

Sacramento River National Wildlife Refuge

Environmental Assessment

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Region 1

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Chapter 1. Purpose of and Need for Action

Introduction

This environmental assessment (EA) evaluates the environmental effects of three alternatives for managing the Sacramento River National Wildlife Refuge (Sacramento River Refuge). This EA will be used by the U.S. Fish and Wildlife Service (Service) to solicit public involvement in the refuge planning process and to determine whether the implementation of the Comprehensive Conservation Plan (CCP) would have a significant effect on the quality of the human environment. This EA is part of the Service's decision-making process in accordance with the National Environmental Policy Act (NEPA), amended and its implementing regulations.

Proposed Action

The Service proposes to implement Alternative B, as described in this EA. This alternative is described in more detail in Chapter 5 of the CCP.

Purpose of and Need for the Proposed Action

The CCP is needed to guide the management of the Sacramento River Refuge for the next 15 years. In addition, the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) requires that CCPs be in place for all refuges within 15 years of its enactment.

Project Area

The Sacramento River Refuge is part of the Sacramento National Wildlife Refuge Complex (Sacramento Refuge Complex) and is located in the Sacramento Valley of north-central California. The Valley is bordered by the Sierra Nevada Range to the east and the Coast Range to the west. The Refuge was established in 1989 and is currently composed of 26 units along a 77-mile stretch of the Sacramento River between the cities of Red Bluff and Princeton, 90 miles north of the metropolitan area of Sacramento. In addition, the Service has 1,281 acres of riparian habitats in conservation easement owned by Llano Seco Ranch.

The Valley is an extensive agricultural area that is a major wintering area for millions of ducks and geese. Lands that surround the Refuge are mostly orchards and irrigated rice lands with some dairy operations and safflower, barley, wheat, and alfalfa crops. The topography is flat with a gentle slope to the south. The predominant soil type is Columbia loam.

More detailed information about the project area can be found in Chapter 3 of the CCP.

Decisions to be Made

Based on the analysis documented in this EA, the California/Nevada Operations Manager must determine the type and extent of management and public access on the Refuge and

whether the selected management alternative would have a significant effect on the quality of the environment.

Issue Identification

Issues, concerns, and opportunities were identified through early planning discussions and the public scoping process, which began with the mailing of the first planning update in May 2000. Other comments were received in writing and noted through personal communications. For more in depth description of the issues, see Chapter 2 of the CCP.

Issues discussed under each alternative include riparian habitat restoration, migratory birds, threatened and endangered species, monitoring, visitor services and cultural resources. Additional issues are addressed for each alternative in Table 1 and Appendix 1.

Public Involvement

The Refuge sent four additional planning updates to a mailing list of over 300 individuals, groups, and agencies in May 2001, August 2001, July 2002 and December 2003. The public workshops were held in May and June of 2001 in Red Bluff, Chico, Willows, and Colusa. In addition, the Refuge distributed a brochure describing the planning process and requesting input from refuge visitors during fall 1999.

Public input received in response to these updates and workshops is incorporated into the CCP and EA, and a summary of comments is included in Chapter 2 of the CCP. The original comments are being maintained in planning team files at the Sacramento Refuge Complex headquarters in Willows, California, and are available for review. Appendix J contains a list of individuals and organizations that were notified or were sent a copy of the Draft CCP, were sent planning updates or attended scoping meetings.

Related Actions

Please see Chapter 1 of the CCP for a description of related actions, projects, and studies in the area.

U.S. Fish and Wildlife Service and National Wildlife Refuge System

The mission of the Service is to conserve, protect, and enhance the nation's fish and wildlife and their habitats for the continuing benefit of the American people. The Service is the primary Federal agency responsible for migratory birds, endangered plants and animals, certain marine mammals, and anadromous fish. This responsibility to conserve our nation's fish and wildlife resources is shared with other Federal agencies and State and Tribal governments.

As part of this responsibility, the Service manages the National Wildlife Refuge System (Refuge System). The Refuge System is the only nationwide system of Federal lands managed and protected for wildlife and their habitats. The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management,

and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

The Refuge is managed as part of the Refuge System in accordance with the National Wildlife Refuge System Administration Act of 1966 as amended by the Improvement Act, and other relevant legislation, executive orders, regulations, and policies. Chapter 1 of the CCP summarizes these major laws, regulations, and policies and also describes the goals of the Refuge System.

Refuge Purposes

The Refuge purposes are:

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” 16 U.S.C. Sec. 1534 (Endangered Species Act of 1973).

".. the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..."16 U.S.C. 3901(b) (Emergency Wetlands Resources Act of 1986).

“... for the development, advancement, management, conservation, and protection of fish and wildlife resources ...” 16 U.S.C. 742f (a) (4) “... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ...” 16 U.S.C. Sec. 742f (b) (1) (Fish and Wildlife Act of 1956).

The Refuge Vision Statement

“The Sacramento River Refuge will create a linked network of up to 18,000 acres of floodplain forests, wetlands, grasslands, and aquatic habitats stretching over 100 miles from Red Bluff to Colusa. These refuge lands will fulfill the needs of fish, wildlife, and plants that are native to the Sacramento River ecosystem. Through innovative revegetation, the Refuge will serve as an anchor for biodiversity and a model for riparian habitat restoration throughout the Central Valley. We will forge habitat, conservation, and management links with other public and private conservation land managers.

The Sacramento River Refuge is committed to the preservation, conservation, and enhancement of a quality river environment for the American people along the Sacramento River. In this pursuit, we will work with partners to provide a wide range of environmental education programs and promote high quality wildlife-dependent recreational opportunities to build a refuge support base and attract new visitors. Compatible wildlife-dependent recreational opportunities for hunting, fishing, wildlife observation and photography, environmental education and interpretation will be

provided on the Refuge.

Just as the floodplain along the Sacramento River has been important to agriculture, it is also an important natural corridor for migratory birds, anadromous fish, and threatened and endangered species. Encouraging an understanding and appreciation for the Sacramento River will be a focus of the Sacramento River Refuge for generations to come.”

Refuge Goals

Wildlife and Habitat Goal:

Contribute to the recovery of endangered and threatened species and provide a natural diversity and abundance of migratory birds and anadromous fish through the restoration and management of viable riparian habitats along the Sacramento River using the principles of landscape ecology.

Public Use Goal:

Encourage visitors of all ages and abilities to enjoy wildlife-dependent recreational and educational opportunities and experience, appreciate, and understand the Refuge history, riparian ecosystem, fish, and wildlife.

Partnership Goal:

Promote partnerships to preserve, restore, and enhance a diverse, healthy and productive riparian ecosystem in which the Sacramento River Refuge plays a key role.

Resource Protection Goal:

Adequately protect all natural and cultural resources, staff and visitors, equipment, facilities, and other property on the Refuge from those of malicious intent in an effective, professional manner.

Chapter 2. Alternatives, Including the Proposed Action

Introduction

This chapter describes three alternatives for managing the Sacramento River Refuge. Alternative A, Current Management (No Action); Alternative B, Optimize Habitat Restoration and Public Use (Proposed Action); and Alternative C, Accelerate Habitat Restoration and Maximize Public Use. These alternatives are summarized in Table 1, Appendix 1, and are described below.

All alternatives considered in this CCP were developed with the mission of the Refuge System and the purposes of the Refuge as guiding principles. The Service's proposed action is Alternative B. Two of the three alternatives presented in this chapter are "action alternatives" that would involve a change in the current management of the refuge. Under the No Action alternative, the Service would continue managing the refuge as it currently does.

Current Management

The purpose of the Sacramento River Refuge is to preserve, restore, and enhance riparian habitat for threatened and endangered species, breeding and wintering migratory birds, anadromous fish, resident species, and native plants. The Refuge is managed to maintain, enhance and restore habitats for these species. Chapter 4 of the CCP describes the Refuge's current management practices in detail.

Alternatives Development Process

The alternative development process was a process involving much repetition and review that began after the planning team developed the Refuge vision statement and goals. The first step in this process was to identify all of the important issues related to Refuge management. The core planning team, Service staff, and Refuge stakeholders generated the list of issues collaboratively. (Refuge stakeholders are those individuals or groups currently working or conducting research on the Refuge, and State natural resource agencies.) The general public also helped to identify important management issues through the scoping process. All public comments submitted at the four public scoping meetings in 2001, and written correspondence, were considered. Once the list of important management issues was generated, the planning team described the No Action Alternative. It was important to describe this alternative accurately because the No Action Alternative serves as the baseline to which all other alternatives are compared.

Next, the planning team listed a wide range of management actions that would address the issues identified and achieve one or more of the goals of the Refuge. These actions were refined during planning team meetings. The planning team then clustered these actions into logical groupings to form the action alternatives. Many actions are common to

more than one alternative, but the actions within each alternative reflect a common management approach, as described in detail below.

Features Common to All Alternatives

All three alternatives, including the No Action Alternative, include a number of features in common. Under each alternative, riparian vegetation on La Barranca, Ohm, Pine Creek, Capay, Phelan Island, Dead Man's Reach, and Drumheller Slough units would be restored and enhanced. These restoration activities were addressed in an Environmental Assessment completed in February 2002 (USFWS 2002b). Other continuing activities include baseline surveys and monitoring, fire management, law enforcement, and fishing at Packer Lake.

Acquired in 1991, the Llano Seco Ranch Riparian Easement consists of 1,281 acres located between river miles 183 and 178. It is bordered to the north by the Ord Ferry Bridge and to the south by the Llano Seco Unit, Riparian Sanctuary. Management of the 1,281-acre Llano Seco Ranch conservation easement is not included in the annual habitat management plan. However, the Refuge does manage the Llano Seco Ranch Riparian Easement. The refuge manager monitors easement compliance; the wildlife biologist conducts regular Refuge wildlife surveys and surveys for special status species as part of the Refuge wildlife inventory and monitoring program; and, the manager, biologist, and fire management officer provide technical assistance for habitat management such as grazing, burning, and fire breaks.

Alternatives Considered but Eliminated from Detailed Analysis

The alternatives development process under NEPA and the Improvement Act are designed to allow the planning team to consider the widest possible range of issues and feasible management solutions. These management solutions are then incorporated into one or more alternatives evaluated in the EA process and considered for inclusion in the CCP.

Actions and alternatives that are not feasible or may cause substantial harm to the environment are usually not considered in an EA. Similarly, an action (and therefore, an alternative containing that action) should generally not receive further consideration if:

- It is illegal (unless it is the No Action Alternative, which must be considered to provide a baseline for evaluation of other alternatives, even though it may not be capable of legal implementation);
- It does not fulfill the mission of the National Wildlife Refuge System;
- It does not relate to or help achieve one of the goals of the Refuge unit; or
- Its environmental impacts have already been evaluated in a previously approved NEPA document.

However, if such actions or alternatives address a controversial issue or an issue on which many public comments were received, they may be considered in detail in a NEPA document to clearly demonstrate why they are not feasible or would cause substantial

harm to the environment.

During the alternatives development process, the planning team considered a wide variety of potential actions on the Refuge. The following actions were ultimately rejected and excluded from the alternatives proposed here because they did not achieve Refuge purposes or were incompatible with one or more goals.

Custodial Management Alternative

This alternative would have eliminated all restoration projects, habitat management, and precluded the development of additional public use programs. Refuge management would be limited to maintaining boundary signs and fences. Habitat goals would not have been met and the public would be prevented from accessing the Refuge. This alternative was not analyzed in detail because it conflicts with the Refuge purpose of providing habitat for threatened and endangered species, migratory and resident birds, and other wildlife. The Improvement Act also directs the Service to provide compatible wildlife dependant recreational opportunities. This mandate would not be met under this alternative.

Big 5 Public Use Alternative

This alternative would have opened the Refuge to five of the Big 6 wildlife-dependent public uses, with only a minor amount (approximately 10 percent) open to hunting. This alternative was not analyzed in detail because hunting is compatible with the Refuge purposes and goals. In addition, one of the most common issues identified during the scoping process was to open the Refuge to hunting. Hunting currently occurs on adjacent lands and water. It is considered by the local community as a traditional recreational pursuit that many generations of families have enjoyed as part of their local heritage.

Recreational Use Alternative

This alternative would have opened the Refuge as a recreational area. All areas would have been opened to the public and many new facilities would have been built. Development might include multiple hiking trails, parking lots, boat ramps, campgrounds, hunting blinds, and fishing areas. This alternative was not analyzed in detail because it conflicts with the Refuge purpose of serving as a refuge and habitat for threatened and endangered species, migratory and resident birds, and other wildlife and the intent of the Improvement Act, putting wildlife first.

Proposed Action

The planning policy that implements the Improvement Act requires the Service to select a preferred alternative that becomes its proposed action under NEPA. The written description of this proposed action is effectively the draft CCP. Alternative B is the proposed action for Sacramento River Refuge because it meets the following criteria:

- Achieves the mission of the National Wildlife Refuge System.
- Achieves the purposes of Sacramento River National Wildlife Refuge.
- Provides guidance for achieving the Refuge's 15-year vision and goals.

- Maintains and restores the ecological integrity of the habitats and populations on the Refuge.
- Addresses the important issues identified in the scoping process.
- Addresses the legal mandates of the Service and the Refuge.
- Is consistent with the scientific principles of sound fish and wildlife management and endangered species recovery.

Table 9 (Chapter 5, CCP) contains a matrix of the anticipated restoration and public use activities and Appendix L described the rationale used to determine the public use determinations for each of the Refuge units.

The proposed action described in the EA is preliminary. The action ultimately selected and described in the final CCP will be determined, in part, by the comments received on this version of the EA. The preferred alternative presented in the final CCP may suggest a modification of one of the alternatives presented here.

Percentages described in the CCP objectives and strategies represent current refuge acres and do not necessarily reflect the long-term percentages of lands open for visitor use on the Refuge. For example, we have proposed 80% of the Refuge open for wildlife-dependent activities. However, as the Refuge acquires new properties, additional acreages maybe opened for public use or they maybe set aside as sanctuary. This plan does not define public use or sanctuary objectives as a percentage figure, but rather seeks the most appropriate land use for individual sites within the context of the entire Refuge.

The process for determining visitor use on refuge units includes many different elements and is described in Appendix L.

Alternative A: Current Management (No Action)

Under this Alternative, the Refuge would continue to be managed as it has in the recent past. The Refuge currently has no unit-wide management plan. Recent management has followed existing step-down management plans:

- Environmental Assessment for Proposed Restoration Activities on Sacramento River National Wildlife Refuge
- Fire Management Plan for Sacramento River National Wildlife Refuge
- Annual Habitat Management Plan for Sacramento River National Wildlife Refuge
- Cultural Resource Overview and Management Plan

The focus of the Refuge would remain the same: to provide habitat and maintain current active management practices; restore the 9 units identified in the Environmental Assessment for Proposed Restoration Activities on Sacramento River National Wildlife Refuge (USFWS 2002b) for threatened and endangered species, migratory and resident birds, and other wildlife (Figure 1). The Refuge would remain closed to visitor services other than the limited existing opportunities for fishing at Packer Lake (Figure 2). Current staffing and funding levels would remain the same.

Riparian Habitat Restoration: Under Alternative A, the Service would continue to manage the existing riparian habitat on the Refuge. Only riparian habitat expansion projects described in the Restoration EA (USFWS 2002b) would occur under this alternative. The Service would continue to allow researchers to conduct research on the Refuge, but would not actively pursue new research.

Migratory Birds: Under this alternative, the Service would continue to restore and maintain riparian habitat identified in the Restoration EA (USFWS 2002b) to provide winter, migratory corridor, and nesting habitat for migratory landbirds, resident landbirds, migratory waterfowl, wintering and migratory shorebirds, and other colonial nesting birds.

The Service would continue its limited ground surveying and vegetation monitoring program for migratory birds and threatened and endangered species under a cooperative agreement with The Nature Conservancy (TNC), River Partners (RP), and PRBO (PRBO Conservation Science).

Threatened and Endangered Species: Under Alternative A, the Service would continue its restoration program to improve habitat suitability for Valley elderberry longhorn beetle, Bell's vireo, Swainson's hawk, willow flycatcher, western yellow-billed cuckoo, and bank swallow. The Service would continue to restore and protect shaded riverine aquatic habitat along the banks of the Sacramento River to meet the habitat requirements for winter and spring run Chinook salmon and other anadromous fishes. Floodplain restoration for anadromous fish and Sacramento splittail would continue. Protection of individuals from disturbance and limited population monitoring would continue.

Monitoring: Under Alternative A, the Refuge, in cooperation with partners, would continue to monitor restoration projects, avian bird populations, migratory waterfowl, and other wildlife.

Visitor Services: Under Alternative A, Refuge visitor services would continue unchanged with over 99% of the Refuge closed to public uses. The Refuge would continue its small outreach program, which includes a yearly "Marsh Madness" youth wetland experience program and a limited number of presentations by Refuge staff at schools, and public service and conservation group meetings. The Service would also continue to maintain its existing fishing program on Packer Lake.

Cultural Resources: Under Alternative A, all cultural resource sites have been documented and recorded in the National Register of Historic Places. All cultural resource site locations are kept confidential and are monitored on a regular basis. The Service would also create and utilize a Memorandum of Agreement with Native American groups to implement the inadvertent discovery clause of the Native American Graves Protection and Repatriation Act.

Alternative B: Optimize Habitat Restoration and Public Use (Proposed Action)

Under this Alternative, the Refuge would use active and passive management practices to achieve and maintain full restoration/enhancement of all units where appropriate, as funding becomes available (Figure 3). The agricultural program would be phased out as restoration funding becomes available. The Refuge would employ both cultivated and natural recruitment restoration techniques as determined by site conditions. Public Use opportunities would be optimized to allow for a balance of Big 6 wildlife-dependant public uses throughout the entire Refuge river reach in coordination with other agencies and programs (Figure 4). Staffing and funding levels would need to increase to implement this alternative.

Riparian Habitat Restoration: Management of riparian habitats under Alternative B would be the same as under Alternative A. The Service would also focus on additional habitat restoration and enhancement of the remaining Refuge units. Site-specific plans would be developed for restoration activities. Additional NEPA compliance documents may be needed depending on the size and scope of the restoration activities. The Service would continue to allow researchers to conduct research and actively pursue further investigations and long-term monitoring on the Refuge.

Migratory Birds: The Service would use the same tools and techniques to manage riparian habitat for migratory birds under Alternative B as it does under Alternative A. The Service would also evaluate additional sites that are currently managed under the farming program and were not considered in the Restoration EA (USFWS 2002b).

Threatened and Endangered Species: Under Alternative B, the Service would manage threatened and endangered species the same as under Alternative A. However, the Refuge would prepare a surveying and monitoring plan for special status species, and substantially expand research on the ecology and management of special status species. Special regulations and temporary closures would be instituted for the protection of wildlife species and their habitats during critical periods of their life cycles.

Monitoring: Under Alternative B, in cooperation with partners the Refuge would continue to monitor restoration projects, avian bird populations, migratory waterfowl and other wildlife. The Refuge would develop and implement a long-term monitoring program to assess the success of current management and restoration activities.

Visitor Services: Under Alternative B, the Service would improve and expand visitor services with a focus on a balance of Big 6 wildlife-dependent public use opportunities distributed throughout the entire reach of the Refuge. New visitor services projects under this alternative include: a new refuge brochure; developing interpretive kiosks and parking facilities on vehicle accessible units at Rio Vista, Pine Creek, Capay, Ord Bend, Sul Norte, Packer; and creating walking trails on the Rio Vista, Pine Creek, Capay, Ord Bend, Sul Norte, Codora, and Packer units.

Hunting opportunities would increase. Approximately 52 percent of the Refuge would be opened to hunting of dove, waterfowl, coot, common moorhen, pheasant, quail, snipe, turkey and deer. Hunting will be limited to shotgun or archery only. Twenty-three river miles and seasonally submerged areas would be opened to sport fishing consistent with State regulations. Most riverbanks would be opened to fishing as well. Camping would be allowed on gravel bars below the ordinary high water mark.

The current limited outreach program would be expanded to provide more presentations about the Refuge at schools, public events, and public service and conservation group meetings. The Service would purchase new Refuge displays for use at these events.

The environmental education and interpretation programs would be expanded. A visitor services plan would be developed and implemented and a full time public use specialist would be hired. The Service would also seek to establish new partnerships with educational institutions and local organizations for environmental education on the Refuge. In addition, new educational materials would be developed.

Cultural Resources: Under Alternative B, the Refuge would manage cultural resources similar to Alternative A.

Alternative C: Accelerated Habitat Restoration and Maximize Public Use

Under this Alternative, the Refuge would use active and passive management practices to achieve and maintain full restoration of all units (Figure 5). The agricultural program would cease immediately and remaining orchards would be removed. Restoration of these sites would be implemented as funding becomes available. Additional NEPA compliance documents may be needed depending on the size and scope of the restoration activities. Public use opportunities would be maximized to allow for all Big 6 wildlife-dependent public uses throughout the majority of the Refuge (Figure 6). In addition, staffing and funding levels would need to increase substantially to implement the alternative.

Migratory Birds: Under Alternative C, management and restoration of riparian habitats would be the same as Alternative B.

Threatened and Endangered Species: Under Alternative C, the Service would manage threatened and endangered species similar to Alternative B.

Visitor Services: Under Alternative C, hunting opportunities would increase from 52 percent to 68 percent of the Refuge. Hunting would be allowed on most of the units open to the public. The Service would manage the hunting, fishing, wildlife observation, photography, environmental education and interpretation programs similar to Alternative B.

Cultural Resources: Under Alternative C, the Refuge would manage cultural resources similar to Alternative B.

Table 1. Sacramento River Refuge Alternative/Issue Comparison Summary

Issue Questions	Alternative A Current Management (No Action)	Alternative B Optimize Habitat Restoration and Public Use	Alternative C Accelerate Habitat Restoration and Maximize Public Use
<p>Threatened and Endangered Wildlife and Plants What measures are taken to protect threatened, endangered, and candidate species and species of management concern?</p>	<p>Management for T&E species consists primarily of habitat restoration, protection of individuals from disturbance, and some population monitoring.</p> <p>Over 99% of the refuge is closed to all public uses and thereby limits most disturbances.</p>	<p>Same as Alternative A and would include additional habitat restoration, expanded wildlife and habitat monitoring program.</p> <p>Special regulations/ closures would be instituted for protection of wildlife species and their habitat on the Refuge.</p>	<p>Similar to Alternative B.</p> <p>Same as Alternative B</p>
<p>Wildlife What measures are taken to protect and manage native wildlife?</p>	<p>Management of habitat for wildlife focuses on protection. Over 99% of the refuge is closed to all public uses and thereby limits most disturbance</p>	<p>Focus on additional restoration and enhancement of all habitat types and vegetative monitoring.</p>	<p>Same as Alternative B</p>
<p>Riparian How will riparian habitat be restored/ enhanced to support migratory birds and anadromous fish?</p>	<p>Restoration/enhancement projects will occur at the 9 locations outlined in the Restoration EA (USFWS 2002b).</p>	<p>Same as Alternative A plus additional sites would be further investigated</p>	<p>Same as Alternative B except all farming operations would cease immediately and all units would be restored as funding allows.</p>
<p>Upland How would upland grasslands and savannahs be managed to support native wildlife species and migrating birds?</p>	<p>Native grasslands and savannahs are planted to restore historical diversity. Emphasis is on elderberry savannahs for endangered species recovery purposes. Limited repetitive monitoring occurs throughout the Refuge.</p>	<p>Similar to Alternative A. Grasslands and savannahs planted as orchards would be removed as restoration funding becomes available. Long-term habitat monitoring program initiated. Monitoring of special species occurs.</p>	<p>Similar to Alternative B; except immediate orchard removal would necessitate increased grassland and savannah habitat enhancement efforts.</p>
<p>Riverine How are riverbanks managed on the Refuge?</p>	<p>The river is allowed to meander across the refuge except at designated hard points.</p>	<p>Same as Alternative A</p>	<p>Same as Alternative A</p>

Issue Questions	Alternative A Current Management (No Action)	Alternative B Optimize Habitat Restoration and Public Use	Alternative C Accelerate Habitat Restoration and Maximize Public Use
<p>Flood Management To what extent are Refuge activities coordinated with flood management agencies?</p>	<p>All restoration sites have been identified and evaluated via the NEPA process.</p> <p>On-going coordination of site-specific restoration plans occurs with the State Reclamation Board.</p>	<p>Similar to Alternative A; however, additional sites may be identified and evaluated via the NEPA process.</p> <p>Same as Alternative A</p>	<p>Same as Alternative B</p> <p>Same as Alternative A</p>
<p>Weeds To what extent are weeds (invasive, non-native plants) controlled?</p>	<p>Limited treatments of weeds occur via herbicides, grazing, and mechanical methods.</p>	<p>Similar to Alternative A however, more aggressive efforts would be made in grazing and mechanical control methods.</p>	<p>Substantial increased efforts (pesticides/mechanical) would be made in cultivated restoration sites to control weeds.</p>
<p>Pests How are pests (mosquitoes, rodents) managed on the refuge?</p>	<p>Mosquito management occurs via an Integrated Pest Management (IPM) Plan and Special Use Permits to local Mosquito Abatement Districts.</p> <p>Refuge staff works with neighbors and County Agricultural Commissioners on pest related issues.</p>	<p>Same as Alternative A</p> <p>Same as Alternative A</p>	<p>Same as Alternative A</p> <p>Same as Alternative A</p>
<p>Grazing Is grazing allowed on the Refuge?</p>	<p>Grazing for habitat management purposes occurs on the Ohm and Mooney Units through a Cooperative Land Management Agreement.</p>	<p>Similar to Alternative A; plus additional areas may be opened for site specific grazing for habitat/weed management purposes.</p>	<p>Same as Alternative B</p>
<p>Farming To what extent would farming (orchards, row crops) continue?</p>	<p>Farming will be phased out on 9 Refuge units (as identified in the 2002 Restoration EA) as restoration funding becomes available and the individual orchards become less productive.</p>	<p>Same as Alternative A on all Refuge units that are included in the farming program.</p>	<p>All farming operations would cease immediately.</p>

Issue Questions	Alternative A Current Management (No Action)	Alternative B Optimize Habitat Restoration and Public Use	Alternative C Accelerate Habitat Restoration and Maximize Public Use
Fire Management How is fire managed on the Refuge?	The Fire Management Plan is followed. Prescribed burns are conducted and wildfires are suppressed. Cooperative agreements exist for fire suppression with local, State and other Federal agencies in the area.	Similar to Alternative A: except a seasonal fire crew/engine would be assigned to the Refuge.	Same as Alternative B
Wildlife Viewing And Photography To what extent are opportunities provided for wildlife viewing and photography?	Wildlife viewing and photograph opportunities are provided only at Packer Lake.	80% of the Refuge would be available for these activities. Comprehensive Watchable Wildlife brochure is available.	Same as Alternative B
Environmental Education What type of environmental education program is provided to the public?	Refuge staff provides a limited number of tours to schools, civic groups, and other organizations upon request.	Similar to Alternative A; however, additional educational programs would be provided. Opportunities to partner would be pursued.	Same as Alternative B
Hunting What types of hunting opportunities are provided on the Refuge?	No hunting occurs on the Refuge.	Selected units (52%) of the refuge would be open to hunting of migratory waterfowl, quail, doves, turkeys, pheasants, and deer consistent with State regulations. Limited to shotgun or archery hunting only.	Selected units (68%) of the refuge would be open to hunting. Same as Alternative B
Fishing What types of fishing opportunities are provided on the Refuge?	The Refuge provides boat and bank fishing at Packer Lake only.	23 river miles and seasonally submerged areas would be open to sport fishing consistent with State regulations. Most riverbanks open to fishing.	Same as Alternative B
Camping Is camping allowed?	No camping allowed.	Camping would be allowed on the gravel bars below the ordinary high water mark.	Same as Alternative B
Boating Is boating allowed?	Unrestricted boating occurs on the river. Boating on Packer Lake limited to non-motorized boats.	Same as Alternative A	Same as Alternative A

Issue Questions	Alternative A Current Management (No Action)	Alternative B Optimize Habitat Restoration and Public Use	Alternative C Accelerate Habitat Restoration and Maximize Public Use
<p>Visitor Use Level What is the appropriate visitor use level of the refuge?</p>	<p>Visitor use not allowed on the Refuge, except on navigable waters and Packer Lake.</p>	<p>Visitor use would be limited by access points (i.e., designated locations and boat access only). Use levels and impacts monitored. If visitor use levels increase to a level where resource impacts occur, areas may be subject to temporary or permanent closures to protect wildlife and habitat.</p>	<p>Same as Alternative B</p>
<p>Access Management How is access/travel managed on the Refuge?</p>	<p>No vehicle access is allowed.</p>	<p>Vehicle access would be allowed on designated roads and parking areas only. Designated units and trails would be open for pedestrian access year-round. Entry to Refuge would be via designated locations or by boat. Most of the landward boundary of the Refuge would be closed.</p>	<p>Same as Alternative B</p>
<p>River Access How is river access managed?</p>	<p>No access to the river across the Refuge.</p>	<p>Access to the river would occur at designated locations. Parking areas for river access would be established at Rio Vista, Capay, Sul Norte, Packer and Drumheller Slough Units. Improve directional and public use signing, brochures, and website directions.</p>	<p>Similar to Alternative B; however, additional areas would be open for river access.</p>

Issue Questions	Alternative A Current Management (No Action)	Alternative B Optimize Habitat Restoration and Public Use	Alternative C Accelerate Habitat Restoration and Maximize Public Use
<p>Universal Access To what extent is universal access to public use facilities and activities provided?</p>	<p>The Packer Lake fishing site and boat launch is a primitive facility with no improvements.</p> <p>Large print, Braille, audio tape and CD versions of brochures are available on request.</p> <p>TTY phone available at Sacramento NWRC headquarters.</p>	<p>Accessible parking lots, restrooms and trails would be available at Rio Vista, Pine Creek, Capay, Ord Bend, Sul Norte, and Packer.</p> <p>Same as Alternative A</p> <p>Same as Alternative A</p>	<p>Same as Alternative B</p> <p>Same as Alternative A</p> <p>Same as Alternative A</p>
<p>Resource Protection How is information on the Refuge, its resources, and regulations provided to the public?</p> <p>What level of law enforcement activity occurs on the Refuge?</p>	<p>A general Refuge brochure is available on request. The Sacramento NWRC website provides specific information on the Refuge.</p> <p>Law enforcement patrols conducted on an intermittent basis by refuge officers.</p>	<p>Similar to Alternative A; however, all brochures updated and more comprehensive maps would be provided. Refuge use guidelines and regulations would be posted.</p> <p>Regular and recurring law enforcement patrols would be conducted by refuge officers. Two fulltime refuge officers on staff. More emphasis on cooperative efforts with CDFG Wardens and State Park Rangers.</p>	<p>Same as Alternative B</p> <p>Same as Alternative B, except 3 fulltime refuge officers on staff.</p>
<p>Cultural Resources How are cultural resources protected?</p>	<p>A Cultural Resource Overview and Management Plan has been developed in conjunction with the Archaeological Research Program at Chico State University and TNC. Refuge officers make regular patrols to cultural sites.</p>	<p>Same as Alternative A</p>	<p>Same as Alternative A</p>

Issue Questions	Alternative A Current Management (No Action)	Alternative B Optimize Habitat Restoration and Public Use	Alternative C Accelerate Habitat Restoration and Maximize Public Use
<p>Partnerships To what extent are partnership opportunities pursued with volunteers, local service groups, organizations, individuals, schools, and other agencies?</p>	<p>Memorandum of Understanding in effect for cooperative management between Refuge, CDFG, & State Parks. Refuge conducts a small volunteer program. Cooperative agreements in place with TNC & River Partners for habitat restoration & enhancement.</p>	<p>Similar to Alternative A, plus additional volunteer assistance would be sought. Encourage and support the development of a local “Friends” organization or other cooperative association.</p>	<p>Same as Alternative B</p>

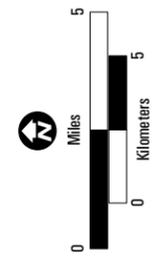
Figure 1

Habitat Management Alternative A

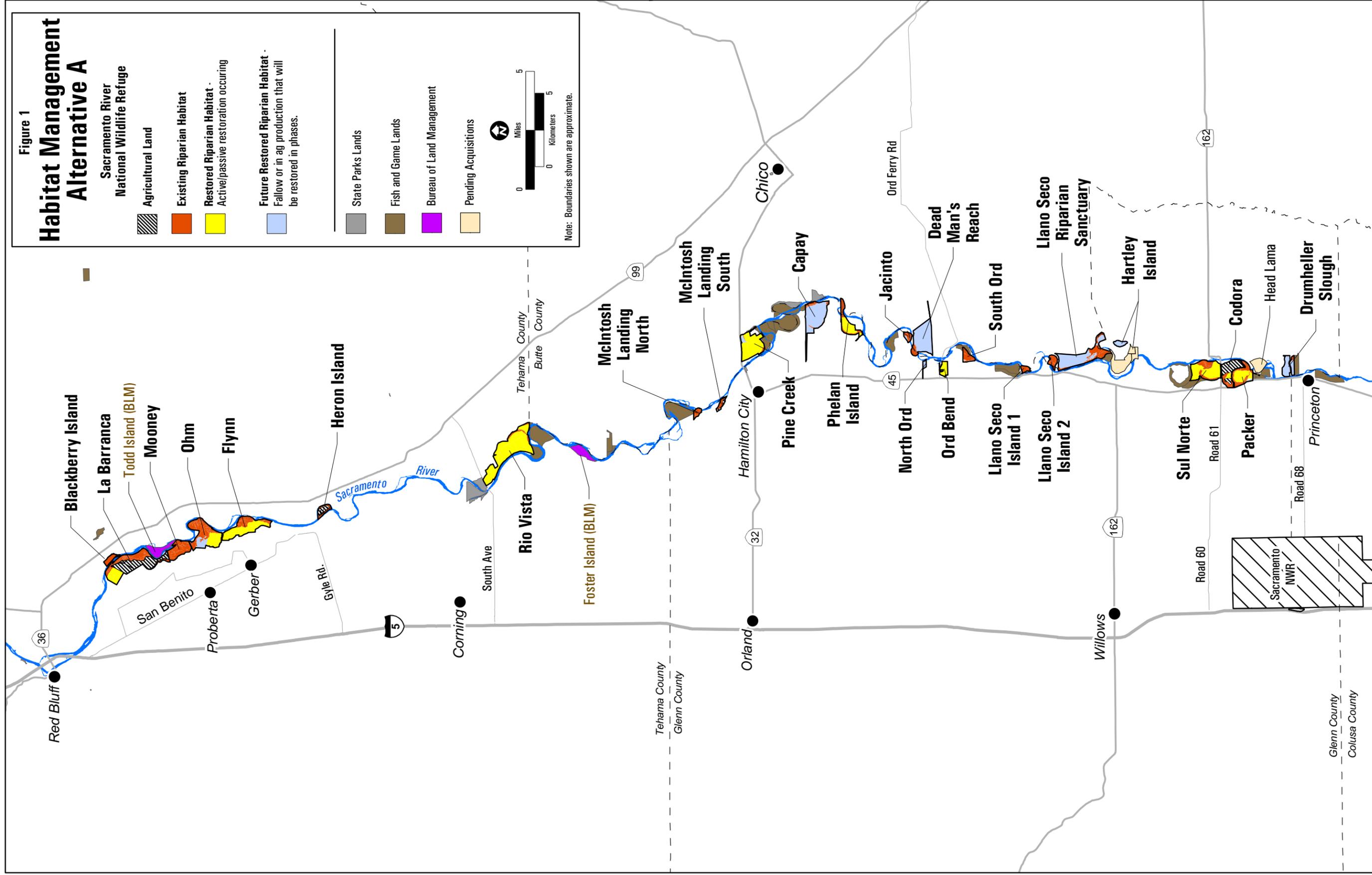
Sacramento River
National Wildlife Refuge

- Agricultural Land
- Existing Riparian Habitat
- Restored Riparian Habitat - Active/passive restoration occurring
- Future Restored Riparian Habitat - Fallow or in ag production that will be restored in phases.

- State Parks Lands
- Fish and Game Lands
- Bureau of Land Management
- Pending Acquisitions



Note: Boundaries shown are approximate.



