cuculiformes (Cuckoos)			
Cuculidae			
Cuculinae			
Western yellow-billed cuckoo	*Coccyzus americanus Occendentalis*	sp, su	SSS
Strigiformes (Owls)			
Tytonidae			
Barn owl	*Tyto alba*	r	-
Strigidae			
Western screech owl	*Otus kennicottii*	r	-
Great horned owl	*Bbo virginianus*	r	-
Longed-eared owl	*Asio otus*	r	SSS
Short-eared owl	*Asio flammeus*	r	SSS
Caprimulgiformes (Goatsuckers)			
Caprimulgidae			
Chordeilinae			
Lesser nighthawk	*Chordeiles acutipennis*	sp,su, f	-
Common nighthawk	*Chordeiles minor*	sp,su, f	-
Caprimulginae			
Common poorwill	*Phalaenoptilus nuttallii*	sp, su, f	-
Apodiformes (Swifts)			
Apodidae			
Chaeturinae			
Vaux's swift	*Chaetura vauxi*	sp, su, f	-
Apodinae			
White-throated swift	*Aeronautes saxatalis*	sp, su, f	-
Trochilidae (Hummingbirds)			
Trochilinae			
Black-chinned hummingbird	*Archilochus alexandri*	sp,	-
Anna's hummingbird	*Calypte anna*	r	-
Rufous hummingbird	*Selasphorus rufus*	sp, f	-
Coraciiformes (Kingfishers)			
Alcedinidae			
Cerylinae			
Belted kingfisher	*Ceryle alcyon*	r	-
Piciformes (Woodpeckers)			
Picidae			
Picinae			
Lewis' woodpecker	*Melanerpes lewis*	r	-
Acorn woodpecker	*Melanerpes formicivorus*	r	-
Red-breasted sapsucker	*Sphyrapicus ruber*	sp, f, w	-
Nuttall's woodpecker	*Picoides nuttallii*	r	-
Downy woodpecker	*Picoides pubescens*	sp, su, f, w	-
Hairy woodpecker	*Picoides villosus*	w	-
Northern flicker	*Colaptes auratus*	r	-

Passeriformes (Songbirds and Allies)

Tyrannidae			
Fluvicolinae			
Olive-sided flycatcher	*Contopus cooperi*	sp, f	-
Western wood-pewee	*Contopus sordidulus*	sp, f	-
Hammond's Flycatcher	*Empidonax hammondii*	sp, f	-
Dusky flycatcher	*Empidonax oberholseri*	sp, f	-
Willow flycatcher	*Empidonax traillii*	sp, f	-
Western flycatcher	*Empidonax difficilis*	sp, f	-
Black phoebe	*Sayornis nigricans*	r	-
Say's phoebe	*Sayornis saya*	sp, f, w	-
Tyranninae			
Western kingbird	*Tyrannus verticalis*	sp, su	-
Ash-throated flycatcher	*Myiarchus cinerascens*	sp, su	-
Laniidae			
Loggerhead shrike	*Lanius ludovicianus*	r	SSS
Northern shrike	*Lanius excubitor*	f, w	-
Vireonidae			
Hutton's vireo	*Vireo huttoni*	r	-
Cassin's vireo	*Vireo cassiuii*	sp, f	-
Warbling vireo	*Vireo gilvus*	sp, f	
Corvidae			
Western scrub jay	*Aphelocoma californica*	r	-
American crow	*Corvus brachyrhynchos*	r	-
Yellow-billed magpie	*Pica nuttalli*	r	-
Common raven	*Corus corvax*	r	-
Alaudidae			
Horned lark	*Eremophila alpestris*	r	-
Hirundinidae			
Violet-green swallow	*Tachycineta thalassina*	sp, su, f	-
Tree swallow	*Tachycineta bicolor*	r	-
Northern rough-winged swallow	*Stelgidopteryx serripennis*	sp, su	-
Bank swallow	*Riparia riparia*	sp	SSS
Cliff swallow	*Hirundo pyrrhonota*	sp	-
Barn swallow	*Hirundo rustica*	sp	-
Paridae			
Oak titmouse	*Baeolophus inornatus*	r	-
Aegithalidae			
Bushtit	*Psaltriparus minimus*	r	-
Sittidae			
Sittinae			
Red-breasted nuthatch	*Sitta canadensis*	sp,f, w	-
White-breasted nuthatch	*Sitta carolinensis*	r	-

Certhiidae			
Certhiinae			
Brown creeper	*Certhia americana*	sp, f, w	-
Troglodytidae			
Bewick's wren	*Thryomanes bewickii*	r	-
House wren	*Troglodytes aedon*	r	-
Winter wren	*Troglodytes troglodytes*	sp, f, w	-
Marsh wren	*Cistothorus palustris*	r	-
Regulidae			
Golden-crowned kinglet	*Regulus satrapa*	sp, s, f	-
Ruby-crowned kinglet	*Regulus calendula*	sp, s, f	-
Sylviidae			
Polioptilinae			
Blue-gray gnatcatcher	*Polioptila caerulea*	sp, su	-
Turdidae			
Western bluebird	*Sialia mexicana*	sp,f, w	-
Swainson's thrush	*Catharus ustulatus*	sp	-
Hermit thrush	*Catharus guttatus*	sp, f, w	-
American robin	*Turdus migratorius*	r	-
Varied thrush	*Ixoreus naevius*	sp, f, w	-
Timaliidae			
Wrentit	*Chamaea fasciata*	r	-
Mimidae			
Northern mockingbird	*Mimus polyglottos*	r	-
California thrasher	*Toxostoma redivivum*	r	-
Sturnidae			
European starling	*Sturnus vulgaris*	r	NN
Motacillidae			
American pipit	*Anthus rubescens*	f, w	-
Bombycillidae			
Cedar waxwing	*Bombycilla cedrorum*	f, w	-
Ptilogonatidae			
Phainopepla	*Phainopepla nitens*	f, w	-
Parulidae			
Orange-crowned warbler	*Vermivora celata*	sp, f, w	-
Nashville warbler	*Vermivora ruficapilla*	sp, f	-
Yellow warbler	*Dendroica petechia*	sp, su, f	SSS
Yellow-rumped warbler	*Dendroica coronata*	sp, f, w	-
Black-throated gray warbler	*Dendroica nigrescen*	sp, f	-
Townsend's warbler	*Dendroica townsendi*	sp,f	-
Hermit warbler	*Dendroica occidentalis*	sp, f	-
MacGillivray's warbler	*Oporornis tolmiei*	sp, f	-
Common yellowthroat	*Geothlypis trichas*	r	-

Wilson's warbler	*Wilsonia pusilla*	sp, f	-
Yellow-breasted chat	*Icteria virens*	sp, su	SSS
Thraupidae			
Western tanager	*Piranga ludoviciana*	sp, f	-
Emberizadae			
Spotted towhee	*Pipilo maculatus*	r	-
California towhee	*Pipilo fuscus*	r	-
Chipping sparrow	*Spizella passerina*	sp, su, f	-
Rufous-crowned sparrow	*Aimophila ruficeps*	r	-
Lark sparrow	*Chondestes grammacus*	r	-
Savannah sparrow	*Passerculus sandwichensis*	f, w	-
Fox sparrow	*Passerella iliaca*	sp, f, w	-
Song sparrow	*Melospiza melodia*	r	-
Lincoln sparrow	*Melospiza lincolnii*	sp, f, w	-
Golden-crowned sparrow	*Zonotrichia atricapilla*	sp, f, w	-
White-throated sparrow	*Zonotrichia albicollis*	sp, f, w	-
White-crowned sparrow	*Zonotrichia leucophrys*	sp, f, w	-
Dark-eyed junco	*Junco hyemalis*	sp, f, w	-
Cardinalidae			
Black-headed grosbeak	*Pheucticus melanocephalus*	sp, su	-
Lazuli bunting	*Passerina amoena*	sp, su	-
Icterndae			
Red-winged blackbird	*Agelaius phoeniceus*	r	-
Tricolored blackbird	*Agelaius tricolor*	r	SSS
Western meadowlark	*Sturnella neglecta*	r	-
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	r	-
Brewer's blackbird	*Euphagus cyanocephalus*	r	-
Brown-headed cowbird	*Molothrus ater*	r	-
Bullock's oriole	*Icterus bulloclii*	sp, su	-
Fringillidae			
Carduelinae			
Purple finch	*Carpodacus purpureus*	w	-
House finch	*Carpodacus mexicanus*	r	NN
Pine siskin	*Caruelis pinus*	f, w	-
Lesser goldfinch	*Carduelis psaltria*	r	-
Lawrence's goldfinch	*Carduelis lawrenci*	sp, su, f	-
American goldfinch	*Carduelis tristis*	r	-
Evening grosbeak	*Coccothraustes vespertinus*	w	-
Passeridae			
House sparrow	*Passer domesticus*	r	NN

Appendix F

INFORMATION ON THE EFFECTS OF IMPLEMENTATION OF THE COMPREHENSIVE MANAGEMENT PLAN ON SPECIAL STATUS SPECIES

This Plan identifies fourty (40) Special Status Species that may potentially occur in the Wildlife Area in Chapter III, Table 4. Through an Ecosystem Approach to management, the recovery of viable populations of Special Status Species is a major focus of this Plan. Accordingly, the Biological Element of this Plan establishes Goals and Tasks to achieve this end through the restoration and maintenance of the native riparian habitats that support these Special Status Species.

In order to obtain the best information regarding Special Status Species and the management strategies that will best support them, numerous consultations were held with public agencies having statutory responsibility for the protection of Special Status Species. Consultations were also held with the science staff of the Nature Conservancy's Northern Central Valley Office. The conclusion of the consultations was that the Draft Comprehensive Management Plan is not expected to jeopardize the continued existence of the Special Status Species occurring in the Wildlife Area. Agency contacts and consultations included:

California Department of Fish and Game

- Consultation with Teresa Le Blanc (Senior Wildlife Biologist), Paul Hofmann (Associate Wildlife Biologist) and Paul Ward (Associate Fisheries Biologist) on July 22, 2003, September 4, 2003 and other dates.
- Consultation with David Walker (Associate Wildlife Biologist) on July 17, 2003.
- Initial consultation with Craig Martz (Senior Environmental Scientist) on August 14, 2003.
- Referral of the Preliminary Draft Plan and Draft Plan for review and comment regarding the potential impact on Special Status Species to the following staff members:
  - Teresa Le Blanc (Senior Wildlife Biologist)
  - Paul Hofmann (Associate Wildlife Biologist)
  - Paul Ward (Associate Fisheries Biologist)
  - David Walker (Associate Wildlife Biologist)
  - Craig Martz (Senior Environmental Scientist)
  - Terry Roscoe (Habitat Conservation Supervisor)

US Fish and Wildlife Service

- Consultation with Joe Silveira (Associate Wildlife Biologist) on July 16, 2003.
- Referral of the Preliminary Draft Plan and Draft Plan for review and comment regarding the potential impact on Special Status Species to the following staff members:
  - Joe Silveira (Associate Wildlife Biologist)
  - Kelly Moroney (Assistant Manager, Sacramento National Wildlife Refuge)
- Referral of the Draft Plan for review and comment regarding the potential impact on Special Status Species to the following staff member:
  - Sacramento Valley Branch Chief

National Marine Fisheries Service

- Initial consultation with Howard Brown (Field Representative) on August 13, 2003.
- Referral of the Draft Plan for review and comment regarding the potential impact on Special Status Species to the following staff member:
  - Michael Aceituno (Supervisor, Sacramento Area).