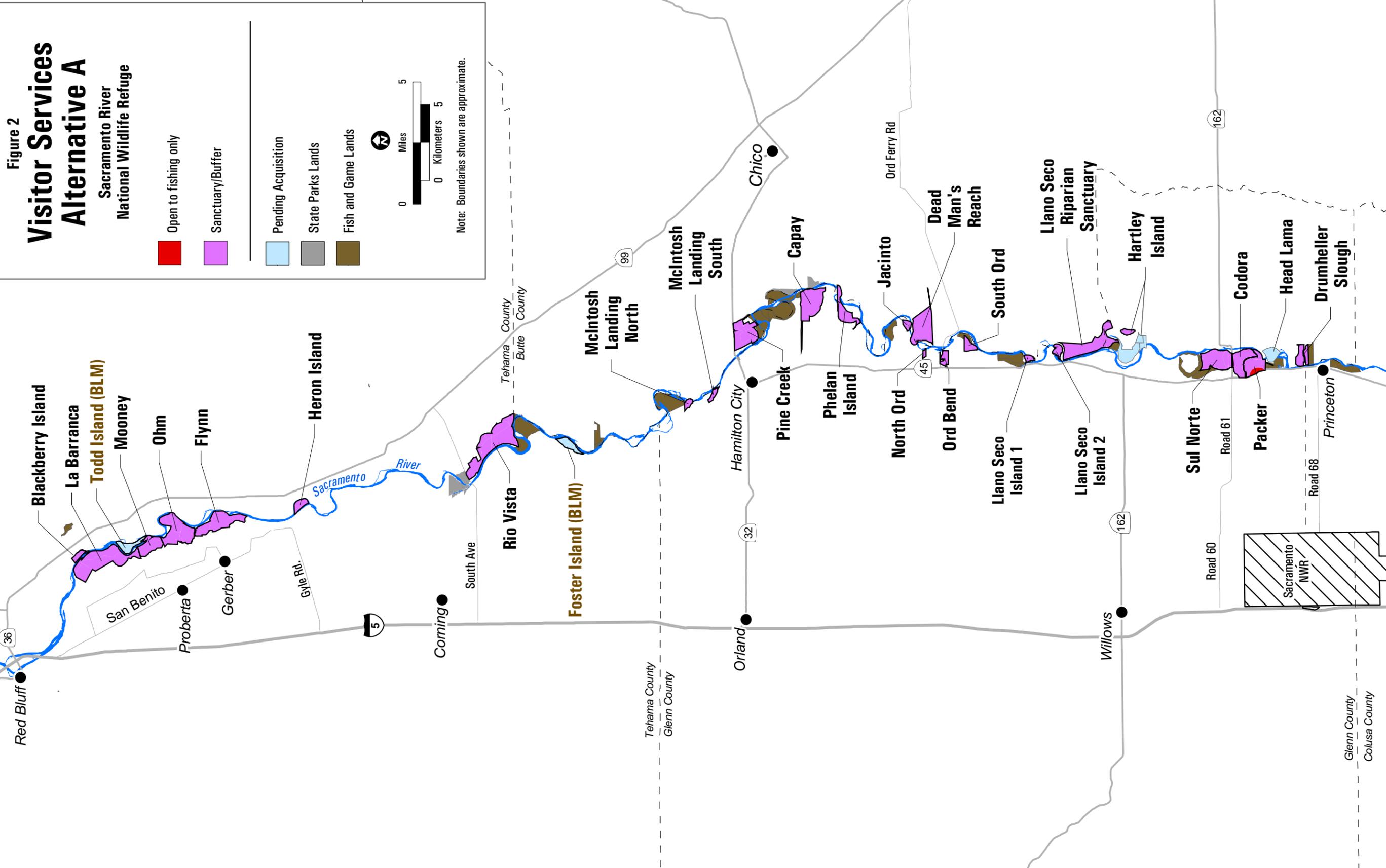
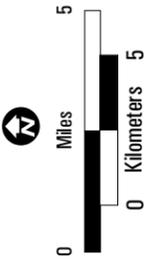


Figure 2
Visitor Services
Alternative A

Sacramento River
 National Wildlife Refuge

- Open to fishing only
- Sanctuary/Buffer
- Pending Acquisition
- State Parks Lands
- Fish and Game Lands



Note: Boundaries shown are approximate.

Tehama County
 Butte County

Tehama County
 Glenn County

Glenn County
 Colusa County

Sacramento
 NWR

Figure 3
Habitat Management
Alternative B

Sacramento River
 National Wildlife Refuge

Existing Riparian Habitat
 Restored Riparian Habitat - Active/passive restoration occurring
 Future Restored Riparian Habitat - Fallow or in ag production that will be restored in phases.

State Parks Lands
 Fish and Game Lands
 Bureau of Land Management
 Pending Acquisitions

0 5 Miles
 0 5 Kilometers

Note: Boundaries shown are approximate.

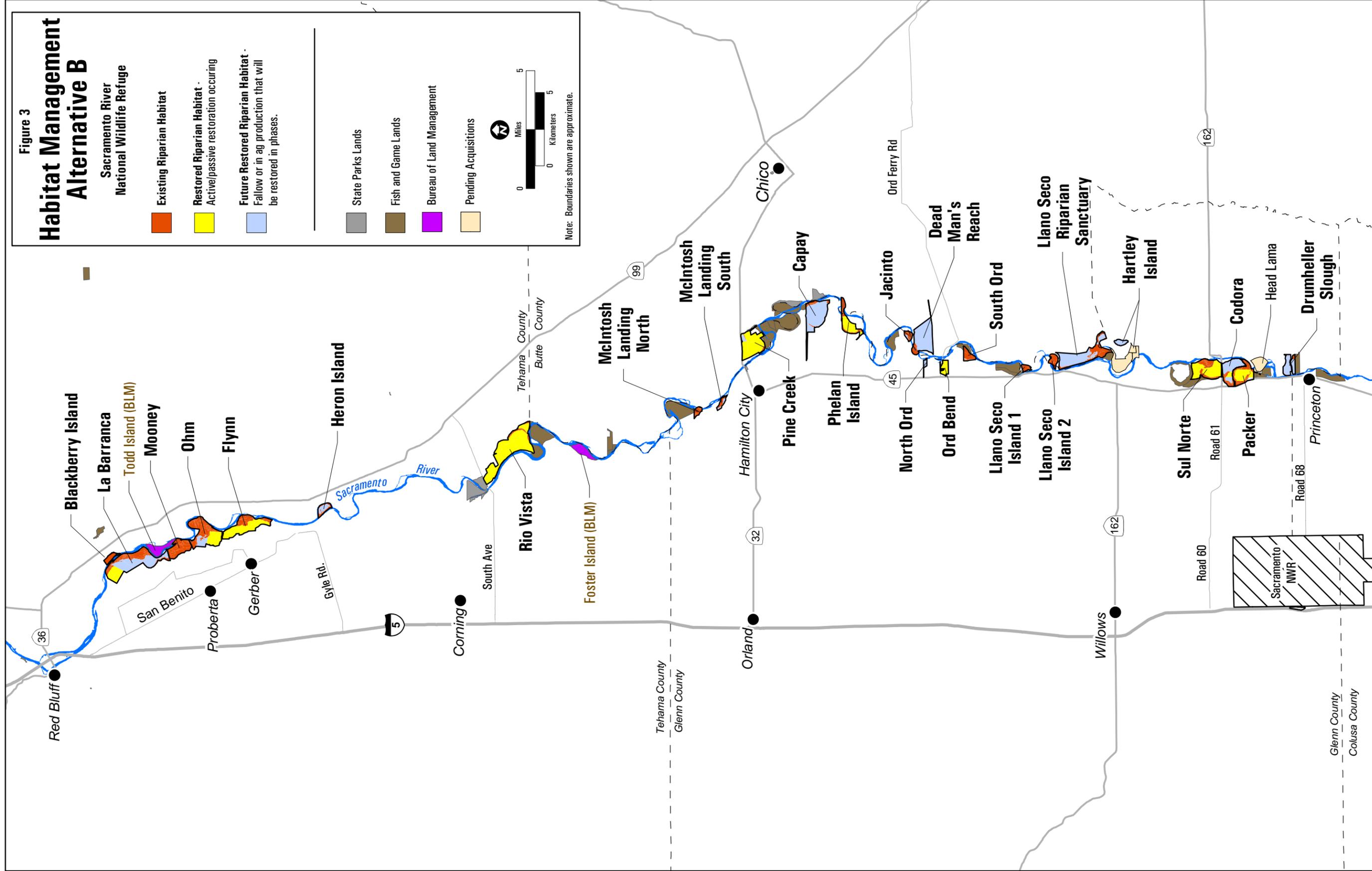


Figure 4
Visitor Services
Alternative B
 Sacramento River
 National Wildlife Refuge

All Priority Uses (Big 6)
 Open to hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

Limited Priority Uses (Big 5)
 Open to fishing, wildlife observation, photography, environmental education, and interpretation.

Sanctuary / Buffer

Pending Acquisition
 State Parks Lands
 Fish and Game Lands

0 5 Miles
 0 5 Kilometers

Note: Boundaries shown are approximate.

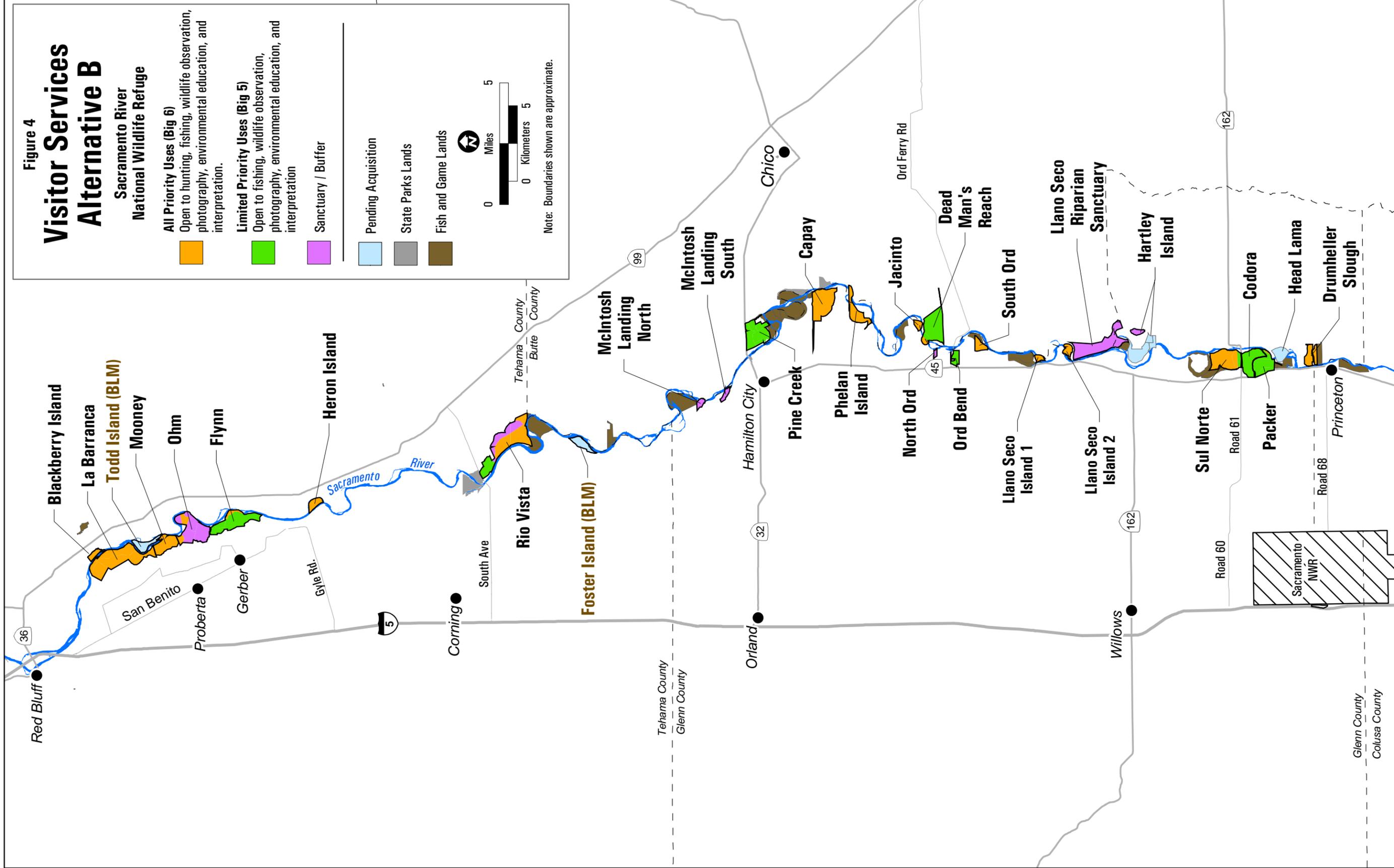


Figure 5
Habitat Management
Alternative C

Sacramento River
 National Wildlife Refuge

Existing Riparian Habitat

Restored Riparian Habitat -
 Active/passive restoration occurring

Future Restored Riparian Habitat -
 Fallow or in ag production that will
 be restored in phases.

State Parks Lands

Fish and Game Lands

Bureau of Land Management

Pending Acquisitions

0 5
 Miles
 0 5
 Kilometers

Note: Boundaries shown are approximate.

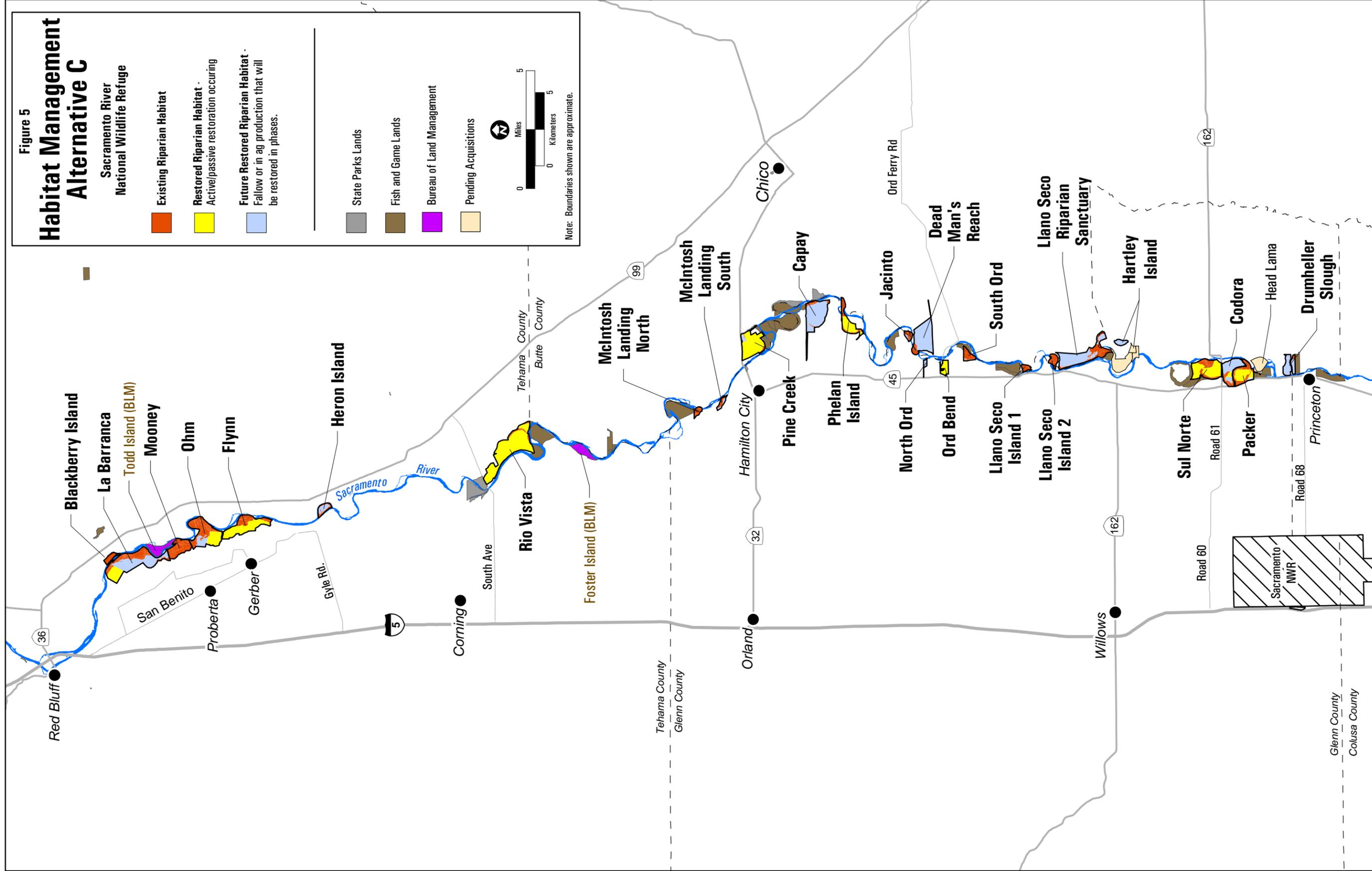


Figure 6
Visitor Services
Alternative C
 Sacramento River
 National Wildlife Refuge

All Priority Uses (Big 6)
 Open to hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

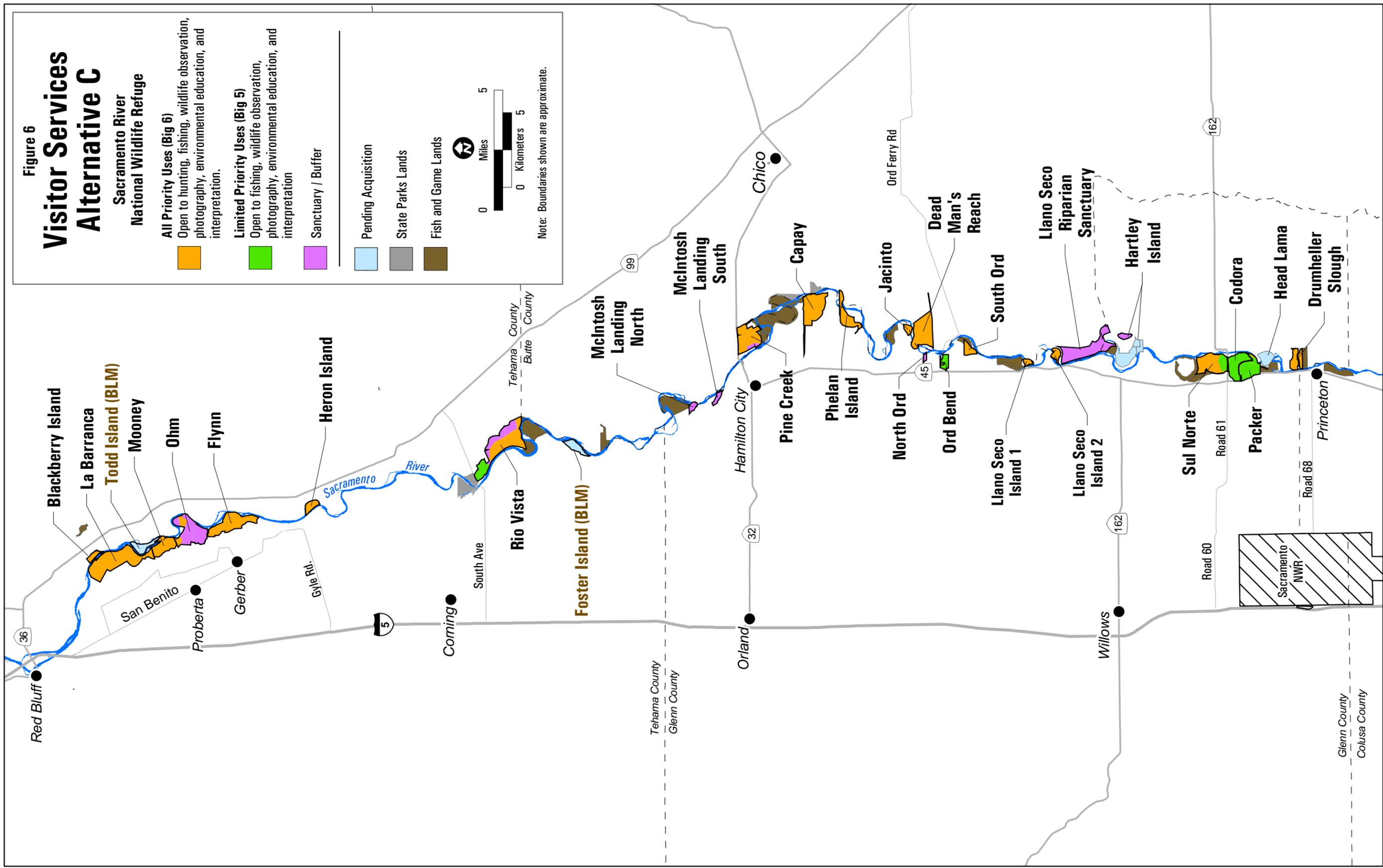
Limited Priority Uses (Big 5)
 Open to fishing, wildlife observation, photography, environmental education, and interpretation.

Sanctuary / Buffer

Pending Acquisition
 State Parks Lands
 Fish and Game Lands

0 5 Miles
 0 5 Kilometers

Note: Boundaries shown are approximate.



Chapter 3. Affected Environment

This chapter briefly outlines the physical, biological, social, and economic environment that would most likely be affected by the alternatives. See Chapter 3 of the CCP for a more detailed description.

Physical Environment

Chapter 3 of the CCP provides a detailed description of the physical environment.

Biological Environment

Chapter 3 of the CCP provides a detailed description of the biological environment.

Social and Economic Environment

Chapter 3 of the CCP provides a detailed description of the Social and Economic environment.

It is important to note “that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment” (40 CFR 1508.14). In assessing the physical and biological effects of changing land use on certain pieces of land, the EA has appropriately addressed the interrelated potential social and economic impacts.

Employment

The employment base of the agricultural heartland is diversifying in Colusa, Glenn, and Tehama counties, but real wages are decreasing in almost every sector (Collaborative Economics for New Valley Connexions 2001).

The following is an excerpt from *The State of the Great Central Valley of California – Assessing the Region via Indicators* (Munroe and Jackman 1999).

“Unemployment rates have persistently been higher in the Central Valley than in the state, typically by at least 3 percentage points. This is mainly attributable to the Central Valley’s large share of jobs in agriculture, construction, and other sectors that have marked seasonal fluctuations.

In 1997, the Central Valley unemployment rate rose to almost 4 percentage points above the State’s. The main reason for this was that the rate of job growth in the state in the period 1996-1997 was almost twice that of the Central Valley.

Unemployment rates in the Sacramento Region are markedly lower than in the San Joaquin Region and North Valley and are even decidedly lower than those of the state.”

Local Economy

Agriculture is the dominant economic enterprise in the northern Sacramento Valley. The diversity of crops grown in the Sacramento Valley reflects the diversity of soils, climate, cultural and economic factors. Butte County’s major crops include rice, almonds, prunes, and walnuts; Glenn County’s include rice, almonds, prunes, alfalfa, and corn; Tehama County’s include prunes, walnuts, olives, and pasture; and Colusa County’s include rice, tomatoes, and almonds. Areas in proximity to the river mainly support tree crops. Countywide agricultural production values are \$291.3 million for Butte; \$280.9 million for Glenn; \$110.7 million for Tehama; and \$346 million for Colusa (California Department of Finance 2000).

As diverse as the crops they grow, these four counties also vary greatly in their demographics. Butte County has a population of more than 205,400 (year 2000), with the largest employment sectors being trade, services, and state/local government. Agriculture employs 3,000 people in Butte County. Glenn County has a population of 26,900, with State/local government as its largest employment sector, and agriculture its second (employing 1,520 people). Tehama County’s population is 56,700, and its major employment sectors are trade services and State/local government. Agriculture employs 1,440 people in Tehama County. Colusa County has a population of 19,150, with agriculture as its largest employment sector (employing about 2,540 people), and State/local government its second.

Land Use and Zoning

The Refuge is bordered by private lands, as well as Federal and State owned public lands. Private lands are mostly agricultural land (orchards, row crops, rice), with some private duck-hunting clubs, farmsteads, businesses, trailer parks, and isolated homes.

Each of the four counties in which the Refuge acquisition boundary is located has its own General Plan that outlines land use policies. The portions of Butte, Glenn, Tehama, and Colusa Counties’ General Plans that relate to Refuge management are summarized in Appendix M.

Demographics

Until recently, demographic data had not been analyzed to depict the profile of potential visitors to the Sacramento River Refuge by county. In January 2002, TNC facilitated The Sacramento River Public Recreation Access Study (EDAW 2003). The primary purpose of the study was to “...assess existing and potential public recreation uses, access, needs, and opportunities along the Sacramento River between Red Bluff and Colusa.” The goals of the study were to 1) identify and characterize existing public access opportunities and needs associated with public recreation facilities and infrastructure... 2) and to identify and make recommendations for future public recreation access opportunities and

management programs...” The study areas were developed so that data would be meaningful and useful to the partners that are developing management plans.

The tables that are the most applicable to the CCP are included in Appendix N. Two study areas are portrayed (EDAW Table 4.1-1): 1) the local study area comprising Tehama, Butte, Glenn, and Colusa counties and 2) the regional study area encompassing 20 adjacent counties where there is reasonable likelihood of recreational visitation.

EDAW Tables 4.1-3,-4,-5 and-6 (Appendix N) depict a profile of the potential local refuge visitor as predominately Caucasian, 31-50 years of age, some college education/trade school education with a household income under \$20,000 to \$40,000 (median income \$31-35,000). The current population in the local four counties is expected to grow by 55 percent, in contrast to the adjacent 20 counties, which are expected to grow by 25 percent (Appendix N EDAW Table 4.1-2). There is a significant Hispanic population, including one-half of the residents of Colusa County, and about one-third of the residents of Glenn County. The local area residents tended to have lower household income brackets than their regional counterparts.

The U.S. Department of Housing and Urban Development (HUD) defines low income as 80% of the median family income for the area, subject to adjustment for areas with unusually high or low incomes or housing costs. The 1999 estimated median family income was \$31,206 in Tehama County, \$31,924 in Butte County, \$32,107 in Glenn County, and \$35,062 in Colusa County (California Employment Development Department 2000).

The agricultural sector of the regional economy would be most affected by riparian habitat restoration. The reestablishment of riparian habitat would result in small reductions to agricultural production, local agricultural jobs, and personal income. These changes were analyzed in the Restoration EA in Section 4.4 Effects on the Social and Economic Environment (USFWS 2002). The Service has taken the effects on Prime and Important Farmland into account as it has considered alternatives to the CCP. Alternative B was developed because it would lessen these impacts. No significant positive or negative economic impacts are expected from implementation of the proposed alternative.

The report entitled “Socioeconomic Assessment of Proposed Habitat Restoration within the Riparian Corridor of the Sacramento River Conservation Area” (Jones & Stokes 2003) looked at an estimated 42,543 acres study area to generally define and broadly communicate the economic consequences that may result from the establishment of a riparian corridor along the Sacramento River between Red Bluff and Colusa. This economic analysis focused on evaluating two kinds of effects associated with establishing a riparian corridor along the Sacramento River: changes in regional economic activity and fiscal conditions, and changes in resource costs and benefits. The agricultural sector of the regional economy would be most affected by riparian habitat restoration. The conversion

of 9,390 acres of agricultural land to riparian habitat would result in small reductions to agricultural production, local jobs and personal income. These reductions would be relatively small when taken in the context of the 4-county agricultural economy. County tax revenues would see minor adjustments. The easily quantified benefits of the restoration would be small in comparison to the losses, but the potential for substantial local benefits in the recreation sector and societal benefits from the improvement in habitat conditions in the Sacramento Valley is large. The key to realizing substantial recreation-related benefits would be the expansion of public access and recreation-related facilities along the Sacramento River.

Chapter 4. Environmental Consequences

Chapter 4 analyzes the environmental impacts expected to occur from the implementation of the alternatives as described in Chapter 2. Direct, indirect, and cumulative impacts are described where applicable for each alternative. Alternative A (No Action) is a continuation of management practices that are in place today and serves as a baseline against which Alternatives B and C are compared.

The National Environmental Policy Act (NEPA) requires mitigation measure when the NEPA process detects possible significant impacts to habitats, wildlife, or the human environment. All of the activities proposed under Alternative B are not expected or intended to produce significant levels of environmental impacts that would require mitigation measures. Nevertheless, the CCP contains measures that would preclude significant environmental impacts from occurring. The Service is proposing mitigation measures in an effort to avoid having CCP implementation result in significant adverse effects. Regarding the suggestion that mitigation measures trigger preparation of an EIS, it is important to note that an agency may support a conclusion of less than significant effects by showing that mitigation measures will significantly compensate for a proposed action's adverse environmental impacts (Friends of Endangered Species v. Jantzen, 760 F.2d 976, 987 (9th Cir. 1985)).

In describing the significance of impacts, the Service defers to NEPA Implementing Regulations at 40 CFR 1508.27.

"Significantly" as used in NEPA requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. “

Significance of impacts to the human environment determines whether preparation of an EIS is warranted. Thus, an EA provides a discussion of the magnitude of the impacts within the context of the situation for each impact topic.

Effects on the Physical Environment

Soils

Under all alternatives, soils that are considered to be prime and important farmland would be taken out of agricultural production. Because these lands are subject to regular flooding and erosive forces, they require reoccurring maintenance to repair damage caused by flooding. As a result, these farmlands have inconsistent production and require expensive long-term maintenance. The loss of farmland and agricultural production is mitigated through continued agricultural leases administered through Cooperative Land Management Agreements (CLMA) with private, nonprofit conservation groups. The CLMAs allow the land to be leased to private farmers who, in turn, continue farming the land until the orchards and farmlands become agriculturally unproductive through attrition, are damaged to a degree that repair is not economically feasible, or restoration funding to allow their conversion becomes available.

Under all alternatives, several site preparation activities would be conducted to prepare the Refuge units for habitat restoration. Some of these activities, such as orchard removal, infrastructure removal, and light land grading, would involve soil disturbance and may temporarily increase erosion and sedimentation rates in the project area.

The overall effect on soils from implementation of Alternatives A and B is negligible. The surface erosion potential is low, and because these activities would be conducted in small increments, any temporary increase in erosion and sedimentation rates resulting from the project would likely be minor. Moreover, any temporary increase in erosion and sedimentation rates resulting from site preparation activities under alternatives A and B would be offset by the substantial long-term reduction in erosion and sedimentation rates that would result from taking the Refuge units out of agricultural production and restoring them to native riparian habitat. Under Alternative C, large scale orchard removal could pose a temporary erosion hazard resulting in a negative effect on soils.

Standard habitat management activities, including mowing, discing, tilling, herbicide/pesticide application, fire, grazing, and irrigation may have some effect on soils. In particular, Service-approved herbicides would be used with all alternatives including both restoration and farming applications. The use of herbicides and pesticides is highly regulated through the Service's Pesticide Use Proposal (PUP) process. This approach notes environmental hazards, efficacy, costs, and vulnerability of the pest. In addition, the highly regulated Integrated Pest Management process results in minimizing the use of herbicide/pesticides and subsequently, leads to minor effects on soils.

Pesticides for the farming program have been approved with varying restrictions and may be used in the management of orchards in Alternatives A and B. Under Alternative A, approximately 1,100 acres would remain in agricultural production and there would be continued use of pesticides, resulting in a long-term negative impact. Long-term pesticide and herbicide applications would be reduced or eliminated under both Alternatives B and

C, leading to a positive or negligible effect on soils.

Geology and Hydrology

All proposed alternatives would convert relatively open agricultural fields and orchards to riparian vegetation; the conversion could cause changes in the velocity of flood flows that inundate the re-vegetated areas. Potential changes in water surface elevations were evaluated in hydrologic models created by Ayres Associates (2001b) to assess the potential effects of converting agricultural land to riparian habitat on 9 units of the Refuge under the Restoration EA (USFWS 2002b). The engineering parameters used in the study found water surface elevations upstream and within the river reaches confined by the Sacramento River Flood Control Project to be flood neutral throughout the area used as a model, as a result of the proposed restoration activities. Any future restoration plans outside of these 9 units (Alternatives B & C) would be evaluated on an individual basis to assure that restoration projects would have a neutral affect on water surface elevations and no adverse effects to adjacent properties.

As agricultural operations cease and Refuge lands are restored to riparian habitat, the need for flood protection of these properties is reduced. By restoring the floodplain hydrology on Refuge lands, flooding on neighboring agricultural operations may be reduced.

Erosion and deposition would not be expected to change substantially as a result of the proposed alternatives. The conversion of properties from managed agricultural production to a more natural riparian condition is considered beneficial for reducing the direct and indirect adverse effects of erosion and sediment deposition in the river. The area in which the river can naturally erode and deposit would be increased in all alternatives, reducing the stress on those areas that have ongoing structural flood and bank stabilization activities or that could require such measures in the future. The Service recognizes the need to protect the integrity of the system of levees, weirs, diversions, and overflow areas for the purpose of public safety and agricultural operations. Bank protection is an ongoing aspect of the Sacramento River Flood Control Project for the purpose of public safety and economic considerations. Habitat protection and restoration programs would have minimal influence on the direction of bank stabilization projects.

Mitigation Measure 1: Coordinate Site-Specific Restoration Plans with the Reclamation Board. Copies of detailed restoration plans/planting designs would be provided to the staff at the State Reclamation Board for review and comment. The specific comments from the Reclamation Board staff would be evaluated and incorporated into the localized plans.

Air Quality

All alternatives would have temporary increases in dust and tailpipe emissions due to restoration work. Alternatives B and C would have long-term minor increases in tailpipe and fugitive dust emissions due to increased visitor trips (estimated to be 5,000 annually) and the construction of parking lots, but would have an overall positive effect on air

quality with the implementation of full restoration over time. The potential for wind blown erosion under Alternative C may result in a temporary negative affect on air quality. Alternative A would have long-term minor impacts to air quality associated with the continuation of the agricultural practices such as orchard management, but would result in minor improvement to air quality over time as the restoration identified in the Restoration EA (USFWS 2002b) is implemented.

All alternatives would use limited prescribed fire to control nonnative weeds which may temporarily impact air quality. Burning vegetation could temporarily and substantially increase PM10 concentrations in the areas. However, adverse impacts from prescribed fire are expected to be less than significant for the following reasons. Prior to conducting a burn, the Service would develop a prescribed burn plan and obtain a burn permit from the appropriate Air Quality Management District. The Service would follow all conditions of the permit. Measures to avoid and/or minimize adverse effects would include close coordination with the appropriate Air Quality Management District; selection of a proper burn prescription and cessation of burn activities when conditions exceed predetermined prescription levels; and the use of firebreaks (cut line, existing roads) around burn units to minimize any potential for wildfire. Prescribed fire impacts are mitigated by small burn unit size, direction of winds, and distance from population centers. See Fire Management Plan for more detailed information (Appendix E). Interpretive programs, explaining the prescribed burning program, will also be conducted on and off the Refuge.

Water Quality/Contaminants

Land-disturbing construction activities would occur in all alternatives, but would have minimal impacts on water quality under Alternatives A and B because restoration efforts would primarily involve planting operations entailing minimal tillage or grading. Under Alternative C, the immediate removal of all orchards could have a temporary negative impact on water quality resulting from possible soil erosion into the Sacramento River. However, under this alternative, all agricultural-related pesticides would be eliminated immediately.

To prevent groundwater contamination, the Refuge would identify and protect wells expected to be exposed to inundation, or would abandon and seal the wells according to county specifications under each of the alternatives.

All herbicides approved by the Service through the PUP process would be applied at label rates and all label recommendations would be followed. All three alternatives would result in an overall long-term reduction in pesticide applications within the Sacramento River floodplain. In the context of the overall input of chemicals from agricultural activities (acres of land and pounds of chemicals) within the Sacramento River floodplain, the long-term reduction in pesticide applications resulting from refuge actions represents a minor improvement.

Restoration activities would involve large earthmoving equipment that could result in the introduction of various contaminants, such as fuel oils, grease, and other petroleum products, either directly from equipment or through surface runoff. Contaminants may be toxic to fish or adversely affect their respiration and feeding. With the implementation of avoidance measures described below, no adverse effects on fish are expected to occur.

Mitigation Measure 2: Implement Best Management Practices to Avoid Reduction in Water Quality. Best management practices (BMPs) could include a variety of sediment control measures such as silt fences, straw or rice bale barriers, brush or rock filters, sediment traps, fiber rolls, or other similar linear barriers that can be placed at the edge of the project area to prevent sediment from flowing off site. The exact location and placement of the various sediment control BMPs would be determined by the refuge manager.

The Refuge would establish a spill-prevention and countermeasure plan before project construction begins; this plan would include on-site handling criteria to avoid input of contaminants to the waterway. A staging, washing, and storage area would be provided away from the waterway for equipment, construction materials, fuels, lubricants, solvents, and other possible contaminants.

Over time, all of the alternatives are expected to result in positive effects on water quality on the Sacramento River. As the Refuge restores riparian habitat and agricultural operations cease, the need for flood protection of these properties is reduced. Restoring the floodplain hydrology (topography) on Refuge lands may also reduce flooding on neighboring agricultural operations. Sediment and contaminant levels could also be reduced. These effects, although beneficial, are not significant. The Sacramento River is the largest river in California, starting near Mount Shasta and flowing 382 miles to the north arm of the San Francisco Bay. The Refuge encompasses only a small portion of this river and thus its effects are not significant.

Effects on the Biological Environment

Vegetation

None of the alternatives would have adverse effects on special-status plants or sensitive natural communities due to restoration activities. No restoration activities are proposed within existing natural areas; such activity would be limited to existing fallow or agricultural areas (orchards and pastures). Special-status plants and sensitive natural communities (e.g. valley oak woodland and elderberry savanna) would benefit from implementation of all alternatives, which would increase the acreage of forest, scrub, savannah, grassland, and wetland communities throughout the Refuge. Existing riparian forest, grassland, and wetland communities would be protected and their habitat area expanded. Alternatives B and C would have greater long-term positive effects on vegetation than Alternative A, due to the increased acreage that would be restored. But, because Alternative C would require immediate removal of all orchards, the resulting

fallow fields would soon likely be invaded by nonnative weed species and in turn become a troublesome source of nonnative weed species.

All alternatives would utilize herbicides for weed maintenance in existing riparian areas and in restoration sites, and Alternatives A and B would also utilize herbicides for weed maintenance in orchards. Trained applicators would apply herbicides following manufacturers' recommendations and in accordance with the Refuge's approved PUPs. Use of herbicides would have a positive effect on vegetation, since the control of nonnative weeds would result in an increase in native species with minimal environmental cost.

Alternatives B and C would have small, but dispersed, impacts on some vegetated areas due to increased public use. Areas with special-status plants and sensitive natural communities would be avoided in the placement of trails, parking lots, and other public use facilities. Foot traffic would likely increase in areas that are most easily traversed, such as gravel bar, riparian willow scrub, herbland, grassland, valley oak and elderberry savanna. The small amount of trampling that would result from public use activities would have temporary and small-scale impacts on vegetation.

The riparian restoration in Alternatives B and C would have beneficial long-term impacts on the Refuge. Approximately 2,372 acres of land on nine existing units within the Refuge will be planted or allowed to revegetate with native vegetation under Alternative A (No Action) based on the Restoration EA (USFWS 2002b). The additional 3,255 acres that would be restored under Alternatives B and C would have additional beneficial effects. Habitat restoration fulfills the Service's congressional mandate to preserve, restore, and enhance riparian habitat for threatened and endangered species, songbirds, waterfowl, other migratory birds, anadromous fish, resident riparian wildlife, and plants. However, the Refuge encompasses only a small portion of the 382 mile long Sacramento River and the Refuge is only one of many partners who have the goal to restore habitat along the river. In the context of the large amount of habitat lost along the Sacramento River compared to the amount of habitat that would be restored by Alternatives B and C, the beneficial effects are not significant.

Wildlife Resources

All alternatives would result in short-term and long-term benefits for wildlife species due to the restoration of riparian habitat. Alternatives B and C would provide more restored riparian habitat than Alternative A, and would therefore have greater positive effects for wildlife. As with the effects of riparian restoration (above paragraph), the beneficial effects of Alternative B and C are also not significant for wildlife for many of the same reasons.

Increased public use under Alternatives B and C would result in disturbance to wildlife. Alternative C would have a slightly greater effect because it allows for more public access than Alternative B. Due to the inaccessible "jungle-like" nature of a mature riparian forest; disturbance would be limited to those habitats that are more open to foot travel.

These areas already receive some unpermitted public use. With the implementation of Alternatives B and C, there would also be increased public education, trails and signage, and law enforcement, all of which would help to alleviate the degree of disturbance.

Special Status Species

Bank swallow

Indirect adverse effects on bank swallows are not likely to result from the conversion of agricultural habitats to riparian forest. Public use (Alternatives B & C) would be limited or prohibited in areas with active bank swallow colonies.

Valley elderberry longhorn beetle (VELB)

All alternatives are not likely to adversely affect VELBs. Every effort would be made to incorporate existing shrubs in agricultural habitats into the restoration plans, although an occasional shrub may be affected. This effect would be infrequent and offset by the substantial increase in VELB habitat created by restoration activities. If there is a situation in which a shrub cannot be saved, the Refuge has the appropriate permits allowing the “take” of up to 10 plants per year that have main stems one inch or more in diameter. The Refuge would be required to consult with the Service if individual shrubs must be removed.

Mitigation Measure 3: Translocate removed elderberry shrubs to base of mature elderberry shrubs nearby at the Refuge. If there is a situation in any of the Alternatives where an elderberry shrub cannot be saved this mitigation measure would be applied. This allows emerging VELB the opportunity to populate existing elderberry shrubs.

Alternatives B and C may have negative impacts on elderberry shrubs if persons knowingly or unknowingly harvest the plants. Refuge law enforcement officers have found evidence of elderberry harvesting on the Refuge. Public education efforts and increased law enforcement should help to decrease the potential for negative impacts to VELB and associated habitats.

Adjacent landowners have expressed concerns that planting elderberry shrubs near their properties could lead to the spread of VELB onto their properties, with resulting special-status species issues. In response to these concerns, all restoration plans would leave a 100-foot-wide corridor along the inside of the refuge perimeter in which no elderberry shrubs would be planted, reducing the likelihood that VELB would colonize elderberry shrubs on adjacent properties.

Giant garter snake (GGS)

All alternatives could adversely affect the GGS if restoration activities were to occur in potential GGS habitat. The following measures would be taken to protect GGS and its habitat when threatened by restoration activities:

Mitigation Measure 4: Avoid Giant Garter Snake Habitat by Restricting Location and Timing of Project Activities. If project activities take place within 200 feet of potential habitat between April 1 and October 1, surveys would be conducted immediately prior to ground disturbance. No ground-disturbing activities would occur within 200 feet of potential habitat from October 1 through April 1 without consulting with Service Endangered Species Division staff.

Increased public use due to implementation of Alternatives B and C are unlikely to cause any adverse effects on GGS. Giant garter snakes are associated with permanent wetlands, low gradient streams and drainage and irrigation systems. It is unlikely that wildlife-dependant public use activities (hunting, fishing, wildlife observation and photography, environmental education and interpretation) will affect this species in these habitats.

Other Special Status Wildlife Species

All alternatives would result in short-term and long-term benefits for special status wildlife species due to restoration of riparian habitat, such as Bell's vireo, willow flycatcher, western yellow-billed cuckoo, and bald eagle. Since most of these species have declined due to loss of riparian habitats, the restoration of these habitats would benefit these species. Some species may be adversely affected by restoration activities. The conversion of fallow fields or low-growing agricultural crops into riparian habitats would reduce the amount of potential foraging habitat for Swainson's hawks and other raptor species. However, many restoration plans include areas of open native grassland, elderberry savannah, and Valley oak savannah, all of which provide excellent quality foraging habitat for raptor species. In addition, the types and quality of foraging habitat provided by fallow fields and low-growing agricultural crops are common in the region, and as a result, foraging habitat loss for Swainson's hawks is not considered substantial.

Alternatives B and C would provide greater positive effects for special status wildlife species than Alternative A, since more acreage would be restored to riparian habitat. However, the beneficial short and long-term effects on wildlife would not be significant. The Refuge would only be able to provide habitat for a limited number of special status wildlife species. While this would be a benefit, it would probably not be enough to restore their populations. The Refuge's contribution, therefore, is only part of what maybe required for their continued long-term survival.

The implementation of Alternatives B and C could create some disturbance to special status species due to increased public use. To alleviate any negative effects, areas that are known to have sensitive species would have restricted public access and may have temporary closures instituted for protection during critical lifecycle periods such as nesting.

Fisheries Resources

The implementation of riparian restoration in all alternatives would result in long-term beneficial effects on fish in the Sacramento River, including winter/spring run Chinook salmon, steelhead, and Sacramento splittail. The resulting riparian habitats would provide shaded riverine aquatic habitat and large woody debris, increasing cover, food, and other main channel and floodplain habitat components for fish. Alternatives B and C would provide more restored riparian habitat, having a greater positive effect for fish than Alternative A. These effects, although beneficial, are not significant. The loss of riparian habitat on the Sacramento River has contributed, in part, to the decline of our native fisheries resources. The Refuge encompasses only a small portion of the Sacramento River, therefore, is only part of what maybe required for the continued long-term survival of our fisheries resources.

Temporary impacts on fish species could occur during restoration implementation due to loosening of the soil during orchard removal, and grading and placement of irrigation systems, resulting in a temporary increase sediment load in the river. Increased input of sediment has the potential to increase turbidity, possibly reducing the feeding efficiency of juvenile and adult fish. Alternative C would have greater potential sediment impacts due to the large amount of acreage that would undergo orchard removal and then remain fallow. Because the Sacramento River is typically a turbid system, additional sediment input from restoration activity would be comparatively minimal and would not have any noticeable effect to the overall condition of the river. Furthermore, sediment runoff from restoration sites would occur only during storm events. After the first germinating fall/winter rains, grasses and forbs will provide ground cover which stabilizes top soil.

Alternatives B and C would allow fishing at the Refuge, but are not expected to significantly affect fish harvest since most areas along the river are accessible by boat only and are already being fished.

Effects on the Social and Economic Environment

Visitor Services

Implementing Alternative A would result in a very limited public use program, which would include a limited volunteer program that would assist in habitat restoration projects and a limited number of tours and school field trips. Only the primitive public fishing access road and boat launch at Packer Lake would be maintained. There would be no additional public use facilities developed and very limited outreach efforts for environmental education.

Under Alternatives B and C there would be an increased promotion of the Refuge with schools, the development of an educator-led curriculum for Refuge resources, and additional refuge signs, trails, restrooms, and parking lots. Visitation may increase to approximately 5,500 total annual visits. The number of visits may increase over time. The public would be allowed daytime access (one hour before sunrise to one hour after sunset)

to much of the Refuge land, excluding gravel bars, for hunting, fishing, wildlife observation, photography, interpretation, and environmental education.

Although public use opportunities would substantially increase under Alternatives B and C, user conflicts may occur under the implementation of Alternative C. More contact between hunters and other visitors may lead to increased competition for recreation space. There could be more safety concerns involving hunting activities taking place simultaneously with non-hunting public use activities on more units of the Refuge under Alternative C. Long-term monitoring would be conducted to evaluate the impact of the increased public uses on the Refuge and other users in an effort to avoid adverse impacts to the recreating public.

Alternatives B and C provide the need for additional visitor opportunities which was identified and discussed in the Sacramento River Public Recreation Access Study (EDAW 2003). The increase of public use in Alternatives B and C, compared to Alternative A, is substantial, but not significant. Although public use will be allowed on the Refuge, the proposed action (Alternative B) balances these public uses with the mission of the Service and the purposes of the Refuge. Sensitive areas for wildlife, plants and cultural resources have been set aside as sanctuaries (20%) and will be closed to the public. The remaining 80 percent of the Refuge that allows wildlife-dependent public uses have been carefully planned. Compatible locations of trails and facilities including restrooms and parking lots have been chosen to minimize disturbance to wildlife. Areas outside the trails and facilities, will not receive as much visitation or as concentrated visitation due to the thick “jungle” nature of the riparian habitat. To alleviate any negative effects, areas that are known to have sensitive species would have restricted public access and may have temporary closures instituted for protection during critical lifecycle periods such as nesting. With the implementation of Alternatives B and C, there would also be increased public education, trails and signage, and law enforcement, all of which would help to alleviate the degree of disturbance. The overall increase in wildlife-dependent recreational opportunities from Alternative B is not significant and is viewed positively because it is compatible with the purposes of the Refuge, mission of the Service, the National Wildlife Refuge System, and it is also consistent with the Improvement Act.

Economy

No significant positive or negative economic impacts are expected from implementation of the alternatives. The agricultural sector of the regional economy would be most affected by riparian habitat restoration. The reestablishment of riparian habitat would result in small reductions to agricultural production, local agricultural jobs, and personal income. These changes were analyzed in the Restoration EA in Section 4.4 Effects on the Social and Economic Environment (USFWS 2002b). The Service has taken the effects on Prime and Important Farmland into account as it has considered alternatives to the CCP. Alternative B was developed because it would lessen these impacts.

During the process of identifying appropriate land to purchase and dedicate to restoration for the benefit of wildlife, the Service considered that the land along the river is subject to periodic inundation and therefore of lesser agricultural value than surrounding land. Willing sellers were sought so that the impact on lands with long-term value for crop production would be minimized. Because the lands to be converted are subject to flooding, and because of the importance of these lands to the recovery of federally protected species, the Service believes that converting these agricultural lands to habitat is appropriate. More than 90% of the riparian habitat that once existed along the Sacramento River has been lost to agriculture and urban development. When the size of the acreage converted is considered in the context of the four-county agricultural base, the conversion of this flood-prone farmland to habitat does not reach the level that would result in a significant impact on the human environment (USFWS 2002b). Additional economic information is included in the CCP, Chapter 3.

Alternatives B and C would substantially increase wildlife-dependent recreation opportunities on the Refuge and would result in some increased economic activity to the local area. *Banking on Nature*, a report by the USFWS (2003a), reports that recreational visits to national wildlife refuges generate substantial economic activity. In FY 2002, people visited refuges more than 35.5 million times for recreation and environmental education. Their spending generated \$809.2 million of sales in regional economies. As this spending flowed through the economy, nearly 19,000 people were employed and \$315.2 million in employment income was generated. In some areas, refuge visitors are major stimuli to the local economy. Non-consumptive use of wildlife at refuges generated about 30 percent more economic activity than hunting and fishing. Although non-consumptive wildlife users usually stay for shorter periods of time, their numbers at many refuges far exceed those of hunters and anglers. Surveys show refuge visitors would have been willing to pay more for their visit than it actually cost them. The difference between what they were willing to pay and what they actually paid is their net economic value or consumer surplus. Visitors enjoyed a consumer surplus of more than \$792 million in FY 2002. Over \$497 million of this amount accrued to non-consumptive visitors.

More information on the economic impacts of wildlife watching can be found in the report entitled “2001 National and State Economics of Wildlife Watching” (USFWS 2003b). Observing, feeding, and photographing wildlife in the United States is an important pastime for millions of Americans and contributes significantly to the national and state economies. In 2001, more than 66 million people 16 years of age and older spent over \$38.4 billion on trips and equipment in pursuit of these activities. Wildlife-watching expenditures have contributed substantially to Federal and state tax revenues (\$6.1 billion), jobs, earnings (1,027,833 jobs), and industry output (\$95.8 billion).

It is anticipated that there could be increased employment and spending in the local area for materials, services and contracts related to wildlife dependent recreation. The increase in public use could help to offset the local losses from the agricultural economy, but it would not result in a significant effect on the local economy. See Chapter 3 of the

CCP for more information about the local economy.

Cultural Resources

A beneficial effect to cultural resources is anticipated under all alternatives as there are several known cultural resource sites within the Refuge boundary. Under Federal ownership, archaeological and historical resources within the Refuge receive protection under Federal laws mandating the management of cultural resources, including, but not limited to, the Archaeological Resources Protection Act; the Archaeological and Historic Preservation Act; the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act. Under all alternatives, if any additional cultural resources are discovered on the Refuge, the Service would take all necessary steps to comply with section 106 of the National Historic Preservation Act of 1966, as amended.

The Refuge has been involved in discussions/consultation with local tribes on management issues pertaining to properties with significant archeological resources. These discussions have allowed the Service to make informed management decisions as well as improve relationships with local tribes. The Refuge would continue to engage the appropriate tribes on management decisions related to culturally significant resources and incorporate the historical value in the environmental education program. Additional cultural resource information is included in the CCP, Chapter 3.

Environmental Justice

On February 11, 1994, the President issued Executive Order 12898 (“Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”) requiring that all Federal agencies achieve environmental justice by “identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” Environmental justice is defined as the “fair treatment for peoples of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies.

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. The developing environmental justice strategy of the Service extends this mission by seeking to ensure that all segments of the human population have equal access to America’s fish and wildlife resources, as well as equal access to information that will enable them to participate meaningfully in activities and policy shaping.

Within the spirit and intent of Executive Order 12898, no minority or low income populations would be impacted by any Service action under any Alternative.

Unavoidable Adverse Impacts

None of the alternatives would have unavoidable adverse impacts on the environment.

Irreversible and Irretrievable Commitments of Resources

None of the proposed alternatives would result in an irreversible or irretrievable commitment of resources.

Short-term Uses versus Long-term Productivity

The habitat protection and management program proposed as part of the Refuge System is permanent and exclusively dedicated to maintaining the long-term productivity of the Refuge habitats. The local short-term uses of the environment would include increased management of wildlife habitats and development of public use facilities. The resulting long-term productivity would include increased protection and survival of endangered species as well as a myriad of plant and animal species. Under Alternative B, the public would gain long-term opportunities for wildlife-dependent recreational activities and an enhanced quality of life.

Cumulative Impacts

Cumulative effects (or impacts) are those effects on the environment resulting from incremental consequences of the Service's proposed actions when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes these actions. Cumulative effects can be the result of individually minor impacts which can become significant when added over a period of time. Accurately summarizing cumulative effects is difficult in that while one action increases or improves a resource in an area, other unrelated actions may decrease or degrade that resource in another area.

Within all of the alternatives, the conversion farmlands would contribute to the incremental, cumulative conversion of these land resources to other land uses in Glenn, Butte, Tehama and Colusa counties, as well as in the Sacramento Valley and the state of California as a whole. The cumulative effect of these conditions would be offset by the following conditions. The loss of jobs and income resulting from farmland conversion would be an indirect adverse effect on fiscal resources in the Sacramento Valley and the four subject counties. This effect would be most pronounced following the initial 5-10 year period of conversion and restoration. In the long term, the lost economic benefits of agricultural production could be offset by increased recreation-based income resulting from visitor use of the river and surrounding riparian habitat. In addition, cost savings associated with the reduced extent of flood damage repairs in these counties may offset some of the economic loss. The net effect is not expected to be substantial (USFWS 2002b).

All alternatives would have long-term benefits for native wildlife species and habitats within the area. The protection of wildlife habitats within the Refuge would represent a benefit to the long-term conservation of threatened and endangered species and other native wildlife species. Alternatives B and C would provide greater benefits due to the

increased amount of habitat restoration that would take place. However, these long-term benefits are not cumulatively significant. There are many projects that benefit wildlife and habitats on the Sacramento River. The establishment of the Refuge and restoration that will be accomplished under the Restoration EA (USFWS 2002b) both provide beneficial effects. The Refuge is also, just one of many partners along the river that is restoring habitat for wildlife along the Sacramento River. However, despite all of these beneficial effects there are negative effects that have occurred and continue to occur on this river. The long-term cumulative negative effects of wildlife habitat degradation still outweigh the beneficial effects of the proposed action. The Refuge encompasses only a small portion of the 382 mile long Sacramento River. Moreover, the benefits derived from Alternatives B and C will only restore and protect a small fraction of the amount of habitat that has been lost on this river and within the Central Valley of California.

Table 2. Summary of Environmental Consequences

Resource	Alternative A No Action	Alternative B Optimize	Alternative C Accelerated/Maximize
PHYSICAL ENVIRONMENT			
Soils	Surface erosion potential is low, activities conducted in small increments, long-term reduction in erosion and sedimentation due to restoration	Same as Alternative A	Large scale orchard removal may cause temporary erosion hazards, activities conducted in small increments, long-term reduction in erosion and sedimentation due to restoration
Geology/Hydrology	Restoration sites have neutral effect on water surface elevations (USFWS 2002b)	Coordinate site-specific restoration plans with Reclamation Board to ensure neutral effect on water surface elevations	Same as Alternative B
Air Quality	Long-term minor impacts from agricultural practices, but improved air quality with implementation of restoration	Increased visitor use could increase tailpipe and fugitive dust emissions, but air quality could improve with implementation of restoration	Potential for wind blown erosion, increased visitor use could increase tailpipe and fugitive dust emissions, but air quality could improve with implementation of restoration
Water Quality and Contaminants	Long-term reduction of pesticide applications, Best Management Practices used during restoration	Same as Alternative A	Removal of orchards may result in temporary decrease in water quality due to increased erosion, Agricultural-related pesticides eliminated, Best Management Practices used during restoration
BIOLOGICAL ENVIRONMENT			
Vegetation	Riparian habitat restored under Restoration EA (USFWS 2002b)	Additional acres of riparian habitat restored	Additional acres riparian habitat restored, but immediate removal of orchards could increase nonnative weeds
Wildlife Resources	Wildlife benefits due to restoration of habitat, No increased public use disturbance	Wildlife benefits due to more restored acres, Increased disturbance by public use balanced with public education, trails, signs and law enforcement	Same as Alternative B

Resource	Alternative A No Action	Alternative B Optimize	Alternative C Accelerated/Maximize
Fishery Resources	Long-term benefit to fish	Increased long-term benefit to fish (more acres restored increases habitat components for fish)	Same as Alternative B
Special Status Species	Species benefit due to restoration of habitat	Species benefit even more due to additional acres of habitat restored	Same as Alternative B
SOCIAL AND ECONOMIC ENVIRONMENT			
Visitor Services	Limited public use program	Increased public use opportunities	Increased public use opportunities, user conflicts may occur
Economy	Agricultural sector most affected by incremental riparian habitat restoration	Agricultural sector most affected by incremental riparian habitat restoration, Increased wildlife-dependent opportunities may increase local economy	Same as Alternative B, except effect to agricultural sector will not be incremental and farming will cease immediately
Cultural Resources	Impacts of management activities minimized through reviews and surveys.	Same as Alternative A	Same as Alternative A
Environmental Justice	No minority or low income populations will be disproportionately impacted.	Same as Alternative A	Same as Alternative A

Chapter 5. List of Planning Team Members and Persons Responsible for Preparing this Document

Core Planning Team

Kevin Foerster	Project Leader, Sacramento NWRC
Kelly Moroney	Refuge Manager, Sacramento River NWR
Denise Dachner	Outdoor Recreation Planner, Sacramento NWRC
Joe Silveira	Wildlife Biologist, Sacramento NWRC
Jennifer Isola	Wildlife Biologist, Sacramento NWRC
Mark Pelz	Refuge Planner – GIS Analyst, CA/NV Refuge Planning Office
Jacqueline Ferrier	Refuge Planner, Sacramento NWRC
Miki Fujitsubo	Former CCP Planner, CA/NV Refuge Planning Office
Ramon Vega	Former Refuge Manager, Sacramento River NWR

Expanded Team Members

Paul Hofmann	Wildlife Biologist, California Dept. of Fish and Game
Woody Elliot	Resource Ecologist, California Dept. of Parks and Recreation
Jason Douglas	Sr. Fish and Wildlife Biologist, FWS – Sacramento FWO
Michael Green	Nongame Landbird Coordinator, FWS – Region 1
Randy Jero	USDA -Mendocino National Forest
Teresa Leblanc	Wildlife Biologist, Dept. of Fish and Game, Sacramento, CA
Paul Ward	Fisheries Biologist, California Dept. of Fish and Game
Joel Miller	Asst. Refuge Supervisor, CA/NV Operations Office
Gregg Werner	Conservation Planner, The Nature Conservancy

Reviewers

Leslie Lew	Landscape Architect, CA/NV Refuge Planning Office
Chuck Houghten	Chief, Refuge Planning, Region 1
J. Greg Mensik	Deputy Project Leader, Sacramento NWRC
Michael Wolder	Supervisory Wildlife Biologist, Sacramento NWRC
Dave Paullin	Refuge Supervisor, CA/NV Operations Office
Perry Grissom	Fire Management Officer, Sacramento NWRC
Marilyn Gamette	Interpretive Specialist, Sacramento NWRC
Jeanne Clark	Writer/Editor, Classic Communications

Chapter 6. Consultations and Coordination with Others

Agency Coordination and Public Involvement

The CCP and EA were prepared with the involvement of technical experts, community groups, and private citizens. The Service has invited and continues to encourage public participation through the public involvement program consisting of technical panels and project planning updates.

The public workshops, planning updates, and other coordination activities have been previously discussed in the Issue Identification and Public Involvement sections of Chapter 1 and Appendix J of the CCP.

Notice of Intent

A Notice of Intent (NOI) was published in the Federal Register on June 11, 2001. An extension to the comment period was published in the Federal Register on September 24, 2001.

A Notice of Availability (NOA) was published in the Federal Register on June 29, 2004.

Environmental Review and Coordination

As a Federal agency, the Service must comply with provisions of the NEPA. An environmental assessment was developed under NEPA to evaluate reasonable alternatives that would meet stated objectives and to assess the possible impacts to the human environment. The EA serves as the basis for determining whether implementation of the proposed action would constitute a major Federal action significantly affecting the quality of the human environment.

Other Federal Laws, Regulations, and Executive Orders

In undertaking the proposed action, the Service would comply with the following Federal laws, Executive Orders (EO), and Legislative Acts: Floodplain Management (EEO 11988), Intergovernmental Review of Federal Programs (EO 12372), Protection of Historical Archaeological, and Scientific Properties (EO 11593), Protection of Wetlands (EO 11990), Management of General Public Use of National Wildlife Refuge System (EO 12996), Environmental Justice in Minority Populations and Low-Income Populations (EO 12898), Endangered Species Act of 1973, as amended, Fish and Wildlife Act of 1956, Emergency Wetlands Resources Act of 1986, Refuge Recreation Act as amended, National Wildlife Refuge System Administrative Act of 1966, as amended, National

Historic Preservation Act of 1966, as amended, Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186), Migratory Bird Treaty Act of 1918, the Fish and Wildlife Conservation Act of 1980, as amended, Neotropical Migratory Bird Conservation Act of 2000, and the Coastal Zone Management Act of 1972, as amended. Appendix M of the CCP contains a list of other laws and executive orders that may affect the CCP or the Service's implementation of the CCP. It also contains an overview of policies and plans that are relevant to Sacramento River Refuge.

Distribution and Availability

The draft CCP and EA has been sent to the State of California Clearinghouse, various agencies, organizations, community groups, and individuals for review and comment. Appendix J of the CCP contains a list of individuals and organizations that were notified or were sent a copy of the Draft CCP were sent planning updates or attended scoping meetings.

List of Specific Persons Consulted

Paul Hofmann	California Department of Fish and Game
Paul Ward	California Department of Fish and Game
Teresa Leblanc	California Department of Fish and Game
Steve Owen	California Department of Fish and Game
Woody Elliot	California Department of Parks and Recreation
Michael Fehling	California Department of Parks and Recreation
Stacy Cepello	California Department of Water Resources
Dave Means	Wildlife Conservation Board
Scott Clemons	Wildlife Conservation Board
Bob Shaffer	Bureau of Reclamation
Kelly Williams	Bureau of Land Management
Chuck Schultz	Bureau of Land Management
Greg White	Chico State University - Archaeology
Jim Camy	Butte County Mosquito and Vector Control District
Burt Bundy	Sacramento River Conservation Area Forum
Dawit Zeleke	The Nature Conservancy
Gregg Werner	The Nature Conservancy
John Carlon	River Partners
Bernard Flynn	River Partners
Dan Efseaff	River Partners
John Merz	Sacramento River Preservation Trust
Bill Gaines	California Waterfowl Association
Mark Hennelly	California Waterfowl Association

Appendix 1. Goals, Objectives and Strategies Matrix.

1 Wildlife and Habitat Goal:

Contribute to the recovery of endangered and threatened species and provide a natural diversity and abundance of migratory birds and anadromous fish through the restoration and management of riparian habitats along the Sacramento River using the principles of landscape ecology.

1.1 Riparian Vegetation and Habitat Objective

Prepare and implement site assessment and restoration plans to restore an additional 3,255 acres of riparian vegetation and habitats (Great Valley willow scrub, Great Valley cottonwood forest, Great Valley mixed riparian forest, Great Valley valley oak riparian forest, Valley oak savannah, elderberry savanna, and grassland, herbland, and wetland), as well as maintain existing and newly restored riparian habitats for riparian-dependent species by 2015.

Riparian Vegetation and Habitat Objective Comparison by Alternative			
Objective 1.1: Restoration	Alternative A	Alternative B	Alternative C
Acres of Restored habitat by 2005	2,600	2,600	2,600
Acres of Restored habitat within 10 years (2015)	4,636	5,855	5,855

Rationale: Riparian forests and other riparian plant communities of California's Great Central Valley provide habitat for a diversity of resident and migratory terrestrial and aquatic wildlife, including rare and endangered species (Gaines 1974, 1977; Moyle 2002; Riparian Habitat Joint Venture 2004; Roberts et al. 1977; Small et al. 2000) The Partners in Flight North American Landbird Conservation Plan (Rich et. al 2004), and the California Partners in Flight/Riparian Habitat Joint Venture Riparian Bird Conservation Plan (2004), and the Southern Pacific Coast Regional Shorebird Plan (2003) identify focal species and habitat conservation and restoration needs for Central Valley birds.

Wetlands and riparian forests once covered about 5 million acres of the Central Valley before intensive settlement began in the late 1800's. Flood-control and subsequent conversion of natural wetlands to agricultural production have reduced these habitats to less than one-tenth their former extent (Dahl 1990). CDFG considers Great Valley willow scrub, Great Valley cottonwood forest, Great Valley mixed riparian forest, Great Valley oak riparian forest, Valley oak and elderberry savannas, and many grassland and freshwater wetland vegetation types to be rare plant communities (Holland 1986; Holland and Roye 1989). Less than 2 percent of the pre-1850 acreage of riparian forest remain, with virtually all of the Valley oak forest type gone (Bay Institute 1998). Out of 418,916 hectares of potential riparian habitat in the Central Valley of California, only 51,927 hectares is

currently forested (RHJV 2004). In addition, less than 1 percent of California’s original grasslands remain (Huenneke, 1989).

Few sites on the Refuge offer conditions for successful passive restoration because of the altered hydrograph, existing weed community, and lack of native seed sources. At most sites, natural recruitment would likely include many nonnative plant species of lower habitat value for target wildlife species. As a result, modern agricultural techniques are used for restoration on Sacramento River Refuge.

Riparian restoration and management are necessary to expand and provide habitat for species associated with the Sacramento River. Opportunities for willow scrub, cottonwood, mixed riparian, Valley oak riparian forest, and associated grassland and herbland habitats exist at the mid-elevation floodplain of the Sacramento River. Opportunities exist for valley oak woodland and savanna, and associated grassland habitats, at the high-elevation floodplain of the Sacramento River. Table 9 lists the acres proposed for restoration on each Refuge unit.

Riparian Vegetation and Habitat Strategies	Alternative		
	A	B	C
1.1.1: Develop a site assessment and restoration plan for each of the restoration sites on the additional 3,255 acres of riparian habitat. Each plan will identify the site characteristics using the principles of landscape ecology and determine the site-specific restoration criteria (species composition, etc.).	✓	✓	✓
1.1.2: Maintain cooperative land management agreements (CLMA) to administer the agricultural and restoration.	✓	✓	✓
1.1.3: Maintain, monitor and evaluate existing restoration sites to provide high quality fish and wildlife habitat. Evaluate past and present restoration techniques and results to build upon the knowledge available for future restoration efforts.	✓	✓	✓
1.1.4: Continue exploring potential habitat restoration sites and implementing restoration techniques using landscape ecology along the Sacramento River Refuge.		✓	✓

1.2 Floodplain and River Processes Objective

Promote recruitment of fish and wildlife habitat by investigating riverbank stabilization, Refuge levees, and floodplain topography for best management options. During this investigation, the Refuge will consider impacts on public safety, agriculture, and water conveyance. This investigation will be conducted on 11 Refuge units (La Barranca, Ohm, Flynn, Rio Vista, McIntosh Landing South, Pine Creek, Capay, Deadman’s Reach, Llano Seco Riparian Sanctuary, Sul Norte, and Drumheller Slough) and a written report will be created by 2015.

In the event that a bank stabilization, topographic or re-vegetation restoration project is identified that directly effects the management of the refuge or adjacent landowners, the refuge will work with government agencies and stakeholders to initiate the first steps in addressing these issues. The first step would be to conduct a feasibility study which identifies the problem and those that may be affected, this may involve forming a technical advisory committee of stakeholders and independent experts, development of a range of possible alternatives, preliminary analysis of those alternatives. The final product of the feasibility study will include a report of the findings and recommendations for further analysis under the National Environmental Policy Act (NEPA). Examples of feasibility studies conducted on refuge projects either completed or ongoing include: La Barranca Ecosystem Restoration Flood Reduction Project, Rio Vista Ecosystem Restoration Flood Reduction Project, M&T Pumping Plant Protection Project, and the Llano Seco Riparian Sanctuary Restoration and PCGID/PID Pumping Plant Protection Project.

Once the findings of the feasibility study are complete, the refuge and stakeholders must conduct further analysis under NEPA to refine and analyze the alternatives and potential impacts. Depending on the scope of work and context and intensity of the proposed project, this analysis will either be completed by the refuge staff or private contractors. The NEPA analysis may involve a categorical exclusion, an Environmental Assessment, Finding of No Significant Impact, or an Environmental Impact Statement.

Depending on the outcome of the analysis of the proposed action alternative, funding for and implementation of the project may proceed. A project proposal, developed from the analysis, will be submitted to appropriate funding sources by the refuge, a conservation agency, the lead government agency, or other project proponents. Regardless of who may be the grant applicant, continued coordination with adjacent landowners and other stakeholders will be required.

Floodplain and River Process Objective Comparison by Alternative			
Objective 1.2: Riparian Restoration	Alternative A	Alternative B	Alternative C
Units investigated by 2005 (La Barranca, Flynn, Rio Vista, Sul Norte)	4	4	4
Additional Units investigated within 10 years (2015) (Llano Seco and La Barranca not included in 2002 Restoration EA)	9	11	11

Rationale: Migratory birds and native anadromous fish, especially Sacramento River Chinook salmon, have adapted to the natural process of erosion and deposition along the middle Sacramento River. The meandering processes along this stretch of the river create conditions that allow natural recruitment and succession of riparian vegetation and habitats to occur. Migratory birds and anadromous fish will respond positively to the resulting habitat features.

Loss of riparian habitat, levee construction, and bank protection have physically altered fish and wildlife habitat. This has resulted in negative affects to spawning and rearing habitats for Chinook salmon, steelhead, and other native fishes (NOAA-NMFS 1997; USFWS 2000). This has also resulted in declines in nesting and feeding habitats for breeding migratory and resident birds (Riparian Habitat Joint Venture 2004; Small et al. 1999, 2000). To address these problems in part, and where appropriate, the Refuge proposes to modify or remove existing privately-constructed levees and restore floodplain topography within Refuge boundaries. This will restore and also provide for long-term maintenance of physical processes and conditions for erosion, over-bank flooding, sediment deposition on the floodplain, and recruitment of LWD. LWD also traps sediments, including spawning gravel and fish carcasses, the primary source for MDN (USFWS 2000). These natural processes will enhance, restore, and maintain floodplain habitats for salmonids, other native fish (NOAA-NMFS 1997; USFWS 2000), and migratory landbirds and waterbirds, including species that breed, migrate and winter along the middle Sacramento River (Riparian Habitat Joint Venture 2004; Small et al. 1999, 2000)

As the Refuge and its partners restore riparian habitat and agricultural operations cease, the need for flood protection of these properties is reduced. Restoring floodplain hydrology (topography) on Refuge lands may also reduce flooding on neighboring agricultural operations. Floodplain hydrology is restored by removing or breaching levees and/or riprap (bank revetment) that were constructed by the previous owners to protect agriculture. It is also restored through swale construction that recreates natural topography and allows Refuge lands to convey floodwaters and provide off-channel water storage during high water events as the Sacramento River overtops the its banks and spills into the floodplains.

At the same time, bank protection remains an ongoing aspect of the Sacramento River Flood Control Project and water diversion facilities. The Service recognizes the need to protect the integrity of the system of levees, weirs, water diversion facilities and overflow areas that facilitates public safety and agricultural operations.

Habitat protection programs may have minimal influence on the merits or direction of bank stabilization projects. The issues of concern to the Refuge are the retention of existing riparian vegetation, protection of spawning and rearing habitat for anadromous fish, and maintenance of habitat for the threatened valley elderberry longhorn beetle and migratory birds.