No additional comments or recommendations regarding Special Status Species were received from the above agencies and individuals as a result of the referral of the Preliminary Draft and Draft Plans.

Appendix G

CULTURAL RESOURCES ANALYSIS

The Planning Process included the preparation of a Cultural Resources Analysis to evaluate the potential for archaeological or historical resources in the Wildlife Area. The analysis, which was performed by Peak and Associates in 2003, included the following components:

1. A review of existing records to determine if any known cultural resource locations were within the boundaries of the Wildlife Area.
2. A sensitivity analysis of the potential for cultural resources for each Unit and Subunit of the Wildlife Area.
3. An explanation of the actions that should be taken if cultural resources are discovered in the Wildlife Area in the future.

In summary, the analysis concluded that there were no recorded cultural resources sites recorded within the Wildlife Area. The report noted that about half of the Units have been substantially disturbed by channel meander over the past century, such that these sites have a low sensitivity for cultural resources. The remaining sites have a moderate sensitivity for such resources and detailed field evaluation of these sites was recommended prior to management actions that will include substantive physical change to the property.

The full text of the Analysis is incorporated in this Appendix G.

CULTURAL RESOURCES ANALYSIS OF THE SACRAMENTO RIVER WILDLIFE AREA, BUTTE, COLUSA, GLENN, AND TEHAMA COUNTIES, CALIFORNIA

Prepared for

California Department of Fish and Game
1416 9th Street
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August 21, 2003

(Job # 03-071)

INTRODUCTION

The California Department of Fish and Game, in partnership with The Nature Conservancy, is developing a new management plan for the Sacramento Wildlife Area. The Wildlife Area is divided into thirteen administrative units that are located along the Sacramento River between the south boundary line of Tehama County, south to near the community of Colusa. The thirteen units contain approximately 3800 acres of wildlife habitat.

Peak & Associates is assisting the California Department of Fish and Game and The Nature Conservancy with their new management plan for the Sacramento Wildlife Area. Data concerning the status of previously identified cultural resources and cultural resource investigations were obtained from the Northwest and Northeast Information Centers of the California Historical Resources Information System. Historic period Government Land Office, and Plat maps were reviewed as were sources concerning ethnographic village (Native American) locations. The *River Atlas: Appendix To Middle Sacramento River Spawning Gravel Study* (Department of Water Resources 1984) was also reviewed to determine the status of the thirteen units in regards to historic period river channel meanderings.

Based on the literature review, there are no known cultural resources recorded within any of the thirteen units that comprise the Sacramento River Wildlife Area. There are a number of known cultural resources near, or adjacent to, the thirteen units. There are a number of locations derived from historic period maps that are near, or adjacent to, the thirteen units, that may have cultural resources but have never been verified or documented. Eight previous cultural resource investigations have occurred within portions of thirteen units, but no unit has been entirely investigated.

The thirteen units range in sensitivity from moderate to low for the possibility to contain undiscovered cultural resources. The thirteen parcels with the lowest sensitivity are those who have been within the active stream channel of the Sacramento River since 1896. Parcels with moderate sensitivity possess natural (pre 1896) ground. In many cases, individual areas within the thirteen parcel administrative unit have both re-deposited and native areas (low and moderate sensitivity).

A review of the historic period and ethnographic maps indicate that there may have been both prehistoric and historic period cultural resources within the thirteen units that have been washed away by the Sacramento River. Areas shown to have been within the active stream channel during the past 109 years also once apparently contained at least one Native American village and a number of early homesteads.

LITERATURE REVIEW

A review of records maintained by the Northwest and Northeast Information Centers of the California Historical Resources Information System was conducted for each of the thirteen units. Data concerning known cultural resource locations and previously conducted cultural resource investigations (field surveys) was compiled from records kept by these centers. This information was transferred onto copies of the appropriate United States Geological Survey (USGS) topographic map quadrangles. The locations of un-verified historic period features were also plotted on the topographic maps as were the approximate locations of historic (and modern) period

river channel meanderings. These maps are presented in Appendix A. Appendix A is a confidential appendix that should viewed on a need-to-know basis, and should not be released to the public. It contains information concerning the location of sensitive cultural resources.

RESULTS

Merrill's Landing (Map 1)

- Previous studies: None within unit, two adjacent (across river), IC File #'s B-150 and B-197A
- Known resources: None within unit, none adjacent
- Historic/ethnographic period resources (within a one-mile radius): Moore Bar, S.A. Gayles House, Merrill's Landing (two locations), Morrill's Board yard (1868), CA-BUT-59 (prehistoric period village site)
- Status: Two-thirds deposited after 1923 (former river channel)

The Merrill's Landing area is composed of the Merrill's Landing Unit and the Merrill's Landing Wildlife Area. The Merrill's Landing Unit includes the west parcel which was deposited after 1923 (former river channel) and the northeast and southwest parcels which partially predate 1896. The southwest portion of the Merrill's Landing Wildlife Area predates 1896 while the remainder of the area has been deposited since that time. This southern area contains elevated ground that might have been attractive for prehistoric or historic period settlement. This area, and the higher portions of the northeast and southeast parcels would have moderate sensitivity, while the remaining, post 1923 era portions, would have low sensitivity.

Dicus Slough (Map 2)

- Previous studies: None within unit, two adjacent (across river), IC File #' B-150 and B-137A.
- Known resources: None within unit, none adjacent
- Historic/ethnographic period resources (within a one-mile radius): Eastman Field, Missouri Bend, House, Hoodlum Chute, CA-TEH-248 (prehistoric period village site), CA-BUT-462 (prehistoric period village site)
- Status: The western half of the unit was deposited after 1896 (former river channel)

The Dicus Slough Unit is a single parcel. The western half is shown to have been within the confines of the Sacramento River channel after 1896 while the eastern half does not, and appears to be outside of the historic period river channel meanderings. The presence of Dicus Slough along the eastern and partial southern boundary, and relatively elevated terrain, would make the eastern portion of the Dicus Slough unit moderately sensitive for the presence of both prehistoric and historic period cultural resources. The western portion would have a low sensitivity.

Wilson Landing (Map 3)

- Previous studies: Two within unit (partial), IC File #'s B-150 and B-137A
- Known resources: None within unit, one adjacent (CA-BUT-166)
- Historic/ethnographic period resources (within a one-mile radius): Wilson Landing, Wilson Island, McIntosh Island, Sam Soule's Bar, Cochran Bosquejo (1856), Mitchell Bosquejo (1856), Reager's House (1856), CA-GLE-95 (prehistoric period village site).
- Status: Easterly portion of parcel deposited after 1896 (former river channel), approximately 40 percent of westerly portion is outside of historic period river channel meandering.

The Wilson Landing Unit is a single parcel. The easterly portion was deposited after 1896 and has a low sensitivity for the presence of cultural resources. Approximately 40 percent of the site, westerly portion, is elevated ground, outside of the historic period river channel meanderings, and has a moderate sensitivity

Pine Creek Unit (Map 4)

- Previous studies: One within unit, one adjacent; IC File #'s B-137-A (within) and H97-7-633 (adjacent).
- Known resources: None within unit, one adjacent (CA-BUT-717).
- Historic/ethnographic period resources (within a one-mile radius): Sharkey's Landing (1895 w/ barn) Bidwell's Ferry (1868, 1895 w/ barn), Ferry House (1868).
- Status: All of the Unit, except the center of the East Unit, was deposited after 1923 and 1969 (former river channel).

The Pine Creek Unit is composed of three subunits. The North Subunit is shown to have been within the river channel after 1923 and 1969. The West Subunit is shown to have been within the river channel after 1923 and 1955 except for portion of the western margin that is shown to have outside of the historic period river channel meanderings. The East Subunit contains areas that have been within the river channel since 1923, and a central portion that was outside of historic period river channel meanderings. The North Subunit, and those portions of the West and East Subunits shown to have been deposited after 1923 (former river channel) would have a low sensitivity. Those portions of the East and West Subunits that are shown to be outside of the historic period river channel meanderings have a moderate sensitivity for cultural resources.

Three structures are shown to be present on the USGS Ord Ferry topographic quadrangle within the central portion of the East Subunit. All three structures are shown to have been constructed sometime between 1949 and 1969 (original and photo-revised topographic map publication dates). At this date, only one structure remains. The California Office of Historic Preservation (OHP) considers any man made feature or artifact greater than 45 years in age (pre 1958) to be a cultural resource. If any alterations to these three structures are proposed, a cultural

resource evaluation should be conducted in order to determine whether any or all may be eligible historic properties for inclusion in the California Register ("important archeological resources" under CEQA).

Shannon Slough (Map 5)

- Previous studies: One within unit, none adjacent, IC File # 1663
- Known resources: None within unit, none adjacent
- Historic/ethnographic period resources (within a one-mile radius): Munroeville (Depot), Gibb's House (1858), Jenson's House (1858), Nicks Ferry (w/ barn 1898), Mrs. Toy's House, H.G. Jennings, Dayton landing (w/ barn 1895), CA-BUT-48 (prehistoric period village site).
- Status: Approximately 96 percent deposited after 1935 (former river channel)

The Shannon Slough Unit is a single parcel. All but a tiny fraction located in the southwest corner is shown to have been deposited after 1935. This parcel would have low sensitivity for the presence of cultural resources.

Ord Bend (Map 6)

- Previous studies: None within unit, none adjacent
- Known resources: None within unit.
- Historic/ethnographic period resources (within a one-mile radius): Placer City (1872), Hight's Wood Yard (1858), *Soo' noor (*ethnographic village site)*,* CA-GLE-18 (village site), CA-BUT-233 (village site).
- Status: The entire unit was deposited after 1896 (former river channel).

The ethnographic village of *Soo' noor* is shown to be within the Ord Bend Unit, in an area that was river channel after 1896. The sensitivity for the Ord Bend Unit is low.

Jacinto (Map 6)

- Previous studies: None within unit, none adjacent
- Known resources: None within unit, one adjacent (CA-GLE-20)
- Historic/ethnographic period resources (within a one-mile radius): King's House, Spark's House, Hight's Wood Yard (1858),
- Status: The entire unit was deposited after 1896 (former river channel).

The Jacinto Unit is a single parcel. The southern portion of the Jacinto Unit has an adjacent Native American village site (CA-GLE-20) that is now shown to be in the center of the current

channel of the Sacramento River. The sensitivity for the Jacinto Unit is low.

Oxbow (Map 7)

- Previous studies: None within unit, none adjacent
- Known resources: None within unit, none adjacent
- Historic/ethnographic period resources (within a one-mile radius): Gibson's (1857), Newhart's House, Newhart's Landing (w/ barn 1895), Billison's House (?) (1857), Old Rancheria (1857).
- Status: The entire unit was deposited after 1896 (former river channel)

The Oxbow Unit is a single parcel. It has a low sensitivity for the presence of cultural resources.