Floodplain Connectivity and Topographic Restoration Strategies	Alternative		
	A	B	C
1.2.1: Modify privately constructed levees, restore or enhance topographic features, and other bank stabilization features on Refuge land if supported by feasibility studies, associated hydrologic investigations, and NEPA documentation.		✓	✓
1.2.2: Coordinate with the FWS-Ecological Services, U.S. Army Corps of Engineers, NOAA-Fisheries, State Reclamation Board, DFG, irrigation districts, and affected groups about Refuge projects on a continual basis.	✓	✓	✓
1.2.3: Work with Federal, State, county, levee and irrigation districts to investigate best management practices for habitat, water diversion, and flood management projects through technical studies and agency coordination.	✓	✓	✓
1.2.4: Continue to protect and manage Refuge lands within the 100-year floodplain. This will facilitate natural geomorphic and hydrologic processes that create and maintain habitat features to which migratory birds and anadromous fish have adapted.	✓	✓	✓

1.3 Threatened and Endangered Species Objective

Evaluate the response of Federal and State threatened and endangered species to habitat restoration projects. Implement eight surveys by 2005 and four additional surveys by 2015.

Threatened and Endangered Species Objective Comparison by Alternative			
Objective 1.3: Threatened and Endangered Species	Alternative A	Alternative B	Alternative C
Target T&E Species restored habitat use monitored and evaluated by 2005	8 (Least Bell's vireo, valley elderberry longhorn beetle, American bald eagle, giant garter snake, bank swallow, western yellow-billed cuckoo, willow flycatcher, & Swainson's hawk)	8 (Least Bell's vireo, valley elderberry longhorn beetle, American bald eagle, giant garter snake, bank swallow, western yellow-billed cuckoo, willow flycatcher, & Swainson's hawk)	8 (Least Bell's vireo, valley elderberry longhorn beetle, American bald eagle, giant garter snake, bank swallow, western yellow-billed cuckoo, willow flycatcher, & Swainson's hawk)
Additional Target T&E Species habitat use monitored and evaluated within 10 years (2015)	0	4 (Winter-run Chinook salmon, spring-run Chinook salmon, fall-run and late fall-run Chinook salmon, Central Valley ESU steelhead)	4 (Winter-run Chinook salmon, spring-run Chinook salmon, fall-run and late fall-run Chinook salmon, Central Valley ESU steelhead)

Rationale: Federally listed threatened and endangered species and candidate species are trust responsibilities under the jurisdiction of the Service. Threatened and endangered species and those proposed for Federal listing, are likely to become extinct due to environmental factors. State threatened and endangered species have been identified as Birds of Conservation Concern by the Service, and are trust responsibilities of the Service under the Migratory Bird Treaty Act. Populations are in decline due, in part, to habitat degradation and destruction. Monitoring is necessary to determine population distribution, abundance, and survival of species and identify habitat use and restoration and management needs.

Threatened and Endangered Species Monitoring Strategies	Alternative		
	A	B	C
1.3.1: Least Bell's vireo: Cooperate with PRBO or other partners to conduct point-count and demographic surveys for the species.	✓	✓	✓
1.3.2: Conduct VELB monitoring to assess distribution, abundance, and habitat use. Coordinate activities with the Fish and Wildlife Service/Sacramento Field Office. Support VELB research by cooperators on the Refuge.		✓	✓
1.3.3-1.3.6: Winter-run Chinook salmon, spring-run Chinook salmon, fall-run and late fall-run Chinook salmon, Central Valley ESU steelhead: Coordinate research and investigations at the refuge that focus on population demographics and habitat use and requirements. Coordinate with CDFG fishery investigations (Lower Stony Creek Fish Monitoring; Redd Surveys), Service population surveys (escape/passage at Red Bluff Diversion Dam), and research investigations from universities conducting salmonid research (University of California Davis and California State University Chico).	✓	✓	✓
1.3.7: American bald eagle: Identify locations where eagles are observed during proposed routine main channel surveys (Also strategies 1.4.4 and 1.5.3). Document refuge habitat use.	✓	✓	✓
1.3.8: Giant Garter Snake: Conduct GGS surveys prior to habitat work, where hibernation areas may be disturbed.		✓	✓
1.3.9: Bank swallow: Conduct an annual bank swallow survey in coordination with CDFG or other partners to monitor breeding colonies, habitat use on the Refuge, and population trends. Monitor Refuge restoration and management activities at bank swallow colonies to reduce disturbance. Monitor public use activities at bank swallow colonies and restrict use, if necessary, to reduce disturbance	✓	✓	✓
1.3.10: Western yellow-billed cuckoo: Conduct periodic surveys at three-year intervals for western yellow-billed cuckoos at the Refuge to document their distribution, abundance, and habitat use. Coordinate surveys with other Service offices, CDFG, U.S. Geological Survey, and PRBO.	✓	✓	✓

Threatened and Endangered Species Monitoring Strategies	Alternative		
	A	B	C
1.3.11: Willow flycatcher: Cooperate with PRBO or other partners to conduct point-count and demographic surveys for the species.	✓	✓	✓
1.3.12: Swainson's hawk: Identify locations where Swainson's hawks are observed during proposed routine main channel surveys. Document Refuge habitat use for adaptive management purposes.	✓	✓	✓

1.4 Breeding Migratory and Resident Landbird Objective

Enhance, restore and monitor breeding migratory and resident landbird populations to source population levels (40 percent recruitment) through habitat restoration on 3,255 acres by 2015. Source populations are those where recruitment (annual increase) is high enough to replace the local breeding population with a surplus, which can repopulate other areas. Source populations recruit at levels above 35 percent for most species.

Migratory Bird and Resident Landbird Objective Comparison by Alternative			
Objective 1.4: Migratory and Resident Landbirds	Alternative A	Alternative B	Alternative C
Target Neotropical Migratory Landbirds and Resident Birds restored to Source Population status (40% recruitment) within 10 years (2015)	14 (Black-headed Grosbeak, Common Yellowthroat, Swainson's Hawk, Yellow-billed Cuckoo, Nuttall's Woodpecker, Yellow Warbler, Song Sparrow, Bell's Vireo, Spotted Towhee, Willow Flycatcher, Blue Grosbeak, Spotted Sandpiper, Bank Swallow)	14 (Black-headed Grosbeak, Common Yellowthroat, Swainson's Hawk, Yellow-billed Cuckoo, Nuttall's Woodpecker, Yellow Warbler, Song Sparrow, Bell's Vireo, Spotted Towhee, Willow Flycatcher, Blue Grosbeak, Spotted Sandpiper, Bank Swallow)	14 (Black-headed Grosbeak, Common Yellowthroat, Swainson's Hawk, Yellow-billed Cuckoo, Nuttall's Woodpecker, Yellow Warbler, Song Sparrow, Bell's Vireo, Spotted Towhee, Willow Flycatcher, Blue Grosbeak, Spotted Sandpiper, Bank Swallow)

Rationale: Migratory birds are trust species under the jurisdiction of the Service. Sacramento River Refuge was established under the authority of the Endangered Species Act for birds, such as the least Bell's vireo. Executive Order 13186 directs Federal agencies to ensure that agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts such as the Partners in Flight Riparian Bird Conservation Plan (Riparian Habitat Joint Venture 2004). The Refuge provides summer breeding, migration, and wintering habitat for migratory landbirds. Migratory landbird populations are in decline, due in part to habitat degradation and destruction, increased nest depredation and nest parasitism. Landbird monitoring is necessary to determine population status, assess population trends, determine causes for

poor productivity, identify solutions, determine habitat restoration needs, and assess restoration success.

Migratory and Resident Landbird Strategies	Alternative		
	A	B	C
1.4.1: Implement restoration of mid- and high-elevation riparian vegetation and habitats. Use principles outlined in the California Partners in Flight/Riparian Habitat Joint Venture Riparian Bird Conservation Plan (2004), including habitat features that cover all of the 14 riparian bird focal species.	✓	✓	✓
1.4.2: Coordinate with FWS Office of Migratory Bird Management, California Partners in Flight, the Riparian Habitat Joint Venture, PRBO, and other partners to periodically monitor the productivity of riparian focal species on restored and native riparian acres to evaluate and adapt restoration design and management to enhance conditions of focal species as needed.	✓	✓	✓
1.4.3: Annually evaluate species diversity and abundance of breeding birds on acreage under active and planned restoration and adapt restoration design and management to enhance conditions of focal species as needed.	✓	✓	✓
1.4.4: Conduct Sacramento River main channel, fixed-route surveys for nesting osprey and other visible nesting species (e.g., kingfisher burrows). These cooperative Refuge surveys are conducted seasonally, four times a year, from Red Bluff to Colusa, and record all wildlife observed from the survey vessel (Also strategies 1.3.7 and 1.6.1).	✓	✓	✓

1.5 Winter Migratory Landbirds

Implement monitoring surveys for wintering migratory landbird populations on up to 8,000 acres of riparian habitat on the Refuge by 2010.

Winter Migratory Landbirds Objective Comparison by Alternative			
Objective 1.5: Winter Migratory Landbirds	Alternative A	Alternative B	Alternative C
Acres of monitoring surveys for wintering migratory landbirds within 5 years (2010)	8,000	8,000	8,000

Rationale: Migratory birds are trust species under the jurisdiction of the Service. Migratory land bird populations are in decline, due in part to habitat degradation and destruction. Sacramento River Refuge provides winter habitat for migratory landbirds.

Winter Migratory Landbirds Strategies	Alternative		
	A	B	C
1.5.1: Coordinate with PRBO and other partners to conduct and evaluate winter landbird surveys.	✓	✓	✓
1.5.2: Annually evaluate the use of various habitat types by wintering birds and adapt the restoration design and management to enhance use.	✓	✓	✓
1.5.3: Conduct Sacramento River main channel, fixed-route surveys for wintering birds. These cooperative Refuge surveys are conducted seasonally, four times a year, from Red Bluff to Colusa, and record all wildlife observed from the survey vessel (Also strategies 1.4.4 and 1.6.1).	✓	✓	✓

1.6 Waterfowl and other Waterbirds Objective

Implement monitoring surveys for wintering and breeding waterfowl and shorebird populations and colonial nesting waterbirds on all main channel and floodplain wetland habitat on the Refuge. Survey, locate and map three egret, heron, and cormorant rookeries by 2008 and conduct five surveys by 2010.

Waterfowl and other Waterbird Objective Comparison by Alternative			
Objective 1.6: Waterfowl and Waterbirds	Alternative A	Alternative B	Alternative C
Number of egret, heron, cormorant rookeries located and mapped by 2008	3	3	3
Number of surveys conducted for egret, heron, cormorant rookeries located and mapped within 5 years (2010)	5	5	5

Rationale: Migratory birds are trust species under the jurisdiction of the Service. Many species of migratory and resident birds depend on wetlands for breeding and winter habitat. Freshwater wetlands have declined by 95 percent in the Central Valley. The North American Waterfowl Management Plan and the Central Valley Habitat Joint Venture address population and habitat objective for healthy waterfowl populations. Sacramento River Refuge provides breeding and wintering habitat for waterfowl and other waterbirds. Population monitoring is necessary to determine population status, assess trends, and identify habitat use and restoration and management needs.

Waterfowl and other Waterbird Strategies	Alternative		
	A	B	C
1.6.1: Conduct Sacramento River main channel, fixed-route surveys for waterfowl and other waterbirds. These cooperative Refuge surveys with TNC, CDFG, PRBO, and River Partners are conducted seasonally, four times a year, from Red Bluff to Colusa, and record all wildlife observed from the survey vessel (Also strategies 1.4.4 and 1.5.3).	✓	✓	✓
1.6.2: Coordinate with FWS Office of Migratory Bird Management to conduct and report Sacramento River waterfowl populations during the midwinter waterfowl survey	✓	✓	✓
1.6.3: Conduct and evaluate the results of the annual colonial waterbird surveys to estimate breeding colony sizes and productivity.	✓	✓	✓
1.6.4: Survey, locate, map and protect egret, heron and cormorant rookeries	✓	✓	✓

1.7 Anadromous Fisheries and Native Fisheries Objective

Provide high quality habitat for native anadromous fish by enhancing and restoring 33.5 miles of shaded riverine aquatic (SRA) habitat for temperature control and future sources of large woody debris (LWD) by 2015. Where appropriate, enhance or restore floodplain topography and connectivity with the river at 11 units (La Barranca, Ohm, Flynn, Rio Vista, McIntosh Landing South, Pine Creek, Capay, Deadman's Reach, Llano Seco Riparian Sanctuary, Sul Norte, and Drumheller Slough) of the Refuge by 2015.

Anadromous Fisheries and Native Fisheries Objective Comparison by Alternative			
Objective 1.7: Anadromous and Native Fish	Alternative A	Alternative B	Alternative C
Linear feet of Shaded Riverine Aquatic habitat restored by 2005	22,400	22,400	22,400
Additional Linear feet of Shaded Riverine Aquatic habitat restored within 10 years (2015)	6,700	14,500	14,500
Acres of Floodplain connectivity enhanced and restored by 2005	2,178	2,178	2,178
Additional Acres of Floodplain connectivity enhanced and restored within 10 years (2015) (La Barranca)	2,017	3,084	3,084
Acres of Floodplain topography enhanced and restored by 2005	208	208	208
Additional Acres Floodplain topography enhanced and restored within 10 years (2015)	889	889	889

Rationale: The Service and the Refuge System each identify anadromous fish conservation in their mission statements. The Sacramento River is the only river in western North America which supports four distinct salmon runs making Chinook salmon and Central Valley steelhead important ecological, recreational, and commercial fisheries. Components of high quality habitat include mature riparian forests, SRA, LWD, floodplain connectivity (NOAA-NMFS) 1997; USFWS 2000) and restored or enhanced sloughs and oxbow wetlands. SRA habitat moderates water temperatures for immature salmonids and creates habitat for terrestrial and aquatic insects, which are a food source for salmonids and other native fishes (NOAA-NMFS 1997). LWD provides food substrate and escape cover for immature salmonids (USFWS 2000). It also traps spawning gravel, creating redd (nest) habitat for fall-run Chinook salmon that spawn in the middle Sacramento River (USFWS 2000). LWD also creates plunge pool topography on the downstream side, which provides important microhabitat features that regulate temperatures, prey distribution, and cover. LWD traps anadromous fish carcasses, the source of marine-derived nitrogen (MDN) (USFWS 2000). MDN is important for maintaining the productivity of river systems, which continually drain nutrients downstream. An intact floodplain is important to immature salmonids and other native fishes that escape from large predatory fish in shallow waters. When inundated, the relatively warmer waters of the floodplain become very productive and produce an abundance of prey.

Anadromous Fisheries and Native Fisheries Strategies	Alternative		
	A	B	C
1.7.1: Implement restoration of mid- and high-elevation riparian forest to create 14,500 linear feet of SRA by 2015.	✓	✓	✓
1.7.2: Restore mid- and high- elevation riparian forest to create a source of LWD.	✓	✓	✓
1.7.3: Conduct feasibility studies, associated hydrologic investigations, and NEPA documentation to remove privately constructed levees on Refuge land. This, along with topographic restoration, will ensure floodplain connectivity with the main channel. Enhance 3,084 acres of floodplain connectivity at La BARRANCA by 2015. Enhance floodplain topography on additional 889 acres by 2015.	✓	✓	✓
1.7.4: Ensure recruitment of spawning gravel necessary for creating redd habitat for fall-run Chinook salmon by conducting feasibility studies, associated hydrologic investigations, and NEPA documentation to remove privately-constructed levees or other bank stabilization features on Refuge land.	✓	✓	✓
1.7.5: Enhance and restore slough and oxbow wetlands for Sacramento splittail and other native fishes that require a warmer temperature and slow moving water. Enhancement and restoration may include the removal of non-native fishes.	✓	✓	✓

Anadromous Fisheries and Native Fisheries Strategies	Alternative		
	A	B	C
1.7.6: Coordinate research investigations and monitoring at the Refuge which focuses on population demographics, habitat use and requirements, and health of anadromous and other native fishes. Coordinate with CDFG fishery investigations (Lower Stony Creek Fish Monitoring; Redd Surveys), USFWS–Red Bluff Fish and Wildlife Office population surveys (escape/passage at Red Bluff Diversion Dam), USFWS–California/Nevada Fish Health Center disease investigations and monitoring, NOAA–Fisheries investigations and universities conducting salmonid research (University of California, Davis; California State University, Chico) and research regarding other anadromous and native fish species.	✓	✓	✓

1.8 Native Plant Species Objective

On up to 9,000 acres of the Refuge, locate and map six populations of rare and important native plants by 2005 and 24 populations by 2010; maintain and enhance native plant populations through restoration and conservation of 3,225 acres; and restore two native wildflower patches by 2005 and up to 100 patches by 2010.

Native Plant Species Objective Comparison by Alternative			
Objective 1.8: Native Plants	Alternative A	Alternative B	Alternative C
Number of important native plant populations identified, mapped, and protected by 2005	6	6	6
Additional number of important native plant populations identified, mapped and protected within 5 years (2010)	24	24	24
Acres of native vegetation maintained, enhanced and restored by 2005	5,600	5,600	5,600
Additional acres of native plant populations maintained, enhanced and restored within 5 years (2010)	2,036	3,255	3,255
Number of native wildflower patches restored by 2005	2	2	2
Additional native wildflower patches restored within 5 years (2010)	100	100	100

Rationale: Both the Fish and Wildlife Service and the Refuge System identify native plant conservation in their mission statements. Plants are important elements that add diversity and stability to the ecosystem. Plants have individual floristic attributes (e.g., host plants for insects and pollinators), as well as vegetation attributes (e.g., plant communities and habitat structure) that are necessary for ecosystem function and wildlife habitat.

Native Plant Species Strategies	Alternative		
	A	B	C
1.8.1: Use plant materials (i.e., cuttings, acorns, seeds) for restoration projects derived from local ecotypes of indigenous plant species and populations.	✓	✓	✓
1.8.2: Identify, locate, map, and conserve (protect and manage) important native plant areas, including trees, shrubs, forbs, and grasses (e.g., native vegetation reference sites, La Barranca tarweed/buckwheat association and valley oak/elderberry savanna; Ohm sandbar vegetation; Pine Creek wildflower seed source site, Llano Seco valley oaks, native grass reference site, Eddy Lake oxbow vegetation, wildflower seed source sites; Sul Norte native herbaceous understory vegetation).	✓	✓	✓
1.8.3: Annually evaluate plant species and associated vegetation for habitat management and research needs (i.e., grazing, burning, herbicides, and other mechanical methods).	✓	✓	✓
1.8.4: Update and maintain the Refuge herbarium (plant specimen) collection.	✓	✓	✓
1.8.5: Restore 100 additional patches of native wildflowers on the Refuge by 2010.		✓	✓
1.8.6: Support botanical research of taxonomic and physiological investigations on the Refuge by university cooperators.	✓	✓	✓

1.9 Exotic, Invasive Species Control Objective

Locate and map exotic invasive species on five units of the Refuge (Pine Creek, Phelan Island, Capay, La Barranca, and Drumheller Slough) by 2010. Implement control programs (treatment and monitoring) for exotic invasive species on 7 units of the Refuge (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller Slough, Flynn, and Rio Vista) by 2010.

Exotic, Invasive Species Control Objective Comparison by Alternative			
Objective 1.9: Exotic, Invasive Species	Alternative A	Alternative B	Alternative C
Locate and map populations of exotic invasive species by 2010	5 (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller)	5 (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller)	5 (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller)
Implement control programs (control treatment and monitoring) for populations of exotic invasive species by 2010	7 (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller, Flynn, Rio Vista)	7 (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller, Flynn, Rio Vista)	7 (Pine Creek, Phelan Island, Capay, La Barranca, Drumheller, Flynn, Rio Vista)

Rationale: Invasive non-indigenous (exotic) species have become the single greatest threat to the Refuge System and the Service’s wildlife conservation mission. More than 8 million acres within the Refuge System are infested with invasive weeds (Audubon 2002). Invasive species cause widespread habitat degradation, compete with native species, and contribute significantly to the decline of trust species (USFWS 2002c). The National Strategy for Management of Invasive Species (USFWS 2002c) has been developed within the context of the National Invasive Species Management Plan as called for by Presidential Executive Order 13112, and functions as the internal guidance document for invasive species management throughout the Refuge System. This Plan has four goals: 1) Increase the awareness of the invasive species issue, both internally and externally, 2) Reduce the impacts of invasive species to allow the Refuge System to more effectively meet its fish and wildlife conservation mission and purpose, 3) Reduce invasive species impacts on the Refuge System’s neighbors and communities, and 4) Promote and support the development and use of safe and effective integrated management techniques to deal with invasive species.

The Great Central Valley is occupied by a diversity and abundance of exotic, invasive species that are harmful because they crowd out or replace native species that are important to wildlife natural diversity and ecosystem function. These species often dominate old agricultural fields and restoration sites. In addition, some late successional stages of native vegetation are dominated by these undesirable species. For these reasons, vegetation must be managed to control exotic, invasive species so that species composition favors a diversity and abundance of native, indigenous plants.

Exotic, Invasive Species Control Strategies	Alternative		
	A	B	C
1.9.1: Manage vegetation and habitat for desired species composition and population levels of native species. Annually evaluate invasive exotic species to be controlled (Table 7). Locate, map, and monitor exotic species that may trigger a management response (i.e., grazing, burning, herbicides, and other mechanical control methods).	✓	✓	✓
1.9.2: Conduct and support research to evaluate techniques for controlling target invasive plant species including prescribed fire, grazing, herbicide treatment, mowing, disking, and weed mat tarping.		✓	✓

1.10: Wildlife and Cultural Sanctuary Objective

Provide 2,043 acres (20 percent) of long-term sanctuary for general wildlife use and nesting, sensitive breeding colonies, plant populations, and cultural resource sites by 2005.

Wildlife and Cultural Sanctuary Objective Comparison by Alternative			
Objective 1.10: Sanctuary	Alternative A	Alternative B	Alternative C
Acres of long-term sanctuary for general wildlife use and nesting, sensitive breeding colonies, plant populations, and cultural resource sites.	2,043	2,043	2,043

Rationale: Sanctuaries are areas on the Refuge that are closed to public use. They provide places where human-caused disturbances are reduced, which also reduce interruption of wildlife activities, such as foraging, breeding, resting, feeding nestlings, and other maintenance activities. This may be especially important during high refuge visitor use periods. Sanctuaries also are important to wildlife avoiding predation by other wild animals because they can devote less energy to avoiding humans and more to avoiding predators. Sanctuaries may become important nesting and fawning areas, as well as important areas for feeding and roosting.

Long-term sanctuaries are areas where wildlife concentrate and reproduce, resulting in increased populations that can lead to more wildlife-dependent public use in areas near the sanctuary. As a result, sanctuaries on public land play a key role in providing increased wildlife-dependent public use opportunities on adjacent public lands. In some cases, short-term sanctuaries may be established to protect a sensitive nesting colony or site. These seasonal sanctuaries may impose public access restrictions at some, but not necessarily all nesting colonies, such as heron/egret rookeries and bank swallow colonies, and at nesting sites for species with a low tolerance for human disturbance, such as the American bald eagle, Swainson's hawk, and osprey.

Sanctuaries also protect sensitive cultural resources. Areas of significant occupation by Native Americans and areas containing significant cultural resources warrant long-term permanent protection. Cultural resource sanctuaries strictly limit the amount of human contact and potential for accidental and intentional vandalism, and show respect for past Native American cultures and customs.

A few of the sanctuaries were designated as areas of no public use based on management issues. These units are typically small in size, surrounded by private property, have poor access and may pose a safety concern. A list of some of the factors considered when determining the level of public use to be allowed on each refuge unit can be found in Appendix L.

Wildlife and Cultural Sanctuary Strategies	Alternative		
	A	B	C
1.10.1: Provide long-term sanctuaries on about 20 percent of the Refuge to provide areas for wildlife to feed and rest with relatively little human disturbance.	✓	✓	✓
1.10.2: Provide areas of short-term sanctuary to reduce human disturbance at sensitive fish, wildlife, vegetation, and plant sites during the breeding, rearing, and growing seasons.	✓	✓	✓
1.10.3: Provide areas of long-term sanctuary that are closed to public use to provide permanent protection of sensitive cultural resources. These areas will be of sufficient size to provide a buffer to surrounding public uses.	✓	✓	✓

2. Visitor Services Goal

Encourage visitors of all ages and abilities to enjoy wildlife-dependent recreational and educational opportunities and experience, appreciate, and understand the Refuge history, riparian ecosystem, fish, and wildlife.

Percentages described in the following objectives and strategies represent current refuge acres and do not necessarily reflect the long-term outcome for visitor use on the Refuge. The process for determining visitor use on refuge units is outlined in Appendix L of the CCP.

2.1 Hunting Objective

Provide high quality opportunities for 1,500 annual hunting visits on 3,356 acres by 2005 and an additional 1,967 acres within two to 10 years, to total 5,323 acres (52 percent) (Table 9, Figure 29, Appendix L of the CCP).

Hunting Objective Comparison by Alternative			
Objective 2.1: Hunting	Alternative A	Alternative B	Alternative C
Acres open to hunting by 2005	0	3,323	4,317
Additional acres of open to hunting within 2-10 years	0	1,967	2,766

Rationale: Hunting is identified in the Improvement Act as a priority public use for refuges when it is compatible with other refuge purposes. As a result, the Refuge proposes dove, waterfowl, coot, common moorhen, pheasant, quail, snipe, turkey, and deer hunting, all of which are currently hunted on public land along the Sacramento River (Table 10). The hunting program will be conducted in a safe and cost-effective manner and will be carried out consistent with State regulations. The Hunting Plan (Appendix C) was developed to provide safe and accessible hunting opportunities, while minimizing conflicts with other priority wildlife-dependent recreational uses. Some visitor uses occur at different times of the year, therefore minimizing potential conflicts with hunters and other user groups (Figure 25). The Refuge hunting program will comply with the Code of Federal Regulations Title 50, 32.1 and be managed in accordance with Refuge Manual 8 RM 5, Hunting.

Hunting Strategies	Alternative		
	A	B	C
2.1.1: Implement the Sacramento River Refuge Hunting Plan by 2005.		✓	✓
2.1.2: Identify Refuge units open to hunting, target species and Refuge-specific regulations through news releases, Sacramento River Refuge general brochure, Sacramento Refuge Complex website and publications by 2005.		✓	✓
2.1.3: Add the appropriate Sacramento River units to the information section of the CDFG regulations: Other Public Uses on State & Federal Areas for the 2005 hunting season.		✓	✓
2.1.4: Open Refuge units allowing hunting to “scouting”, including pre-season scouting.		✓	✓
2.1.5: Assess the need for turkey and deer hunting by permit only.		✓	✓
2.1.6: Continue to coordinate the Llano Seco Junior Pheasant Hunt with the Llano Seco Ranch, California Waterfowl Association and CDFG.		✓	✓

Hunting Strategies	Alternative		
	A	B	C
2.1.7: Complete the Sacramento River Refuge general brochure by 2005. The brochure will include descriptions of Refuge units open to hunting, Refuge-specific hunting regulations, parking areas, and vehicle/boat/foot access.		✓	✓
2.1.8: Post laminated Boating Trail Guide by the California Department of Boating & Waterways at existing kiosks at public boat ramps, and give copies of the Boating Trail Guide to local sporting good stores, partners, and public agencies by 2005.		✓	✓
2.1.9: Develop hunting map flyer and disseminate in the Refuge Complex visitor center and on the website by 2005.		✓	✓
2.1.10: Construct and set information kiosks, entrance and public use signs and auto counters at vehicle access points on Capay, Sul Norte, and Drumheller Slough as units open to the public and funding becomes available.		✓	✓
2.1.11: Provide a parking area, gate, and portable toilet on the Capay, Sul Norte, and Drumheller units, as units open to the public and funding becomes available.		✓	✓
2.1.12: Construct an accessible one-mile walking trail on Sul Norte as funding becomes available.			
2.1.13: Place public use signs at vehicle access points and at the approximate ordinary high water mark on all Refuge units open to the public. The signs will depict the unit name, river mile, and public uses allowed/prohibited (Figures 26 & 27 of the CCP).		✓	✓
2.1.14: Monitor hunting visits by personal contact by law enforcement officers, comment drop box (Capay, Sul Norte and Drumheller Slough units), Refuge web site e-mail, and vehicle counters at units with parking areas by 2005.		✓	✓
2.1.15: Complete random, weekly hunter field-checks to assess type and number of species harvested and compliance with all regulations.		✓	✓
2.1.16: Use the Sacramento Refuge Complex Refuge Hunting Program Working Group and the Disabled Access Working Group to develop and improve the Refuge hunting program.		✓	✓
2.1.17: Collect and annually report hunting visit data for the Refuge Management and Information System (RMIS), Public Education and Recreation section.		✓	✓
2.1.18: Use the CDFG deer tag data to complete the hunting sections of the RMIS annual report.		✓	✓
2.1.19: Work cooperatively with CDFG wardens to enforce State Fish and Game hunting laws and Refuge-specific regulations to provide a quality experience for all visitors.		✓	✓

2.2 Fishing Objective

Open gravel bars, sloughs, oxbow lakes, and the inundated floodplain on all Refuge units to fishing. Provide 23 river-front miles for 1,000 annual fishing visits. By 2005, open all seasonally submerged areas below the ordinary high water mark to the public for fishing (Table 9, Appendix L of the CCP).

Fishing Objective Comparison by Alternative			
Objective 2.2: Fishing	Alternative A	Alternative B	Alternative C
River front miles for fishing by 2005	0	23	23

Rationale: Fishing is identified in the Improvement Act as a priority use for refuges when compatible with other refuge purposes. The fishing program will be conducted in a safe and cost-effective manner and, to the extent that it is feasible, carried out in accordance with State regulations. The Fishing Plan (Appendix D) was developed to provide safe and accessible fishing opportunities, while minimizing conflicts with other priority wildlife-dependent recreational uses. The fishing program will comply with 50 CFR 32.4 and will be managed in accordance with Refuge Manual 8 RM 6, Sport Fishing.

Fishing opportunities in sloughs, oxbow lakes and on the inundated floodplain of Refuge lands will be limited since these habitat features are also limited. Fishing on Refuge land or from the bank is limited by the river's dynamic meander pattern, resulting in banks with steep slopes. Bank-fishing opportunities will occur where there is reasonable access and when it is safe for anglers. New boat ramps are not proposed due to problematic siltation, channel meander change, and high year-round maintenance costs. Seasonal flooding on most Refuge lands makes ADA accessible fishing access trails cost-prohibitive. ADA fishing access will be available in other areas on the river.

Fishing Strategies	Alternative		
	A	B	C
2.2.1: Implement the Sacramento River Refuge Fishing Plan by 2005.		✓	✓
2.2.2: Identify Refuge units open to fishing in sloughs, oxbow lakes, and from gravel bars, and the Refuge-specific regulations, through news releases, Sacramento River Refuge general brochure, Sacramento Refuge Complex website and publications by 2005.		✓	✓
2.2.3: Use the Red Bluff Diversion Dam fish-viewing plaza to provide visitors with information about the Sacramento River fishery and salmon migration.		✓	✓
2.2.4: Complete the Sacramento River Refuge general brochure by 2005. The brochure will include descriptions of Refuge units open to fishing, Refuge-specific fishing regulations, parking areas, and vehicle/boat/foot access.		✓	✓

Fishing Strategies	Alternative		
	A	B	C
2.2.5: Post laminated Boating Trail Guide by the California Department of Boating & Waterways at existing kiosks at public boat ramps, and give copies of the Boating Trail Guide to local sporting good stores, partners, and public agencies by 2005.		✓	✓
2.2.6: Construct and set information kiosks at Rio Vista, Pine Creek, Capay, Ord Bend, Sul Norte, and Packer by 2005.		✓	✓
2.2.7: Maintain a one-mile bank fishing access trail on the Capay Unit and the boat launch area at Packer Unit.		✓	✓
2.2.8: Work with local resource agencies to provide fishing access and facilities for anglers with disabilities on adjacent compatible areas.		✓	✓
2.2.9: Place public use signs at vehicle access points and at the approximate ordinary high water mark on all Refuge units open to the public. The signs will depict the unit name, river mile, and public uses allowed/prohibited (Figures 26 & 27 of the CCP).		✓	✓
2.2.10: Continue to request anglers to report catch and release of the native Sacramento splittail in Packer Lake by maintaining current regulations and posting.	✓	✓	✓
2.2.11: Work cooperatively with CDFG to obtain creel census data on the River and enforce compliance with the State fishing regulations.		✓	✓
2.2.12: Collect and annually report fishing visits for the RMIS, Public Education and Recreation section.		✓	✓
2.2.13: Work cooperatively with CDFG Wardens to enforce State Fish and Game fishing laws and Refuge-specific regulation compliance and to provide a quality experience for all visitors.		✓	✓

2.3 Wildlife Observation and Photography Objective

Provide quality opportunities for 1,000 wildlife viewing and photographic annual visits on 5,096 acres by 2005 and an additional 3,165 acres by 2015 to total 8,261 acres (80 percent).

Wildlife Observation and Photography Objective Comparison by Alternative			
Objective 2.3: Wildlife Observation and Photography	Alternative A	Alternative B	Alternative C
River front miles open for Wildlife Observation/Photography by 2005	0	23	23
Acres open for Wildlife Observation/Photography by 2005	0	5,096	5,096

Additional acres open for Wildlife Observation/Photography within 2-10 years	0	3,165	3,165
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Rationale: Wildlife viewing and photography are identified in the Improvement Act as a priority uses for refuges when they are compatible with other refuge purposes. As a result, the Refuge encourages first-hand opportunities to observe and photograph wildlife in their habitats. These activities will be managed to ensure that people have opportunities to observe wildlife in ways that do not disrupt wildlife or damage refuge habitats. Wildlife viewing and photography will be managed to foster a connection between visitors and natural resources.

Wildlife Observation and Photography Strategies	Alternative		
	A	B	C
2.3.1: Use the Red Bluff Diversion Dam salmon-viewing plaza to provide visitors with information about the Sacramento River fishery and close up viewing and photographic opportunities of salmon during August-October.		✓	✓
2.3.2: Post laminated Boating Trail Guide by the California Department of Boating & Waterways at existing kiosks at public boat ramps, and give copies of the Boating Trail Guide to local sporting good stores, partners, and public agencies by 2005.		✓	✓
2.3.3: As units open to the public, develop and maintain a one-two mile walking trail on Rio Vista, Pine Creek, Capay, Ord Bend, Sul Norte, Codora and Packer units to provide wildlife viewing and photographic opportunities and to promote awareness about the value of riparian habitat, management efforts, and plant/wildlife identification tips.		✓	✓
2.3.4 Construct a wildlife viewing/photography blind on the Codora Unit, when it opens to the public.		✓	✓
2.3.5 Place public use signs at vehicle access points and at the approximate ordinary high water mark on all Refuge units open to the public. The signs will depict the unit name, river mile, and public uses allowed/prohibited (Figures 26 & 27 of the CCP).		✓	✓
2.3.6 Collect and annually report wildlife observation and photography visits for the RMIS, Public Education and Recreation section.		✓	✓
2.3.7: Provide an entrance sign, parking area, information kiosk, public use signs, gate, auto counter, and portable toilet on the Rio Vista, Pine Creek, Capay, Ord Bend, Sul Norte, Codora, Packer, and Drumheller units, as units open to the public and funding becomes available.		✓	✓

2.4 Environmental Education Objective

Develop an environmental education program by 2005 to service about 1,000 students annually. Develop an environmental education program that promotes in-depth study of the ecological principles that are associated with the Sacramento River watershed, riparian ecosystem, and the Refuge's natural, cultural, and historical resources. The education activities will be designed to develop awareness and understanding for Refuge resources and management activities.

Environmental Education Objective Comparison by Alternative			
Objective 2.4 Environmental Education	Alternative A	Alternative B	Alternative C
Number of students by 2005	300	1,000	2,000

Rationale: Environmental education is identified in the Improvement Act as a priority use for refuges when it is compatible with other refuge purposes. As a result, the Refuge encourages environmental education as a process of building knowledge in students. The Refuge staff will work with schools (K-12) to integrate environmental concepts and concerns into structured educational activities. These Refuge-lead or educator-conducted activities are intended to actively involve students or others in first-hand activities that promote discovery and fact-finding, develop problem-solving skills, and lead to personal involvement and action. Refuge staff will promote environmental education that: is aligned to the current Federal, State and local standards; is curriculum based that meets the goals of school districts adopted instructional standards; and provides interdisciplinary opportunities that link the natural world with all subject areas. The environmental education program will be managed in accordance of Refuge Manual 8 RM 3, Outdoor Classroom (Environmental Education).