Beehive Unit (Map 8)

- Previous studies: None within unit, none adjacent.
- Known resources: None within unit, none adjacent
- Historic/ethnographic period resources (within a one-mile radius): Gallo's Bend, Cox's Bend, (4) Old Rancherias (1857), CA-GLE-103, CA-GLE-580, CA-GLE-581, site reported by landowner.
- Status: The oxbow area around Hanson Island was the 1896 river channel, the remaining portion of the North Unit and the entire area of the South Unit appears to be outside of the historic period river channel meanderings.

The Beehive Unit is composed of two subunits. The North Subunit has an oxbow area that is shown to have been within the river channel after 1896. The southern portion of the North Unit is outside of the area of historic period river channel meanderings. The South Unit is outside of the area of historic period river channel meanderings. An unrecorded, prehistoric period cultural resource, was reported by a landowner to be located adjacent to the oxbow area. Even though this oxbow is shown to have been deposited after 1896, cultural material from this unrecorded cultural resource may be eroding out of the cutbank. Both the North and South Beehive units should therefore be considered as moderately sensitive for the presence of cultural resources.

Princeton Units (Maps 9, 10)

- Previous studies: Four within unit, none adjacent , NWIC File #'s S-2948, S-13593, NEIC File #'s 1993, G-487-A
- Known resources: None within unit, none adjacent

- Historic/ethnographic period resources (within a one-mile radius): (3) Old Rancherias, Willett's House (1857), Clark's House (?) (1856), Helvertsen's House (?) (1856), House, Blacksmith Shop, Old Rancheria, Van Skkled Stote- Princetown (1856), Pariswood (?) (1856), Ammet's House (1856), Mill's House (?) (1856), Grigsbed's House (?) (1856), Old Adobe- Crigler's (1856)

- Status: Portions of the North Unit and East Unit are shown to be outside of the historic period river channel meanderings. The South Unit was entirely within the river channel after 1908 and 1946.

The Princeton Unit is composed of three parcels, the North Unit, East Unit, and South Unit. Approximately 20 percent of the North Unit (northern portion) is shown to be outside of the area of historic period river channel meanderings. The remaining portion of the North Unit has been an active river channel since 1896. The East Unit is almost entirely outside of the area shown to be within the historic period river channel meanderings. Approximately five percent of the East Unit (western margin) was within the river channel after 1896. The South Unit has been entirely within the river channel since 1908 and 1946.

The North Unit had a "Willett's '57" noted near the southwest corner. This former residence is shown to be just outside of the North Unit. The USGS Princeton topographic quadrangle shows a residence or structure to be present near the center of the North Unit. The residence/structure was at this location by 1949 according to the topographic map. The California Office of Historic Preservation (OHP) considers any man made feature or artifact greater than 45 years in age (pre 1958) to be a cultural resource. If any alterations to these three structures are proposed, a cultural resource evaluation should be conducted in order to determine whether any or all may be eligible historic properties for inclusion in the California Register ("important archeological resources" under CEQA).

The East Unit has a Clark's (house?) noted on a map with information collected in 1856. A previous examination of the area (NEIC File #1993) failed to uncover evidence of this historic period feature.

Three un-verified historic period resources are shown on historic period maps to have once been located in the South Unit; Pariswood (?), Ammet's House, and the Old Adobe owned by Crigler (1856). These apparently were destroyed when the area was eroded by the Sacramento River.

The northern portion of the North Unit, and the entire East Unit (with the exception of the area immediately adjacent to the current river channel) have a moderate sensitivity for cultural resources. The South Unit has a low sensitivity.

Stegeman (Map 11)

- Previous studies: One within the South Unit, NWIC File #' S-10064

- Known resources: None within units, one adjacent to South Unit (CA-GLE-158)

- Historic/ethnographic period resources (within a one-mile radius): Indian Mound, John Hancock's House- Old Nine Mile House (1856), Moulton's Landing (w/ barn 1895)

- Status: Both subunits deposited after 1896 and 1908 (former river channel)

Both the North Subunit and South Subunit are shown to have been within the historic period river channel meanderings, post 1908. The adjacent prehistoric period resource (CA-GLE-158) is reported to terminate at the edge of the South Subunit. The South Subunit would therefore have a moderate sensitivity. The North Subunit would have low sensitivity.

Moulton Unit (Map 12)

- Previous studies: Two within South Subunit, NWIC File #'s S-9666 and S-13593
- Known resources: None within subunits, none adjacent
- Historic/ethnographic period resources (within a one-mile radius): Adobe Wall (1857), Caldren's Landing (w/ barn 1895), 7 Mile House (2 locations, one with barn by 1895)
- Status: North Subunit is shown to be outside of the area of historic period river channel meanderings. The South Subunit has been deposited since 1896 (former river channel).

The North Subunit is outside of the area shown to be within the historic period river channel meanderings, and has some elevated areas. It has a moderate sensitivity. The South Subunit is shown to have been deposited after 1986 (former river channel). It has a low sensitivity.

Colusa Unit (Map 13)

- Previous studies: None within subunits, one adjacent to North Subunit, NWIC File # S-2948
- Known resources: None within subunits, one adjacent to South Subunit (CA-COL-8)
- Historic/ethnographic period resources (within a one-mile radius): Colusa townsite, Cobbs Bend.
- Status: Both subunits are shown to have been deposited after 1896 (former river channel).

Both subunits have a low sensitivity for the presence of cultural resources.

RECOMENDATIONS

Background

Prehistoric period activity along the Sacramento River course and adjacent lands was widespread. There are a number of recorded village sites and notations for "Rancherias" or Indian encampments on historic period maps. Typically, villages would be constructed on elevated ground, either naturally occurring, or human created (earthen mounds). Villages were the center of activity for multiple family lineages, and may have been repeatedly occupied over the course of hundreds of years. This occupation usually leaves the telltale signs of human activity- organically enriched sediment (midden) that contains fragments of fish and animal bones, and the stone tools that captured and processed the food. When possible, deceased individuals were also buried at village sites for protection against natural and human elements.

Historic period settlement was also extensive along the banks of the Sacramento River. Early Government Land Office maps show a number of houses, landings, and commercial enterprises in place by the late 1850s. The early use of the Sacramento River for transportation was vital for the development of the region.

Prehistoric and historic period cultural resources may be present anywhere along the course of the Sacramento River. The examination of previously conducted archeological field inspections indicates that the majority of the parcels within the thirteen units have never been systematically examined. The parcels that have been ranked with low sensitivity in this study have a low probability to contain cultural resources due to the history of the Sacramento River meanderings. Those parcels assigned a moderate sensitivity have a much higher chance to have cultural resources, because they possess natural land surfaces.

Table 1 lists the Units, their land status, sensitivity, and recommendations for further treatment.

Table 1 Sacramento River Wildlife Area Cultural Analysis, Recommendations

Unit (parcel)	Land Status	Sensitivity	Recommendations
Merrill's Landing, West Unit	Post 1923	Low	Call in archeologist for unexpected discoveries
Merrill's Landing, northeast and southeast units	Pre 1923 (eastern portion), post 1923 (western portion)	Moderate (eastern portion), low (western portion)	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Merrill's Landing Wildlife Area	Pre 1923 (southern portion), post 1923 (northern portion)	Moderate (southern portion), low (northern portion)	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity

Dicus Slough	Western half, post 1896, eastern half pre 1896	Low (western half), moderate (eastern half)	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Wilson Landing	All post 1960	Low	Call in archeologist for unexpected discoveries
Pine Creek , North	All post 1965	Low	Call in archeologist for unexpected discoveries
Pine Creek, West	Pre 1896 (western margin), post 1923 (remainder)	Moderate (pre 1896), low (post 1923)	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Pine Creek, East	Pre 1896 (central portion), post 1923 (remainder)	Moderate (pre 1896), low (post 1923	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Shannon Slough	All post 1936	Low	Call in archeologist for unexpected discoveries
Ord Bend	All post 1896	Low	Call in archeologist for unexpected discoveries
Jacinto	All post 1896	Low	Call in archeologist for unexpected discoveries
Oxbow	All post 1896	Low	Call in archeologist for unexpected discoveries
Beehive Unit, oxbow area	Oxbow area adjacent to Hanson Island, post 1896,	All moderate (cultural resource adjacent to oxbow area)	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Beehive Unit, remainder parcel	Pre 1896	Moderate	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Princeton Unit – North	Northern part pre 1896, southern part post 1896	Moderate (northern part), low (southern part)	Perform field inspection prior to any ground-disturbing activities
Princeton Unit – East	Extreme western portion post 1896, remained natural	Low to moderate	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Princeton Unit – South	Post 1908	Low	Call in archeologist for unexpected discoveries
Stegeman Unit, North Subunit	Post 1896 and 1908	Low	Call in archeologist for unexpected discoveries

Stegeman Unit, South Subunit	Post 1908	Low to moderate (along western edge)	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Moulton Unit, North Subunit	Pre 1896	Moderate	Perform field inspection prior to any ground-disturbing activities in area with moderate sensitivity
Moulton Unit, South Subunit	Post 1896	Low	Call in archeologist for unexpected discoveries
Colusa Unit, North Subunit	All post 1955	Low	Call in archeologist for unexpected discoveries
Colusa Unit, South Subunit	Post 1896 and 1908	Low	Call in archeologist for unexpected discoveries

Low Sensitivity Areas

For those areas with low sensitivity, i.e. areas that have been within the Sacramento River channel, there appears to be little likelihood that remnant, undisturbed ground that may contain evidence of prehistoric or historic period remains. There does not appear to be any need to perform a physical, on-site inspection of these areas by an archeologist prior to planned ground disturbing activities. Unexpected discoveries, such as re-deposited cultural material, or historic period features that may have withstood inundation and scouring, may still be present. If, during construction activities, concentrations of artifacts or non-native stone (obsidian, fine-grained silicates, basalt) are exposed or if unusual amounts of bone or shell, or concentrations of historic period refuse or if historic period features are observed, then work should cease in the immediate area of the discovery and a professionally qualified archeologist should be contacted immediately for a on-site inspection of the discovery.

If any bone is uncovered that appears to be human, then state law requires that the local county coroner must be contacted. If the coroner determines that the bone most likely represents a Native American interment, then the Native American Heritage Commission in Sacramento must be notified so that they can identify the most likely descendants

Moderate Sensitivity Areas

For those areas with moderate sensitivity (natural ground surface, or former river channel areas adjacent to known cultural resources), the first activity should be the preparation of maps that clearly delineate the maximum extent of the proposed activity (APE, or area of potential effect). The proposed project area (APE) should be plotted on a copy of the appropriate USGS topographic quadrangle, so that this information can be compared to the existing record of previously conducted cultural resource investigations (Appendix B).

For small-scale maintenance projects, such as sign or gate replacement, only those provisions that apply to unexpected discoveries should be followed.

If the proposed APE has been previously inspected by archeologists within the previous ten-year period (general cut-off date for Information Center regarding “adequate” surveys), then this

information can be used to support a finding of no effect. If the proposed APE has not been previously inspected (Appendix B), then a professionally qualified archeologist should be consulted to perform an on-site inspection of the proposed APE.

Existing Structures

The Pine Creek East Unit includes three structures, according to the USGS topographic map quadrangle. These structures are shown in purple, meaning that they were constructed sometime between 1947 and 1969. As of this date, only a single structure remains within the Pine Creek Unit. The Princeton Unit North has a single structure that was constructed sometime before 1949.

The California Office of Historic Preservation (OHP) considers any man made feature or artifact greater than 45 years in age (pre 1958) to be a cultural resource. If any alterations to these three structures are proposed, a cultural resource evaluation should be conducted in order to determine whether any or all may be eligible historic properties for inclusion in the California Register ("important archeological resources" under CEQA). The structures may qualify for outstanding or unique architecture or their associations with famous persons or events.

The structures indicated on the USGS topographic quadrangle maps may no longer be present, or may be in a dilapidated condition. An archeologist would need to document (record) and evaluate the remaining foundations, and/or debris piles and submit this information to the OHP. In most cases, the documentation and evaluation of existing or collapsed structures would be the only mitigation measures necessary.

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Appendix H

LAND MANAGEMENT ALTERNATIVES

The responsible management of public property in this era of fiscal limitations requires the consideration of alternative methods of managing property. The Department is actively evaluating different ways of doing business that may result in operational and cost efficiencies. Such alternatives may also facilitate the establishment of services and recreation facilities that otherwise would not exist. Land management alternatives should be considered for both the restoration of habitat and for the long-term management of habitat areas.

- **Alternatives to Support Restoration**
  Achieving the Goals of this Plan may involve the acquisition of additional flood-prone property to address the impacts of habitat fragmentation, as discussed in Chapter III of this Plan. These acquisitions may fill gaps in concentrations of permanent habitat, add continuity to migration corridors or increase the ratio of interior area. This property, sold at the election of willing sellers, may contain areas of producing orchards or other investments in agricultural production. It may be desirable to maintain agricultural use for a period of time to maintain support to the local agricultural economy and provide for a smooth transition to habitat conservation use. This time period may also coincide with the timing required for the funding of restoration activities. During this interim period it is important that the property receives appropriate agricultural management and that any returns that accrue during this period be channeled toward the restoration of the property into viable riparian habitat.

  The USFWS has executed agreements for management of property in the SRNWR for similar purposes and this practice provides some indication of how an outside management agreement might benefit the Wildlife Area. The laws of the State of California would permit the lease of Department property to a qualified land manager for the enhancement of the habitat and achieving the purposes for which the property was acquired. This is a relatively common practice on the part of public conservation agencies and the Department has executed leases for property management in other areas of the State. Two potential statutory vehicles have been identified for the leasing of Department property.

  USFWS Cooperative Land Management Agreements
  The USFWS has acquired property for riparian habitat preservation as part of their efforts to meet the conservation goals for the SRNWR. A substantial portion of this property was converted from riparian habitat in the past and at the time of acquisition it was in agricultural use. These lands were all acquired from willing sellers who chose to sell their properties to the USFWS rather than continue to farm in flood prone areas. The USFWS has executed Cooperative Land Management Agreements with nonprofit entities to manage property and to plan and execute the appropriate restoration of the properties to riparian habitat.

  Two nonprofit entities currently manage property for the USFWS in the SRNWR (TNC and River Partners). These entities have significant expertise in both land management and restoration of land to its riparian habitat potential. These two

entities work with the local agricultural community to lease these areas for agricultural production for an interim period of time. Such contractual agreements have been utilized since the mid 1990's and they appear to be a practical and efficient way to meet the needs of the USFWS. The statutes of the State of California do not provide for this exact mechanism, but similar objectives may be achieved through the lease of property.

State Lease Option No. 1
Government Code Section 14670 authorizes the Department of General Services to lease State lands for fair market value if such leasing is in the best interest of the State. This option requires that the following standards apply to such leases:

- The leaseholder would need to demonstrate that the total benefit received to the State, the value of funds spent and services provided to manage, plan and restore the Department property, is equal to the fair market value of the leasehold interest.

- Any funds received through the State's lease would be deposited in the State's General Fund. The potential for a lessee to use sublease revenues directly for habitat restoration purposes needs to be clarified.

- A lease for a Wildlife Area would require that the lessee pay local property taxes and assessments.

- The Department of General Services would approve the lease.

State Lease Option No. 2
Section 1348 of the Fish and Game Code authorizes the leasing of Department lands to implement either the Wildlife Conservation Law of 1947 or the California Riparian Habitat Conservation Program. Such leases would appear to meet the established State policy "to acquire and restore to the highest possible level, and maintain in a state of high productivity, those areas that can most successfully be used to sustain wildlife and which will provide adequate and suitable recreation" (Fish and Game Code, §1301). This option requires that the following standards apply to such leases:

- The leaseholder would need to demonstrate that it would restore the land to "highest possible wildlife value and maintain the real property at that highest possible wildlife value."

- Any funds received through the lease would be deposited in the State's Wildlife Restoration Fund. The potential for a lessee to use sublease revenues directly for habitat restoration purposes needs to be clarified.

- A lease for a Wildlife Area would require that the lessee pay local property taxes and assessments.

The leasing of portions of the Wildlife Area for management and restoration is an option that the Department may choose to pursue if an appropriate situation presents itself. Additional management expertise would be available without either direct cost or the need to establish a permanent staff capacity for this purpose. Further evaluation of the two identified alternatives and specific lease format would be required.

- **Alternatives for Ongoing Management**
  Long term management of portions of the Wildlife Area by other entities may prove to be efficient for the Department and beneficial to the public. Possible managers could include other public agencies as well as private, nonprofit corporations. Management of portions of the Wildlife Area by other entities could offer efficiencies due to locational advantages and the availability of specific expertise. The preceding discussion of the USFWS's Cooperative Land Management Agreement and the potential for lease of DFG property are illustrative of the kind of arrangements that might also be utilized for ongoing management.

  Management Agreements with Other Public Agencies
  The Wildlife Area is spatially disconnected and spread over a seventy-mile reach of the Sacramento River. This disconnected pattern is a function of acquiring property only from willing sellers and from a focus on areas with high habitat value. Certain portions of the Wildlife Area are adjacent to larger areas that are managed by DPR and USFWS. These agencies have habitat conservation objectives that are substantially consistent with those of the Department. They also have a strong management and maintenance presence; DPR near its three recreation areas and USFWS in the entire river corridor. The transfer of responsibility for management of Wildlife Area property, either by agreement or by fee title transfer, may result in overall cost effectiveness without loss of benefit to the fish, wildlife or the recreation users of the particular area. Correspondingly, it may prove efficient for the Department to accept management responsibility for isolated areas of land, which are adjacent to the Wildlife Area but now managed by other agencies.

  Management Agreements with Nonprofit Corporations
  Nonprofit corporations that have a mission to conserve habitat and support public recreation use may also be effective managers for Department property. Such entities typically have significant science and research capabilities and have established property maintenance functions. They also typically share a similar Ecosystem Approach to habitat management of riparian areas. The private sector management of Wildlife Area property, by lease or contract, is an option that the Department may wish to evaluate. Contractual property management has been used successfully by the Department and by other public agencies.

  Operating Agreements with Local governmental Agencies
  The Department currently has an Operating Agreement with Glenn County for the Site 21 fishing access. The twenty-five year agreement provides for development and maintenance of a portion of the Princeton-North Subunit. The existing improvements include a parking area, a trash receptacle and a primitive pathway to the river. The Agreement provides for other possible improvements in the future. This type of agreement could be applicable to boat ramps and other facilities that are beyond the normal scope of Department improvements to wildlife areas. The operating agreement is a tool that could result in the installation of additional improvements that would serve the public recreation demand and also help generate local economic activity.

Appendix H

LAND MANAGEMENT ALTERNATIVES

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- **Alternatives to Support Restoration**
  Achieving the Goals of this Plan may involve the acquisition of additional flood-prone property to address the impacts of habitat fragmentation, as discussed in Chapter III of this Plan. These acquisitions may fill gaps in concentrations of permanent habitat, add continuity to migration corridors or increase the ratio of interior area. This property, sold at the election of willing sellers, may contain areas of producing orchards or other investments in agricultural production. It may be desirable to maintain agricultural use for a period of time to maintain support to the local agricultural economy and provide for a smooth transition to habitat conservation use. This time period may also coincide with the timing required for the funding of restoration activities. During this interim period it is important that the property receives appropriate agricultural management and that any returns that accrue during this period be channeled toward the restoration of the property into viable riparian habitat.

  The USFWS has executed agreements for management of property in the SRNWR for similar purposes and this practice provides some indication of how an outside management agreement might benefit the Wildlife Area. The laws of the State of California would permit the lease of Department property to a qualified land manager for the enhancement of the habitat and achieving the purposes for which the property was acquired. This is a relatively common practice on the part of public conservation agencies and the Department has executed leases for property management in other areas of the State. Two potential statutory vehicles have been identified for the leasing of Department property.

  USFWS Cooperative Land Management Agreements
  The USFWS has acquired property for riparian habitat preservation as part of their efforts to meet the conservation goals for the SRNWR. A substantial portion of this property was converted from riparian habitat in the past and at the time of acquisition it was in agricultural use. These lands were all acquired from willing sellers who chose to sell their properties to the USFWS rather than continue to farm in flood prone areas. The USFWS has executed Cooperative Land Management Agreements with nonprofit entities to manage property and to plan and execute the appropriate restoration of the properties to riparian habitat.

  Two nonprofit entities currently manage property for the USFWS in the SRNWR (TNC and River Partners). These entities have significant expertise in both land management and restoration of land to its riparian habitat potential. These two

entities work with the local agricultural community to lease these areas for agricultural production for an interim period of time. Such contractual agreements have been utilized since the mid 1990's and they appear to be a practical and efficient way to meet the needs of the USFWS. The statutes of the State of California do not provide for this exact mechanism, but similar objectives may be achieved through the lease of property.

State Lease Option No. 1
Government Code Section 14670 authorizes the Department of General Services to lease State lands for fair market value if such leasing is in the best interest of the State. This option requires that the following standards apply to such leases:

- The leaseholder would need to demonstrate that the total benefit received to the State, the value of funds spent and services provided to manage, plan and restore the Department property, is equal to the fair market value of the leasehold interest.

- Any funds received through the State's lease would be deposited in the State's General Fund. The potential for a lessee to use sublease revenues directly for habitat restoration purposes needs to be clarified.

- A lease for a Wildlife Area would require that the lessee pay local property taxes and assessments.

- The Department of General Services would approve the lease.

State Lease Option No. 2
Section 1348 of the Fish and Game Code authorizes the leasing of Department lands to implement either the Wildlife Conservation Law of 1947 or the California Riparian Habitat Conservation Program. Such leases would appear to meet the established State policy "to acquire and restore to the highest possible level, and maintain in a state of high productivity, those areas that can most successfully be used to sustain wildlife and which will provide adequate and suitable recreation" (Fish and Game Code, §1301). This option requires that the following standards apply to such leases:

- The leaseholder would need to demonstrate that it would restore the land to "highest possible wildlife value and maintain the real property at that highest possible wildlife value."