Environmental Education Strategies	Alternative		
	A	B	C
2.4.1: Use the Sacramento Refuge Complex visitor center and Discovery Room to provide presentations and exhibits about the Sacramento River Refuge purposes and management.	✓	✓	✓
2.4.2: Develop a Discovery Pack with environmental education activities and on-site information for use by scheduled groups on walking trails.		✓	✓
2.4.3: Utilize California Waterfowl Association's wetland kits and the Songbird Blues and Bird of Two Worlds trunks to further educate students about wetlands and Neotropical migrants.		✓	✓
2.4.4: Continue to work cooperatively with PRBO and TNC to provide tours to school groups and develop an awareness of the purpose of the Refuge.	✓	✓	✓
2.4.5: Continue assisting Chico Junior High School in implementing their Wetlands Unit, an in-depth study of wetlands and riparian habitats.		✓	✓

Environmental Education Strategies	Alternative		
	A	B	C
2.4.6: Develop educational materials that interpret the Sacramento River fishery and utilize the Coleman National Fish Hatchery and the North Sacramento Valley Fisheries Office expertise.		✓	✓
2.4.7: Conduct or host at least 50 school groups each year utilizing the Rio Vista, Pine Creek, Phelan Island, Ord Bend, and Packer units.		✓	✓
2.4.8: Facilitate one annual resource-training workshop to provide educators and tour guides consistent and current information about the Refuge and management.		✓	✓
2.4.9: Coordinate one meeting each year with local groups that are involved with leading school groups. The goal of the meeting would be to update agencies on new issues, confirm education guidelines.		✓	✓
2.4.10: Continue to require all groups to complete the Environmental Education Program Reservation or the Event Notification Forms to schedule and record visitor use.	✓	✓	✓
2.4.11: Continue to collect and annually report environmental education use data for the Refuge RMIS, Public Education and Recreation section.	✓	✓	✓

2.5 Interpretation Objective

Refuge staff will develop an interpretive program to service about 1,000 annual visits. The program will promote public awareness and support of the Refuge resources and management activities by 2005.

Interpretation Objective Comparison by Alternative			
Objective 2.5 Interpretation	Alternative A	Alternative B	Alternative C
Number of annual visits by 2005	0	1,000	2,000

Rationale: Interpretation is identified in the Improvement Act as a priority use for refuges when it is compatible with other refuge purposes. As a result, the Refuge encourages interpretation as both an educational and recreational opportunity that is aimed at revealing relationships, examining systems, and exploring how the natural world and human activities are interconnected. Participants of all ages can voluntarily engage in stimulating and enjoyable activities as they learn about the refuge issues confronting fish and wildlife resource management. First-hand experiences with the environment will be emphasized, although presentations, audiovisual media, and exhibits will be necessary components of the Refuge interpretive program. The interpretive program will be managed in accordance of Refuge Manual 8 RM 4, Interpretation.

Interpretation Strategies	Alternative		
	A	B	C
2.5.1: Use the Sacramento Refuge Complex visitor center to provide presentations and exhibits about the Refuge purposes and management.	✓	✓	✓
2.5.2: Utilize the Woodson Bridge State Recreation Area's amphitheater and evening campfire program, during the summer, to promote the Refuge's goals and purposes (i.e., wildlife viewing opportunities, restoration, fisheries, etc.).		✓	✓
2.5.3: Promote awareness about the value of riparian habitat, management efforts, plant/wildlife identification by utilizing the walking trails for public tours.		✓	✓
2.5.4: Develop a conceptual plan for a reservation-only group campsite at Deadman's Reach Unit, when the unit is opened to the public.		✓	✓
2.5.5: Conduct or host at least 50 tour groups each year utilizing, Rio Vista, Pine Creek, Phelan, Ord Bend, and Packer units.		✓	✓
2.5.6: Continue to collect and annually report public use data for the RMIS, Public Education and Recreation section.		✓	✓

2.6 Public Outreach Objective

Develop an outreach program to attract about 5,500 total annual visits. The program will promote public awareness and understanding of the Refuge resources and management activities by 2005.

Public Outreach Objective Comparison by Alternative			
Objective 2.6 Outreach	Alternative A	Alternative B	Alternative C
Number of annual visits	500	5,500	10,000

Rationale: The Refuge will develop an effective outreach program that will provide two-way communication between the Refuge and the public to establish a mutual understanding and promote involvement with the goal of improving joint stewardship of our natural resources. The outreach program will be designed to identify and understand the issues and target audiences, craft messages, select the most effective delivery techniques, and evaluate effectiveness. It will include education, interpretation, news media, information products and relations with nearby communities and local, State, Federal agencies. The refuge outreach program will follow the guidance of the National Outreach Strategy: A Master Plan for Communicating in the U.S. Fish and Wildlife Service, and America's National Wildlife Refuge System: 100 on 100 Outreach Campaign.

Public Outreach Strategies	Alternative		
	A	B	C
2.6.1: Maintain the Sacramento Refuge Complex web site to promote current recreational and educational opportunities.	✓	✓	✓
2.6.2: Continue to participate or provide information to local events, such as International Migratory Bird Day, Snow Goose Festival, Endangered Species Fair, and the State of the Sacramento River Conference.	✓	✓	✓
2.6.3: Provide a web site link to a composite Sacramento River map of multi-agency public uses and access when completed by California State University Chico.	✓	✓	✓
2.6.4: Host one annual workday/barbecue to clean up the river properties, promote awareness of Refuge management, and network with community members.		✓	✓
2.6.5: Provide interpretive boat tours of the Refuge for partners or scheduled groups annually.		✓	✓
2.6.6: Continue to collect and annually report public use data for the RMIS, Public Education and Recreation section.	✓	✓	✓
2.6.7: Participate in fire prevention education efforts to reduce fire incidence and fire damage. Provide outreach about the role of fire and management uses of fire.	✓	✓	✓
2.6.8: Write news releases for local and State newspapers and articles for magazines when appropriate. Conduct television and radio interviews upon request.	✓	✓	✓

2.7 Volunteer Objective

Develop a volunteer program that consists of up to 12 volunteers that support and help implement the Refuges special events, restoration, and maintenance programs by 2005.

Volunteer Objective Comparison by Alternative			
Objective 2.7 Volunteer	Alternative A	Alternative B	Alternative C
Number of volunteers by 2005	3	12	25

Rationale: The National Wildlife Refuge System Volunteer and Partnership Enhancement Act of 1998 (P.L. 105-242) strengthens the Refuge System's role in developing relationships with volunteers. Volunteers possess knowledge, skills, and abilities that can enhance the scope of refuge operations. Volunteers enrich Refuge staff with their gift of time, skills, and energy. Refuge staff will initiate, support, and nurture relationships with volunteers so that they may continue to be an integral part of Refuge programs and management. The volunteer program will be managed in accordance with the Fish and Wildlife Service Manual, Part 150, Chapters 1-3, "Volunteer Services Program", and Part 240 Chapter 9 "Occupational Safety and Health, Volunteer and Youth Program".

Currently the Sacramento Refuge Complex volunteer program consists of 20 individuals that assist with biological, environmental education, interpretive, wildlife observation, hunting, and maintenance events and activities. Additional individuals are signed up for one-time events such as Brush Up Day of the hunting areas and trail maintenance by Audubon Society. The Refuge supports and participates in annual Eagle Scout projects.

Volunteer Strategies	Alternative		
	A	B	C
2.7.1: Use the Sacramento Refuge Complex volunteer coordinator to increase efforts of recruitment and training of volunteers.	✓	✓	✓
2.7.2: Promote the Refuge through the Sacramento Refuge Complex bookstore, the Altacal Audubon, Sacramento River Preservation Trust and other informal partners.	✓	✓	✓
2.7.3: Recruit volunteers through the Student Conservation Association, California Waterfowl Association Visitor Service Assistants, California State University Chico internship program, and other universities.	✓	✓	✓
2.7.4: Recruit a variety of community groups and individuals (i.e. CSU Chico, Butte College, Boy Scouts, Girl Scouts, Audubon, etc.) with diverse expertise and experiences to complete a variety of Refuge projects.	✓	✓	✓
2.7.5: Host an annual volunteer recognition dinner for volunteers, local community leaders, and Refuge staff.	✓	✓	✓
2.7.6: Facilitate volunteer training workshops to develop skills in: field equipment use (i.e. tractors and mowers); computer data entry software programs; teaching methods to assist with environmental education program; and other skills to facilitate Refuge-specific programs.	✓	✓	✓
2.7.7: Continue to collect and annually report volunteer hours and projects for the Service's regional volunteer program report.		✓	✓

3 Partnerships Goal

Promote partnerships to preserve, restore, and enhance a diverse, healthy and productive riparian ecosystem in which the Sacramento River Refuge plays a key role.

3.1 Partnership Objective

Create opportunities for 25 new and maintain existing partnerships among Federal, State, local agencies, organizations, schools, corporations, and private landowners to promote the understanding and conservation of the Sacramento River Refuge resources, activities, and management by 2015.

Partnership Objective Comparison by Alternative			
Objective 3.1 Partnership	Alternative A	Alternative B	Alternative C
Number of Partners by 2015	13	25	50

Rationale: The Refuge System recognizes that strong citizen support benefits the System. These benefits include the involvement and insight of citizen groups in Refuge resource and management issues and decisions, a process that helps managers gain an understanding of public concerns. Partners support Refuge activities and programs, raise funds for projects, are advocates on behalf of wildlife and the Refuge System, and provide support on important wildlife and natural resource issues. In “Fulfilling the Promise” the Service identified the need to forge new and non-traditional alliances and strengthen existing partnerships with States, Tribes, non-profit organizations and academia to broaden citizen and community understanding and support for the National Wildlife Refuge System.

A variety of people including, but not limited to, scientists, birders, anglers, hunters, farmers, outdoor enthusiasts and students have a great deal of interest in Sacramento River Refuge’s management, fish and wildlife species, and habitats. The number of visitors to the Refuge and the partnerships that have already been developed (CCP, Chapter 1) are evidence of this growing interest. New partnerships will be formed with organizations, local civic groups, community schools, Federal and State governments, and other civic organizations, as funding and staff are available.

Partnership Strategies	Alternative		
	A	B	C
3.1.1: Maintain the Memorandum of Understanding (MOU) with CDFG and California Department of Parks and Recreation to mutually manage, monitor, restore and enhance lands for fish, wildlife, and plants along the Sacramento River.	✓	✓	✓
3.1.2: Continue to work with TNC and River Partners through the use of the Cooperative Land Management Agreements.	✓	✓	✓
3.1.3: Continue to coordinate Refuge activities with the Sacramento River Conservation Area Forum.	✓	✓	✓
3.1.4: Work closely with California Department of Water Resources and State Reclamation Board staff on floodplain management issues. Provide each agency with copies of annual habitat management plans.	✓		
3.1.5: Maintain good relations and open communication with partners.	✓	✓	✓
3.1.6: Actively look for partnering opportunities with local and regional hunting and fishing groups (e.g., California Waterfowl Association, United Sportsmen for Habitat and Access, Chico Fly Fishers).		✓	✓
3.1.7: Pursue opportunities to cost-share projects with other organizations.	✓	✓	✓

Partnership Strategies	Alternative		
	A	B	C
3.1.8: Identify and promote new partnerships to support restoration, enhancement, and management of riparian habitat and its flora and fauna.	✓	✓	✓
3.1.9: Expand opportunities with local Chambers of Commerce to participate in local events and improve dissemination of public recreation literature about the Refuge.		✓	✓
3.1.10: Stay actively involved in other neighboring Federal, State, and local planning processes to protect Refuge resources and foster cooperative management of those resources in the Sacramento River watershed	✓	✓	✓
3.1.11: Continue coordination with the American Bird Conservancy to publicize the Refuge's designation as a Globally Important Bird Area.	✓	✓	✓
3.3.12: Maintain agreements with CDF and local fire departments about fire suppression, and coordinate with them in prevention and hazard reduction work.	✓	✓	✓
3.3.13: Host a Refuge open house or tour each year that will promote Service and Refuge.	✓	✓	✓

3.2: Cooperation with Adjacent Landowners Objective:

By 2015, create opportunities for new and maintain existing partnerships with private landowners to promote cooperation and address mutual concerns.

Cooperation with Adjacent Landowners Objective Comparison by Alternative			
Objective 3.2 Partnership	Alternative A	Alternative B	Alternative C
Create opportunities for new and maintain existing partnerships with private landowners by 2015	All units	All units	All units

Rationale: It is important to communicate with our neighbors to help identify any issues at an early stage and attempt to resolve any conflicts that may exist. The Refuge will continue to participate in the Sacramento River Conservation Area Forum (SRCAF). The SRCAF is a multi-organization 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. This coordination includes both public agencies and private landowners and interests.

Private Landowner Cooperation Strategies	Alternative		
	A	B	C
3.2.1: Maintain contact with adjacent neighbors to discuss mutual concerns and opportunities.	✓	✓	✓
3.2.2: Implement improvements and operational revisions to resolve issues with adjacent landowners that are compatible with the mission of the Service and purpose of the Refuge as well as consistent with the funding available to the Refuge.	✓	✓	✓
3.2.3: Design habitat restoration projects to address considerations of adjoining landowners including but not limited to: <ul style="list-style-type: none"> ▪ 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 	✓	✓	✓
3.2.4: Continue to consult with adjoining landowners as part of the development of plans for proposed restoration projects and other physical changes to the Refuge.	✓	✓	✓
3.2.5: 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 Refuge.	✓	✓	✓
3.2.6: Commission field surveys as needed to identify specific property boundaries where uncertainty has contributed to substantive violations of Refuge regulations.	✓	✓	✓

4 Resource Protection Goal

Adequately protect all natural and cultural resources, staff and visitors, equipment, facilities, and other property on the refuge from those of malicious intent in an effective, professional manner.

4.1 Law Enforcement Objective

Provide visitor safety, protect resources, and ensure compliance with regulations through law enforcement. Increase the number of law enforcement officers (from 1 to 2) and increase the monitoring of significant resource sites from quarterly to monthly by 2010.

Law Enforcement Objective Comparison by Alternative			
Objective 4.1 Law Enforcement	Alternative A	Alternative B	Alternative C
Law Enforcement Officers	1	2	3
LE Monitor Significant Resource Sites by 2010	Quarterly	Monthly	Monthly

Rationale: A common belief among neighboring landowners is that with public ownership or easements, public access could result in increase vandalism and theft of agricultural equipment, poaching, and ignoring private property rights. The layout of the refuge in terms of is elongated and fragmented nature crossing through four counties requires law enforcement coordination on the Federal, State, county and local levels. Enforcement is further complicated because many units are accessible only by water.

Law Enforcement Strategies	Alternative		
	A	B	C
4.1.1: Develop MOUs with various law enforcement agencies to improve coordination, improve safety and coordinate efforts in areas of special concern.	✓	✓	✓
4.1.2: Conduct periodic patrols of the Refuge by boat.	✓	✓	✓
4.1.3: Develop MOUs with state and local law enforcement agencies to implement river boat patrols to enforce State and Refuge regulations.	✓	✓	✓
4.1.4: Allow only public use that is compatible with the primary objective of habitat management plans and that is strictly controlled.		✓	✓
4.1.5: Permit boat access through Refuge lands that are open to the public during high water events; close to public entry and post all sensitive areas.		✓	✓
4.1.6: Establish public access near State parks and State wildlife areas where public use is a primary purpose.		✓	✓
4.1.7: Provide public education and signage as part of law enforcement programs and provide a sufficient level of law enforcement from various agencies to address these issues.		✓	✓
4.1.8: Employ two full-time park rangers (refuge law enforcement officers) and supplement their duty schedule with dual-function officers. The officers would also support the other refuges within the Sacramento Refuge Complex and coordinate their activities with other local, State, and Federal law enforcement agencies.		✓	✓
4.1.9: Ensure all officers are fully trained, equipped, and prepared to perform preventative Refuge law enforcement duties.	✓	✓	✓
4.1.10: Maintain a daily law enforcement presence to ensure that violations are deterred or successfully detected and the violators are apprehended, charged, and prosecuted.	✓	✓	✓
4.1.11: Encourage refuge officers to work closely with the game wardens from CDFG and deputy sheriffs from Tehama, Glenn, Butte, and Colusa counties.	✓	✓	✓
4.1.12: Develop a Law Enforcement Plan for Sacramento River Refuge.	✓		
4.1.13: Annually maintain boundary, closed area and public use signs.	✓	✓	✓
4.1.14: Conduct law enforcement patrols at all known archaeological sites on a regular basis to inspect for disturbance and illegal digging and looting.	✓	✓	✓
4.1.15: Investigate fire causes and pursue fire trespass cases.	✓	✓	✓

4.2 Safety Objective

By 2005, provide Refuge facilities and lands that are safe for public use and management activities through annual inspections and routine maintenance.

Safety Objective Comparison by Alternative			
Objective 4.2: Safety	Alternative A	Alternative B	Alternative C
Law Enforcement Officers	1	2	3
LE Monitoring of Significant Resource Sites by 2005	Quarterly	Monthly	Monthly

Rationale: Visitor and staff safety is a high priority for the Refuge. Refuge lands stretch over 77-miles of the Sacramento River, so it is extremely important to have comprehensive safety strategies. Illegal activities, such as drug cultivation, poaching, vandalism, and vehicle stripping, are present on Refuge lands where there will be public activities. Strict law enforcement and the support of partners will be necessary to provide a safe environment for visitors and staff. The Refuge is committed to training staff in the most current safety standards and practices, maintaining facilities, coordinating with law enforcement partners, and providing an effective monitoring program to provide the safest environment possible.

Safety Strategies	Alternative		
	A	B	C
4.2.1: Administer and monitor required permits, licenses, and inspections on a repetitive basis under the Federal Facility Compliance Act and Service policy.	✓	✓	✓
4.2.2: Promptly replace, upgrade, or temporarily close any facility that comprises public safety.	✓	✓	✓
4.2.3: Minimize injuries to staff and visitors through preventive measures and be prepared to respond to injuries if they occur.	✓	✓	✓
4.2.4: Ensure that safety procedures, designated personnel, equipment and supplies (e.g., first aid kits and fire extinguishers) are in place and kept current.	✓	✓	✓
4.2.5: Conduct monthly staff safety meetings covering pertinent topics and conduct annual safety inspections to ensure that Refuge facilities and lands are safe for public and staff use.	✓	✓	✓
4.2.6: Train and refresh staff in CPR and basic first aid.	✓	✓	✓
4.2.7: Maintain existing access roads and parking areas by grading, mowing, and replacing culverts, as needed, for public vehicle access, law enforcement, and habitat management activities.		✓	✓
4.2.8: Work with the State of California, Department of Boating & Waterways to modify the boat launch area at the Packer Unit to improve safety for anglers and other visitors.	✓	✓	✓

Safety Strategies	Alternative		
	A	B	C
4.2.9: Investigate the need for turn lanes on Highway 45 for the Packer unit, Highway 32 for the Pine Creek unit, South Avenue for the Rio Vista unit, and Ord Ferry Road for the Ord Bend unit.		✓	✓
4.2.10: Maintain secondary roads and pathways for public pedestrian traffic by grading, mowing and replacing culverts, as needed.		✓	✓
4.2.11 Help protect refuge visitors, neighbors, and employees through fire prevention, hazard reduction, and fire trespass programs.	✓	✓	✓

Appendix 2. Response to Comments

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1.0 INTRODUCTION

This appendix contains a detailed summary of all comments that were received in response to the Draft Comprehensive Conservation Plan/Environmental Assessment (Draft CCP/EA) for Sacramento River National Wildlife Refuge during the official public comment period. Public comments on the Draft CCP/EA were accepted from July 8, 2004 to August 20, 2004. Any additional comments received up until August 31, 2004 were also accepted and analyzed. Comments received after August 31, 2004 were reviewed for content, but were not used in the analysis.

All comments were reviewed and organized so that an objective analysis and presentation of the comments could be made (Section 2). Each piece of correspondence was assigned an identification number. Note that for simplicity sake, the word “letter” is generally used throughout this appendix to refer to any comment received, whether by letter, fax, postcard, email, comment sheet, or telephone call. A database was created to help analyze the nature and extent of the range of comments received. Service responses are included in Section 3. The names and affiliations of all of the people who commented are listed at the end of this Appendix (Section 4). Section 5 explains and summarizes the changes made between the Draft and Final versions of the Comprehensive Conservation Plan and Environmental Assessment. In cases where a letter pointed out a minor typographical or editorial error in the Draft CCP/EA/ the change was made in the Final CCP/EA, but no response is included in this summary.

2.0 QUANTITATIVE ANALYSIS OF COMMENTS RECEIVED

2.1 Summary of Comments Received on the Draft CCP/EA and the Response Process

The Service received a total of 1,187 comment letters (via letter, fax, postcard, e-mail, comment card, phone conversation) on the Sacramento River Refuge CCP/EA during the comment period.

2.1.1 Public Meetings

To facilitate public review and comment on the Draft CCP/EA, the Service hosted four public meetings (Table 1). Service staff made formal presentations and provided time for questions and comments at the meetings. Service staff and visual aids were also available at each topical station (refuge management, visitor services, wildlife and habitat, and fire and maintenance) to facilitate dialog. Hardcopies and CD copies of the Draft CCP/EA were available for the public to review and take with them.

At the meetings, the public was invited to provide comments on the contents of the Draft CCP/EA. Comment sheets were provided. The public meetings were attended by a wide

range of people, including federal, state, and local agency staff; representatives of organizations; neighbors of the Refuge; and other members of the general public. All four meetings were held in the evening from 6 p.m. to 8 p.m.

Table 1. Date, Location and Attendance During Public Meetings on the Draft CCP/EA

Date	Location	Attendance
July 20, 2004	Willows, CA	6
July 21, 2004	Chico, CA	42
July 27, 2004	Red Bluff, CA	22
July 29, 2004	Colusa, CA	19

2.1.2 Affiliations

Table 2 provides a summary of the affiliation of commentors. Names and entities of the commentors are listed at the end of this Appendix (Section 4). Many of the comments received had letterhead and signatures from various agencies, organizations, and businesses; however, unless the entity was specifically represented in the comment, the comment was left in the general public affiliation type.

Table 2. Commentor Affiliation

Affiliation Type	Number Of Letters Received
Federal Agencies	2
State Agencies	3
Local Agencies	4
Organizations	16
Businesses	9
General Public	1,153
TOTAL	1,187

2.1.3 Comment Media

Comments were received in a variety of formats during this process, including letters (and postcards), e-mails, faxes, phone conversations, and comment sheets distributed by the Service (primarily at public meetings and local businesses) to facilitate the comment process. A hardcopy of the Draft CCP/EA was placed at local businesses as well as local libraries for review (locations are listed in Appendix J). The distribution of media type is summarized below in Table 3. Note: no petitions were received as part of the comment process, although a few of the form letters contained up to 8 signatures. It should be recognized that the increased use of e-mail and other internet-based communication tools contributed to the large number of comments received on the Draft CCP/EA. The Service considered all comments received as part of the decision-making process.

Table 3. Type of Media Used

Type of Media	Number of Comments Received
Letter	126
E-mail	863
Fax	24
Phone Record	7
Comment Sheet	145
Letter & Email	11
Email & Fax	11
TOTAL	1,187

2.1.4 Place of Origin of Commentors

Although the Sacramento River Refuge is a relatively new refuge, it is well known and the anticipation of its opening to the public has been recognized throughout the CCP process. The greatest number of respondents (54%) was from California, with 38 other states or outside of the United States making up 1% or less. 407 commentors did not provide a place of origin (Table 4).

Table 4. Commentor State of Origin

STATE	# of respondents	STATE	# of respondents
Outside of the US	6	NC	6
AL	1	NE	1
AR	3	NH	1
AZ	3	NJ	2
CA	639	NM	1
CO	1	NV	2
DC	1	NY	15
FL	7	OH	4
GA	1	OK	2
HI	1	OR	9
ID	5	PA	2
IL	7	SC	2
IN	5	TN	1
KS	3	TX	12
LA	2	UT	2
MA	6	VA	4
MD	5	WA	8
MI	1	WI	1
MN	2	WV	1
MO	3	No state given	407

2.2 Quantitative Summary of Comments Received – Alternatives and Issues

Section 3 of this Appendix presents a summary of specific comments received, followed by the Service's responses. However, it is first useful to present a general summary of the nature of comments received, based on issue type. The information presented in this section includes a relatively quantitative analysis of the information received and analyzed. A more precise analysis was difficult due to the overlap of key issues and the open ended nature of the comment process. Data was recorded only for issues specifically identified by commentors. For example, if a letter specifically addressed only one key issue, it was tallied under that issue topic only, even though a position was implied on other key issues. Thus, evaluation and assessment of comments is strongly tied to the nature and content of the specific comments received. Service staff have read and reviewed every letter received during the comment process, and the information contained in those comments was used to help develop the Final CCP/EA, and refine the Preferred Alternative.

2.2.1 Alternative Support

The Draft CCP/EA presented an analysis of 3 alternatives: Alternatives A, B, and C. Commentors often expressed their explicit support for (or opposition to) a particular alternative by name. In many instances, commentors qualified their support for a given alternative, that is, they noted that they preferred a particular alternative overall, but also recommended certain additions or deletions of specific action components. For this analysis, the Service refers to this conditional support as support "with changes." Out of the 1,187 comment letters, 787 (66%) of the comments supported an Alternative. Out of those that expressed support for an Alternative, there was strong support expressed for Alternative C (86%, with and without changes). Alternative B, the Preferred Alternative was supported by 9%, with and without changes. In addition, almost all agencies and governments expressed support for the Preferred Alternative. Five percent supported either Alternative B or C. Very little support was given for Alternative A, the No Action Alternative. Table 5 summarizes the commentors' stated support for the given alternatives. Out of 1,187 comment letters, 400 (34%) did not express support for an Alternative. These commentors expressed either opposition or support for a specific issue.

Table 5. Support for Defined CCP/EA Alternative

Alternative	Number (percent)
Alternative A	3 (<1%)
Alternative B	54 (7%)
Alternative B with changes	15 (2%)
Alternative C	664 (84%)
Alternative C with changes	12 (2%)
Alternative B or C	39 (5%)
Total Comments on Alternative Preference	787

2.2.2 Issues

Table 6 contains a list of issues that were specifically mentioned in the comments received. It is important to note that comment letters may have contained more than one issue. Within a single comment letter, there may have been multiple comments on a specific issue; however, the issue was only recorded once per comment letter in this analysis. Either support or opposition was expressed for each of the issues, except for the no hunting issues which consisted entirely of those opposed to hunting on the Refuge.

After reviewing the 1,187 comment letters, 1,681 comments within 19 issues were identified. Many of these issues were also identified during the CCP scoping process. Out of the 1,681 comments, the majority dealt with hunting (57%) with 13% opposing hunting and 44% either supporting or specifically mentioning hunting in their comment.

Table 6. Comments Concerning Specific Issue

Issue	Number (percent)
Hunting	747 (44%)
Fishing	346 (21%)
Opposed to Hunting	219 (13%)
Refuge/River Access	178 (11%)
Agriculture	48 (3%)
Other	36 (2%)
Other Recreation	23 (1%)
Refuge Management	22 (1%)
Adjacent Landowner	12 (<1%)
Law Enforcement/Fire	11 (<1%)
Wildlife Observation	10 (<1%)
Flood Control	10 (<1%)
Boat Ramps	5 (<1%)
Questions	5 (<1%)
Environmental Education	2 (<1%)
Interpretation	2 (<1%)
Photography	2 (<1%)
Disabled Access	2 (<1%)
Camping	1 (<1%)
	1,681

3.0 SUMMARY OF COMMENTS AND SERVICE RESPONSES

This section provides a summary of the individual comments received on the Draft CCP/EA, followed by the Service's responses to those comments. The comments were organized into 14 topic areas many of which are issues identified in Table 2. The topic areas include:

- Floodplain Management/Hydrology
- Adjacent Landowner Concerns
- Biological Comments
- Refuge Management
- Biological Issues
- Biological Integrity
- Hunting
- Cultural Resources
- Sanctuary
- Public Access
- Policy
- Other CCP Comments
- EA Comments
- Praise

Within each topic area, similar or related comments were grouped by subtopic and presented as bulleted items. In many cases, the text in the bulleted comment is a quote from a particular letter; in some cases, very similar comments were merged into a single bullet or comments were paraphrased to make them more concise. Every effort was made to present all substantive comments in this summary; the specific comments presented here are a representative sample of all the comments received. A comment that addressed several issues was sometimes placed in a single bullet, in the section to which it was most closely related. Therefore, there is some overlap between topics. The Service response follows each group of comments. A copy of all of the original comments received on the Draft CCP/EA is maintained on file at Sacramento Refuge Complex headquarters.

3.1 Floodplain Management/Hydrology

Comment: While it is commendable that the Service recognizes the need to protect the integrity of the system of levees, weirs, and overflow areas the wording in Strategy 1.2.3 could and should be more strongly worded to state a Refuge goal is to retain and enhance existing flood flows. The words “coordination” and “studies” are a subterfuge for inaction within governments.

Service Response: Authorizing legislation of the Refuge is described in Chapter 1 of the CCP in the section titled Sacramento River National Wildlife Refuge. The purposes of the refuge are linked to the enabling legislation which is also described in Chapter 1 in the Refuge Purposes section. The process used to determine refuge goals, which are tied to

the purpose of the Refuge is explained in Chapter 2 in the Determining the Refuge Goals, Objectives, and Strategies section. Although the Service does recognize the importance of the Sacramento River Flood Control Project (SRFCP) and requirements to maintain flood control infrastructure, flood control was not defined as a specific purpose for which the Sacramento River National Wildlife Refuge was established.

Coordination and consultation with regulating agencies, environmental compliance including NEPA, and engineering/hydraulic analysis are required for federal actions beyond regular and reoccurring maintenance activities. This document, which involved coordination with other agencies and technical studies and analysis, is part of the process.

Comment: Restoring floodplain hydrology through refuge properties near Deer Creek, Tehama County.

Service Response: Chapter 5, Objective 1.2 describes the refuge management options for floodplain restoration and river processes. The benefits to allowing floodwaters to enter refuge lands should not only improve fish and wildlife habitat, but also provide additional acreage for floodwater storage. Prior to any restoration efforts including both re-vegetation and/or topographic modifications, the refuge conducts in depth ecological and engineering studies to determine the benefits to fish and wildlife as well as potential impacts to neighboring lands. A detailed feasibility study was conducted on the Rio Vista Unit (PWA, 2004) to determine the benefits and impacts to restoring floodplain topography on the property southeast of Woodson Bridge. The study indicated, by restoring historic topographic features on the Rio Vista Unit, there would be ecological benefits and minor local flood hazard reduction in the vicinity of the Rio Vista Unit. The Refuge is in the process of conducting preliminary endangered species consultation and engineering designs to improve drainage on South Avenue through Refuge lands.

Comment: The soils section and geology/hydrology section state that surface erosion and sedimentation rates would change minimally as a result of the proposed alternatives. These statements need clarification and qualification. If floodplain hydrology is restored erosion potential, deposition, and sedimentation should be expected to shift as the floodplain develops.

Service Response: Restoration of agricultural lands to riparian habitat involves normal agricultural practices including orchard removal, discing and land plain work for seedbed preparation and weed control.

Prior to any action involving floodplain changes the Refuge would consult with engineers to conduct hydraulic modeling of the restoration site and identify potential impacts. The Refuge and its restoration partners would design revegetation and other restoration activities accordingly. All restoration plans must be sent to the State Reclamation Board for review and comment. Projects with specific goals for increased flood water storage on Refuge lands to reduce flood pressure on surrounding communities include La Barranca,

Rio Vista, and Pine Creek.

Comment: If the intent of the Refuge is to return the floodplain between the levees to an open area as represented by these pictures in the Draft CCP, it would greatly benefit flood protection to properties in the Butte Basin.

Service Response: It is the intent of the Refuge to restore, enhance and manage the natural, indigenous habitats and vegetation that once occurred and potentially would occur at the Refuge. These habitats include open grasslands, savannas, woodlands, and forests. The Refuge and associated restoration partners use hydraulic models to determine the impacts of restoration design (i.e., vegetation structure and density) on flood flow conveyance and levees. The Refuge has planted open habitats such as grasslands and savannas where needed to maintain flood flow conveyance and protect levees.

Comment: The second sentence in the second paragraph on page 23 of the Draft CCP is misleading and that riparian forests have not been weakened by dams and an altered hydrograph. The opposite is true with summer water flows augmented from Klamath River flows and reservoir releases.

Service Response: Modern flood control and water storage and conveyance systems on the Sacramento River have altered the hydrograph so the flow regime (i.e., timing, distribution, and volume of flow, over bank flooding) and associated physical processes of main channel migration (i.e., river meander), erosion, and deposition/sedimentation have been greatly altered. The Sacramento River is a meandering river and the vegetation, plants, fish, and wildlife are adapted to the seasonal, convulsive nature of these physical processes. Riparian trees and shrubs survive prolonged flooding during dormancy and subsequent drought by tapping into the water table. As trees fall into the river due to erosion on one side of the river, corresponding deposition creates a substrate for seedbed, while seedling roots follow a trailing water table. Over time, the meandering Sacramento River built natural levees that valley oak forests eventually became established and thrived upon. The extent of these forests can be surmised by the extent of Columbia-class soils in the Sacramento Valley. The Sacramento River riparian corridor was a large, diverse mosaic of vegetation, sand and gravel bars. Modern flood control and water storage and conveyance structures ultimately made it possible to clear oak woodlands and riparian forest for agriculture. This change to agricultural land use is largely responsible for the loss of 98 percent of California's riparian habitats. It should also be noted that flows of the Sacramento River are augmented by water from the Trinity River, not the Klamath River.

3.1.1. Restoration

Comment: Consider the impacts of vegetation, sediment transport, and geomorphology on the hydraulic capacity of the River. Evaluation should include hydraulic modeling to determine effects on bank stabilization and channel capacity.

Service Response: Restoration planning activities (Restoration EA, USFWS 2002) fall under the NEPA process for environmental and public involvement compliance. These documents include planning, restoration design, hydraulic analysis, impact analysis, and public involvement. The use of computer models that describe water flow is a standard engineering practice employed to evaluate changes in water flow resulting from a project. There are many different models employed for this purpose, however they are all based on the physics that describe moving water. The basic approach is to calibrate the various model parameters such as water depth and velocity to a known set of conditions on the landscape. Project conditions such as a levee, a bridge, or a change in land cover use are then input into the computer model. The model is then used to compare the resulting project conditions to without project conditions to aid in project design. The detailed, site specific design and collaboration takes place once funding is secured. During the restoration planning process, the Service and its partners are relying more on the expertise and experience of local landowners or tenant farmers, restoration ecologists, and engineering and hydraulic engineers to assist in the design of restoration projects. All site plans are reviewed by the State Reclamation Board, adjacent landowners, and the SRCAF. Although it is the intent of the refuge to restore or enhance all refuge properties in order to fulfill the purposes and accomplish the goals of the Refuge by providing high quality riparian habitat, properties not covered in the Restoration EA (USFWS 2002) will require further analysis and public involvement. It is the responsibility of the refuge manager to ensure that any Refuge actions (e.g. restoration projects) are in compliance with NEPA and other applicable laws and regulations.

Comment: Restore drainage swales/topography through refuge lands prior to restoration

Service Response: The Refuge will focus on the restoration and enhancement of historic topographic features during the planning stages of restoration design on future projects to enhance ecosystem restoration and reduce localized flood hazards prior to implementation. Under Objective 1.2 Floodplain and River Process of the CCP, the Service has identified strategy 1.2.1 as the method for improving the restoration planning process.

Changed CCP, Chapter 5, Floodplain and River Process strategy 1.2.1 to include topographic features: Modify privately constructed levees, *restore or enhance topographic features*, and other bank stabilization features on Refuge lands....

Comment: Statement on page 48 of the Draft CCP and text about bank erosion rates on the Sacramento River is misleading and does not attempt to address how Tehama County

is much different than that of counties downstream.

Service Response: The Service added text to this section of the CCP to clarify differences in erosion rates among Red Bluff to Ord Bend, Ord Bend/Llano Seco to Princeton, and Princeton to Colusa.

Comment: Potential impacts of construction projects associated with the CALFED feasibility study currently being conducted for the protection of the M&T Pumping Plant is not included in the Draft EA.