- Any funds received through the lease would be deposited in the State's Wildlife Restoration Fund. The potential for a lessee to use sublease revenues directly for habitat restoration purposes needs to be clarified.

- A lease for a Wildlife Area would require that the lessee pay local property taxes and assessments.

The leasing of portions of the Wildlife Area for management and restoration is an option that the Department may choose to pursue if an appropriate situation presents itself. Additional management expertise would be available without either direct cost or the need to establish a permanent staff capacity for this purpose. Further evaluation of the two identified alternatives and specific lease format would be required.

- **Alternatives for Ongoing Management**
  Long term management of portions of the Wildlife Area by other entities may prove to be efficient for the Department and beneficial to the public. Possible managers could include other public agencies as well as private, nonprofit corporations. Management of portions of the Wildlife Area by other entities could offer efficiencies due to locational advantages and the availability of specific expertise. The preceding discussion of the USFWS's Cooperative Land Management Agreement and the potential for lease of DFG property are illustrative of the kind of arrangements that might also be utilized for ongoing management.

  Management Agreements with Other Public Agencies
  The Wildlife Area is spatially disconnected and spread over a seventy-mile reach of the Sacramento River. This disconnected pattern is a function of acquiring property only from willing sellers and from a focus on areas with high habitat value. Certain portions of the Wildlife Area are adjacent to larger areas that are managed by DPR and USFWS. These agencies have habitat conservation objectives that are substantially consistent with those of the Department. They also have a strong management and maintenance presence; DPR near its three recreation areas and USFWS in the entire river corridor. The transfer of responsibility for management of Wildlife Area property, either by agreement or by fee title transfer, may result in overall cost effectiveness without loss of benefit to the fish, wildlife or the recreation users of the particular area. Correspondingly, it may prove efficient for the Department to accept management responsibility for isolated areas of land, which are adjacent to the Wildlife Area but now managed by other agencies.

  Management Agreements with Nonprofit Corporations
  Nonprofit corporations that have a mission to conserve habitat and support public recreation use may also be effective managers for Department property. Such entities typically have significant science and research capabilities and have established property maintenance functions. They also typically share a similar Ecosystem Approach to habitat management of riparian areas. The private sector management of Wildlife Area property, by lease or contract, is an option that the Department may wish to evaluate. Contractual property management has been used successfully by the Department and by other public agencies.

  Operating Agreements with Local governmental Agencies
  The Department currently has an Operating Agreement with Glenn County for the Site 21 fishing access. The twenty-five year agreement provides for development and maintenance of a portion of the Princeton-North Subunit. The existing improvements include a parking area, a trash receptacle and a primitive pathway to the river. The Agreement provides for other possible improvements in the future. This type of agreement could be applicable to boat ramps and other facilities that are beyond the normal scope of Department improvements to wildlife areas. The operating agreement is a tool that could result in the installation of additional improvements that would serve the public recreation demand and also help generate local economic activity.

Appendix I

MEMORANDUM OF UNDERSTANDING WITH DPR AND USFWS

The Department is a participant in a Memorandum of Understanding with the California Department of Parks and Recreation and the U.S. Fish and Wildlife Service regarding land management along the Sacramento River in Colusa, Glenn, Butte and Tehama Counties. The Scope of Actions of the Memorandum includes:

- General Management
- Public use
- Acquisition
- Maintenance
- Biological Data
- Permits
- Law enforcement
- Coordination

The full text of the Memorandum of Understanding is incorporated in this Appendix I.

MEMORANDUM OF UNDERSTANDING

between

THE U.S. FISH AND WILDLIFE SERVICE
regarding the
SACRAMENTO RIVER NATIONAL WILDLIFE REFUGE

and

THE CALIFORNIA DEPARTMIENT OF FISH AND GAME
regarding the
SACRAMENTO RIVER WILDLIFE AREA

and

THE CALIFORNIA DEPARTMENT OF PARKS AND RECREATION
NORTHERN BUTTES DISTRICT

I. PARTICIPANTS

This Memorandum of Understanding (MOU) is an agreement for land management purposes between the U.S. Fish and Wildlife Service regarding the Sacramento River National Wildlife Re:ftige (Service), the California Department of Fish and Game regarding the Sacramento River Wildlife Area (Department), and the California Department of Parks and Recreation regarding the Sacramento River State Parks (State Parks). In addition to presently owned and managed lands, this MOU will also apply to any future acquisitions by the Service, Department, and State Parks within the designated units.

II. PURPOSE

The purpose of this MOU is to formally document an agreement to mutually manage, monitor, restore and enhance lands managed for **fish,** wildlife, and plants along the Sacramento River in Tehama, Butte, Glenn, and Colusa Counties, California. An additional purpose is to communicate between agencies regularly to prevent duplicating or prescribing conflicting land management and acquisition efforts.

III. AUTHORITY

Fish and Wildlife Coordination Act of 1958,16 U.S.C. 661
Migratory Bird Conservation Act, 16 U.S.C. 71'5i.
Endangered Species Act of 1973, 16 U.S.C. 1531-1544.

IV. SCOPE OF ACTIONS

The affected area includes all lands owned and managed as the Sacramento River National Wildlife Refuge, Sacramento River Wildlife Area, and State Parks located along the Sacramento River in the designated counties. These lands have been identified in several documents as providing essential habitat for numerous species of fish and wildlife including many threatened and endangered species. The Service, Department, and State Parks mutually agree to manage these lands for the conservation of biological, cultural, and scenic values, and for promoting compatible wildlife-dependent recreational opportunities.

The Service, Department and State Parks agree to cooperate on the following items:

A. **General Management:**

- Combine efforts to mutually manage, monitor, restore, and enhance **fish** and wildlife management projects in the designated area.
- Coordinate management between agencies to prevent duplicating or prescribing conflicting management.

B. **Public Use:**

- Coordinate to provide public use opportunities that are consistent with the goals and needs of both agencies and their respective public.
- Provide clear, non-conflicting, straight-forward information to visitors.
- Cooperate in the development of public use plans. This would include cooperating with signing, brochures, use maps, and regulations.
- Promote mutual environmental education and special event opportunities.

In some instances, an agency may need to change its public use regulations in a specific area to protect natural resources (i.e. sensitive species) and provide a quality outdoor experience for the public. All public use will be offered in a manner that is consistent with land purchase and public trust documents, and is compatible with Service, Department, and State Parks purposes and missions.

C. **Acquisition:**

- Coordinate on acquisition plans.
- Prevent duplicate or conflicting acquisition efforts.
- Pursue joint fending opportunities when applicable.

D. Maintenance:

- Coordinate and share maintenance equipment and staff, whenever possible.
- Negotiate transportation and maintenance/repairs of shared equipment
- Combine maintenance work parties to address specific concerns in a timely manner and to reduce funding needs for joint project.

E. Biological Data:

- SURVEYS. Data collection will be coordinated and standardized between agencies whenever possible to strengthen study results and to aid interpreting trends in wildlife and plant populations. Agencies agree to coordinate efforts in research of threatened and endangered species, migratory birds, fish, wildlife (including predators), and plant surveys. Combining funds for a specific contract, arranging for volunteer and staff assistance, and sharing equipment (i.e. boats, ATV, etc.) may facilitate research projects.

- RESEARCH. Research needs will be identified and efforts combined to initiate and fund specific research projects.

- MONITORING. Monitoring of restoration project sites will be coordinated so that the information is comparable, consistent and complementary. Efforts may be combined to fund and staff specific monitoring components.

F. Permits:

The agencies will communicate and cooperate on permits. Combined or regional environmental documents and permits that could benefit both agencies will be considered. Special-Use Permits will be required for all activities on Service lands and the equivalent required for all activities on Department and State Parks lands.

G. Law Enforcement:

The agencies will communicate and cooperate on law enforcement issues. Efforts will be made to discuss issues, potential problems, needed support and to exchange phone numbers and current staffing information on a regular basis. Signing efforts will be mutually updated and implemented.

H. Coordination:

Formal meetings will be held semi-annually in spring and fall at a minimum. The agencies will alternate hosting and provide agendas and notification for the meeting. The meeting agendas (jointly developed) may be changed under mutual consent of the agencies and additional meetings may be held to discuss specific topics. Suggested agenda topics include:

- Discuss current issues/events
- Provide relevant updates on agency activities
- Highlight a main topic/training opportunity at each meeting
- Set next meeting location, time, and date

V. PROJECT OFFICERS

David Walker, Unit Biologist
Northern California - North Coast Region
California Department of Fish and Game
1760 Bidwell Road
Red Bluff, California 96080 ,
(530) 528-9405

Paul Hofmann, Unit Biologist Sacramento
River Wildlife Area California Department
of Fish and Game, 1701 Nimbus Road
Rancho Cordova, California 95670
(916) 358-2900

Woody Elliott, Resource Ecologist
Northern Buttes District
Department of Parks and Recreation
400 Glen Drive
Oroville, California 95966-9222
(530) 538-2200

Assistant Refuge Manager
Sacramento River National Wildlife Refuge
U.S. Fish and Wildlife Service
752 County Road 99W
Willows, California 95988
(530) 934-2801

VI. MODIFICATION AND TERMINATION

This MOU agreement may be amended with consent all agencies. Amendments will be attached to this document after concurrence of the agencies.

This agreement may be terminated as mutually agreed or upon 6 months written notice by either agency.

VII. APPROVAL

This MOU shall be effective on the date all signatures are received and will be in effect for a period of five years. At that time, the MOU may be reviewed, updated, and extended for an additional five-year period.

Donald Koch — 5/14/01
Date

Don Koch, Regional Manager
Northern California - North Coast Region
California Department of Fish and Game
Redding, California

Banky Curtis — 6/17/01
Date

Banky Curtis, Regional Manager
Sacramento Valley - Central Sierra Region
California Department of Fish and Game
Rancho Cordova, California

Kathryn V. Foley — 7/6/01
Date

Kathryn Foley, District Superintendent
Northern Buttes District
Department of Parks and Recreation
Oroville, California

7/16/01
Date

Kevin S. Foerster, Project Leader
Sacramento National Wildlife Refuge Complex
U.S. Fish and Wildlife Service
Willows, California

Appendix J

MEMORANDUM OF AGREEMENT REGARDING THE SACRAMENTO RIVER CONSERVATION AREA

The original *Sacramento River Conservation Area Handbook* included a proposed Memorandum of Agreement which was intended to incorporate the shared agreement of the various local, State and federal agencies in regard to the conservation program along the river. This Memorandum of Agreement was subsequently signed on behalf of all the Counties in the SRCA and the key State and federal agencies involved in the SRCA. The General Agreements provisions include the commitment of each entity to:

1. Endorse the goals of the *1989 Upper Sacramento River Fisheries and Riparian Habitat Management Plan*.
2. Agree to the goals and principles of the SRCA and the *Handbook*.
3. Agree to maximize coordination and consistency of programs with the *1989 Upper Sacramento River Fisheries and Riparian Habitat Management Plan* and the *Handbook.*
4. Recognize the proposed Conservation Area as delineated and described in the *Handbook*.
5. Recommend and agree to the creation of a nonprofit organization (Now the SRCAF).
6. Agree that any breach of the inner river zone would be addressed quickly with full cooperation.

The Memorandum of Agreement has been signed by the following agencies:

- Butte County
- Coulsa County
- Glenn County
- Shasta County
- Sutter County
- Tehama County
- Yolo County
- California Department of Fish and Game
- California Department of Parks and Recreation
- California Department of Water Resources
- California Reclamation Board
- California Resources Agency
- California State Lands Commission
- California Wildlife Conservation Board
- U.S. Army Corps of Engineers
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Fish and Wildlife Service

The full text of the Memorandum of Agreement, as provided by the SRCAF, is incorporated in this Appendix J.

MEMORANDUM OF AGREEMENT
REGARDING THE SACRAMENTO RIVER CONSERVATION AREA

I. Preamble

Background

In 1986, the California State Legislature passed Senate Bill 1086. The law called for development of a management plan for the Sacramento River and its tributaries to protect, restore, and enhance both fisheries and riparian habitat. The law created an Advisory Council, composed of representatives of state and federal agencies, county supervisors, and landowner, water contractor, commercial and sport fishery, and general wildlife and conservation representatives. The Council and its action teams developed a plan which included a specific and action-oriented fisheries plan, and a more conceptual riparian habitat plan. This plan, the *Upper Sacramento River Fisheries and Riparian Habitat Management Plan*, was published by the State of California Resources Agency in 1989 (*1989 Plan*).

Many of the fisheries action items have since been or are currently being implemented, such as fish bypass structures at diversions on Sacramento River tributaries, and the Shasta Dam temperature control structure. A Riparian Habitat Committee was created in 1993, when the Advisory Council was reconvened by the Secretary of Resources to "complete its earlier work concerning riparian habitat protection and management, including the development of a specific implementation program."

The Riparian Habitat Committee is an informal and consensus-based planning group. It includes landowner representatives, environmental group leaders, and agency personnel who are working toward on-the-ground implementation of the *1989 Plan*. They have developed *The Sacramento River Conservation Area Handbook (Handbook)* as a guide for riparian habitat management along the Sacramento River. The Committee has worked to ensure that the *Handbook* addresses both the dynamics of riparian ecosystems as well as the realities of local agricultural economies.

Through the work of the Riparian Habitat Committee, the Advisory Council proposes the formation of a largely locally-based nonprofit entity to coordinate implementation of the riparian habitat management and restorations goals and objectives of the *1989 Plan* and *Handbook*. Actions implemented by the nonprofit should also be coordinated with the Central Valley Project Improvement Act, the CALFED Bay-Delta Program, and the U.S. Army Corps of Engineers Sacramento-San Joaquin Basins Comprehensive Study, and other ongoing related activities. The work of this nonprofit organization would be supported by the various agencies and organizations interested in the Sacramento River through this Memorandum of Agreement (MOA).

Goal of the Sacramento River Conservation Area Program

The goal of the Sacramento River Conservation Area Program as outlined in the *1989 Plan* is "to preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Chico and Redding, and reestablish riparian vegetation along the river from Verona to Chico." The goal will be met in a manner that follows these six guiding principles:

- Utilizes an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander, where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Encourages participation by private landowners and affected local entities that is voluntary, never mandatory;
- Gives full consideration to landowner, public and local government concerns;
- Provides for the accurate and accessible information and education that is key to sound resource management.

II. Purpose of MOA and Disclaimers

The purpose of this MOA is to:

A. Document broad endorsement by the signatories of the decisions and recommendations made by the Advisory Council embodied in the *1989 Plan*.

B. Document signatory commitment to support the goals, six principles and *Handbook*.

C. Improve coordination and cooperation between public agencies in the implementation of the *1989 Plan* and *Handbook*.

D. Identify the agreements of the signatories and relationships among the signatories and the new nonprofit organization (NPO) in implementing the *1989 Plan* and *Handbook*.

E. Document signatory support of the establishment of a NPO as described in *Goal, Role and Structure of a Nonprofit Organization* (Attachment A).

F. Identify the role and responsibilities of the NPO as detailed in Attachment A.

Disclaimers

A. Nothing in this MOA is intended to expand or limit the legal authority of any signatory, agency, entity or organization. This document does not modify or supersede other existing agreements, programs, MOUs, plans, regulations or executive orders.

B. Nothing herein alters the existing authorities or responsibilities of any party nor shall be considered as obligating any party in the expenditure of funds or the future payment of money or providing services.

C. This MOA is intended to embody general principles, and does not create contractual relationships, rights, obligations, duties or remedies between or among signatories.

D. All activities implemented by the NPO under the *1989 Plan* and *Handbook*, including site specific agreements, will be in compliance with all applicable existing and future local, state, and federal laws and regulations.

E. The signatories acknowledge that the California Environmental Quality Act requires consideration of the environmental consequences of an activity as early as feasible in the planning process to enable environmental considerations to influence project program and design. All activities implemented under the *1989 Plan and Handbook* will comply with CEQA and the National Environmental Policy Act (NEPA) on a site-specific basis. The signatories will also consider the appropriateness and potential benefits of programmatic approaches to CEQA and NEPA compliance.

III. Relationship between Signatories and Nonprofit Organization

A. We will support the NPO in implementing the *1989 Plan* and *Handbook*, and will work with the NPO on specific projects. We will maximize coordination and consistency of policies and programs with the *1989 Plan* and *Handbook*.

B. We will assist the NPO in identifying and obtaining funding sources for the activities of the NPO including, but not limited to, a voluntary land transaction or management program. This program may include activities such as development of site specific land management plans within the inner zone; bank stabilization that is consistent with the *1989 Plan* and *Handbook*; revegetation of levees and other areas where natural revegetation will not occur; and control of trespass and vandalism.

C. We will coordinate with the NPO in the land management planning process for lands within the Conservation Area delineated in the *Handbook*.

D. We will coordinate with the NPO when acquiring lands within the Conservation Area delineated in the *Handbook*.

E. We will conduct land management practices on public lands within the Sacramento River Conservation Area in a manner that is consistent with the *1989 Plan* and *Handbook*.

F. We may contract with the NPO.

G. Signatories will work with the NPO to develop a streamlined/ coordinated permit process for individual project agreements.

H. Appropriate signatories will participate in a technical advisory committee for the NPO. They will assist the NPO with technical information on issues such as erosion/deposition data, flood control activities, and habitat protection and restoration methods and programs.

I. Appropriate signatories will work with the NPO to coordinate and maximize law enforcement activities regarding trespass and vandalism along the river and for participating properties within the Conservation Area on both private and public lands.

IV. General Agreements

A. We endorse the goals of the *1989 Plan*.

B. We agree to the goals, six principles, and *Handbook*.

C. We agree to maximize coordination and consistency of the programs and policies of our agencies with the goals, and management objectives in the *1989 Plan* and *Handbook*.

D. We agree to recognize the proposed Conservation Area as delineated and described in the *Handbook*.

E. We recommend and agree to the creation of a NPO as detailed in Attachment A. The NPO will oversee implementation of the goals and restoration priorities stated in the *1989 Plan* and *Handbook*.

F. We agree that any potential breach of the inner zone boundary will be addressed quickly and with our full cooperation. The manner in which the breach will be addressed will depend on the specific site, and may range from the placement of rock or other appropriate material to the acquisition of land.

V. Amendment Process

This MOA may be supplemented, amended, or modified by the written agreement thereto of the signatories.

VI. Signatories

NOTE: Support for this MOA will be solicited and welcomed from each of the governments and agencies below. After signing the MOA, each county participant will appoint two representatives to the board of directors of the proposed nonprofit organization. The participation of four counties is required to ensure a large enough
initial board. Italics indicate those state governments and agencies from whom signed support is critical for the success of the program.

Butte County
Colusa County
Glenn County
Shasta County
Sutter County
Tehama County
Yolo County
California Resources Agency
California Department of Fish and Game
Wildlife Conservation Board
California Department of Water Resources
California Department of Parks and Recreation
California Water Commission
The Reclamation Board
California State Lands Commission
California Department of Food and Agriculture
United States Army Corps of Engineers
United States Bureau of Reclamation
United States Fish and Wildlife Service
United States Natural Resource Conservation Service
National Marine Fisheries Service
City of Redding
City of Anderson
City of Red Bluff
City of Tehama
City of Colusa
California Environmental Protection Agency
California Department of Forestry and Fire Protection
California Department of Boating and Waterways
California Department of Conservation
Special Districts (e.g. reclamation, flood control, irrigation districts etc.)
State Water Resources Control Board
Central Valley Regional Water Quality Control Board
United States Environmental Protection Agency
United States Bureau of Land Management
United States Forest Service

In addition to signed support from the above governments and agencies, endorsements will be sought from the following programs and organizations:

Audubon Society
CALFED Bay Delta Program
California Cattlemen's Association
California Farm Bureau Federation
Central Valley Habitat Joint Venture
California Waterfowl Association
CalTrout
Central Valley Flood Control Association
Ducks Unlimited
Family Water Alliance
Friends of the River
The Nature Conservancy
Northern California Water Association
Pacific Coast Federation of Fishermen's Associations
Planning and Conservation League
Riparian Habitat Joint Venture
Sacramento River Discovery Center
Sacramento River Partners
Sacramento River Preservation Trust
Sacramento River Watershed Program
Sacramento Valley Landowners Association
Society for Ecological Restoration, California Chapter
Trust for Public Lands
United Anglers of California

SIGNATURES

Name and Title	Agency	Date
Denny Bungarz, Chairman	Glenn County Board of Supervisors	June 1, 1999
Jane Dolan, Chair	Butte County	May 16, 2000
	Shasta County	JUL 27 1999
Chairman	Colusa County	June 22, 1999
Ross M. Turner, Chairman	Tehama Co. Board of Supervisors	6/30/99
	Sutter County	4/4/00
	Yolo County	May 23, 2000

SIGNATURES

Name and Title	Agency	Date
Secretary	Resources Agency	12/2/99
Director	Dept of Fish & Game	12/2/99 *
	Dept of State Parks	12/2/99
EXECUTIVE DIRECTOR	Wildlife Conservation Board	12/2/99
	Army Corps of Engrs	2 Dec 99
Executive Officer	CA State Lands Comm.	8/2/99

Name and Title	Agency or Organization	Date

Name and Title	Agency	Date
	BLM	10/18/99

AL WRIGHT
State Director

California Bureau of Land Management

SIGNATURES

Name and Title	Agency	Date
WAYNE S. WHITE Field Supervisor	Fish & Wildlife Service	7/14/99
William H. Lee, ACTING FOR Regional Director	Bureau of Reclamation	APR 12 2000
Barbara Leeke, President	The Reclamation Board	7/13/99
	Department of Water Resources	12/2/99
Daniel E. Webb Deputy Secretary	CDFA	2-25-02

Appendix K

INITIAL STUDY / NEGATIVE DECLARATION

The Comprehensive Management Plan is a project under the California Environmental Quality act that requires environmental analysis. This Appendix includes the full text of the Initial Study/Negative Declaration that was prepared and approved in conformance with the requirements of the State CEQA Guidelines.