Service Response: Additional text describing the feasibility/NEPA process was added to River Management section in Chapter 4 of the CCP. Chapter 5, Objective 1.2: Floodplain and River Process section identifies the units of the Refuge that require technical investigation pertaining to future management decisions. Strategy 1.2.3 identifies the need to work with Federal, State, county, levee and irrigations districts to investigate best management practices for habitat and flood management purposes through technical studies and agency coordination. There has been no action proposed as a result of the M&T Pumping Plant Feasibility Study. Therefore, the results are not covered under this NEPA process and documentation. The results of the feasibility study will determine the need for additional environmental and/or NEPA compliance.

Changes to the CCP document to include in Chapter 5, under strategy 1.1.4 bullet 2 added the M&T Pumping Plant Feasibility study. Under strategy 1.2.3, changed text to say: Work with Federal and State agencies, counties, and levee and irrigations districts to investigate best management practices for habitat, *water diversion* and flood management purposes through technical studies, coordination and cooperative projects.

3.1.2. Feasibility Studies and Other Investigations

Comment: CCP lacks an adequate description of future conditions since current feasibility studies (Llano Seco and La Barranta) are not cited as projects or alternatives. If the feasibility studies being conducted at Llano Seco Riparian and Pumping Plant were referenced in CCP, the subsequent conclusions would justify need for EIS.

Service Response: Additional text explaining the Feasibility Study/NEPA process was added to River Management section in Chapter 4 of the CCP. Chapter 5 identifies these studies and describes the strategies (Riparian Vegetation and Habitat Strategy 1.1.4 and Floodplain and River Processes strategies 1.2.1-1.2.3) used to address floodplain management issues. The future conditions on the Llano Seco and La Barranta properties have yet to be determined. These site specific projects are currently being analyzed and will be covered under separate environmental compliance when necessary. The results of the feasibility studies and subsequent NEPA process for each project will dictate whether an EIS is needed.

Comment: Are the feasibility studies at Llano Seco and La Barranca part of No Action alternative?

Service Response: Yes, these feasibility studies are part of the No Action Alternative. Please see the Technical Analysis section of Chapter 4 of the CCP for more details.

Comment: The CCP must disclose linkages to Anadromous Fish Restoration Program (AFRP) goals and objectives for this project.

Service Response: Please refer to Appendix M of the CCP which has been revised to include a description of many federal, state and local programs. The program goals of AFRP that relate to the CCP have also been listed.

3.2 Adjacent Landowner Concern Theme

Comment: Concern from adjacent land owners regarding the following issues: trespass, hunting and weapons restrictions, wildfire, buffer zones, access roads, long-term maintenance funding, and cooperation.

Service Response: Trespass on private lands is a problem throughout the country. The Refuge works with its neighbors to develop strategies to discourage trespass and protect both the resources on the Refuge as well as those of the neighbors. Currently, the Refuge has 2 law enforcement officers (funding for a third officer in fiscal year 2005) that patrol along the Sacramento River Refuge. The Refuge has posted boundaries on an annual basis and more recently began constructing gates and fences at access points to reduce the potential of trespass. Each gate is signed with access restrictions and a contact number for more information. As the Refuge extends over 77 river miles on 26 separate properties, we rely heavily on information provided by our neighbors to identify specific issues or concerns they may be having with regard to Refuge properties. The Refuge also works within the parameters of an MOU with State Parks and Department of Fish & Game to conduct law enforcement activities along the Sacramento River.

Hunting was identified by Congress as a priority public use activity on National Wildlife Refuges in the 1997 amendments to the National Wildlife Refuge Administration Act of 1966. Although the Proposed Action of the CCP opens approximately 50% of the Refuge to hunting over the next 15 years, the other half of the Refuge will be open to Big 5 uses or will be closed to all public uses (sanctuary). For example, the majority (571 acres) of the Dead Man's Reach Unit has been identified as more suitable for the fishing, wildlife observation, photography, environmental education, and interpretation (Big 5 uses). In Chapter 1, under Refuge River Jurisdiction, the Service acknowledges the State's "public trust easement" in the area between the low water mark and the ordinary high water mark. This acknowledgement is illustrated in the proposed public uses (Big 6: hunting, fishing, wildlife observation, photography, interpretation, and environmental education) allowed on refuge lands below the high water mark as interpreted to be those lands below

cut banks including gravel and sandbars including 66 acres on the Dead Man's Reach Unit. Safety and maintaining consistency with Department of Fish & Game regulations on state lands adjacent to the Sacramento River Refuge is critical; hence, **hunters are restricted to the use of shotguns and archery equipment while hunting the Refuge.** All other types of firearms are prohibited while on the Refuge.

Fire prevention and hazard reduction programs are also described in Chapter 4 of the CCP. In 2002, the Refuge began to implement the Wildland Urban Interface program on Refuge units to reduce the threat of wildfires on urban areas and landowners adjacent to the Refuge. Projects under this program include prescribed burning to reduce fuels, permanent and seasonal fire break construction, and educational signage. Development and design of site specific projects includes involvement from local landowners, rural, county and state fire fighting departments, the refuge manager and the Complex fire management officer. Site specific restoration designs, developed in cooperation with our neighbors, take into account law enforcement access, boundary signing, fire breaks, and maintaining low growing vegetation to reduce potential impacts around the perimeter boundaries of each unit.

Vehicle access is limited to state and county roads. All but eight of the Refuge units that are proposed to be opened to the public require access via boat only. Those units that are located adjacent to public roads will be accessible by vehicle in that parking lots will be developed at the road, but access to the interior of the units will be pedestrian only. The gravel road located off of River Road in Butte County is not considered a public road and it is not proposed to be open to the public for access to Dead Man's Reach. Access is by boat only.

Funding for annual maintenance staffing and equipment is dependant on the federal budget that is developed by Congress and the President annually. The current and proposed annual staffing and equipment needs are maintained in the national data base and can be found in Chapter 6 under Funding & Staffing.

In Chapter 5 of the CCP, under Goal 3 Partnerships, cooperation and coordination with neighbors is discussed in strategy 3.2.1 through 3.2.6 Private Landowner Cooperation Strategies.

Comment: Concerned about the impacts of unmonitored, un-buffered hunting and the lack of mitigation aimed at protecting neighbors from potential safety, trespass, and annoyance issues.

Service Response: Appendix B contains the Service's required compatibility determinations (CD) for public uses on the Sacramento River Refuge. Included in this section is the CD for hunting. The compatibility determination includes a description of use, anticipated impacts and how they are addressed, and stipulations necessary to ensure compatibility. The description of use includes weekly law enforcement patrols and field

checks to monitor use and address potential conflicts. The Refuge Complex currently has 2 refuge officers (funding for a third officer in 2005) available to cover the 10,000 acres analyzed in this plan. Potential conflicts will be minimized by closing all boundaries with adjacent private land to discourage trespass, maintaining boundary signs and posting public information signs where appropriate. Hunting is not allowed on Refuge units that are either small in size or are located near private residences, businesses, or occupied buildings. The Service has modified Rio Vista and Ohm Units in order to address comments on the Draft CCP expressed by Refuge neighbors over hunting activities potentially occurring near permanent residences. The Service has also added a refuge specific regulation which does not allow hunting within 50 feet of any landward boundary adjacent to privately owned property. In addition, as per Fish and Game regulations, it is unlawful to hunt or discharge while hunting, any firearm or deadly weapon within 150 yards of any occupied dwelling house, residence, or other building or any barn or other outbuilding used in connection therewith. The 150-yard area is a “safety zone”.

Of the almost 1,200 comment letters we received, 784 respondents supported either Alternative B or C compared to the three comment letters supporting Alternative A. In addition, 219 letters were against hunting, but did not indicate a preferred alternative. From these comments, we conclude that growing public sentiment is to open some of the Refuge to public use.

Comment: Squirrels and other rodents are an ongoing problem with adjacent agricultural operations; the Refuge should control at Service expense.

Service Response: In Chapter 5 of the CCP, under Goal 3 Partnerships, cooperation and coordination with neighbors is discussed in strategy 3.2.1 through 3.2.6 Private Landowner Cooperation Strategies. The Refuge is now incorporating perimeter firebreaks and law enforcement patrol access roads into restoration planting designs. These maintained perimeters along private properties engaged in orchard operations have served to reduce the impacts of ground squirrels and other rodents on adjacent properties (Charles R. Crain, Jr. personal communication). The Refuge and its partners have also attempted to biologically control rodents associated with orchard operations by installing owl boxes in strategic locations near these “open” boundaries in an attempt to minimize the impacts of wildlife on adjacent lands. These strategies are designed on a case-by-case basis working with the adjacent landowner so that both parties are satisfied with the outcome.

3.2.1 Relationships

Comment: The Refuge should sustain and improve the relationship with adjoining landowners.

Service Response: In Chapter 5 of the CCP, under Goal 3 Partnerships, cooperation and coordination with neighbors is discussed in Private Landowner Cooperation Strategies 3.2.1 through 3.2.6.

Comment: How will you maintain contact with adjacent neighbors to discuss mutual concerns as stated in Strategy 3.2.1?

Service Response: The process for maintaining contact with adjacent landowners is outlined in the CCP, Chapter 4 Cooperation with Adjacent Landowners. The refuge manager is the primary contact for cooperation with adjacent landowners and public agencies. He will keep the line of communication open to help identify any issues at an early stage and attempt to resolve any conflicts that may exist.

3.2.2 Elderberry Beetle

Comment: Concern regarding conservation guidelines for valley elderberry longhorn beetle, buffers around elderberry plants, and weed control.

Service Response: Conservation guidelines for the valley elderberry longhorn beetle (VELB) are out of the scope of this document. The conservation guidelines were issued by the Sacramento Fish and Wildlife Office to assist those needing incidental take authorizations in developing measures to avoid and minimize adverse effects on the VELB. The Refuge does not enforce Endangered Species Act regulations on private lands. However, the Refuge self-imposed, 100-foot valley elderberry shrub-free buffer (Appendix A, Environmental Assessment, Mitigation Measures) is intended for the boundaries between private orchards, levees, roadways and that of Refuge restoration sites so that agricultural pesticide drift from these neighboring private orchards and facility maintenance operations will not affect VELB habitat in restoration sites or adjacent landowner operations.

Comment: Concern about the 100-foot valley elderberry shrub-free buffer adjacent to neighboring private property and importance of valley elderberry shrub restoration adjacent to existing habitat to valley elderberry longhorn beetle dispersal.

Service Response: The Refuge acknowledges the importance of existing “old growth” riparian forest as a source for dispersing VELB. The 100-foot valley elderberry shrub-free buffer is intended for the boundaries between private orchards and Refuge restoration sites so that agricultural pesticide drift from these neighboring private orchards and fields will not affect VELB habitat in restoration sites.

3.2.3 Other Adjacent Landowner Issues

Comment: The gravel bar area to the northeast and on the opposite side of the river from Ohm is an area of disputed ownership.

Service Response: The ownership of this property is in question due to the meander of the River. The issue has been referred to our Solicitor's Office for resolution. In the interim, the area has been designated as an "Area of Disputed Ownership" and the use (e.g. Sanctuary) will not be designated until the issue is resolved.

Comment: Two individuals have easements to walk and/or picnic on the Mooney Unit. Another individual has a lifetime easement to hunt on this property, accompanied by one guest, during the State season for game birds and mammals. The hunting easement holder believes that his easement is *exclusive* and will be violated if the Refuge opens this unit up to the public.

Service Response: The Service and the individual holding the lifetime easement have worked out an agreement regarding the Mooney Unit. This unit and the northern 62 acres of the Ohm Unit will be closed to waterfowl hunting. However, these areas will be open to other hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Contact the refuge manager for details.

3.3 Refuge Management

Comment: Impacts of restoration on farmland, cooperative land management agreements and coordination with agencies.

Service Response: To date, the Refuge and its partners have restored approximately 3,700 acres of frequently flooded farm ground to high quality riparian habitat. Under Alternative B, the Refuge proposes to restore or enhance 5,855 acres of high quality floodplain riparian habitat over a 15 year period by converting the remaining frequently flooded 1,200 acres of orchard lands, 724 acres of row crops, and 870 acres of fallow ground to habitat. Impacts to local economy and agricultural industry were analyzed in the Environmental Assessment Proposed Sacramento River National Wildlife Refuge (USFWS 1989) and the Environmental Assessment for Proposed Restoration Activities on the Sacramento River National Wildlife Refuge (USFWS 2002). From a regional standpoint, the proportion of lands removed from agricultural production is relatively small. These lands are also susceptible to regular flooding and erosion. Short term losses to the local economy may be partially offset by increased opportunity for public use activities and tourism and the impacts to the farming community will not be significant.

The Cooperative Land Management Agreements, whereby tenant farmers continue to work active refuge orchards until restoration funds become available or the orchard is no longer productive, allow the local farmer to phase out those portions of an orchard that were sold on a willing seller basis. Although, this does not directly mitigate for the land use change, it does allow for those that may be affected to modify long-term plans over a 3-10 year period of time.

The Service is a signatory of the Sacramento River Conservation Area Forum (SRCAF).

The SRCAF (SB 1086) acts as the forum for private landowners, stakeholders, conservation groups, federal, state and local government agencies to communicate, coordinate and inform the public on activities occurring along the Sacramento River. The Refuge is an active participant in this process. Refuge staff provided regular briefings on refuge operations, new projects, and CCP status over the past 3 years. Refuge staff conducted two briefings for the SRCAF Technical Advisory Committee and Board members prior to release of the Draft CCP. The Refuge also coordinates with the State Reclamation Board Engineer to review site specific restoration plans prior to the Refuge finalizing the plans.

Comment: Some of the land (2,685 acres as indicated in the Farming Compatibility Determination) that may be acquired or converted is under the Williamson Act contract.

Service Response: Currently, there are no Refuge lands under Williamson Act contract. Since a Williamson Act contract runs with the land and is binding on all successors, the Refuge will coordinate with the California Department of Conservation if any of the properties that the Refuge wishes to purchase in the future has a Williamson Act contract.

Comment: Suggestion to plant food plots for wildlife in the interim between agriculture and habitat restoration.

Service Response: The Refuge acknowledges the utility of food plots to certain game species. However, it is the goal of the National Wildlife Refuge System to maintain biological integrity, diversity and environmental health. The Refuge plans to accomplish this through restoration, enhancement and management of natural, indigenous habitats and vegetation that will benefit the broadest range of plants and wildlife indigenous to the middle Sacramento River. It is the policy of the Refuge to maintain commercially productive agricultural lands until funding becomes available for riparian habitat restoration. The only interim crops planted prior to restoration are those cover crops which suppress non-native weeds and invasive exotic plants, and do not interfere with restoration. Therefore, these cover crops must be either seedless or produce infertile seeds.

3.3.1 Refuge Easement Lands

Comment: Why didn't the Draft CCP/EA include the easement lands?

Service Response: In Chapter 1 of the Draft CCP under the section "The Sacramento River National Wildlife Refuge", the Service described what areas of the Refuge were covered under the CCP. The Llano Seco Unit and Llano Seco Unit Sanctuary were acquired under a separate authority, the North American Wetlands Conservation Act of 1989, and are considered part of the North Central Valley Management Area (NCVMA), a separate unit of the National Wildlife Refuge System. Therefore, these units and the easements east of Angel Slough on Llano Seco are not included in this CCP. They will be

included within the CCP for the NCVMA.

The Service has added a description of Llano Seco Riparian Easement (east of Angel Slough) at the end of Chapter 3 and in Chapter 4, at the end of the section on Habitat Management.

3.4 Biological Issues

3.4.1 Invasive/Exotic Species

Comment: Identify invasive exotic species monitored and controlled and how the Refuge prioritizes weed control.

Service Response: In Chapter 4, the Service added Table 7 (Invasive Exotic Plant Species at Sacramento National Wildlife Refuge Complex) and text explaining prioritization of exotic species for mapping and control at the Refuge. The text in Chapter 5, Exotic, Invasive Species Control Strategies was also modified to acknowledge utility of Table 7 in managing invasive plant species.

Comment: Concerned about use of introduced species as biological control agents for agricultural pest and unknown potential negative affects on non-target native species. Also concerned that use of introduced species as biological control is in conflict with the mission of the Refuge.

Service Response: No introduced species will be used as biological control agents for controlling agricultural pests on the Refuge. Species addressed under biological control in Appendix Q (Integrated Pest Management Plan for Walnut Production) currently exist on the Refuge or are too expensive/labor intensive to be used to control agricultural pests. Currently the least toxic pesticides and herbicides which effectively control target species are used on refuge agricultural lands (Appendix Q. Draft Integrated Pest Management Plan for Walnut Production on the Sacramento River National Wildlife Refuge). Often, these pesticides are less toxic to non-target organisms than those used prior to acquisition as a unit of the Refuge or on nearby private agricultural lands. These agricultural lands are monitored for pest applications so the fewest pesticide applications possible are used. Several research and monitoring projects at the Refuge have included orchards and agricultural lands, so that the affects of agriculture on habitat and the affects of habitat on agriculture are beginning to be investigated. The goal of the Refuge is to restore riparian habitats when funds become available and crop production proceeds are used for restoration activities.

Comment: The Draft CCP identifies birds as important biological control agents as stated in Appendix Q. Suggested that the Refuge plant hedgerow restoration in agricultural complexes.

Service Response: Planting hedgerows of trees and shrubs in a walnut orchard would make orchard floor management more difficult. Even if carefully designed and managed, the hedgerow could serve as isolated, fragmented habitat with potential negative effects to ground and open cup nesting birds (i.e., increased predation and nest parasitism).

Comment: Urge that controlling invasive species be given top priority and that all scientifically approved methods be used.

Service Response: Controlling invasive or exotic species was identified as an objective of the Refuge (Objective 1.9) and will be managed accordingly. Comment noted.

3.4.2 Fish Comments

Comment: Draft CCP has not adequately address fish issues.

Service Response: Commentor has not specified what is inadequate about fish issues addressed in the CCP. It would be remote and speculative for FWS to guess at the impacts to which the commentor is referring. We disagree with assertion that the CCP does not adequately address fish issues.

Comment: Suggestion that the CCP provide a description of how the USFWS intends to monitor anadromous fish resources and provide measures for success for these activities.

Service Response: The Service does not intend to monitor fish populations on the Refuge. What the Service proposes is to coordinate fish monitoring on the Refuge with the fisheries experts, who will determine measures of success. Objective 1.7.6, states: Coordinate research investigations and monitoring at the Refuge which focuses on population demographics, habitat use and requirements, and health of anadromous and other native fishes. Coordinate with CDFG fishery investigations (Lower Stony Creek Fish Monitoring; Redd Surveys), USFWS–Red Bluff Fish and Wildlife Office population surveys (escape/passage at Red Bluff Diversion Dam), USFWS–California/Nevada Fish Health Center disease investigations and monitoring, NOAA– Fisheries investigations and universities conducting salmonid research (University of California, Davis; California State University, Chico) and research regarding other anadromous and native fish species.

Comment: The fisheries resources section of the CCP should be reviewed by an experienced fisheries biologist with knowledge of the Sacramento River. Concerned about the lack of linkage to Central Valley Project Improvement Act (CVPIA) and Anadromous Fish Restoration Program (AFRP) and requested mutual goals and objectives of these programs be made and that the measures of success be disclosed.

Service Response: The Service contacted the following fisheries managers during the CCP process: P. Ward (CDFG); J. Smith, T. Kisanuki, P. Parker, J. Williamson (USFWS–

Red Bluff Fish and Wildlife Office); K. True (USFWS CA-NV Fish Health Center); and, M. Tucker, M. Aceitano, R. del Rosario, and L. Mahan (NOAA– Fisheries). These fisheries experts were asked to review and provide comment on the CCP. Appendix M has been revised to contain a description of CVPIA and AFRP and the goals that relate to the CCP.

Comment: Typo in Table 7 of the Draft CCP where it states “row” but perhaps should state “roe.”

Service Response: The Service appreciates the commentor pointing out the typing error in the document. It has been corrected and it now states “growth” not “row” or “roe”.

Comment: Do not believe pink, chum, and coho salmon occur in the project area.

Service Response: All three of these species are listed in the Sacramento River Conservation Area Forum Handbook (2003) as occurring in the Sacramento River. While never abundant in the Sacramento drainage, a small population of Coho salmon once spawned in the McCloud River, Upper Sacramento River, and tributaries of San Francisco Bay (Frantz, T.C. 1979-1981. Job progress reports; Lake Tahoe. Nevada Department of Wildlife F-20–R-16–17. 82 pp. in Moyle 2002)

The Service has removed pink and chum salmon from the Refuge species list (Appendix G). However, Coho salmon will remain on the Refuge species list since it would not be inconceivable to find non breeding individuals in the middle Sacramento River.

Comment: Objective 1.2 is too subjective and commentor suggests that the Service elaborate on the terms “enhance, restore, and maintain” and refer them to specific goals and objectives.

Service Response: The statement referred to in the comment is found under the rational section of Objective 1.2 and states: “Modifying or removing existing privately-constructed levees that are present and restoring floodplain topography within Refuge boundaries will provide conditions for erosion, sediment deposition, and over-bank flooding. These natural processes will enhance, restore, and maintain floodplain habitats for salmonids, other native fish, and migratory landbirds and waterbirds, including species that breed, migrate and winter along the middle Sacramento River.” Although, it is unclear what the commentor is asking the Service to elaborate upon. We have revised and expanded Objective 1.2: Floodplain and River Processes and its rationale.

3.4.3 Farming

Comment: Concerned about impacts of pesticides on the valley elderberry longhorn beetle, a federally listed threatened species. Commentor also states that farming does not meet the objective to aid in or benefit wildlife management of the area as required in 50 CFR 29.2.

Service Response: The Refuge farming program is managed under Cooperative Land Management Agreements (CLMA) with two local non-profit conservation groups under authority of 50 CFR 29.2. The intent of the Refuge is to restore riparian habitats when funds become available. Cooperatively managed crop production proceeds are used by our non-profit conservation group partners directly on refuge restoration activities. Alternatives to the farming program were analyzed in the Environmental Assessment for Cooperative Farming on the Sacramento River Refuge Tehama, Butte, and Glenn Counties, California (1994) and again in the EA for the Draft CCP. Currently the least toxic pesticides and herbicides which effectively control target species are used on refuge agricultural lands (Appendix Q. Draft Integrated Pest Management Plan for Walnut Production on the Sacramento River National Wildlife Refuge). Often, these pesticides are less toxic to non-target organisms than those used prior to Refuge acquisition or on nearby private agricultural lands. These agricultural lands are monitored for pest applications so the fewest pesticide applications possible are used. Several research and monitoring projects at the Refuge have included orchards and agricultural lands, so that the affects of agriculture on habitat and the affects of habitat on agriculture are beginning to be investigated. The Refuge consulted with and received concurrence from both the Sacramento Fish & Wildlife Office and from NOAA-Fisheries for threatened, endangered, and candidate species consultation. Concurrence letters for ESA consultation will be included as a stipulation in the Farming CD.

3.5 Biological Integrity

Comment: A thorough discussion and investigation of the biological integrity, diversity, and environmental health of a refuge must occur before planning can ensue.

Service Response: The Service has provided a thorough discussion and investigation of the biological integrity, diversity and environmental health of the Refuge. The Threats and Opportunities section of Chapter 1 of the CCP discusses threats to riparian habitats, migratory birds and anadromous fish. Appendix G lists the vertebrate animals and vascular which occur, or potentially occur, on the Refuge. Chapter 3 discusses the Refuge environment including hydrology, geology, soils, vegetation, vertebrate and invertebrate wildlife, and threatened and endangered species, which are also listed in Table 5. The annual habitat management plan for the Refuge, discussed in Chapter 4, has an inventory of the various vegetation types by acreage for individual tracts of each Refuge unit. These also include restored habitats. Special resource issues are tracked in this database including special status species and invasive species and the status of surveys and vegetation management treatments.

Comment: FWS regulations require that before hunting, trapping, or fishing can occur, a determination must be made that wildlife are surplus to a balanced conservation program on any wildlife refuge area and to determine this, the population requirement of wildlife species shall be determined by population census, habitat evaluation, and other ecological investigation and that these investigations has to consider both the population size and

requirements of the target species. An attempt to determine compatible wildlife-dependent recreation for the Refuge until this process has been completed may violate these FWS mandates and this is especially true for hunting since it directly impacts wildlife species.

Service Response: The Service has determined hunting of dove, waterfowl, coot, common moorhen, pheasant, quail, snipe, turkey and deer to be a compatible wildlife-dependent recreation (Appendix B). California Fish and Game Department (2004) also has determined that fish and wildlife resources found along the Sacramento River are healthy and robust enough to support regulated hunting and fishing, complimenting the other activities available to the public in their enjoyment of their public resources.

The Office of Migratory Bird Management sets the general frameworks through their annual regulations permitting the sport hunting of migratory birds. The individual States set seasons within those frameworks. If necessary, the Service develops regulations that may be more restrictive than State hunting regulations in order to protect resources on a refuge-by-refuge basis (i.e., species hunted). Otherwise, the Service observes State regulations on all refuges open to hunting.

U.S. Fish and Wildlife Service Regional and Refuge biologists along with scientists from the U.S. Geologic Survey–Biological Resources Division (Office of Migratory Bird Management) and university researchers meet twice annually with State flyway representatives to discuss inventory data and survey reports for migratory game bird populations which are hunted, proposed for hunting and closed to hunting. The Service bases its migratory waterfowl season length and bag limits for the various species on these surveys. The annual breeding ground survey is one of the most important surveys and has been conducted since 1955. This cooperative effort between the Service and the Canadian Wildlife Service covers Canada, Alaska, and the northern United States prairies where 90 percent of the continental waterfowl populations breed. Results are summarized in various publications, including the annual fall flight forecast. Other important data include harvest and survival rate estimates from band returns. Whether to open a season for a species or not and the establishment of the season length and bag limits are determined by the population objectives for each species. A species must have a harvestable surplus to be considered for hunting. Population objectives for each species are calculated using data from population surveys and banding data. The National Environmental Policy Act process has been followed to insure that migratory bird hunting does not reduce these populations to unsustainable levels.

Current management for mourning doves consists of annual population trend surveys, harvest surveys, and the establishment of annual hunting regulations. Since 1960, management decisions have been made within the boundaries of 3 zones that contain mourning dove populations that are largely independent of each other: the Eastern, Central and Western Management Units. Since 1966, Mourning Dove Call-count Surveys have been conducted annually in the 48 conterminous states by state and federal

biologists to monitor mourning dove populations. In 1992, the U.S. Fish and Wildlife Service and state wildlife agencies initiated the national cooperative Harvest Information Program, which enables the Service to conduct nationwide surveys to provide reliable annual estimates of the harvest of mourning doves and other migratory game bird species. The resulting information on status and trends is used by wildlife administrators in setting annual hunting regulations. In 2001, a National Mourning Dove Planning Committee was formed to further develop guidelines that could be used for regional harvest management. The committee produced The Mourning Dove National Strategic Harvest Management Plan. The implementation of the plan began in July 2003 with the initiation of a national pilot reward-band study. Currently population models are being finalized which will aid in the preparation of regional harvest management plans for 2005. Demographic models and data collection programs to support needs of regional harvest management plans will be established in 2005.

Resident game species are protected by both Federal and State laws and regulations to ensure that harvest rates do not negatively impact populations. The potential impacts of hunting on resident upland game birds and deer are discussed and evaluated in the California Environmental Quality Act process. This process results in periodically updated and publicly reviewed documents. Based on the findings of these documents, the State insures that game animal hunting in California does not have adversely impact its wildlife populations (CDFG 2004).

Wildlife populations along the Sacramento River are currently hunted on both private and public lands, such as Sacramento River Wildlife Area (State), Todd Island and Foster Island (Bureau of Land Management). No impacts to those local populations have been documented (CDFG 2004). Hunting is a highly regulated activity, and generally takes place at specific times and seasons (dawn, fall and winter) when the game animal is less vulnerable (e.g., breeding season) and other wildlife-dependent activities (e.g., bird watching, environmental education and interpretation) are less common, reducing the magnitude of disturbance to Refuge wildlife. Managed and regulated hunting will not reduce species populations to levels where other wildlife-dependent uses will be affected.

Two species, the ring-necked pheasant and turkey, were introduced into the area years ago. These non-native species have more potential to compete for habitat with native species, however no such competition has been noted along the river (CFDG 2004). In addition, selected game species are not known to prey upon other species at unacceptable levels. The potential for competition and predation exists whether the populations are hunted or not; however, removing individuals of non-native species by hunting could conceivably reduce this potential (CDFG 2004).

Comment: supporting recommendations in the Defenders of Wildlife Report, Science-Based Stewardship: Recommendations for Implementing the National Wildlife Refuge System Improvement Act, for a standardized sequence for refuge planning; biological inventory; identification of plan goals; identification of threats; choice of focal species;

comprehensive conservation plan; monitoring and implementation; plan amendment. Also support for the recommended steps for implementing biological inventory.

Service Response: Chapter 4 of the plan discusses current Refuge management and programs. Appendix O shows the inventory and monitoring surveys and research investigations conducted at the Refuge. Currently, the Refuge and its partners collaborate with these investigations when seeking funds and implementing them in the field. Some of these inventory surveys (e.g., western yellow-billed cuckoo collaborative survey with U.S. Geological Survey) and monitoring surveys (e.g., bank swallow collaborative survey with CDFG) represent key focal species of the Riparian Conservation Plan. A recent survey of the valley longhorn elderberry beetle (River Partners 2004) has documented the colonization of this federal-threatened species on planted elderberries at Refuge lands. PRBO has conducted monitoring investigations of the status of breeding landbirds at the Refuge since 1993. Demographic and habitat data are being used track the success of riparian restoration and model landscape level responses. Ecosystem components which decrease the health of landbird populations are being identified, as well as management actions necessary to reverse declining populations. Other research conducted at the Refuge focused on the utility of monitoring indicator species as a means to track ecosystem health (Stillwater Sciences), such as recommended by the Defenders report. Many of the reports and publications from these investigations are posted on the Sacramento River portal web site.

The Refuge will continue to support inventories, surveys, monitoring, and research investigations of Refuge natural resources. The Compatibility Determination for Research (Appendix B) discusses the guidelines for appropriate investigations at the Refuge. Inventory and monitoring surveys and research investigations must be designed to aid in the implementation of sound management practices to increase biological diversity and integrity at the Refuge and ecosystem health.

Chapter 5 presents the planned refuge habitat restoration and management strategies and wildlife surveys. Implementation of the plan will result in increased habitat for threatened and endangered species, migratory birds and anadromous fish. The increased inventory and monitoring surveys by Refuge staff and partners will track the status of these management strategies.

Comment: How will endangered species be protected if 55% of the refuge is opened to hunting?

Service Response: The proposed action allows for almost 80% of the Refuge to be opened to public use including over half of the Refuge open to hunting. Hunting, as well as all other Refuge uses, have been designed to minimize impacts to listed species and thereby determined compatible with the purposes for which the Refuge was established (Appendix B). An Intra-Service Section 7 consultation was completed with the Sacramento Fish and Wildlife Office and NOAA-Fisheries. Concurrence with the Proposed Actions

(implementing the CCP on the Refuge) may effect, but is not likely to adversely affect endangered, threatened, or candidate species.

3.6 Hunting

3.6.1 Opposition to Hunting on the Refuge

- I wish to express my opposition to the proposal to open the Sacramento River National Wildlife Refuge to “sport” hunting.
- Please maintain the true meaning of “refuge” to the Sacramento River National Wildlife Refuge by not opening it to hunting.
- Hunting on Sacramento River Wildlife Refuge lands will only exacerbate impacts to already stressed populations of wildlife and increase the likelihood of poaching.
- The National Wildlife Refuge System was established more than 100 years ago as a safe haven for endangered species and other plants and animals. At a time when state and national trends demonstrate that hunting is on the decline, the limited financial resources available to the refuge would be better spent on protecting habitat and endangered species than on a hunting program.
- Most visitors to refuges do not hunt, but come to experience nature in a peaceful surrounding.
- Our nation’s wildlife refuges should be managed for the benefit of wildlife, not managed for the benefit hunters. It is time to make our wildlife refuges true sanctuaries as they were originally intended.
- Plants and wildlife belong to all of us, and a minority segment of the population must not be allowed to destroy them for fun and entertainment.
- The refuge was created to protect our nation’s animals. (Dictionary definition of “refuge” given).
- The overwhelming majority of visitors to the national wildlife refuge system come to see and take photographs of wildlife and surrounding natural habitat.
- Support the continuation of the ban on hunting along the Sacramento River Refuge.
- Allowing hunting would appease a small group of Americans, as the vast majority of us are not hunters, and it’s time our values were listened too.
- Do not want to have to be concerned about being shot-or denied access to this special place during the hunting season.
- Hunting will increase the likelihood of poaching.
- The overwhelming public opposition to the allowance of consumptive use activities on National Wildlife Refuges and the tiny percentage of Californian’s who engage in hunting, proposal to expend limited resources on the establishment of a new hunting program is fiscally irresponsible.

In addition to opposition to hunting on Refuge lands, several commentators expressed their opposition to trapping on the Refuge and other federally managed lands.

Service Response: The Service appreciates the effort so many commentors took in providing input on the subject of opening Sacramento River Refuge to hunting. Out of the 1,681 comments, the majority dealt with hunting (57%) with 13% opposing hunting and 44% either supporting or specifically mentioning hunting in their comment (Table 6). Although there was public opposition to allowing hunting on Sacramento River Refuge, the majority of the comments that the Refuge received on the Draft CCP/EA supported hunting on the Refuge. Of the almost 1,200 comment letters received only 219 people/organizations opposed hunting (Table 6). 784 people/organizations supported hunting by supporting Alternative B or C (Table 5) and 747 people/organizations specifically mentioned hunting in their comments (not opposing). It is important to note that the public comment process is not a voting contest.

National wildlife refuges exist primarily to safeguard wildlife populations through habitat preservation and management. The word "refuge" includes the idea of providing a haven of safety for wildlife, and as such, hunting might seem an inconsistent use of the National Wildlife Refuge System (Refuge System). However, habitat that normally supports healthy wildlife populations produces harvestable surpluses that are a renewable resource.

One of the five goals of the Refuge System is "To foster understanding and instill appreciation of native fish, wildlife, and plants and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent recreational uses. Such uses are hunting, fishing, wildlife observation and photography, and environmental education and interpretation." The Service recognizes hunting as an acceptable, traditional, and legitimate form of wildlife-oriented recreation and, in some instances, as a management tool to effectively control wildlife population levels.

In the 1997 amendments to the National Wildlife Refuge Administration Act of 1966, Congress identified hunting as one of six priority public uses of the Refuge System. These priority uses are to receive enhanced consideration, in planning and management, over all other public uses. All uses must also be determined to be compatible with Refuge purposes before they can be allowed. Appendix B contains the compatibility determinations for all of the uses on the Refuge including: hunting; fishing; wildlife observation, wildlife photography and interpretation; environmental education; research; camping and recreational boating; farming; grazing; and mosquito and other vector control. Each of these uses was found compatible on the Sacramento River Refuge. The Proposed Action was designed to provide quality hunting opportunities, improve wildlife sanctuary, ensure compatibility, provide clear, accurate hunting information, and reduce conflicts with other users as much as possible.

The Service must coordinate hunting on refuges with other compatible wildlife-dependent public uses to minimize conflicts. We may use time and space scheduling to ensure quality experiences for both hunters and non-hunters. We ensure that adverse impacts to other wildlife, particularly threatened and endangered species, do not occur.

Although hunting directly impacts individual animal, the amount of harvest is not expected to have a measurable effect on Refuge population levels, especially since hunting activity is not expected to be high along the river. In addition, hunting is monitored, regulated, and designed to ensure that harvest does not reduce populations to unsustainable levels. Fish and wildlife resources found along the Sacramento River are healthy and robust enough to support regulated hunting and fishing, complimenting the other activities available to the public in their enjoyment of their public resources (CDFG 2004).

The Service recognizes the majority of the people that visit refuges visit for wildlife observation and to experience nature, however, just as the comment process is not a voting contest, neither is the number of people within each interest group. The Proposed Action represents a balanced approach for wildlife-dependent recreation providing areas for wildlife sanctuary, for wildlife observation, and for hunting.

The Service disagrees with the statement that the establishment of a new hunting program is fiscally irresponsible. The Service also disagrees with the statement that hunting will increase the likelihood of poaching.

3.6.2 Support for Hunting on the Refuge

- Hunting is a part of our natural heritage and does not need to interfere with other wildlife related activities at the refuge.
- Hunters in general appreciate the wild places and a potential partner in habitat improvement projects.
- Hunters have been at the forefront of the conservation effort and continue to support effective management of our shared natural resources through the donation of their time and financial resources to conservation groups.
- Opening the refuge to hunting and fishing is consistent with Federal and State laws and the purpose of the Sacramento River Refuge.
- I feel that a portion of most refuges should be open to hunting, fishing and trapping.
- I urge you to adopt Alternative C so that hunters and other recreational users can enjoy new much-needed outdoor opportunities.
- I support Alternative B or C because management under either option would provide valuable wildlife-dependent recreational opportunities for the public particularly hunting. Hunting has been identified as a priority use of the National Wildlife Refuges and will not prevent the Service from ensuring that the Sacramento River Refuge furthers the mission of the National Wildlife Refuge System.
- Hunting has proven a valuable wildlife management tool that helps maintain healthy game populations.
- Revenues generated from the sale of hunting license and stamp fees, as well as federal taxes on firearms and ammunition, also generate significant funding to protect habitat.
- Over the last several decades in California, hunter access and opportunity has steadily decreased. Unfortunately, most hunters have only limited access to private property,

while the costs for joining private clubs continue to rise. Other factors, such as the continued loss of wildlife habitat and farmland, have recently combined to further limit hunting here.

- While I do not hunt or fish on public land, I strongly encourage and support public access and use of public lands.
- Support maximizing the amount of hunting and fishing available on the refuge.
- Historical use under private property has allowed hunting and fishing.

Service Response: The Refuge acknowledges the important contributions by hunters in wildlife conservation. By respecting seasons and limits, purchasing all required licenses, and paying federal excise taxes on hunting equipment and ammunition, individual hunters make a big contribution towards ensuring the future of many species of wildlife and habitat for the future. By paying the Federal excise tax on hunting equipment, hunters are contributing hundreds of millions of dollars for conservation programs that benefit many wildlife species, hunted and non-hunted. Each year, nearly \$200 million in hunters' federal excise taxes are distributed to State agencies to support wildlife management programs, the purchase of lands open to hunters, and hunter education and safety classes. Proceeds from the Federal Duck Stamp, a required purchase for migratory waterfowl hunters, have purchased more than five million acres of habitat for the Refuge System lands, including many acres of the Sacramento National Wildlife Refuge Complex. These lands support waterfowl and many other wildlife species, and are often open to hunting. However, none of the land on Sacramento River Refuge has been purchased with these funds.

The Refuge agrees with the comments that hunting is a priority use on refuges, hunting is a valuable wildlife management tool, and that hunter access and opportunity have decreased in California. The Proposed Action is designed to provide quality hunting opportunities on Sacramento River Refuge and to reduce confusion for hunters on Refuge and CDFG lands.

Although the Service received comments opposing trapping, trapping is not a proposed use on Sacramento River National Wildlife Refuge.

Private property was only accessible to a small number of hunters prior to it becoming part of the refuge.

3.6.3 Additional Areas Requested to be Opened or Remain Opened to Hunting

Comment: Boat access only units should be opened to hunting.

Service Response: Many of the boat access units will be opened to hunting. Out of the 26 units on the Refuge, 18 units (or portions of them) are boat access only. Hunting will be allowed on all or a portion of 17 of the 18 units. See Table 9 and Figure 28 for additional information.

Comment: Boat access only excludes disabled hunters.

Service Response: Boat access only units may exclude some disabled hunters from some parts of the Refuge. The Service intends to have parking lots on areas with public road access to the Refuge unit entrance. This will provide access for disabled hunters from the parking lot to a trail. The Service does not have the authority to allow access to the Refuge across private property. Therefore, 13 of the 21 units that will be opened to the public and do not have public roads are accessible by boat only. In the future, if new properties are acquired and access becomes available, the Refuge may wish to make changes to the CCP.

Comment: Open more of Llano Seco area to the public for hunting, fishing, hiking and exploring.

Service Response: Acquired in 1991, the Llano Seco Ranch Riparian Easement consists of 1,281 acres located between river miles 183 and 178. It is bordered to the north by the Ord Ferry Bridge and to the south by the Llano Seco Unit, Riparian Sanctuary. This is an easement on private property and the Service does not have the authority to open this easement to public use. The Llano Seco Riparian Sanctuary and Llano Seco Islands 1 and 2, also acquired in 1991, consist of 906 acres and are located between river miles 183.5 and 175.5. The Riparian Sanctuary was originally acquired for a sanctuary. The Proposed Action also designates this property to be a sanctuary since there is no vehicle access to the property, there are sensitive resources on the property, and public access could potentially negatively impact the private land easement. Llano Seco Island 1 and 2 are proposed to be open to Big 6 activities via boat access.

3.6.4 Regulate/Monitor Hunting

Comment: In the absence of any way to regulate hunter access to the Refuge, keep track of how many hunters are using the Refuge, enforce harvest limits, or restrict hunters to the portions of the Refuge where hunting is allowed, refuge managers would have no way of carrying out their duties to protect wildlife populations or to protect other members of the public who use the Refuge.

Service Response: There are numerous methods and techniques that have been developed for estimating the number of visits on refuges. These methods may be applied to a variety of different situations including areas not accessible by roads, areas that have more than one activity occurring at a time, or areas that have multiple access points. The following methods of estimating the number of visitors will be used on Sacramento River Refuge: direct observations, traffic counters, patrols, self-registration, extrapolations from limited data using stratified samples, and best professional judgment. Harvest limits will be estimated using stratified sampling, self-registration, patrol, and direct observations.

A team of specialists are completing the FWS Visitation Estimation Handbook that will be used on all National Wildlife Refuges. It will take into account staffing levels, Refuge acreage, volunteer support, access points, monitoring sites, etc. Given multiple variables, estimation methods will be presented for use on various areas. Currently, there are interim guidelines for visitation monitoring on National Wildlife Refuges for the Refuge Management Information System - Public Education and Recreation section.

The Service added the information on estimating refuge visits to the Hunting Plan C-13, monitoring use levels and trends.

There are many ways that hunters will be regulated. There will be two full-time and one part-time law enforcement officers on the Refuge Complex dedicated to enforce harvest limits and regulate hunters. They are familiar with the areas of the refuge that are accessible for hunting. Some areas are so dense with vegetation that access is limited. They are also familiar with problem areas for illegal activities so they will be able to efficiently patrol and focus on specific problem areas when needed.

Signs and information will help guide hunters to the proposed areas open to hunting. All Refuge lands have boundary signs and signs designating the appropriate uses, which will support enforcement (CCP, Figure 26 & 27). Hunting maps and refuge information will be available at well-known locations including hunter forums, public facilities, websites, sporting goods stores and kiosks where hunters have obtained information in the past.

Comment: For hunting to be acceptable, it would have to be regulated to limit the number of hunters to a sustainable level. The most reasonable way to do this is to require hunters to check in at a central location and to pay a user fee to support refuge activities.

Service Response: There are numerous acceptable methods and techniques that have been developed for estimating number of visits on refuges. Some of these methods including direct observations, traffic counters, patrols, self-registration, extrapolations from limited data using stratified samples, and best professional judgment will be used on Sacramento River Refuge. Harvest will be estimated using stratified sampling, self-registration, patrol and direct observations.

The programs that use a central check-in and user fees are generally areas that have heavy use, need quotas, etc. The hunting program on the California Department of Fish and Game Sacramento River Wildlife Management Area has operated for a number of years without the need for a centralized check-in or user fees. In our professional judgment, the hunting program on the Sacramento River Refuge will also not need to have hunter quotas at this time. However, the Hunt Plan includes the option for implementing quotas if monitoring efforts by the refuge biologist, law enforcement officers, or manager indicates the need for increased regulation of the activity.

Comment: Concerned about the Refuge allowing open-range hunting. The completely new and unfamiliar hunting format being proposed needs to be complemented by significant and corresponding amounts of outreach efforts, safeguards, monitoring and maintenance.

Service Response: See response above. The hunting program proposed by the Service does not constitute open-range hunting nor is it new and unfamiliar. This format is currently used on California Fish and Game (CDFG) lands in the Sacramento River Wildlife Management Area, lands along the river owned by Bureau of Land Management, and on private lands.

Although hunting will be new to the Sacramento River Refuge; it is not new to other areas along the River including the Sacramento River Wildlife Management Area where hunting has been operating successfully for years. CDFG's hunting program is also 7 days a week as the Service proposes for Sacramento River Refuge. Specific information about the hunting program can be found in the Hunting CD (Appendix B) and the Hunting Plan (Appendix C).

The Service does agree that outreach, monitoring and maintenance will need to take place to provide a quality hunting experience and to provide assurance for our neighbors. Hunting on the Refuge will be regulated and monitored.

Comment: The Hunting CD proposes to inform hunters through signs. This is inadequate to reach all hunters unless signs are posted at every accessible access point along the entire perimeter of the refuge.

Service Response: The Service disagrees with the comment that signage is an inadequate means of informing hunters. The Service intends to post the Refuge boundary including vehicle and boat access locations. Most boat accessible properties have limited access points due to the dense vegetation, steep slope of the river bank, or terrain that prohibits the ability to dock a boat. Signs will be posted at the most opportune boat accessible locations. In addition, signs designating appropriate Refuge uses will be posted. Refuge information and hunting maps will be provided at well known locations including hunter forums, public facilities, websites, sporting goods stores and kiosks where hunters have obtained information in the past.

Comment: The CCP states that the use of federally approved non-toxic shot will be required for all hunting except deer. Lead shot is traditionally and legally used in California to hunt doves. It is unclear how the Refuge will overcome the inevitable confusion over the legality of lead shot use and how effectively the regulations will be enforced.

Service Response: The Service will require the use of non-toxic shot for dove hunting on the Sacramento River Refuge. Initially, educating the public on lead shot requirements for dove hunting on refuge lands may be challenging. However, the Service’s adaptive management philosophy allows staff to respond to site specific issues by modifying strategies of implementation for signing, education, and enforcement. Refuge regulations will be posted and will be available in our brochures and on our website. Refuge regulations will be enforced by refuge officers and coordinated patrol with Service special agents, state game wardens, state park rangers and deputy sheriffs.

Comment: Hunting must be limited to a smaller area, and high-quality habitat must be given priority for designation as a no-hunting zone.

Service Response: Hunting activities actually need to take place on fairly large areas of land in order to offer a situation for “fair chase” of game species. We have proposed wildlife observation activities in smaller areas where visitor needs can be met by constructing facilities i.e. trails, restrooms, etc. and yet be able to financially maintain them. High-quality habitat has been designated as sanctuary (Chapter 5, Objective 1.10).

Comment: Without a significant budget increase, refuge personnel will not have the time or resources to conduct the “random, weekly field checks” that the Hunting CD proposes.

Service Response: The field checks will be planned and coordinated with staff and other agencies. The word “random” was changed to planned and coordinated field checks in the Hunting CD (Appendix B) and the Hunting Plan (Appendix C). This will make more efficient use of the law enforcement officers’ limited time.

Comment: The activities of hunters pose a hazard to other visitors on the Refuge. Limiting the area open to hunting would make the Refuge more accessible to the public as a whole and better achieve the goal of increasing visitor knowledge and appreciation of wildlife.

Service Response: We recognize the concern that some visitors will be uncomfortable visiting areas where hunting occurs. Therefore, we have proposed to set aside areas that do not allow hunting and will be developed for wildlife observation, photography, education, and interpretation. These areas will have trails, kiosks, parking areas, and port-a-potties (Table 9 in the CCP). Refuge units that allow hunting are also proposed. Hunting will be limited to designated seasons and will not occur year-round. By providing areas for both consumptive and non-consumptive uses, the Service can increase the knowledge and appreciation of fish and wildlife resources for both consumptive and non-consumptive users.

Comment: Efforts to manage and regulate hunting can detract from other refuge programs. The CCP allocates a mere \$5,000 for outreach, education, and monitoring. This amount falls short of the funds that would be required to adequately study and monitor

the effect of hunting on target and non-target populations.

Service Response: The estimated annual increase in budget of \$5,000 for outreach, education, and monitoring is in addition to current funding that provides for 3 refuge officers to patrol the Refuge Complex. The \$5,000 additional budget would be used for signs, press releases, and brochures. Three officers to patrol monitor and educate the public on approximately 10,000 acres in addition to coordinated efforts with state and local law enforcement agencies would be considered more than appropriate in national wildlife refuge settings.

Comment: Disagree with the statement made in the Hunting CD that hunting has given many people a deeper appreciation of wildlife and a better understanding of the importance of conserving their habitat.

Service Response: The statement in the Hunting CD regarding ...a deeper appreciation of wildlife and a better understanding of the importance of conserving their habitat...does not imply that “consumptive” users have a greater appreciation for wildlife than “non-consumptive” users. It does however; suggest that hunting and or fishing is one mode of access to and appreciation for wildlife and the outdoors similar to a beginning bird watcher seeing a connection between bird diversity and different habitats. There are many conservation groups that stress the importance of conservation and habitat restoration that also support recreational hunting. This is where the connection is made between hunting and conservation.

Comment: Hunting program should include opportunities for training, testing and trialing hunting dogs.

Service Response: Comment noted. The Service will not be allowing training, testing, or trialing of hunting dogs on the Refuge. Opportunities for these activities exist on other areas (e.g. State Wildlife Areas). Dog testing, training and trialing may also interfere with priority Big 6 uses.

Comment: Make regulations uniform with other agencies controlling the land along the river (as stated in the Comprehensive Management Plan for the Sacramento River Wildlife Area by CDFG)

Service Response: The Service agrees with this comment. The Refuge has tried to make regulations uniform with the different agencies along the river whenever possible. For example, whenever possible Refuge units adjacent to CDFG lands were designated open to Big 6 uses which are consistent with CDFG regulations. There will still be some exceptions to this and Refuge visitors will be responsible for knowing them. For example, CDFG allows coyote, squirrel and rabbit hunting on their lands in the Sacramento River Wildlife Management Area. The Refuge; however, does not allow hunting for these species. Refuge boundaries and access points will be posted and clear and accurate

Refuge hunting information will be provided.

Comment: Using 0 or 00 buckshot as referred to in the Draft CCP is illegal along the river according to state law (Title 14, section 353 (b)). The only legal method is by firing single slugs.

Service Response: Commentor is correct. The Service has revised the appropriate sections in the CCP, Hunting Plan and the Hunting CD.

3.6.5 Navigable Waterways and Hunting

Comment: Request for liberal interpretation of navigable waterways.

Service Response: In Chapter 1, under Refuge River Jurisdiction, the Service acknowledges the State’s “public trust easement” in the area between the low water mark and the ordinary high water mark. This acknowledgement is illustrated in the proposed public uses (Big 6: hunting, fishing, wildlife observation, photography, interpretation, and environmental education) allowed on Refuge lands below the high water mark as interpreted to be those lands below cut banks including gravel and sandbars. The Proposed Action allows hunting on over 50% of the Refuge, including lands above the high water mark on identified units (Figure 28). During high water events, those lands that have been identified for Big 6 public uses would be accessible by boat and hunting would be permitted. However, those lands that have been identified as sanctuary or allow for the Big 5 public uses would not be open to hunting during high water events. One of the purposes of the Refuge is to provide high quality habitat, including sanctuary from hunting and disturbance, to migratory birds and endangered species.

3.6.6 Huntability Species

Comment: Allow hunting of non-native wild pigs, coyotes, squirrels etc.

Service Response: Species legal to hunt on the Refuge include dove, waterfowl, coot, common moorhen, pheasant, quail, snipe, turkey and deer. All other species that are considered legal game species by California Fish and Game are still not legal to be hunted on the Refuge.

Comment: Work with CDFG to add a special late season deer hunt (late September through late December) for the Refuge and CDFG lands along the river.

Service Response: Comment noted. In the future, the Service and CDFG may be able to offer this type of hunt.

3.6.7 Other Hunting Comments

Comment: All proposed hunt units of 100-200 acres or more be provided with land access in addition to river access.

Service Response: Vehicle access to the Refuge is limited to public roads. Eight of the 26 Refuge units are located adjacent to public roads will be accessible by vehicle. At these 8 units, parking lots will be developed, but access to the interior of the units will be by pedestrians only. Units that are not accessible by public roads, regardless of size, will be boat access only.

Comment: Until the time cultivated agricultural land is developed into the refuge, if the agricultural leasee's are requesting depredation permits for controlling wildlife we propose public hunting become the first priority.

Service Response: Agricultural leases on the Refuge are managed under a Cooperative Land Management Agreement (CLMA). Cooperative farmers and nonprofit conservation organizations that manage the agricultural operations on these units abide to the conditions of the CLMA. A compatibility determination with stipulations (Appendix B) and Integrated Pest Management Plan (Appendix Q) have also been completed. Depredation permits will not issued on these Refuge-owned properties. Tenant farmers knowingly accept the risk of crop depredation from wildlife when farming on a National Wildlife Refuge.

Comment: Areas open to hunting should be off-limits to users other than those holding a valid hunting license and in possession of a legal firearm or weapon during the appropriate seasons.

Service Response: Areas on the Refuge open to hunting will be open to all uses determined compatible. These uses include hunting, fishing, wildlife observation, photography interpretation, environmental education. Signs will be posted to inform hunters as well as non-hunters when the unit is open to hunting. The Refuge boundary will also be posted with signs to ensure that Refuge visitors know when they are entering or exiting a Refuge unit. Using the Refuge specific information and regulations provided, visitors may choose when, where and how they would like to visit the Refuge.

Comment: Existing private facilities (campgrounds, marinas) should be thought of as partners and be a part of whatever long range plan is adopted. Bank protection is important.

Service Response: Existing private facilities including campgrounds and marinas are considered Refuge partners. Bank protection is an important issue identified in Objective 1.2 of the CCP.

3.7 Cultural Resources

Comment: Under the Cultural Resources Section of the CCP add more information about the recent history of the Sacramento Valley including River boat trade, ferries, agriculture, etc.

Service Response: Comment noted. The Service has revised this section of the CCP to include more information about the recent history of the Sacramento Valley.

3.8 Sanctuary

Comment: Both Alternative B and C are deficient in the amount of sanctuary (16%) and with current staffing the Refuge does not have the resources to monitor public use impacts at the Refuge. Recommends increasing the amount of sanctuary at the Flynn, Rio Vista, Phelan Island, Capay and Sul Norte units.

Service Response: The rationale for determining public use and sanctuary areas at the Refuge are explained in Appendix L of the CCP. We have added 341 acres of sanctuary along the central-eastern portion of Rio Vista, which increases overall sanctuary to 20%. We believe much of the Refuge will serve as “sanctuary” because of the dense structure of riparian vegetation and access to most units is by boat only. The Refuge is in the process of adding an additional full-time law enforcement officer, which will greatly increase natural resources monitoring. The CCP also calls for periodic surveys of public use to determine impacts to Refuge natural resources. Identified public use impacts will be addressed through education and when necessary, additions to Refuge sanctuary. In addition, Objective 1.10 Wildlife and Cultural Sanctuary, also makes provisions for the establishment of short-term sanctuaries to protect transient sensitive fish, wildlife and other natural resources; examples include breeding colonies, nest/roost trees, sensitive vegetation and areas with sensitive plants.

Comment: Clarify the planning process that has led to the designation of sanctuary.

Service Response: The process for determining the public use on a particular refuge unit is explained under Objective 1.10 Wildlife and Cultural Sanctuary. Appendix L also contains a list of specific issues that were considered when designating the amount of public use at each refuge unit.

Comment: Keeping only a small portion of the refuge off-limits to public use is insufficient to support the diversity of species that use the Sacramento River Refuge.” Commentor also expressed concern with lack of sanctuary for migratory birds because of the limited size of the Refuge.

Service Response: The Service has increased the amount of sanctuary on the Refuge from 16% to 20%. The sanctuaries are located within separate reaches of the River which

distributes wildlife for resting, feeding, nesting, and fawning. In addition, the density of the riparian forests provides additional sanctuary for wildlife species. Many of the areas used by wintering waterfowl are already open to public use because they are accessed by hunters during high water flooding events. Likewise, the mallards, wood ducks, common mergansers, and Canada geese, which breed at the Refuge, occupy the main channel or sloughs and oxbows connected to the main channel, which currently receive public via boat access. The riparian habitat restoration (revegetation, private levee removal, topographic restoration) undertaken by the Refuge has increased habitat for endangered species (e.g., bald eagle, valley elderberry longhorn beetle, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, bank swallow, western yellow-billed cuckoo), anadromous fish (e.g., fall-late fall run Chinook salmon), migratory birds (e.g., red-shouldered hawk, mourning dove, rufous hummingbird, Pacific-slope flycatcher, black-headed grosbeak, spotted-towhee), and resident species (e.g., wild turkey, deer). Habitat restoration has increased the natural diversity of Refuge lands and monitoring results from PRBO have demonstrated that as these revegetated sites mature, avian diversity increases. Public use will result in local disturbance of species, but the habitat structure will provide sanctuary, and the restoration projects will continue to increase natural diversity.

Comment: There is no information regarding where these lands (sanctuary units) are located, how they were chosen, whether they include a representative sample of wildlife habitats, how the designation would be enforced, etc.

Service Response: The location and description of sanctuary units was described in the Draft CCP. Sanctuaries were described in Chapter 5 in Table 8, in Objective 1.10, and in Figure 27 Visitor Services Alternative B maps. Appendix L described the rationale behind the public use determinations for each unit. The Hunting Plan (Appendix C) described the method of enforcement for the sanctuaries as well as the rest of the Refuge.

3.9 Public Access

Comment: Recommend that a separate Public Access Plan be developed.

Service Response: Public access is addressed in Goal 2 Visitor Services, in Chapter 5 of the CCP. Many of the items that would be included in a public access plan can be found within each of the objectives and strategies of the Visitor Services goal and in the step down plans listed; therefore, a public access plan is not necessary. Several studies were used in determining public use trends along the Sacramento River including Sacramento River Public Recreation Access Study (EDAW 2003), Sacramento River Recreation Survey (DWR 1980) Public Opinions and Attitudes on Recreation in California (California DPR 1998), and Outdoor Recreation in American Life: A National Assessment of Demand and Supply (Cordell et al. 1999). Please refer to the Public Use section of Chapter 3, Goal 2 of Chapter 5, and Appendix N for additional information.

Comment: Alternative B states vehicle access would be allowed on designated roads and parking areas only. A detailed planned road system in the refuge is not clear in the CCP.

Service Response: The Service acknowledges the importance of minimizing the number of roads to decrease habitat fragmentation, which influences emigration, immigration, and wildlife population dynamics.

There is no planned public access road system for the Refuge. The roads referred to are entrance roads to the 8 Refuge units that are accessible by vehicle. There are also parking areas proposed for these units. There are also interior roads that will be utilized for refuge maintenance and monitoring, but these roads will not be opened to the public. Currently, there are no facilities at these areas for parking. If visitors and school groups want to access these areas for wildlife observation, education, interpretation, or photography they will need a place to park. Foot trails will be maintained on each of these areas.

3.9.1 Boat Ramps

Comment: Environmental justice requires public access from roads and trails since not all people can afford to own or rent a boat and additional boat ramps are needed on the river.

Service Response: Executive Order 12898 (Environmental Justice) states: each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such, programs, policies, and activities, because of their race, Color, or national origin. The Service has made reasonable accommodations for access, given the constraints at each site (lack of legal land access, high cost of boat ramp construction and maintenance) and our mission.

Within the large alluvial Sacramento River system, the very nature of changing sedimentation and accretion patterns and a dynamic meander pattern pose a challenge to determining the best location for boat ramps and similar facilities. A number of the existing facilities have costly maintenance needs, and some are now closed because of siltation and channel meander. Providing additional boat ramps on the river is not a high priority for the Refuge. Even if there was funding for constructing boat ramps, there is very little money available for maintenance costs. It has been estimated that annual boat ramp maintenance (i.e. dredging and ramp repair due to erosion) can cost tens of thousands of dollars annually, which makes it unfeasible for the refuge. Instead, the Refuge has assisted its partners including Tehama County with routine maintenance of their boat ramp by providing equipment and an operator.

3.9.2 Visitor Parking Lots

Comment: The CCP proposes to build and maintain eight new parking lots on the Refuge in the Wildlife Observation, Wildlife Photography and Interpretation CD. However there is no description of the proposed location, and no information about the expected impact of these parking lots.

Service Response: The parking areas proposed are for the Refuge units that are accessible to vehicles. Currently, there are marginal facilities located at the entrance roads for parking on these areas. These facilities would be the footprint for improved parking and access for refuge visitors.

The proposed areas that will need parking lot improvements were listed in the Table 8 of the Draft CCP. The average size of the parking lots is 25 'x 85' to accommodate a combination of up to 10 vehicles or a bus. The parking lots are proposed to be graveled, have drainage to address runoff, and would be constructed in areas that do not have support wildlife habitat. Impacts from these improved parking areas would be negligible.

If visitors and school groups want to access these areas for wildlife observation, education, interpretation, or photography they will need a place to park. Without the improvements to parking lots, the visitors to these proposed areas will not have access.

Comment: The Wildlife Observation, Wildlife Photography and Interpretation Compatibility Determination does not contain information on the impacts of increased visitor load on wildlife. A legitimate CD must include why the use is being proposed, where the use would be conducted, anticipated impacts of the use, and an explanation describing how the proposed use would or would not materially interfere with or detract from the fulfillment of the purposes of the Refuge.

Service Response: There is an understanding that increased visitor use, consumptive and non-consumptive, will increase impacts on wildlife. This disturbance is recognized and addressed in the Hunting Plan and the Anticipated Impacts of Use section in the Wildlife Observation, Wildlife Photography and Interpretation CD. The Service agrees with the content required for a "legitimate" CD (50 CFR 26.41(12)). Although all of the information was stated within the Draft CCP, the CD has been revised to include this information as well.

3.10 Policy

Comment: Service policy of requiring pre-approval by the Service before a pesticide can be used on refuge land has resulted in lengthy delays and sometimes denial of the use of certain needed pesticides even though these products are thoroughly tested and approved for use on these sites by both the USEPA and California EPA.

Service Response: The Refuge must follow the U.S. Fish and Wildlife Service pesticide use policy. Under this policy, the refuge manager may allow the use of certain mosquito control pesticides (which include several larvicide products) without higher level review. More toxic chemicals such as adulticides and organophosphate larvicides require annual review/approval at the Regional Office (Sacramento, California or Portland, Oregon) or Washington D.C. Office level. By their nature, NWRs are places of wildlife concentration, and the Service pesticide review process considers this in evaluating the use of any pesticide, regardless of U.S. or California EPA registration. Service approval/disapproval of a particular pesticide use of Refuges is based on a review including their toxicity to non-target organisms, presence of sensitive species, persistence of the chemical/carrier in the environment, application rate, method, and frequency, and the availability of alternative products.

Refuge staff will continue to work with local Mosquito Abatement Districts by meeting before the potential mosquito season on Refuge lands to discuss ways of reducing mosquito production and minimizing public health risk by allowing mosquito control, when necessary, based on mosquito population data and public health risk thresholds. In fact, the Districts are currently allowed to use a “package” of mosquito control products, including a variety of larvicides, a pupicide, and adulticides when treatment thresholds have been reached. The compatibility determination for mosquito and other vector control (Appendix B) and the Draft Integrated Pest Management Plan (Appendix Q) provide additional information about this process.

Comment: FWS does not provide any funding to the counties for control of Refuge produced mosquitoes.

Service Response: All of the Refuge units are owned in fee title by the Service; therefore, they do not provide property tax revenues to county governments. However, the Service does provide refuge revenue sharing payments to the counties in which these parcels are located. These annual revenue sharing payments were instituted to help mitigate the effects of property acquisition. The county can use the refuge revenues sharing payments for any government purpose.

Comment: From the County’s perspective, land taken out of agricultural production is off the tax rolls. The County needs tourism opportunities to contribute to the local economy and offset these losses.

Service Response: The Service does provide refuge revenue sharing payments to the counties in which Refuge units are located. These annual revenue sharing payments were instituted to help mitigate the effects of property acquisition. The Sacramento River corridor offers substantial opportunities for both land-based recreation uses (e.g., hunting, wildlife viewing, hiking) and water-based uses (e.g., boating, fishing, swimming). Trends for the Pacific region indicate wildlife viewing and nature study are expected to increase by 65 percent and double the number of days per year per person in the next 40

years. Fishing is expected to increase, while hunting is expected to decrease (Appendix N, EDAW Table 4.2-11). The increase in recreation opportunities provided by the Refuge will help offset the local losses from the agricultural economy.

3.10.1 Refuge River Jurisdiction

Comment: Concern over total closure of River due to impacts on anadromous fisheries utilizing the river year round.

Service Response: The CCP/EA does not suggest the possibility of closing down the Sacramento River to public use. Rather, in Chapter 1 under the Refuge River Jurisdiction section, the Service acknowledges the State’s “public trust easement” in the area between the low water mark and the ordinary high water mark. This acknowledgement is illustrated in the proposed public uses (Big 6: hunting, fishing, wildlife observation, photography, interpretation, and environmental education) allowed below the high water mark on refuge lands. These lands are interpreted to be lands below cut banks including gravel and sandbars.

Comment: CCP cites several statutes and cases apparently to support the USFWS assertions that it has, or will in the future exercise jurisdiction over portions of the Sacramento River. The commentor cites a section from the River Jurisdiction section of the CCP: “For example, in the U.S. v. Hells Canyon Guide Service case, the District Court maintained that the Property Clause of the Constitution gave the government power “to regulate conduct on non-federal land (the Snake River that runs through the National Forest) when reasonably necessary to protect adjacent Federal property or navigable waters.” In addition, this case stated “Congress’ power over Federal lands includes the authority to regulate activities on non-federal waters in order to protect the archaeological, ecological, historical and recreational values on the lands” (United States v. Hells Canyon Guide Service; U.S. District Court of Oregon, Civil No. 79-743; 5-6; 1979).”

Service Response: This comment takes this quote out of context. The intent of the Refuge River Jurisdiction section of the CCP is to clarify State and Federal laws dealing with jurisdiction on and under water bodies. This section explains that Federal Courts have clarified these statutory authority issues in regards to Federal agencies (including National Wildlife Refuges) that own and manage lands that encompass portions of water bodies. The Federal Courts have consistently maintained that Federal agencies have jurisdiction over **recreational uses** on these water bodies when the water body is integral to the primary purposes for which the park, forest, or wildlife refuge was established. It is the policy of the Sacramento River Refuge to recognize the rights of the public to use, consistent with State and Federal laws, the waters below the ordinary low water mark and the “public trust easement” in the area between the ordinary low water mark and ordinary high water mark.

3.11 Other CCP Comments

Comment: Provide an annual seminar on proper river etiquette and how to minimize the impact on the river shores.

Service Response: Comment noted. The Service, at this time, will not offer an annual seminar on proper river etiquette. There are numerous outreach efforts planned to inform visitors about the Refuge. Many of these efforts are outlined under Goal 2 Visitor Services in the CCP. Refuge visitors will be informed of laws and regulations and these laws and regulations will be enforced by refuge law enforcement officers.

Comment: Are there plans to charge for access to use these lands?

Service Response: There is no entrance fee planned for the Sacramento River Refuge at this time.

Comment: Please encourage citizen volunteers for appropriate projects and participation within the refuge.

Service Response: The National Wildlife Refuge System Volunteer and Partnership Enhancement Act of 1998 (P.L. 105-242) strengthens the Refuge System's role in developing relationships with volunteers. Volunteers possess knowledge, skills, and abilities that can enhance the scope of refuge operations. Volunteers enrich Refuge staff with their gift of time, skills, and energy. The Service developed Objective 2.7 to develop a volunteer program that will support and help implement the Refuges special events, restoration, and maintenance programs.

Comment: I fear, like many, that uncontrolled areas (primarily parking areas) will get excess litter. Perhaps come up with some sort of ticket and receipt that is placed on the car and carried with you.

Service Response: Signs and information will help guide Refuge visitors. All Refuge lands will be posted with boundary signs and informational signs designating the appropriate uses, which will support enforcement. Hunting maps and refuge information will be available at well-known locations such as hunter forums, public facilities, websites, sporting goods stores, and kiosks.

Currently, the Refuge has 2 law enforcement officers that patrol along the Sacramento River Refuge boundaries daily. The Refuge will be hiring an additional full time officer to support changes to refuge management proposed in this plan. All laws and regulations, including littering, will be strictly enforced.

Comment: I strongly urge the prohibition of all off-road vehicles on refuge land.

Service Response: The Service has not proposed, and will not allow, off-road vehicles on the Refuge.

Comment: No vehicle access other than some parking areas. No buildings, signs, interpretive centers etc.

Service Response: Due to the nature of the Refuge, many of the units will not have vehicle access. Only 8 of the 26 Refuge units will have parking areas established adjacent to public roads. The Service has no current plans for any buildings; however, in the future when funding permits an interpretive center/office may be developed. Signs will be a part of the Refuge too. Signs are important to inform refuge visitors about what uses are allowed on each unit and what uses are not allowed. Boundary signs are also important to reduce trespass on our neighbors.

Comment: Open 73% of the refuge to hunting and fishing, but gradually phase out farming operations. Phase out of certain agricultural operations will overall benefit the Pacific flyway.

Service Response: The Service agrees with comment about phasing farming out gradually; however, only half of the Refuge will be opened to hunting as stated in the Proposed Action. Phasing out farming allows the Refuge to continue to financially support restoration activities and reduces the local economic impact of removing agricultural operations. Agricultural areas provide habitat for many species of wildlife but species diversity will increase further once the areas are restored.

Comment: Hope to get more disabled people into the field with Alternative C.

Service Response: Alternative C would not have provided any additional opportunities for disabled hunters to get into the field than Alternative B, except for the additional acreage open to hunting.

Comment: There will not be any method implemented to regulate fishing.

Service Response: This comment misquotes the statement on B-11 of the CCP which reads, "...there will not be any method implemented to regulate fishing quotas." This statement referenced the anticipated limited numbers of anglers on Refuge lands due to limited boat access and opportunities. The methods of implementing the fishing program can be found in the Fishing Plan (Appendix D).

Comment: Maps on Page 79 of the Draft CCP are helpful but would be more beneficial if adjacent roads could be labeled and adjacent properties labeled public or private ownership.

Service Response: The unit maps, Figures 11-24, are in the Refuge Unit Description section include a brief summary of the size, location, and land use/composition. The purpose of these maps is to supplement this section by depicting the existing habitat. Figure 28, the Visitor Services Alternative B maps, have labeled roads, creeks, public facilities, and adjacent public lands that may be more helpful in identifying the nearest access point or a familiar landmark.

Comment: Refuge website should include links to local businesses.

Service Response: The Service cannot promote local businesses on the Refuge website, but we could list the Chamber of Commerce as local resource.

Comment: Recommend that implementation of the CCP is evaluated by an advisory committee comprised of public and private members.

Service Response: Comment noted. The Service does not intend to form an advisory committee at this time.

Comment: Support building of bat boxes as an inexpensive and effective method of mosquito control that has few side effects for other wildlife species.

Service Response: Comment noted.

Comment: Sacramento River Refuge should become its own entity within the national refuge system once the CCP has been finalized.

Service Response: Comment noted. The Sacramento River Refuge is currently managed as part of the Sacramento National Wildlife Refuge Complex. It is not feasible to de-complex the Sacramento River Refuge from the Sacramento Refuge Complex until full funding and staffing are reached.

Comment: Suggest adding a map that indicates those lands taken by legislative fiat to “protect” some endangered species.

Service Response: All of the lands within the Sacramento River Refuge have been purchased from willing sellers. Therefore, this comment does not pertain to the Refuge and is outside the scope of this CCP.

Comment: Why doesn't the planning hierarchy include any local landowners on the planning team?

Service Response: Planning teams, as defined by the Service's planning policy (602 FW1) are: “interdisciplinary in membership and function. Teams generally consist of a planning team leader, refuge manager and staff biologists, a state natural resource agency

representative, and other appropriate program specialists (e.g., social scientist, ecologist, recreation specialist). We also will ask other Federal and Tribal natural resource agencies to provide team members, as appropriate. The planning team prepares the CCP and appropriate NEPA documentation.”

Therefore, no local landowners were included on the planning team. The Refuge; however, has invited local landowners and any other member of the public to participate in the CCP planning process. Appendix J contains a list of people that received planning updates, copies of the plan or came to public meetings regarding the CCP. Appendix J also contains a list of the outreach that was conducted by the Refuge to ensure that the public including refuge neighbors and local landowners knew about the CCP.

Comment: Planning assistance from local law enforcement staffs to aid one full-time refuge officer is worrisome. As noted under Objective 4.1 there have been thefts and equipment loses in recent months and local law enforcement units are needed in these areas rather than on Refuge lands.

Service Response: This comment is incorrect. Objective 4.1 actually states: Provide visitor safety, protect resources, and ensure compliance with regulations through law enforcement. Increase the number of law enforcement officers (from 1 to 2) and increase the monitoring of significant resource sites from quarterly to monthly by 2010.