INITIAL STUDY / NEGATIVE DECLARATION
pertaining to the
COMPREHENSIVE MANAGEMENT PLAN
FOR THE SACRAMENTO RIVER WILDLIFE AREA

1. **Project title:** Comprehensive Management Plan for the Sacramento River Wildlife Area

2. **Lead agency name and address:**
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

3. **Contact persons and phone numbers:**

Paul Hofmann, Associate Wildlife Biologist
530-934-9309

Gregg Werner, Project Planner
530-897-6374
500 Main Street
Chico California, 95928

Project location:
Thirteen separate Units along the Sacramento River between River Mile 245 and 215, in olusa, Glenn Butte and Tehama Counties. Figure 1 depicts the location of the Wildlife Area.

5. **Project sponsor's name and address:**
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

6. **General plan designation**:
Floodway (Colusa County)
Intensive Agriculture (Glenn County)
Agriculture (Butte County)
Habitat Reserve (Tehama County)

7. **Zoning:**
Floodway zoning district (Colusa County)
AE-40 zoning district (Glenn County)
Agricultural zoning districts (Butte County)
Primary Floodway zoning dist. (Tehama ounty)

8. **Description of project:**
The project is the Comprehensive Management Plan for the Sacramento River Wildlife Area. The purpose of the Wildlife Area is to protect and enhance habitat for wildlife species, and to provide the public with compatible, wildlife-related recreational uses. The Wildlife Area has existed since 1980 and this Plan proposes continuation of an Ecosystem Approach to management of the riparian habitat. The Wildlife Area provides habitat for Special Status Species, game species and other native species.

This Plan consists of eight chapters as follows:
I. Introduction
II. Description of the Wildlife Area
III. Description of Habitat and Species
IV. Coordination with Other Programs
V. Compatible Public Use
VI. Management Goals
VII. Operations and Maintenance

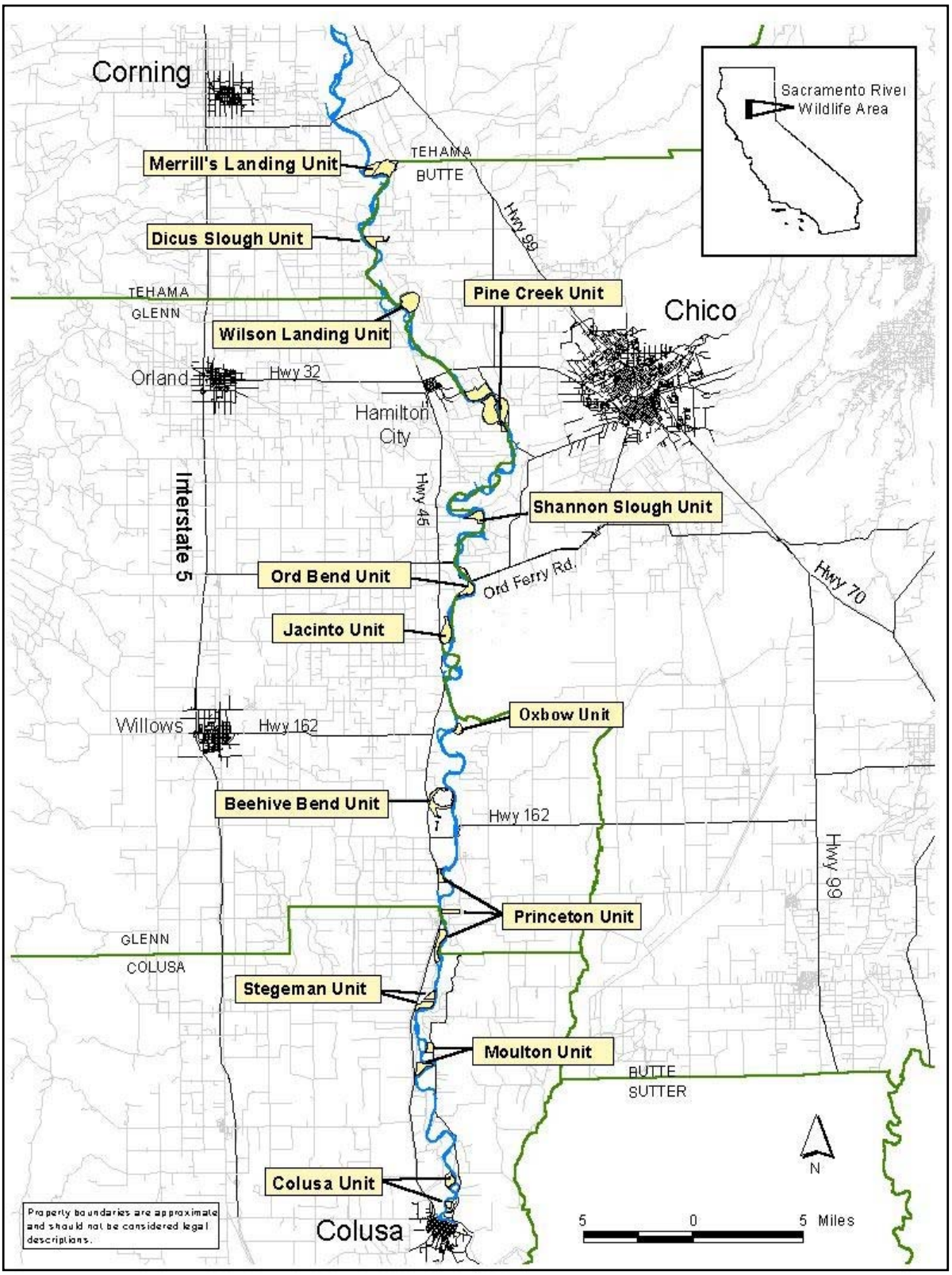

Figure 1. Location of the Sacramento River Wildlife Area

This Plan provides a description of the Wildlife Area and its environment with emphasis on the natural riverine processes that create and maintain riparian habitat and the plant communities and animals that occur in the Wildlife Area. It also includes an evaluation of public uses that are compatible with the Purpose of the Wildlife Area.

This Initial Study is intended to consider the whole of the project. As such, this project and this Negative Declaration includes the following components:

- The ongoing operation of the Wildlife Area including the public uses incorporated in this Plan.
- Maintenance activities to sustain the riparian habitat including control of nonnative, invasive species.
- Installation of minor improvements to the Wildlife Area, such as signing, that do not involve substantial physical disruption of the Wildlife Area.
- Installation of minor improvements to promote compatibility with adjoining property that do not involve substantial physical disruption of the Wildlife Area.
- Maintenance of improvements to the Wildlife Area.
- Conduct of monitoring activities and scientific research.
- Ongoing coordination with public agencies and private entities consistent with the objectives of this Plan.
- The provision of public information regarding the Wildlife Area that may include hardcopy and online data as well as other media.
- The combination of the Merrill's Landing Wildlife Area with the Sacramento River Wildlife Area.
- Update of Wildlife Area regulations.
- Enforcement of duly adopted laws and regulations.

This Plan is a general policy guide to the management of the Wildlife Area. It does not specifically authorize or make any precommitment to any substantive physical changes to the Wildlife Area. With the exception of minor operations and maintenance activities, any physical changes that are not currently approved will require subsequent authorizations and approvals. Because any such possible changes will be a part of projects, which have not yet been conceived, designed or funded, it is not possible to reasonably evaluate the impacts of any such subsequent projects. Any such subsequent projects not included within the scope of this project will require analysis pursuant to CEQA when such projects are conceived and proposed.

9. **Surrounding land uses and setting:**
The Sacramento River Wildlife Area is composed of 3770 acres of wildlife habitat lying within the lower floodplain of the Sacramento River. The area is composed of riparian habitat that includes gravel bars, sloughs and backwater areas, riparian forests and various communities of scrub and grassland vegetation. All of the project area is frequently flooded and, where public levees exist, it is located entirely within those levees. The Wildlife Area is composed of thirteen separate Units of land area along a seventy-mile reach of the river. Approximately 55% of the area adjoins other riparian habitat that publicly or privately owned, 40% adjoins agricultural crops that are privately owned and 5% adjoins public levees with roads or highways adjacent to them.

10. **Other public agencies whose approval is required:**
No other public agency approval is required for the adoption of the Comprehensive Management Plan

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:
The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages. *Note: No impact to any factor has been determined to be potentially significant.

❒	Aesthetics	❒	Agriculture Resources	❒	Air Quality
❒	Biological Resources	❒	Cultural Resources	❒	Geology /Soils
❒	Hazards & Hazardous Materials	❒	Hydrology / Water Quality	❒	Land Use / Planning
❒	Mineral Resources	❒	Noise	❒	Population / Housing
❒	Public Services	❒	Recreation	❒	Transportation/Traffic
❒	Utilities / Service Systems	❒	Mandatory Findings of Significance		

DETERMINATION:
On the basis of this Initial Study:

X I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

4/26/04, 2004
Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

Standardized CEQA Checklist

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	❐	❐	❐	X
b) Substantially damage scenic resources damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	❐	❐	❐	X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	❐	❐	❐	X
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	❐	❐	❐	X
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	❐	❐	X	❐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	❐	❐	❐	X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	❐	❐	❐	X
III. AIR QUALITY -- Where available, the significance criteria established by the applicable				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	❐	❐	❐	X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	❐	❐	❐	X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	❐	❐	❐	X
d) Expose sensitive receptors to substantial pollutant concentrations?	❐	❐	❐	X
e) Create objectionable odors affecting a substantial number of people?	❐	❐	❐	X
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	❐	❐	❐	X
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	❐	❐	❐	X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	❐	❐	❐	X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of	❐	❐	❐	X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
native wildlife nursery sites?				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	❐	❐	❐	X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	❐	❐	❐	X
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in ' 15064.5?	❐	❐	❐	X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to ' 15064.5?	❐	❐	❐	X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	❐	❐	❐	X
d) Disturb any human remains, including those interred outside of formal cemeteries?	❐	❐	❐	X
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	❐	❐	❐	X
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	❐	❐	❐	X
ii) Strong seismic ground shaking?	❐	❐	❐	X
iii) Seismic-related ground failure, including liquefaction?	❐	❐	❐	X
iv) Landslides?	❐	❐	❐	X
b) Result in substantial soil erosion or the loss of topsoil?	❐	❐	X	❐
c) Be located on a geologic unit or soil that is				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	❐	❐	❐	**X**
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	❐	❐	❐	**X**
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	❐	❐	❐	**X**
VII. HAZARDS AND HAZARDOUS MATERIALS B Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	❐	❐	❐	**X**
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	❐	❐	❐	**X**
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	❐	❐	❐	X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	❐	❐	❐	**X**
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	❐	❐	❐	**X**
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	❐	❐	❐	**X**
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	❐	❐	❐	**X**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	❐	❐	X	❐
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	❐	❐	❐	X
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	❐	❐	❐	X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	❐	❐	❐	X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	❐	❐	❐	X
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	❐	❐	X	❐
f) Otherwise substantially degrade water quality?	❐	❐	❐	X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	❐	❐	❐	X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	❐	❐	X	❐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a	❐	❐	X	❐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
levee or dam?				
j) Inundation by seiche, tsunami, or mudflow?	❒	❒	❒	X
IX. LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?	❒	❒	❒	X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	❒	❒	❒	X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	❒	❒	❒	X
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	❒	❒	❒	X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	❒	❒	❒	X
XI. NOISE B Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	❒	❒	❒	X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	❒	❒	❒	X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	❒	❒	❒	X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	❒	❒	❒	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted,	❒	❒	❒	X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	❐	❐	❐	X
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	❐	❐	❐	X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	❐	❐	❐	X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	❐	❐	❐	X
XIII. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	❐	❐	X	❐
Police protection?	❐	❐	X	❐
Schools?	❐	❐	❐	X
Parks?	❐	❐	❐	X
Other public facilities?	❐	❐	❐	X
XIV. RECREATION --				
a) Would the project increase the use of existing neighborhood and regional parks or other	❐	❐	❐	X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	❐	❐	❐	X
XV. TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	❐	❐	X	❐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	❐	❐	X	❐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	❐	❐	❐	X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	❐	❐	❐	X
e) Result in inadequate emergency access?	❐	❐	❐	X
f) Result in inadequate parking capacity?	❐	❐	❐	X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	❐	❐	❐	X
XVI. UTILITIES AND SERVICE SYSTEMS Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	❐	❐	❐	X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	❐	❐	❐	X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	❒	❒	❒	X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	❒	❒	❒	X
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments?	❒	❒	❒	X
f) Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs?	❒	❒	❒	X
g) Comply with federal, state, and local statutes and regulations related to solid waste?	❒	❒	❒	X
XVII. MANDATORY FINDINGS OF SIGNIFICANCE --				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	❒	❒	❒	X
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	❒	❒	❒	X
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	❒	❒	❒	X