The rationale states: “A common belief among neighboring landowners is that public ownership, easements, or access could result in increased vandalism and theft of agricultural equipment, poaching, and disregard of private property rights. A well-planned and coordinated program will be necessary to successfully address these concerns. The elongated and fragmented layout of the Refuge, which crosses through four counties, requires law enforcement coordination on the Federal, State, county, and local levels. Enforcement is further complicated because many units are accessible only by water.”

Comment: There are no references in the CCP that Refuge lands are adjacent to PCGID/PID infrastructure.

Service Response: The Refuge clearly understands that this infrastructure exists and knows its location. We have revised Figures 16, 18, 20 and 23 so that the major pumping plants, including PCGID/PID, are now identified.

Comment: Requests the FWS disclose how program success will be measured.

Service Response: The CCP develops objectives within Chapter 5. These objectives are written to be specific, measurable, achievable, results-oriented and time-fixed. Therefore measures of success for the CCP will be based upon individual objectives which have quantitative elements built in to see if they are met. For example, Objective 1.3 states:

implement 8 surveys by 2005 and 4 additional surveys by 2015. This objective will be met if the surveys are conducted during the set timeframe.

Comment: Request documents elucidate statements on scientific principals of sound fish and wildlife management. How does CCP fit with goals of CVPIA, AFRP, AFSP, EWP, and existing Biological Opinions?

Service Response: Please refer to Appendix M which has been revised to include a description of many federal, state and local programs. The program goals that relate to the CCP have also been listed.

Comment: Request more detail on what is meant by active and passive management practices.

Service Response: Active (or cultural) and passive restoration management practices are described in detail in Chapter 5, Objective 1.1. The glossary (Appendix H) also contains a definition of cultural restoration and passive restoration which are as follows:

Cultural Restoration (also Active Restoration): Restoration that uses horticultural and agricultural techniques for plant establishment. Common practices of cultural restoration includes: propagating seeds, acorns and cuttings in a greenhouse; planting these propagules in rows so that irrigations systems may be installed and maintained and weeds can be sprayed and mowed. Specific human actions taken to reestablish the natural processes, vegetation and resultant habitat of an ecosystem.

Passive Restoration: Restoration is defined as the return of an ecosystem to an approximation of its former unimpaired condition. Passive restoration is defined as restoration that relies on natural processes for plant establishment. These processes include: flooding, sediment deposition, erosion, and seed dispersal from local or upstream plant sources. Allowing an ecosystem to restore its natural processes, vegetation and resultant habitat without human actions.

Comment: Request an update on the status of biological assessments and biological opinions relating to the CCP.

Service Response: The Refuge completed and Intra-Service Section 7 consultation with the Service (Sacramento Fish and Wildlife Office) and NOAA-Fisheries. As stated in the Draft CCP, copies of these consultations and the concurrence letters are provided in the Final CCP in Appendix F.

Comment: Recommend that the FWS provide a comprehensive list of other plans which are likely to impact management of the Refuge. Also suggest providing details of the plethora of the Federal laws, Executive Orders, regulations and conservation initiatives

that pertain to the CCP.

Service Response: The Draft CCP contained information about these conservation initiatives, plans, laws regulations, and Executive Orders in Chapters 1-5, as well as in the Draft EA. Details of these plans, laws, and regulations have been expanded upon in the revised Appendix M in the Final CCP.

Comment: How does the CCP relate to CALFED?

Service Response: Established in May 1995, the California Bay-Delta Program (CALFED) is a cooperative effort of federal and state agencies working with local communities to improve the quality and reliability of California’s water supplies and revive the San Francisco Bay-Delta ecosystem. CALFED’s mission 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 Ecosystem Restoration Program goals (Appendix M) which are consistent with the goals, objectives and strategies of the CCP.

Comment: Suggestion to add columns to Table 2 containing goals of the programs and measures of success for these programs.

Service Response: Table 2 contains a list of partners in habitat acquisition, restoration and management with the Service. It is not a list of programs that would contain measures of success. A list of plans and programs and their respective goals can be found in the revised Appendix M.

Comment: Commentor was unable to find any reference or introduction to Figure 8 in the Draft CCP.

Service Response: The reference to Figure 8 is on the preceding page (page 33) of the Draft CCP. This figure is copied from Exhibit 1 of the Service’s Refuge Planning Policy Overview (602 FW 1).

Comment: The Draft CCP states “farmers have shown a willingness to work with the Service to cooperatively assist in the management of the Sacramento River Refuge.” The commentor states in order for this section of the CCP to be accurate the Service must disclose the concerns of agriculture as they relate to the development and implementation of the CCP.

Service Response: The referenced quote was taken out of context. The Cooperative Land Management Agreement/Cooperative Agreement section of the CCP states: “Farmers and private nonprofit conservation organizations have shown a willingness to work with the Service and have the expertise and resources necessary to cooperatively assist in management of Sacramento River Refuge. The completion of defined land management

activities by the cooperators will provide direct and substantial overall benefits to Refuge habitat and the associated wildlife.” What is written in the CCP is not related to the stated comment.

In response to the comment about disclosing the concerns of agriculture, the Service has made numerous efforts throughout the CCP process to request comments on the CCP. Appendix J contains a list of outreach that the Service conducted over the three year long CCP process. Many comments about agriculture were received and these have been incorporated into the CCP. If the commentor has additional comments, they were not specified in the comment and the Service will not speculate.

Comment: Suggests that contact with private landowner be maintained and the concerns of landowners addressed.

Service Response: The Refuge has been and will continue to work with numerous adjacent landowners. As explained in Chapter 4 in the Cooperation with Adjacent Landowners section and Chapter 5, Goal 3 Partnerships, the Refuge wants to create and maintain partnerships with federal, state, local agencies organizations, schools, corporations, and private landowners. Although there is no set framework, since each partner will have its own concerns, the Refuge will create a process that is mutually beneficial for all partners. The primary contact for the cooperation with partners is the refuge manager.

Comment: Recommends that the final environmental documents and CCP provide examples of adaptive management.

Service Response: Examples of adaptive management were discussed in the Draft CCP in several places. In Chapter 4, habitat management plans were discussed. This annual plan uses adaptive management to guide management activities for the Refuge for that upcoming year. The habitat management plan is a vital link in adaptive management because it provides a way to track the results of management decisions and associated actions. Also in Chapter 4 under the section on migratory bird management and in Chapter 5 in the overview of the landscape ecology approach section, three examples of adaptive management strategies are given where survey information is applied to improve restoration designs on the Refuge.

3.12 Environmental Analysis Comments

Comment: In the EA, the Service states that riparian restoration under Alternative B and C is not significant. What does this mean?

Service Response: In development of the environmental consequences section of the EA, the Service has provided impacts analysis consistent with NEPA implementing regulations at 40 CFR 1502.16(a) and 40 CFR 1502.16(b). Here NEPA implementing

regulations require discussions of environmental consequences to address “[d]irect effects and their significance” and “[i]ndirect effects and their significance.”

In describing the significance of impacts, the Service defers to NEPA Implementing Regulations at 40 CFR 1508.27.

"Significantly" as used in NEPA requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. “

Thus, while the Service believes the environmental effects of implementing the CCP will result in improved conditions for fish and wildlife resources along the Sacramento River, when considered within the context of the worsening environmental conditions occurring throughout the Sacramento River Valley, we do not believe the magnitude of anticipated improved conditions attributable to CCP implementation represents a significant beneficial effect as defined in NEPA Implementing Regulations at 40 CFR 1508.27.

We described the differences between public use levels under Alternatives B and C when compared to Alternative A as “substantial” in an effort to denote that we anticipate markedly differing levels of public use under different alternatives. However, despite the fact that we anticipate markedly different levels of public use under Alternatives B and C when compared to Alternative A, we do not anticipate public use levels under any of the alternatives to result in significant impacts to the human environment (40 CFR 1508.27).

Comment: The greatest concern we have is the conclusion of FONSI. This determination is arbitrary and capricious.

Service Response: In the Draft CCP, the Service did not make a determination or otherwise rendered a Finding of No Significant Impact. The function of the EA is to assist with making a determination as to whether an EIS must be prepared (40 CFR 1501.4(c)). In the environmental consequences section of the EA, the Service provided impacts analysis consistent with NEPA implementing regulations at 40 CFR 1502.16(a) and 40 CFR 1502.16(b). Here NEPA implementing regulations require discussions of environmental consequences which address “[d]irect effects and their significance” and “[i]ndirect effects and their significance.”

Comment: The EA does not disclose and assess potential impacts to land and facilities owned and operated by PCGID/PID.

Service Response: PCGID/PID did not comment during the scoping period or at any other time during the CCP process until their comment letters on the Draft CCP/EA. Also, in those comment letters, they have not stated what the impacts to the facilities are; therefore, the Service will not speculate what these impacts or concerns are. The Refuge is working with PCGID/PID on a feasibility study to protect their pumping plant and restore the riparian sanctuary described in the Technical Analysis section of Chapter 4 of the CCP. This study was funded by CALFED.

Comment: Considering the CCP management objective and the size of project area, the appropriate framework for environmental review is an EIS.

Service Response: The Service disagrees with the assertion that the CCP management objective and the size of project area argue for preparation of an EIS. The level of detail provided in the CCP is appropriate. Significance of impacts to the human environment determines whether preparation of an EIS is warranted. Thus, an EA provides a discussion of the magnitude of the impacts within the context of the situation for each impact topic.

Comment: Commentor claims to provide new information to the CCP process in their comment letter, previously not addressed or disclosed.

Service Response: The Service received the above-mentioned comment letter; however, the commenter has not provided any new information in their letter. The Service has reviewed and developed a response to the substantive comments brought forth in all of the comment letters received during the comment period (Appendix R).

Comment: CCP activities are likely to have significant direct adverse impacts and cumulative impacts on the operation of PCGID/PID pumping plant and fish screen.

Service Response: It is important to note that the commentor has only generally asserted that CCP implementation is likely to have significant direct adverse impacts and cumulative impacts on the operation of PCGID/PID pumping plant and fish screen, but has not provided any information as to what those impacts might be. It would be remote and speculative for FWS to guess at the impacts to which PCGID/PID is referring. The Refuge is working with PCGID/PID on a feasibility study described in the Technical Analysis section of Chapter 4 of the CCP.

Comment: Language should be added to the introduction of the EA to state that “pursuant to Council on Environmental Quality regulations, the principle purpose for drafting and EA is to determine if there are significant impacts and if and Environmental Impact Study is requires. If significant impacts are identified, the need to prepare an EIS

is triggered.”

Service Response: This sentence in the EA has been revised to read “....in accordance with National Environmental Policy Act (NEPA), amended and it’s implementing regulations.”

Comment: The CCP and the EA should be stand alone documents

Service Response: The draft CCP and EA were developed consistent with NEPA implementing regulations to reduce excessive and duplicative paperwork by incorporating by reference (40 CFR 1500.4 (j)), integrating NEPA requirements with other environmental review and consultation requirements (40 CFR 1502.25), and combining environmental documents with other documents (40 CFR 1500.4 (o)). The final CCP will be a stand alone document.

Comment: The EA is silent to potential harmful impacts to PCGID/PID pumping plant and fish screen.

Service Response: It is important to note that the commentor has only generally asserted that CCP implementation is likely to direct adverse impacts on the operation of PCGID/PID pumping plant and fish screen, but has not provided any information as to what those impacts might be. It would be remote and speculative for FWS to guess at the impacts to which PCGID/PID is referring.

Comment: Disagree with the determination that “all activities proposed under Alternative B are not expected or intended to produces significant levels of environmental impacts that would require mitigation measures.”

Service Response: Commentor asserts that impact conclusions are not justified, yet commentor does not specify what is inadequate about the analysis. The Service disagrees with the comment and believes that the conclusions are warranted.

Comment: Provide greater detail why mitigation measures are anticipated and suggests that EIS is needed because FWS is planning mitigation measures.

Service Response: FWS is proposing mitigation measures in an effort to avoid having CCP implementation result in significant adverse effects. Regarding the suggestion that mitigation measures trigger preparation of an EIS, it is important to note that an agency may support a conclusion of less than significant effects by showing that mitigation measures will significantly compensate for a proposed action’s adverse environmental impacts (Friends of Endangered Species v. Jantzen, 760 F.2d 976, 987 (9th Cir. 1985)).

Comment: The loss of jobs associated with agriculture is an unacceptable adverse effect that demands much more detailed analysis and further demonstrates the need for an EIS.

Service Response: It is important to note “that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment” (40 CFR 1508.14). In assessing the physical and biological effects of changing land use on certain pieces of land, the EA has appropriately addressed the interrelated potential social and economic impacts.

The agricultural sector of the regional economy would be most affected by riparian habitat restoration. The reestablishment of riparian habitat would result in small reductions to agricultural production, local agricultural jobs, and personal income. These changes were analyzed in the Restoration EA in Section 4.4 Effects on the Social and Economic Environment (USFWS 2002). The Service has taken the effects on Prime and Important Farmland into account as it has considered alternatives to the CCP. Alternative B was developed because it would lessen these impacts. No significant positive or negative economic impacts are expected from implementation of the proposed alternative.

The report entitled “Socioeconomic Assessment of Proposed Habitat Restoration within the Riparian Corridor of the Sacramento River Conservation Area” (Jones & Stokes 2003) looked at an estimated 42,543 acres study area to generally define and broadly communicate the economic consequences that may result from the establishment of a riparian corridor along the Sacramento River between Red Bluff and Colusa. This economic analysis focused on evaluating two kinds of effects associated with establishing a riparian corridor along the Sacramento River: changes in regional economic activity and fiscal conditions, and changes in resource costs and benefits. The agricultural sector of the regional economy would be most affected by riparian habitat restoration. The conversion of 9,390 acres of agricultural land to riparian habitat would result in small reductions to agricultural production, local jobs and personal income. These reductions would be relatively small when taken in the context of the 4-county agricultural economy. County tax revenues would see minor adjustments. The easily quantified benefits of the restoration would be small in comparison to the losses, but the potential for substantial local benefits in the recreation sector and societal benefits from the improvement in habitat conditions in the Sacramento Valley is large. The key to realizing substantial recreation-related benefits would be the expansion of public access and recreation-related facilities along the Sacramento River.

Comment: Commentor stated that they would appreciate receiving the comments made by other reviewers of this EA.

Service Response: The Service incorporated the comments by reviewers prior to the release of the Draft CCP/EA. The CCP and EA reflect the combined contribution of the CCP core team, extended team, and the reviewers.

Comment: Appendix 1 objectives and goals are presented in subjective terms.

Service Response: The goals and objectives that are referred to in Appendix 1 are directly from Chapter 5 of the CCP. As much as possible, the objectives are written to be specific, measurable, achievable, reasonable, and time-fixed. This allows the reader to obtain the quantitative elements to measure success right in the objective. These objectives are restated in Appendix 1 to compare each under each alternative of the EA.

3.13 Praise

- As adjacent landowners we have historically relied upon this good neighbor policy and its incumbent good-faith on the part of the Service and the Refuge management to employ sound preventative and precautionary measures and to respond to incidents and problems as they occur.
- M&T Chico Ranch would like to take this opportunity to acknowledge the importance of the CCP and recognize the efforts of the USFWS in this endeavor to date.
- The environmental education program described on page 157 is good.
- The website described on page 161 is good.
- Wish to compliment the authors on a very complete and easily readable report. Especially noteworthy is the intent to work with “many partners to protect and restore riparian habitat along the Sacramento River and its watershed.”
- The policy of not planting elderberry bushes within 100 feet of the Refuge boundary with private agricultural operations is appropriate.
- Defenders of Wildlife approves of the decision that was made to keep the majority of the refuge lands closed to camping, but to allow limited camping on gravel bars below the high water mark.
- Plan B allows for great public access for non-consumptive purposes.
- Alternative B is a nice compromise between development and wildlife sanctuary. Like the idea of providing land to be kept aside for a wildlife sanctuary while improving other parts of the refuge for public access and appreciation.
- Plan C create maximum opportunity for public use and enjoyment for the citizens of this county.
- We at Kittle’s Outdoor & Sport Co. support conservation efforts along the river and are in favor of option C. Thank you for allowing us to share the Draft with the public. It seems to be very comprehensive.
- Plan B better serves the needs of the community. Hunting and fishing have significant historical and cultural value as does farming and eliminating it under option C is not good.
- I fully support Alternative B to preserve natural habitats for the use and enjoyment of the public as well as the animals that live there.
- We are especially supportive of Alternative B which would optimize habitat restoration and public use of the Refuge.
- Plan is impressive and appears very well thought out. The different uses of these refuges are very diverse and I am pleased with the plan.

- On behalf of The Nature Conservancy I wish to commend your project team for the Draft CCP.
- It is an excellent and inclusive document that will serve as an effective guide for the management of the Refuge.
- The plan has a strong technical basis and the detailed plans for implementation reflect all of the hard work and thought that went into the document.
- The extensive public outreach efforts that were included in the planning process are well chronicled and the plan clearly reflects much of the public input was received.
- The plan will be an important tool to help implement the goals and principles of the Sacramento River Conservation Area Forum Handbook.
- I am very excited to see wildlife habitat restored along the river.
- If this Refuge is managed like the others in the Complex it will no doubt provide high quality habitat and high quality recreational opportunities.
- We join you in your mission of preserving and protecting these public treasures while encouraging compatible public utilization and enjoyment.
- As a hunter and fisherman, I congratulate you for your conservation efforts in restoring wildlife habitats along the Sacramento River.
- I attended your public comment meeting in Red Bluff. Thank you for this meeting and the presentation. I also want to thank all your personnel that were present. Most questions were answered during that meeting. The CD provided me with excellent materials to make my own assessment and evaluation.
- I attended the Colusa meeting. Thanks for the time and effort. Good job.
- The USFWS and CDFG are doing a good job in the re-establishment of wildlife within California.
- I commend you for your thorough job. Keep up the good work.

Service Response: Comments noted.

4.0 LIST OF PEOPLE AND ENTITIES THAT PROVIDED COMMENTED

4.1 Federal Agencies

Agency

USFWS, Red Bluff Fish and Wildlife Office
USFWS, Regional Office

Signature

Parker, T.
Vallentine, N.

4.2 State Agencies

Agency

California Department of Conservation
California Department of Fish and Game
California Department of Fish and Game
California Department of Water Resources

Signature

O'Bryant, D
Curtis, B.
Hoffman, P.
Ng, M.

4.3 Local Agencies

Agency

Butte County Mosquito and Vector Control
Glenn County Board of Supervisors
Glenn County Mosquito and Vector Control
Tehama County Flood Control and Water
Conservation District

Signature

Camy, J.
Freeman, G.
Cavier, J.

Ohlin, E.

4.4 Organizations

Organization

Abbey of New Clairvaux
Animal Protection Institute
Association of Veterinarians for Animal Rights
California Bowmen Hunters
California Waterfowl Association
Central Valley Project Water Association
Chico Area Flyfishers
Chico Chapter of California Deer Association
Defenders of Wildlife
Fresno County Sportsman's Club
Fresno Chapter Quail Unlimited
Princeton Cordora Glenn Irrigation District/
Provident Irrigation District
Sacramento River Preservation Trust

Signature

Brother Regis
Engebretson, M.
Barnato, T.
Becker, J.
Hennelly, M.
Birk, S.
Miller, D.
Wood, A.
Matson, N.
Woods, G.
Woods, G.

Boyd, L.
Merz, J.

Straight Arrow Bowhunters
The Fund for Animals
The Nature Conservancy

Bostain, S.
Handley, V.
Zelege, D.

4.5 Businesses

Business

3B's Ranch
Chico Sportsman's Den
Crain Orchards, Inc.
Crain Ranch
Keyawa Orchards, Inc.
Kittles's Outdoor and Sport Club
M&T Chico Ranch
Western Outdoor News

Signature

Bocks, C.
Ebright, D.
Crain, C.
Crain, H.
Keyawa, R.
Kittle, P.
Heringer, L.
Karr, B.

4.6 General Public

Adolf, N.
Ahre, D.
Alcisto, P.
Alexander, D.
Alexander, A.
Allen, T.
Alonso, M.
Alvarez, C.
Amaral, L.
Amaral, C.
Amaral, D.
Amaral, D.
Amaral, D.
Amaro, B.
Anchors, J.
Anders, C.
Anderson, S.
Anderson, A.
Andoe, D.
Andrews, M.
Anello, D.
Arendt, R.
Arendt, S.
Aries, J. and H.
Artley, R.
Aureala, W.
Austin, G.

Ave, M.
Ave, J.
Baccam, T.
Bachelor, M.
Baer, W.
Baer, K.
Bailey, T.
Baker, G.
Ballard, L.
Ballon, A.
Barber, B.
Barbour, T.
Barcilon, D.
Bard, B.
Barden, D.
Bariola, S.
Barnhart, M.
Barranco, M.
Bates, J.
Baum, B.
Baxter, J.
Beaham, P.
Beaham, T.
Beaver, E.
Beavers, N.
Begley, R.
Belkin, D

Belkin, M.
Beltramo, J.
Beltramo, J.
Benamati, R.
Bender, D.
Bender, E.
Bender, M.
Bender, R.
Benson, C.
Berger, B.
Bergstrom, B.
Berry, J.
Berryhill, T.
Betagna, N.
Bethel, C.
Betts, J.
Bianchi, R.
Biggs, S.
Billeci, F.
Bird, D.
Bitker, M.
Black, D.
Black, M.
Blackwell, D.
Blackwell, D.
Blackwell, D.
Blackwell, P.

Bloxham, T.	Calais, C.	Christensen, E.
Blue, B.	Calbreath, L.	Christensen, M.
Bock, R.	Campbell, M.	Cianelli, T.
Boelens, R.	Candler, R.	Cierley, H.
Bohli, B.	Capriola, R.	Clapp, G.
Bohnemeyer, M.	Caracci, J. and V.	Clapp, K.
Bohnemeyer, S.	Cardella, S.	Clapp, S.
Bonds, J.	Carlson, D.	Clark, B. and C.
Bourdon, J.	Carlson, D.	Clarkson, J.
Boyd, D.	Carlson, D.	Claypool, R.
Boyes, B.	Carman, T.	Clement, R.
Branco, C.	Carney, M.	Cloninger, J.
Bratt, S.	Carney, R.	Cloud, M.
Breglia, A.	Carpenter, T.	Cockrell, A. and D.
Brigantino, T.	Carr, G.	Conn, T.
Britton, R.	Carter, G.	Connell, D.
Bronner, B.	Carter, M.	Connell, D.
Brooks, J.	Cartwright, S.	Connors, P.
Brott, S.	Caruso, G.	Constantini, T.
Brott, S.	Case, M.	Cook, B.
Brown, R.	Case, M.	Cooper, S.
Brown, V.	Case, M.	Copeland, R.
Brown, V.	Cassaretto, T.	Copland, S.
Browne, D.	Cassianna, E. and F.	Corbin, B.
Browne, J.	Cassillas, D.	Cordeau, S. and K.
Bruce, D.	Castellano, E.	Harding
Brugger, R.	Castro, D.	Cornelisun, R.
Bruhn, S.	Cerro, P.	Cornish, K.
Bruno, E.	Cerro, R.	Cory, D.
Bulloch, R.	Chaddock, D.	Cose, E.
Bunch, R.	Chamberlain, S.	Cose, K.
Bundy, M.	Chan, C.	Cotton, T.
Buriani, D.	Chapman, E.	Countryman, G.
Buriani, N.	Chartier, M.	Cowan, B.
Buriani, R.	Chase, C.	Craig, T. and E.
Buriani, R.	Chauvin, R.	Crane, J.
Burke, J.	Chavarria, M.	Cress, G.
Burkett, B.	Chavarria Patino, M.	Crete, C.
Burkett II, R.	Chesney, T.	Crisitia, N.
Burns, P.	Chikato, M.	Croff, W.
Burres, E.	Chikato, M.	Cronin, S.
Burroughs, K.	Childs, S.	Crowe, B.
Butler, J.	Chin, K.	Cullins, W.
Buzzell, M.	Chokrevski, M.	Cullins, W.

Cumming DuCoeur, E.	Domras, R.	Estensen, D.
Cunha, M.	Donald, F.	Estes, D.
Curnow, C.	Donley, C.	Esteve, G.
Currey, D. and H.	Donnelli, G.	Eugene, J.
Currey, D.	Donnici, A.	Eusebio, M.
Dailey, M.	Doob, J.	Everly, F.
Damaso, M.	Dorow, M.	Everson, G.
Damitz, G.	Dorrell, D.	Ewing, D.
Damitz, G.	Doucette, C.	Eyre, T.
Damitz, G.	Douglas, M.	Falletti, R.
Damitz, G.	Douglas, R.	Farley, D.
Daniel, B.	Dross, T.	Farmer, G.
Dardzinski, M.	Drost, C.	Farnung, B.
Davanis, T.	Drummond, A.	Farrar, A.
David, M.	Duda, T.	Farrey, R.
Deitz, J.	Dufek, D.	Fast, M.
Deitz, J.	Duffy, D.	Fava, G.
Deitz, R.	Dunlap, J.	Feldheim, C.
Delbridge, G.	Durrant, T.	Feltman, S.
Delorey, G.	Dwinger, D.	Fendrich, C.
Dematteis, P.	Dwinger, T.	Ferrill, H.
DeMello, S.	Dyrssen, D.	Fetzer, P.
Deming, S.	Eaton, H.	Figone, J.
Dengler, R.	Eddy, D.	Figone, J.
Denison, J.	Edmonds, D.	Figone, P.
Deniz, S.	Edwards, W.	Figone, A.
Denson, L.	Ehrich, T.	Filsinger, L.
Depew, G.	Eichert, K.	Finkle, P.
Derdivanis, J.	Eisenman, M. and C.	Fischer, Philip
Deschene, J.	Eitel, R.	Fischoff, R. and S.
DeWitt, R.	Embree, D.	Flores, J.
Dicherry, D.	Emmons, M., T., D., and D.	Flowers, B.
Dick, J.	Engberg, D., C. and C.	Flowers, D.
Dickson, M.	Engbretson, J.	Flynn, B.
Dietrich, D.	Engle, R.	Fole, J.
DiGioia, E.	Engurasoff, G.	Foley, T.
DiMarco, J.	Engurasoff, S.	Forberg, J.
DiNicola, B.	Enright, R.	Forberg, J.
Dinwiddie, D.	Ereth, K.	Forrester, C.
Dirkson, K.	Erickson, C.	Foster, T. and R.
Dixon, K.	Erickson, S.	Foster, J.
Dodd, B.	Ernenwein, R.	Foster, M.
Dodd, E.	Erwin, J.	Foust, J.
Glenn Dodge, G.		Foy, M.

Frank, G.
Frediani, T.
Freeman, D.
Fritsch, S.
Frulan, B.
Fryer, W.
Fulton, C.
Gagliano, M.
Gaines, F.
Gales, C.
Garbato, K.
Gardner, W.
Gargano, L.
Garkow, I.
Gary, R.
Gaumer, D.
Gaumer, G.
Gaumer, J.
Gaumer, T.
Gebke, S.
George, L.
George, R.
George, D.
George, B.
George, T.
German, B.
Gerula, T.
Getchell, T.
Getchell, M.
Ghelfi, P.
Gifford, J.
Gilbert, D.
Ginotti, F.
Glennon, J.
Go, A.
Godsey, B.
Goetter, S.
Gong, A.
Gonsalves, J.
Gonzalez, P.
Goodenough, B.
Goodman, D.
Gork, J.
Goss, S.

Gotfried, J.
Gotfried, C.
Gragg, L.
Graham, B.
Graham, C.
Graham, J.
Graham, R.
Gray, A.
Gray, R.
Gray, R.
Green, E.
Gremore, S.
Griffith, J.
Gromer, D.
Grossman, M.
Grotz, R. T.
Gruendler, D.
Grunert, P.
Guadagnin, D.
Gurton, W.
Gustin, M.
Haigh G.
Haigh, J., T. and D.
Hailstone, J.
Hall, A.
Hall, R.
Hamilton, J, M, and R.
Hamilton, M.
Hamre, L.
Haner, L.
Haney, R.
Hankins, D.
Hanson, B.
Hardesty, S.
Hardy, T.
Harp, R.
Harp, R.
Harp, B.
Harris, G.
Harris, J.
Harrity, J.
Hart, G.
Hartman, C.
Hartman, J.

Hartman, T.
Haseleu, E.
Hass, M.
Hauqe, E.
Hauser, D.
Hay, E. P.
Hazlehurst, J.
Hazlehurst, J.
Heckler, D.
Hedglin, H.
Hedgpeth, B.
Heins, B.
Heins, B.
Heintzman, C.
Hembree, G.
Henry, M.
Heqwer, E.
Herendeen, C.
Herink, M. and M.
Herman, L. and D.
Herman, M.
Hermansen, T.
Herreid, M.
Herrell, B. and P.
Herrick, J.
Hesse, J.
Heywood, G.
Hiebert, A.
Higginson, M.
Hildabridle, J.
Hile, C.
Hilf-Barr, T.
Himmer, K.
Hisey, B.
Hitt, J.
Hobbs, D.
Hobbs, J.
Hobbs, J.
Hobson, A. D.
Holberton, T.
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Ruddick, L. and A.	Shobe, B.	Stewart, R.
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Sager, J.	Slagle, G.	Strauss, R.
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Santino, D.	Smith, J. and J.	Struble, D.
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Saulet, G.	Smith, L.	Stuenkel, M.
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Schmidt, S.	Smith, K.	Summers, D.
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Schmitt, S.	Smith, J.	Sweer, J.
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Schmitz, B.	Smith, R.	Tassin, K.
Schnalle, R.	Smith, K.	Taylor, T.
Schneider, P.	Smith, D.	Taylor, L.
Schuldies, L.	Sobiloff, B.	Taylor, J.
Schults, J.	Somerday, R.	Taylor, B.
SchultsBob	Sorg, S.	Taylor, T.
Schussel, R.	Sorsky, M.	Taylor, T. and C.
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Schussel, M.	Spangler, D.	Telucci, J.
Schwartz, R.	Sparks, L.	Temps, L.
Schwick, K.	Spatta, G.	Theller, J.
Scott, J.	Spatta, G.	Thew, J. and M.
Scott, S.	Spatta, G.	Thomas, S.
Scott, D.	Spolar, J.	Thommen, D.
Scott, J.	Springer, J.	Thompson, G.
Sefert, J.	Springer, S.	Thompson, E.

Thompson, W.	Walker, J.	Williams, T.
Thompson, M.	Walker	Williams, P.
Thompson, A.	Wallace, S.	Williams, R.
Thornton, M.	Wallrich, D.	Williams, J.
Tiller, M.	Wally, R.	Williams, D.
Tintle, B.	Walther, R.	Wilms, J.
Tittle, T.	Wandell II, F.	Wilson, J.
Todd-Mancillas, W.	Wanket, D.	Wilson, E.
Todd-Mancillas, W.	Ward, B.	Wilson, F.
Tolliver, T.	Warmerdam, K.	Wilson, K.
Tolpin, J.	Warmerdam, P.	Wilyard, D.
Towner, M.	Warner, D.	Wines, S.
Towns, T.	Warner, C.	Winter, J.
Tracey, T.	Warren, B.	Winter, M.
Treiber, L.	Warren, M.	Winters, R.
Trivett, R.	Waters, J.	Wolfe, M.
Trost, H.	Watson, E.	Wood, R.
Trout, S.	Watters, C.	Wood, D.
Tucker, T. and B.	Weaver, D.	Wood, D.
Demartini	Webb, B.	Wood, J.
Turley, B.	Weinrich, W.	Wood, J.
Turner, K.	Weinstein, D.	Wood, P.
Tuttle, G.	Well, J.	Wood, F.
Uhland, T.	Wendt, B.	Woodry, L.
Underwood, G.	Wentzel, M.	Wright, C.I
Vaiana, M.	Wheeler, B.	Wrinkle, J.
Valdez, D.	Wheeler, R.	Wrinkle, M.
Valle, D.	Wheeler, G.	Wunsch, M.
Valley, L.	Whilson, C.	Wunsch, K.
Van Alstyne, R.	Whitaker, G.	Wunsch, A.
Van Bree, F.	White, J.	Wunsch, S.
Van Dylce, A.	White, R.	Wunsch, E.
Van Nuys, R.	White, E.	Wunsch, R.
Van Sant, R.	White, L.	Wunsch, S.
Van Sickle, J.	Whitmore, D.	Yakoubovsky, N.
Vann, S.	Whittaker, L.	Yarosevich, J.
Verret, T.	Whitter, Z.	Young, G.
Vix, S., L. and B.	Wiedkemp, K.	Youngberg, N.
Voleck, J.	Wiedkemp, A.	Yunker, N.
Volker, G.	Wigaard, C.	Zamboni, E.
Vorhes, Z.	Wikey D.	Zilch, D.
Voris, T.	Wilcox, C.	Zuck, D.
Wacker, M.	Wilkinson, J.	Zuckerman, E.
Wagenman, L.	Willging, P.	Zumwalt, D.

5.0 Summary of Changes

This section explains and summarizes the major changes made between the draft and final versions of the CCP.

5.1 Refuge Acres

The Refuge acres have changed since the Draft CCP and are now more accurately represent the legal boundaries. Table 7 summarizes these changes.

Table 7 Refuge Acres Changes

Refuge Unit	Draft Acres	Final Acres
Blackberry Island	63	52
La Barranca	1,073	1,066
Todd Island	165	185
Mooney	344	342
Ohm	750	757
Flynn	552	630
Heron Island	116	126
Rio Vista	1,202	1,149
Foster Island	150	174
McIntosh Landing North	60	63
McIntosh Landing South	71	67
Pine Creek	603	564
Capay	667	666
Phelan Island	308	308
Jacinto	82	69
Dead Man's Reach	634	637
North Ord	43	29
Ord Bend	118	111
South Ord	122	122
Llano Seco Riparian Sanctuary	751	751
Llano Seco Island I	56	56
Llano Seco Island II	100	99
Hartley Island	397	487
Sul Norte	590	590
Codora	394	399
Packer	375	404
Head Lama	129	177
Drumheller Slough	226	224
Total Refuge Acres	10,141	10,304

5.2 Visitor Services Changes

Changes in the Refuge acreages (Table 7) and changes in the amount of sanctuary have changed the percentages that were used in the Draft CCP. Table 8 shows the draft and final acreages (and percentages) for sanctuary, Big 5 and Big 6 uses.

Table 8 Visitor Services Changes

	Draft Alt B	Draft Alt C	Final
Sanctuary	1,663 (16%)	1,663 (16%)	2,043 (20%)
Big 5	2,907 (29%)	1,124 (11%)	2,938 (28%)
Big 6	5,571 (55%)	7,354 (73%)	5,323 (52%)

5.2.1 Sanctuary Acres

The Service has revised the amount of sanctuary acres proposed between the draft and final CCP from 1,663 acres (16%) to 2,043 acres (20%). The additional sanctuary acres were added to the Rio Vista and Ohm units (additional 341 and 156 acres respectively). Sanctuaries are areas on the Refuge that are closed to public use. The CCP states that hunting will not be allowed on Refuge units that are small in area and close in proximity to urban areas and private dwellings. In order to be consistent with this statement, the visitor service uses were changed from Big 6 to sanctuary on the areas of Rio Vista and Ohm units that are adjacent to private residences.

5.2.2 Hunting

Many comments were given from adjacent landowners concerning hunting and trespassing. The Service added the following regulation to the Refuge Hunting Plan (Appendix C): “Hunting is not allowed within 50 feet of any landward boundaries adjacent to privately owned property. As per Fish and Game regulations, it is unlawful to hunt or discharge while hunting, any firearm or deadly weapon within 150 yards of any occupied dwelling house, residence, or other building or any barn or other outbuilding used in connection therewith. The 150-yard area is a “safety zone”. In addition, Big 6 acres were reduced when sanctuary was added to Rio Vista and Ohm units.

5.3 Changes to CCP

5.3.1 Technical Analysis

The Service added a section titled Technical Analysis in Chapter 4 and in Objective 1.2 Floodplain and River Processes in Chapter 5 to address comments received regarding ongoing feasibility studies.

5.3.2 Other Changes

In response to a comment received, the Service added a description and a map of Llano Seco Riparian Easement and Table 7 Invasive Exotic Plant Species at Sacramento National Wildlife Refuge Complex.

5.4 Changes to Appendix M

The Service revised Appendix M which now contains a list of other laws and executive orders that may affect the CCP or the Service's implementation of the CCP. It also contains an overview of policies and plans that are relevant to Sacramento River Refuge.