Supplemental Comments to the Checklist

I. Aesthetics

a, b, c. The project will preserve riparian habitat that is an important part of the scenic vistas in the Sacramento Valley. It will not damage scenic resources or degrade the existing visual character of the area.

II. Agricultural Resources

a. The majority of the property in the Wildlife Area has not been in agricultural use. Less than 25 % of the property had been in agricultural use in the past. The Wildlife Area is located on low-lying property that is adjacent to the river and floods frequently (inundation frequency from one to five years). The area adjacent to the river contains a variety of soil conditions that range from gravel bars to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

It is possible, though not known at this time, that subsequent actions may involve the acquisition and conversion of some land classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. If so such acquisition will be tied to a voluntary decision on the part of the landowner to terminate agricultural use. Past experience indicates that any such acquisitions would be in marginal agricultural areas where there are significant practical difficulties for farming which include frequent flooding, erosion by channel meander, access problems due to avulsive changes and areas that are too small to constitute an economic unit for economical farming. Any such future acquisition would require subsequent analysis when the specifics of a project are established.

b. The existing Wildlife Area is consistent with the existing general plan and zoning designations for the area. Similarly any potential future acquisitions of habitat would likely be in an area where the existing general plan and zoning designations permit riparian habitat.

IV. Biological Resources

a, b, c, d. The Wildlife Area is specifically managed with an Ecosystem Approach to benefit Special Status Species, other native species and game species. All activities will be in conformance with State and federal endangered species regulations and will be evaluated for potential impacts on Special Status Species. Natural wetland areas that provide valuable fish and wildlife habitat will be protected and migrational corridors will be maintained.

f. This Plan does not conflict with any Habitat Conservation Plan or Natural Community Conservation Plan. It is specifically developed to be consistent with the *Sacramento River Conservation Area Handbook.*

V. Cultural Resource

a,b,c,d. This Plan incorporates a Cultural Resources Analysis which evaluated the potential for impact on historic and archaeological resources. There are no recorded cultural sites in the Wildlife Area. No substantive physical changes to the Wildlife Area will occur without site specific evaluation by qualified professionals. The Cultural Resources Analysis also specifies procedures if any cultural resources are found in the future.

VI. Geology and Soils

b. The Wildlife Area is adjacent to the Sacramento River where the natural riverine processes include constant erosion and deposition. No change to that natural process is proposed. These natural processes create and maintain riparian habitat and support the riparian ecosystem.

VII. Hazards and Hazardous Materials

h. The Wildlife Area is located in a floodplain where there are very few structures or people. Local, State and federal regulations also severely restrict the potential to build new structures in the floodplain area. The Wildlife Area is subject to the same basic potential for fire as other privately and publicly-owned habitat property along the river. This Plan recommends firebreaks in any new active horticultural restoration projects, coordination with local fire protection agencies and development of appropriate fire protection strategies to ensure that the fire potential is managed.

VIII. Hydrology and Water Quality

c, d. No change to the existing drainage patterns on any site is proposed. Past activities in the Wildlife Area have not involved a change in drainage patterns and there is no proposal for any a change in drainage patterns in the future.

e, h, i. The Wildlife Area is composed of low-lying areas that flood frequently. It is within a flood damage control system (the Sacramento River Flood Control Project) where the subject property is expected to be inundated frequently. Frequent flooding is expected to continue in this area.

It is possible, though not known at this time, that proposed, subsequent actions may involve the active horticultural restoration of limited portions of the Wildlife Area to supplement the natural processes and help restore riparian habitat. It is also possible, though not known at this time, that modification of some bank protection may be proposed. Any such project would require subsequent analysis when the specifics of a project are established. Lacking the specifics of any such projects, it is not practically possible to evaluate the impacts of such projects. If such projects are proposed, however, they are legally required to be reviewed and approved by the Reclamation Board to ensure that the integrity of the flood damage control system is maintained and no significant impacts occur. This Plan provides for the preparation of appropriate hydrologic analysis and the design of any future active horticultural restoration projects or other projects to meet the standards of the Reclamation Board.

XIII. Public Services

a. The intensity and frequency of public use in the Wildlife Area is historically very low. This Plan contains provisions for additional coordination with local public service and law enforcement agencies to deal with any future impacts as well as the proposal for additional Department law enforcement staffing..

XV. Transportation / Traffic

a, b. There is very limited road access to the Wildlife Area and the level of traffic generated by the low intensity use of the area is very small. It is possible, though not known at this time, that subsequent actions may involve the acquisition of rights of way for additional public land access to the Wildlife Area. Any such project would require subsequent analysis when the specifics of a project are established. Notwithstanding, it is reasonably expected that any traffic increase generated by future users of the Wildlife Area would be very small and well within the capacity of roadways in the area.

XVII. Mandatory Findings of Significance

a. This Plan is supportive of habitat and wildlife species and cultural resources. It does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the

range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

b. This Plan does not authorize any substantive physical changes and any unknown, future projects would require subsequent analysis when the specifics of a project are established. There are no impacts that are individually limited, but cumulatively considerable to the point of significance.

c. This Plan provides for compliance with all applicable laws and requirements. It does not authorize any substantive physical changes and any unknown future projects would require subsequent analysis when the specifics of a project are established. It will not have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly.

Notice of Determination

Form C

To: Office of Planning and Research
P.O. Box 3044, 1400 Tenth Street, Room 212
Sacramento, CA 95812-3044

From: (Public Agency) State of California
Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

Comprehensive Management Plan for the Sacramento River Wildlife Area
Project Title

SCH# 2003112097	Teresa Le Blanc	916-445-3499
State Clearinghouse Number (If submitted to Clearinghouse)	Lead Agency Contact Person	Area Code/Telephone/Extension

Thirteen separate Units along the Sacramento River between Woodson Bridge and the City of Colusa (River Mile 215 to 145), located in Butte, Colusa, Glenn and Tehama Counties
Project Location (include county)

Project Description:

The project is a programmatic plan for the continued management of the existing 3770-acre Sacramento River Wildlife Area for fish and wildlife habitat and for compatible public use.

This is to advise that the California Department of Fish and Game (Lead Agency) has approved the above described project on 4/26/04 (Date) and has made the following determinations regarding the above described project:

1. The project will not have a significant effect on the environment.
2. A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures were not made a condition of the approval of the project.
4. A statement of Overriding Considerations was not adopted for this project.
5. Findings were not made pursuant to the provisions of CEQA.

This is to certify that the Negative Declaration is available to the General Public at:

Department of Fish and Game, Lands and Facilities Branch at 1812 Ninth Street, Sacramento, CA 95814, contact is Teresa Le Blanc

Signature (Public Agency)	4/26/04 *Date*	Dep. Director *Title*

RECEIVED
APR 26 2004
STATE CLEARING HOUSE

Date received for filing at OPR:

State of California – The Resources Agency
ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov

State Clearinghouse
1400 Tenth Street
Sacramento, California 95814

April 26, 2004

Final Negative Declaration for the Comprehensive Management Plan for the Sacramento River Wildlife Area, Tehama, Butte, Glenn and Colusa Counties.

Enclosed for review by state agencies is the Notice of Determination (NOD) for the proposed Final Negative Declaration for the Comprehensive Management Plan for the Sacramento River Wildlife Area. The proposed final Draft Management Plan and Final Negative Declaration were prepared by the California Department of Fish and Game in partnership with The Nature Conservancy to establish management direction for the Sacramento River Wildlife Area. We have enclosed one copy of the Plan for your files and a copy of the NOD for distribution.

If you have any questions or need further information, please contact Mr. Felix Arteaga, Branch Chief, Lands and Facilities at 916-327-0062 (E-mail Fel_Arte@dfg.ca.gov).

Felix Arteaga
for Sonke Mastrup
Deputy Director
Wildlife and Inland Fisheries Division

Enclosure

cc: Mr. Banky Curtis, Sacramento Valley & Central Sierra Region
Mr. Donald Koch, Northern California – North Coast Region
Teresa Le Blanc, Lands and Facilities Branch
Mr. Gregg Werner, The Nature Conservancy

COMPREHENSIVE MANAGEMENT PLAN

FOR THE

SACRAMENTO RIVER WILDLIFE AREA

Prepared by:

Paul Hofmann	Associate Wildlife Biologist
Paul Ward	Associate Fisheries Biologist
Teresa Le Blanc	Senior Wildlife Biologist
Gregg Werner	Project Planner

Department Review:
September 18 to October 17, 2003

Public Review:
November 17 to December 18, 2003

Approved by:

Donald Koch — 3/1/04

Regional Manager — **Date**
Northern California - North Coast Region

Banky E Curtis — 3/8/04

Regional Manager — **Date**
Sacramento Valley – Central Sierra Region

Sonke Mastrup for — 4/26/04

Director — **Date**
California Department of Fish and Game

Notice of Determination

Form C

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3. Mitigation measures were not made a condition of the approval of the project.
4. A statement of Overriding Considerations was not adopted for this project.
5. Findings were not made pursuant to the provisions of CEQA.

This is to certify that the Negative Declaration is available to the General Public at:

Department of Fish and Game, Lands and Facilities Branch at 1812 Ninth Street, Sacramento, CA 95814, contact is Teresa Le Blanc

[signature]	4/26/04	Dep. Director
Signature (Public Agency)	*Date*	*Title*

Date received for filing at OPR: