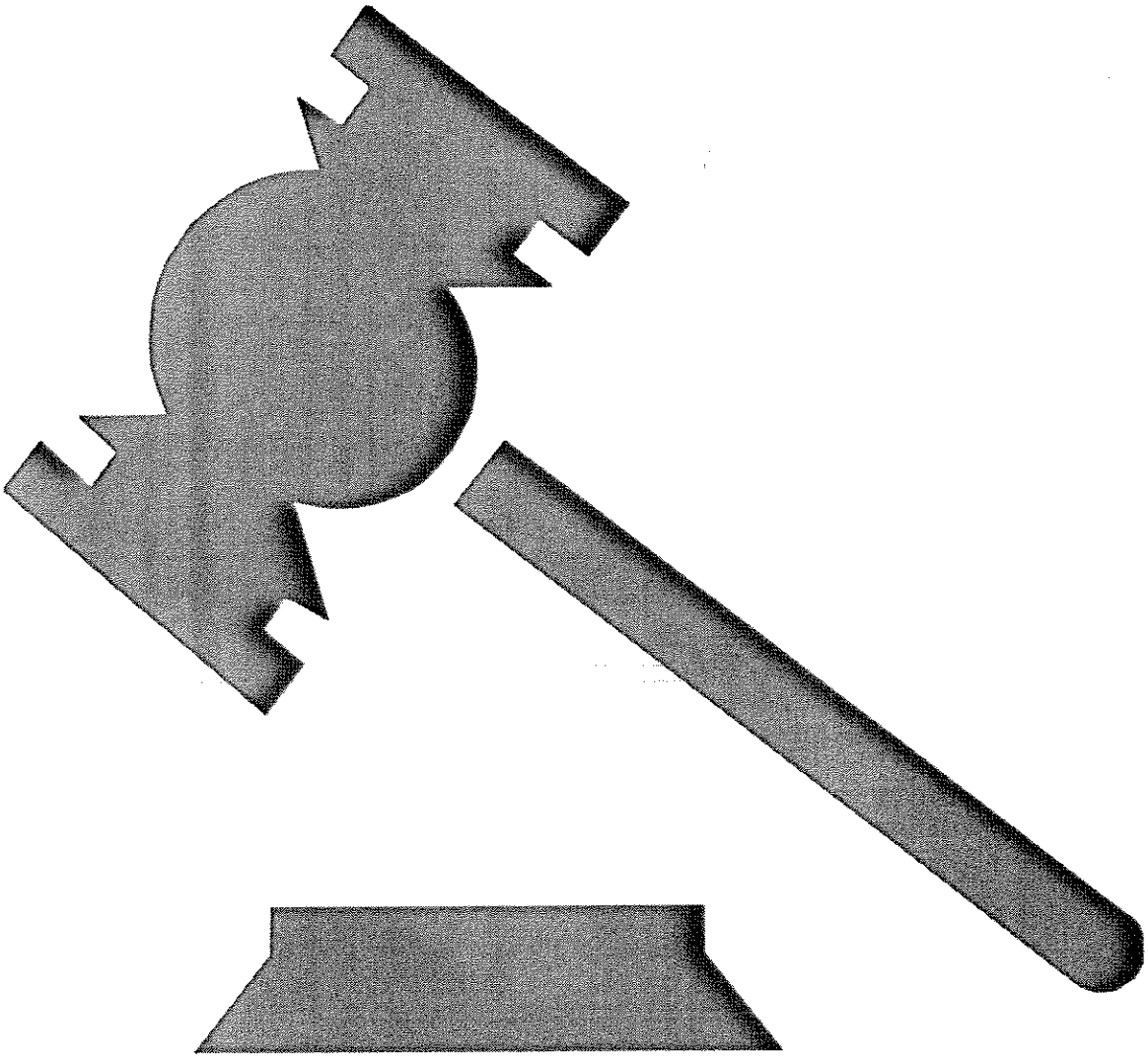


ADMINISTRATIVE ACTION/DISCUSSION ITEMS AGENDA ITEM VII. A.

Council of Fresno County Governments

2035 Tulare Street, Suite 201
Fresno, California 93721

Telephone (559) 233-4148 ◆ FAX: (559) 233-9645
Website Address: www.fresnocog.org

February 17, 2009

Memorandum

TO: Transportation Technical Committee
Policy Advisory Committee
COG Policy Board

FROM: Tony Boren, Executive Director
Barbara Steck, Deputy Director
Les Beshears, Finance Director

SUBJECT: **Draft FY 2009-10 Overall Work Program**

Recommendation:

Staff recommends release of the draft FY 2009-10 Overall Work Program totaling $13,153,330 for a 45 day review and comment period.

Summary:

The FY 2008-09 Overall Work Program (OWP) totaling $13,153,330 (including carryover projects) is submitted for your review. This year's budget total reflects a decrease of 3% ($418,429) from the approved FY 2008-09 budget. Federal revenues increased $1,323,435 to reflect a number of large projects funded by federal funds. These large federally funded programs included the Federal Transit Administration Job Access Reverse Commute and New Freedom programs and the Partnership Planning Metropolitan Rural Loop. State revenues increased 133% largely due to the valley wide state grant we have agreed to administrate for the valley MPO partners. Local Revenues decreased 35%, ($3,111,352). A significant amount of this decrease comes from removing fund balances from the Measure "C" programs to reflect actual program implementation. As the programs grow the fund balances the budgets will be increased and the fund balances drawn down.

The six primary components of the program are as follows:

1. Regional Transportation Planning
2. Transportation Program Development
3. Service and General Coordination Activities
4. Regional Coordination of Transportation, Land Use & Housing
5. Valleywide Coordinated Activities
6. Administrative Activities

Highlights for each of the six OWP components are listed below:

1. Regional Transportation Planning

The work elements contained within this section primarily carryout the long-range regional transportation planning program, which the COG is statutorily responsible for.

Work Element 111 - Regional Transportation Modeling This $412,000 program includes $125,000 to update our Traffic Model.

Work Element 113 – Regional Transportation Planning Studies. This element provides $100,000 for ongoing and new regional planning studies. It will allow continued funding of the West Area Circulation Study ($50,000) and initiate the National Park Transit Study ($50,000).

Work Element 120 – Public Transportation Urban. This $553,000 Urban Transit planning effort programs $100,000 of FAX's Section 5307 grant to do Transit studies as needed.

Work Element 121 – JARC and Work Element 122 – New Freedom This $2.3 million Federal Transit Administration Sect. 5316 and Sect. 5317 grant programs provide funds to eligible projects.

Work Element 123-(Public Transit Infrastructure (PTIS) Completion of this $2.7 million Measure "C" funded study is required before Measure money can be spent on various Transit components and the Transit Oriented Infrastructure program.

Work Element 124 Transit Professional Development - $56,500 has been awarded to convene three workshops by experts in Transit Oriented Developments.

Work Element 152 High Speed Rail Planning - $115,400 has been programmed to study High Speed Rail Planning now that voters have approved the bonds.

Airport Land Use Commission - $31,600 is programmed to administrate the Airport Land Use Commission.

Congestion Management Program - Heightened federal interest in our Congestion Management Plan - increase this budget to $21,500.

2. Transportation Program Development

WE 210 Measure "C" Extension - This $170,200 work element continues work done previously to implement the Measure and develop an implementable Capital Projects Strategic Plan.

WE 211 Measure "C" – Oversight Committee - This work element provides $10,500 to provide staff support for the Oversight Committee.

WE 212 Measure "C" – Rideshare/Van Pool This work element provides $391,940 to cover the cost of the Rideshare/Van Pool program.

WE 214 Measure "C" – ADA/ Seniors - This work element provides $168,200 to administrate the senior taxi script program.

WE 215 Measure "C" - Farmworker Van Pool - The Farmworker Van Pool program is budgeted for $117,200.

WE 220 Transportation Program Development - This $200,000 work element contains $50,000 for leasing web based software to coordinate the various aspects of administrating federal aid project applications with modeling air quality conformity, congestion management and financial constraint.

3. Services and General Coordination

Work Element 360 – "One Voice" Advocacy - This $160,700 work element budgets the cost of the federal and state "One Voice" Advocacy programs at both the local and regional level. These activities are ineligible for state and federal participation and must be funded by local assessments.

4. Regional Coordination of Transportation, Land Use & Housing

Work Element 410 – Blueprint Planning - We have agreed to submit to the state and administrate a fourth year Blueprint application of $2,500,000. This grant will be spread among the partner Valley Cogs, who will also share in the match.

Work Element 412 – Mid-Valley Metro Rural Loop - The City of Fresno applied for and was awarded a $345,000 grant to explore the feasibility of forming a regional collaboration between the four counties of Fresno, Madera, Tulare and Kings to assess the concept of a high-capacity, mass transit based, multi modal corridor.

5. Valleywide Coordinated Activities

Work Element 820 Valley RTPA Coordination - General Activities associated with coordinating Valleywide planning include a $50,000 contract to coordinate the Valleywide planning effort. The cost of the contract is split among the Valley partners.

6. Administrative Activities

Work Element 940 Freeway Service Patrol - The Freeway Service Patrol is continued for a 17th year of operation. The service was bid out last year and again Curtis Towing was the successful bidder for this $302,600 program.

Work Element 950 Abandon Vehicle Abatement Program - FY 2009-10 marks the fifth year of operation for the Abandoned Vehicle Abatement Program. The COG has been designated the local Abandoned Vehicle Abatement Service Authority to administer the AVA Program and Plan. The program is funded by an assessment of a $1 additional registration fee to be used exclusively for the purpose of abandoned vehicle abatement within Fresno County.

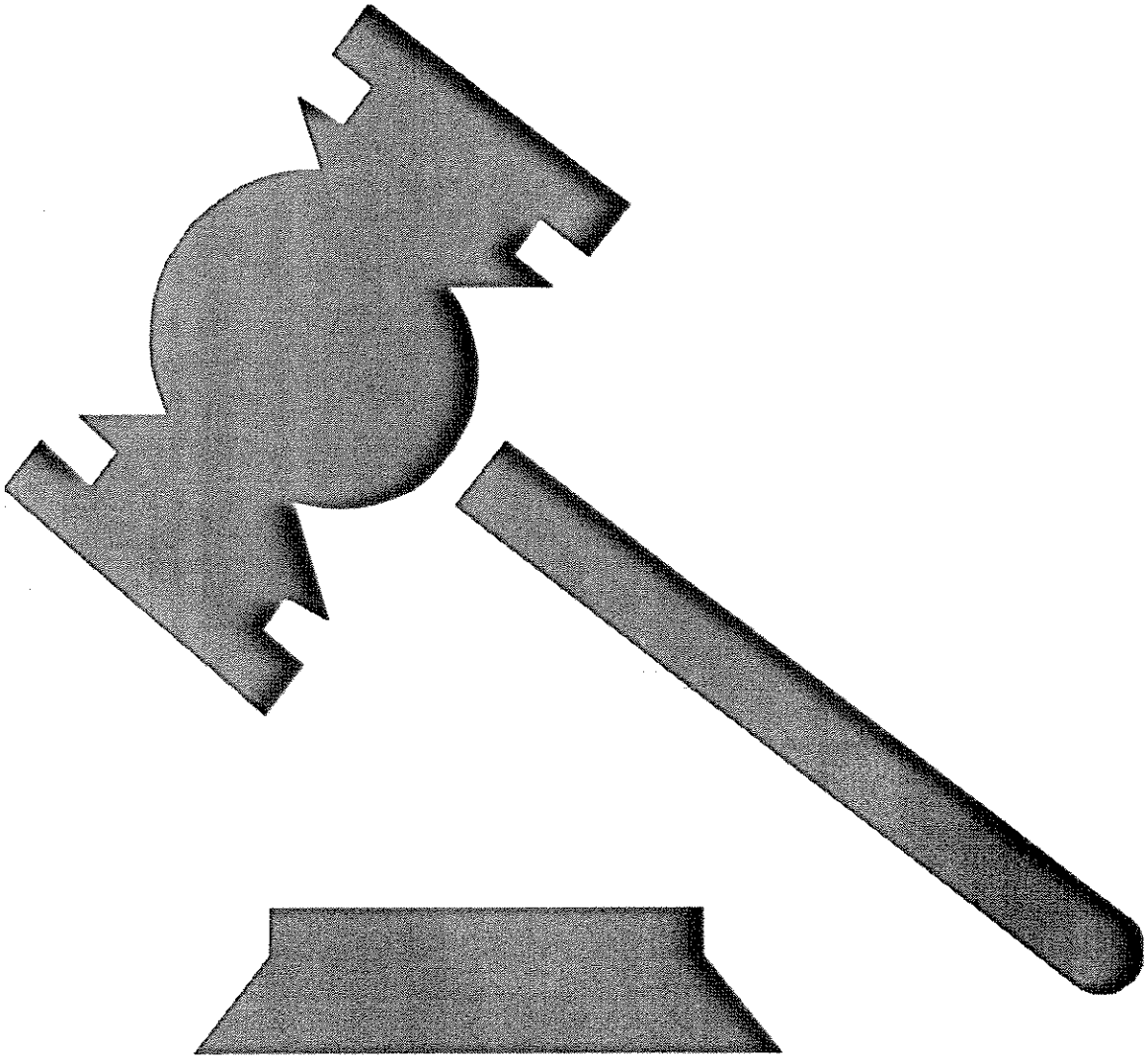
Staffing

The over all number of positions remains unchanged however the increase in staff cost is mitigated by holding a vacant Senior Level Planning position open and creating a Planner I position.

Office Overhead

Office overhead increased slightly ($7,190) from 2008/09 reflecting operating expenses associated with the facility and an upgraded color copier. Audit cost increased $1,800.

Please refer to the website for the 2009-210 Draft Overall Work Program www.fresnocog.org



ADMINISTRATIVE ACTION/DISCUSSION ITEMS AGENDA ITEM VII. B.

TULARE BASIN WILDLIFE PARTNERS

Creating Opportunities for Nature and People

Fresno County Measure C Riparian-Wildlife Corridor Report

Prepared by

Tulare Basin Wildlife Partners

for the

Council of Fresno County Governments

November 30, 2008

Executive Summary

As part of an agreement with the Council of Fresno County Governments, Tulare Basin Wildlife Partners (TBWP) visited seven riparian and wildlife corridors in Fresno County during February and March 2008. TBWP used a numerical ranking system to determine the corridors with the highest potential for habitat/wildlife conservation, recreation, and conjunctive uses, such as flood control, groundwater recharge, tourism and opportunities for private landowner involvement. The three highest-ranking corridors include: Kings River Riparian Corridor, Arroyo Pasajero Riparian Corridor Complex (including Los Gatos, Warthan, Jacalitos and Zapato Chino creeks), and Fresno Slough Riparian Corridor. For each of the three highest ranking corridors, TBWP provides a description and a summary of attributes and conjunctive use opportunities. A brief description of attributes and opportunities for the four additional corridors with lower rankings is provided as well.

In addition, this report lists the Measure C transportation improvements and briefly discusses the potential wildlife impacts related to each of the projects. An examination of other regional planning efforts involving Fresno County provides information about the San Joaquin Valley Blueprint, the Fresno County Planned Rural Bikeway System, the Pacific Gas & Electric Habitat Conservation Plan and the U.S. Fish & Wildlife Service's Upland Species Recovery Plan. The document concludes with information about potential project mitigation areas, including selection criteria and site recommendations.

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Introduction

In February 2008, TBWP entered into an agreement with Council of Fresno County Governments to:

- Identify and prioritize opportunities for natural areas that may be set aside for mitigation banking purposes;
- Identify and leverage additional federal, state and private funding opportunities for mitigation bank creation;
- Provide scientifically-based habitat and special status species information on seven riparian (river or stream) systems on Fresno County watersheds;
- Identify conjunctive use opportunities such as groundwater banking, flood protection, incentives for private landowner participation, recreation, and new business opportunities;
- Help foster sound economic development;
- Facilitate, streamline or avoid federal and/or state regulatory concerns; and
- Help maintain/ensure local control.

This document presents the finding of the riparian and wildlife corridor analysis. Mitigation banking recommendations are also included in this document.

Goals and Objectives

The goals of the Fresno County Measure C Riparian-Wildlife Corridor Project are to:

1. Study each of the riparian and wildlife corridors in the Tulare Basin hydrological unit portion of Fresno County;
2. Identify the highest value areas where conservation activities should be focused;
3. Identify sensitive areas that will need mitigation during Measure C projects;
4. Identify areas for habitat protection;
5. Identify potential mitigation sites; and
6. Identify conjunctive use opportunities such as groundwater banking, flood protection, recreation, open space access, incentives for private landowner participation and new business opportunities.

The objectives for habitat protection along Fresno County corridors include:

1. To enhance wildlife habitat and movement along natural resource corridors by identifying important areas for wildlife;
2. Protect flood-sensitive areas by recommending levee setbacks, floodplain easements and opportunities for the Natural Resources Conservation Service's Wetland Reserve Program; and
3. Promote conjunctive uses to maximize benefits by identifying areas which can accommodate both wildlife and recreation/open space needs.

Fresno County Corridors

Rankings

The TBWP planning team completed site visits to all accessible land along potential corridors during February and March 2008. No incursions on private property were made without permission. After these visits, TBWP ranked each corridor according to specific attributes. This ranking process defined which Fresno County corridors are most important to wildlife and which provide the greatest array of conjunctive use opportunities. TBWP used the following criteria for ranking the corridors (Appendix 1):

1. Extent of urban development;
2. Channel hydrology and morphology, including modification history – diversions, realignments, dams, etc.;
3. Condition of adjacent uplands, such as riparian or other complementary upland habitats;
4. Riparian habitat quality and continuity;
5. Presence of special status species, such as threatened, endangered or species of special concern, etc.;
6. Opportunities for conjunctive use, such as degree of groundwater overdraft, opportunities for recharge, recreation, etc.;
7. Importance to Tulare Basin wetlands (Does this channel bring water down to lakes or wetlands? Does it send significant water to the Basin?); and
8. Community, social and agency considerations.

Numerical ranking results for the seven riparian corridors include (Appendix 1):

- Kings River - 20
- Arroyo Pasajero Complex - 18
- Fresno Slough - 22
- Panoche Creek - 13
- Cantua Creek - 12
- Wahtoke Creek - 12
- Murphy Slough - 11

From this list, TBWP selected the Kings River Riparian Corridor, Arroyo Pasajero Riparian Complex Corridor and Fresno Slough Riparian Corridor for detailed study.

Corridors Selected for Detailed Study

Kings River Riparian Corridor

Description – The Kings River is located in Fresno, Tulare, and Kings counties. The area that TBWP examined in Fresno County is 41 miles long, including 35 miles from just downstream of Pine Flat Dam to two miles south of Reedley plus a six-mile stretch from the Fresno - Kings County line near Laton, downstream to where the river again flows into Kings County. This river begins at one of the highest points in the Sierra Nevada and flows west from the mountains through Kings Canyon (in Kings Canyon National Park) and Sierra and Sequoia National Forests into Pine Flat Reservoir. Kings Canyon is one of the deepest canyons on the North American continent. After leaving Pine Flat Reservoir, the river flows southwest through the towns of Piedra, Minkler, Reedley, Kingsburg and Laton before flowing, historically, into Tulare Lake near Stratford. According to Vorster (2005):

> The Lower Kings River flow is separated into the North and South forks at Army Weir (southwest of Laton). Dam and reservoir control is sufficient to handle the river runoff in most years, though in a little over a third of the years, or 18 of the 50 years from 1955 to 2004, surplus runoff was routed via the North Fork into the San Joaquin River. Flow in excess of the downstream water supply needs in the Kings River is normally first diverted into the North Fork which then flows into Fresno Slough, Fish Slough, and James Bypass, which together constitute the Kings River North channel system. The Kings River North system discharges into the Mendota Pool where it joins flows from the San Joaquin River. When the Kings River North capacity (the published capacity of the Kings River North system is 4,750 cubic feet/second) is reached (7 of the 50 years from 1955 to 2004), floodwater is sent into the Kings River South system. In non-flood years, depending on irrigation demand, water is supplied to the Tulare Lakebed for the longest duration possible each year. When water supply is not restricted, water is diverted into the Lakebed in at least the spring and summer months and in at least some of the winter months. Dry years can restrict such irrigation flows to mainly the summer months.

The river has a total length of approximately 130 miles, with half above and half below Pine Flat Dam. The dam is 95 river miles upstream of where the South Fork of the Kings River joins the Tulare Lakebed. The highest point in the watershed is on North Palisade at 14,242 feet in eastern Fresno County. The watershed above Pine Flat Dam is approximately 1.1 million acres in extent and includes the North Fork, Middle Fork and South Fork of the Kings River as well as Big Creek, Dinky Creek, Bubbs Creek, Roaring River, Mill Creek and many other smaller tributaries. The Kings River, along with the San Joaquin River and the Kern River, are the major rivers in the Southern Sierra Nevada.

The Kings River watershed contains 81 of the 85 habitat types found in Fresno County (Sawyer & Keeler-Wolf 1995). The river's headwaters are in the alpine zone at the crest of the Sierra Nevada. The river then flows through numerous high elevation forest and woodland habitats including lodgepole pine, western white pine, red fir, white fir, mixed conifer, black oak, canyon

live oak and interior live oak. Seventeen giant sequoia groves occur in the watershed including two of the largest groves in the Sierra Nevada, the Converse and Evans groves.

In the middle to low elevations, the watershed is characterized by blue oak woodland, California buckeye and several shrub-dominated habitats. At lower elevations, west of Pine Flat Reservoir, the broad floodplain with multiple braided stream channels was originally dominated by valley oak forest, of which there are examples remaining at the following Fresno County Parks: Choinumni Park, Winton Park, Avocado Lake Park, Kings River Green Belt Park, Kings River Access Park and Laton-Kingston Park. There are also remaining stands of other riparian woodland types including Fremont cottonwood, black willow and red willow. Summit Lake, of which only an alkaline remnant remains today, was originally the terminal freshwater lake where waters exited the Tulare Basin on their way north to join the San Joaquin River. Summit Lake, as well as freshwater marsh habitat and intermittent channels like Boggs Slough and Mussel Slough, was found along the lower stretches of the Kings River in Kings County. Remnants of nearly all the lowland habitat types still occur somewhere along the lower Kings River corridor.

Attributes – The Kings River Riparian Corridor was the second highest rated corridor in the study, with a score of 20. A large portion of the riparian habitat remaining in the Tulare Basin is found along the Kings River downstream from Pine Flat Dam. A total of 4,389 acres of riparian habitat is located along the Fresno County portion of the Kings River. During the field visit, TBWP observed that the floodplain habitat varies greatly in quality and habitat management. Some areas are heavily grazed, invaded by non-native trees and encroached upon by urban and suburban development. Other sites have very high quality riparian habitat with multi-layered forest and a well developed understory and shrub layer. This is a very valuable biological, historical and recreational asset.

This section of the Kings River is crossed by ten roads: Fowler Ave in Laton, East Riverdale Ave., Highway 43, West Olson Ave. in Reedley, Manning Ave. in Reedley, Goodfellow Ave., Annadale Ave., Highway 180, North Piedra Road and Pine Flat Road. TBWP examined 14,295 acres of land along the river using aerial photo analysis, of which nearly 12.5% (1,788 acres) is owned by government agencies:

- State Center Joint Community College District - 427.5 acres
- Fresno County - 284.6 acres
- USA - 267.6 acres
- Alta Irrigation District - 207.9 acres
- Fresno Irrigation District - 133.2 acres
- City of Sanger - 174.2 acres
- State of California - 114.4 acres
- City of Reedley - 107.3 acres
- Consolidated Irrigation District - 70.8 acres

This public land supports a total of 1,170 acres of riparian habitat, which represents 27% of the riparian habitat along this stretch of the Kings River:

- State Center Joint Community College District - 156.3 acres

- Fresno County - 257.4 acres
- USA - 156.5 acres
- Alta Irrigation District - 180.4 acres
- Fresno Irrigation District - 119.6 acres
- City of Sanger - 121.5 acres
- State of California - 114.4 acres
- City of Reedley - 64.1 acres

There are eight existing Fresno County Parks, totaling 814 acres, along the Kings River, including:

- China Creek Park - 120 acres
- Kings River Green Belt Park - 139 acres
- Kings River Access Park - 7 acres
- Laton Kingston Park - 22 acres
- Avocado Lake County Park - 210 acres
- Winton County Park - 26 acres
- Choinumni County Park - 170 acres
- Pine Flat Recreation Area - 120 acres

With the exception of the Fresno County Parks, public access to the public lands along the river is limited and could be improved. Swimming, canoeing and boating are popular activities along the river and are the primary means to access the State and Federal lands. It is not known what, if any, plans have been made for the management of these public lands, but elsewhere in California (e.g. Sacramento River, American River, Feather River, Cosumnes River, Stanislaus River, San Joaquin River, Saint Johns River and Kern River), restored riparian habitats provide extremely popular recreation areas for hiking, horseback riding, bicycling, jogging, canoeing, kayaking, swimming and nature study, including photography and sightseeing, as well as important areas for environmental education. It is important to establish a management framework, including best management practices for grazing, that minimizes negative impacts from other uses, thereby conserving natural resources and aesthetic values.

Opportunities – The Kings River provides excellent opportunities for habitat conservation and restoration. While Fresno County Parks already manages riparian resources on some of the 814 acres it administers at eight parks along the banks of the Kings River, connecting and expanding some of these park units and protecting additional riparian habitat sites will benefit wildlife dependent on this habitat. Habitat corridors and linkages, both riparian and upland, are vitally important to the long-term sustainability of plant and animal populations. This is especially critical to long-term planning for the effects of climate change. Large intact habitat areas are also very important for both the long-term and short-term survival of plant and animal populations. Both observational and experimental research shows that the larger the core habitat area, the less likely plant and animal populations will become locally extinct.

In addition to the benefits to habitat and wildlife, riparian areas along the Kings River provide a range of met and unmet recreation and environmental education opportunities. Visitors can take refuge under the shade of the tree canopy or wade out in shallow cool water when hot summer days make upland areas inhospitable. Restoration and enhancement of existing riparian areas, as well as acquisition of additional habitat sites, could become an important and popular community project. Potential recreation and environmental education opportunities include:

- Modeling outreach programs for the Kings River after the San Joaquin River Parkway and Conservation Trust's successful volunteer and environmental education programs.
- Utilizing valley oak riparian habitat located near Reedley, where Wahtoke Creek meets the river, as an important project area for the natural resource program at nearby Reedley College and as an important destination for eco-tourists. In addition, Reedley College (State Center Joint Community College District) owns 427.5 acres, of which 156.3 acres is currently riparian habitat. Local wildlife, college students and the community could benefit if this area is developed as an on-campus site for environmental research and education. Other public lands along the river could become locations for nature study.
- Modeling environmental education programs to involve large and small communities after the proven success of the Bureau of Land Management's program in the Alpaugh Schools in Tulare County.
- Reinvigorating a dynamic outdoor education program at the Fantz Environmental Center, owned by Parlier Unified School District, which is currently idle for lack of maintenance funds. This could yield tangible benefits to this small rural town by providing access to outdoor recreation and exercise for this underserved community.

Ideally, recreation benefits should be thoughtfully integrated with an upgraded network of nature trails where signage in several languages can help interpret the riverine habitats while conserving this phenomenal example of bottomland riparian forest. All such programs should be developed in coordination with the local community, interested landowners, schools, civic organizations, service clubs and corporate donors interested in improving quality of life for their employees.

The Fresno and Alta irrigation districts and the cities of Sanger and Reedley own a substantial amount of land (830.5 acres), which supports 485.6 acres of riparian habitat along the Kings River. Development of a cooperative management plan for these areas that incorporates public involvement will help conserve these habitats while expanding opportunities for compatible public access and recreation. Private landowners may be willing to partner to improve and restore riparian habitats on their property. If landowners are interested in such opportunities in this area, funding may be available from the Natural Resources Conservation Service through the Wildlife Habitat Improvement Program and the Environmental Quality Improvement Program.

Conservation easements, partnering with landowners or fee title purchase should be considered to protect the remaining 73% (3,219 acres) of private lands that currently support riparian habitat. In addition, there are several privately owned parcels totaling several hundred acres where riparian habitat could be restored. By broadening the floodplain forest, this restoration would make the existing habitat even more valuable to wildlife, landowners and the visiting public. This land could be managed to both offer public access and in other areas, restrict access so as to manage for riparian habitat mitigation for natural areas adversely impacted by development projects elsewhere in the County.

Arroyo Pasajero Riparian Corridor Complex

Description – The Arroyo Pasajero Riparian Corridor Complex is located entirely within Fresno County, with its headwaters at the crest of the Inner Coast Range. Four creeks form this complex: Los Gatos Creek, Warthan Creek, Jacalitos Creek and Zapato Chino Creek. Where all four streams meet, just west of Interstate 5, the single channel is generally referred to as Arroyo Pasajero. The highest point in the Arroyo Pasajero watershed is on Condon Peak at 4,969 feet. The 50 mile long watershed is approximately 339,200 acres in extent. After flowing east from the Inner Coast Range, Los Gatos and Warthan creeks meet at and flow through the town of Coalinga, while Jacalitos and Zapato Chino creeks, located south of town, join the complex after flowing farther to the east. The California Department of Fish & Game's Pleasant Valley Ecological Reserve is located at the confluence of Los Gatos and Jacalitos creeks. Arroyo Pasajero starts where Zapato Chino and Los Gatos creeks merge just east of Interstate 5 and flows east for nine miles, north of the town of Huron and ends in a flood control basin immediately east of the California Aqueduct. This detention basin was created to keep the flood waters from breaching the Aqueduct. Historically, Arroyo Pasajero extended farther east and at flood flows, entered the Kings River system near the present day Lemoore Naval Air Station. Prior to land reclamation and water diversion for farming, Arroyo Pasajero formed an extensive alluvial fan that stretched from near Kettleman City in Kings County to north of Highway 145, forming an area of more than 450,000 acres. This large watershed normally has small water flows, but can yield substantial amounts of water and eroded sediment during peak flows, creating major flooding and seriously impacting downstream water quality (Table 1).

Table 1. Peak water flows on tributaries and main channel of Arroyo Pasajero in Cubic Feet per Second

Location	**10-Year Event**	**100 -Event**	**500-Year Event**	**Percent of Total Runoff**
Los Gatos Creek	3,790 cfs	15,000 cfs	28,200 cfs	40%
Warthan Creek	2,730 cfs	11,400 cfs	22,500 cfs	33%
Jacalitos Creek	1,000 cfs	4,350 cfs	8,390 cfs	12%
Zapato Chino Creek	1,340 cfs	5,500 cfs	10,400 cfs	15%
Total Arroyo Pasajero	8,930 cfs	36,400 cfs	69,200 cfs	100%

The Arroyo Pasajero Riparian Corridor Complex contains 36 of the 85 habitat types found in Fresno County (Sawyer & Keeler-Wolf 1995). The creek's headwaters are at the highest elevations at the crest of the Inner Coast Ranges in the foothill pine zone. The various streams in this riparian corridor complex flow through several mid-elevation habitats including chamise, blue oak woodland canyon live oak and interior live oak.

The middle and lower elevations of the watershed are characterized by the bladderpod-California ephedra-narrowleaf goldenbush, scalebroom, allscale, and California annual grassland habitats.

West of Interstate 5 the dominant habitat along the creek includes Fremont cottonwood, black willow, red willow, mulefat and quailbush scrub habitats. The flood control basin at the California Aqueduct has the largest extent of mulefat riparian habitat in the Tulare Basin.

Attributes – The Arroyo Pasajero Riparian Corridor Complex is the third highest ranked watershed with a score of 18. Ninety percent of the watershed is managed primarily by private land owners. Chevron USA, Inc. is the largest landowner with 8,309 acres (13%). Large public landowners include USA (Bureau of Land Management and Bureau of Reclamation) with 4,644 acres (7%), City of Coalinga with 1,465 acres (2%), and California Department of Fish & Game with 1,013 acres (<2%). An additional 1,354 acres of land (2%) along Jacalitos Creek is owned by Wildlands Inc. and is protected as a mitigation bank.

Of the 64,900 acres of the lower watershed analyzed for this report, approximately 66% (42,853 acres) is native habitat. The majority of the remainder of the area along the corridor is farmed (32%) and the rest is in wetlands (88 acres; <1%), canals (81acres; <1%), or developed (1,025 acres; 1.5%).

There are approximately 3,933 acres of riparian habitat in the Arroyo Pasajero Riparian Corridor Complex. Nearly all of the riparian habitat west of Interstate 5, approximately 1,100 acres, is privately owned. The approximately 2,833 acres of riparian habitat east of Interstate 5 is in the flood control basin and is owned and managed by Bureau of Reclamation. This is the largest patch of contiguous, publicly-owned riparian habitat in the Tulare Basin.

One of the major attributes of the Arroyo Pasajero Riparian Corridor Complex is that there are already several nodes of protected land along the corridor. These include 1,385 acres of Bureau of Land Management land in the upper watershed on Warthan, Jacalitos and Zapato Chino creeks; 1,354 acres of mitigation lands owned by Wildlands Inc. on Jacalitos Creek; and 1,013 acres of California Department of Fish & Game lands on Zapato Chino and Los Gatos creeks. These sites form the basis for upland habitat protection in the region. The 2,833 acres of riparian habitat owned and managed by the Bureau of Reclamation is also a protected habitat of regional importance located at the modern-day terminus of this floodplain within the flood control basin north of Huron.

One of the challenges to environmental quality in this region is the existence of three U.S. Environmental Protection Agency Superfund sites in the Arroyo Pasajero watershed. The 435-acre Atlas Asbestos Mine and the 120-acre Coalinga Asbestos Mine are located in the watershed west of Coalinga and there is a 107-acre storage facility located near the city of Coalinga. These sites have been reclaimed, but are still being monitored to ensure that they no longer contaminate the waterways in the region. Besides contributions from these contaminated areas, there is natural asbestos that erodes into the waterways during heavy rains and adds pollution to the water. As a result, sediments deposited along the river and in the flood control basins contain some asbestos. It is not clear whether the levels are such that they constitute a health risk to people recreating along the corridor.

One of the biggest public safety issues in this region is the flooding risk along Interstate 5, Highway 269 and the California Aqueduct. The most recent major flood occurred in March 1995,

when the Interstate 5 bridge over Arroyo Pasajero was washed away and five people drowned. The highway was closed for several weeks and a new bridge, engineered to handle a 200 year storm event, was constructed. In most years, the flooding is less intense, but the local economy suffers tremendous economic impacts and residents of Huron, who are forced to travel an additional 20 miles, experience major inconvenience for weeks at a time whenever flooding closes Highway 269 (Lassen Avenue). On average this route is closed for 26 days a year and in 1995 it was closed for 72 days.

An even larger flood-related issue is the potential for Arroyo Pasajero flows (potentially carrying sediment loads with asbestos and selenium) to enter the California Aqueduct. During a flood event, as soon as the flood control basin is full, there is no control of water entering the Aqueduct and there is a possibility of Aqueduct failure. In 1995, the Department of Water Resources was able to discharge California Aqueduct water, many miles south of Arroyo Pasajero, into the Cross Valley Canal and the Kern River Intertie to temporarily provide capacity in the Aqueduct for Arroyo Pasajero floodwater. It is believed that these measures helped prevent Aqueduct failure during this 1995 flood event. There is no formal agreement allowing the Department of Water Resources to discharge water into these canals and according to the agency's analysis, there is only a 14% chance, in case of future flooding, that the Kern River Intertie will be available to accept the flood water.

Opportunities – Portions of this corridor provide excellent recreation opportunities. Along Los Gatos Creek and Arroyo Pasajero, from the San Benito County line to the flood control basin at the California Aqueduct northeast of Huron, there are equestrian trails and facilities for camping, hiking and bicycling. There are existing county recreation areas in the watershed. Los Gatos Creek County Park, located 18 miles west of Coalinga on Los Gatos Creek Road, offers day use and overnight camping facilities (44 undeveloped campsites and 17 overflow campsites), a baseball field and a large group picnic area. Coalinga Mineral Springs Recreation Area is located 18 miles west of Coalinga on Coalinga Mineral Springs Road. This property, on the north side of Highway 198 along a branch of Warthan Creek, became a County park in 1967 when a lease agreement was signed with the Wildlife Conservation Board to provide hunting and hiking access to Bureau of Land Management lands. The Huron Fishing Access (located 3.5 miles north of Huron near Lassen Avenue) managed by Fresno County Parks, offers fishing access to the California Aqueduct. Fresno County has a planned rural bikeway along Los Gatos Creek from Coalinga to the San Benito County line. Bikeways are also planned along Jayne Avenue from Coalinga to the Kings County line. An alternative more scenic route for this latter bikeway would be to follow Los Gatos Creek and Arroyo Pasajero from Coalinga to Lassen Avenue (Highway 269) north of Huron where it would meet the proposed bikeway along Lassen Avenue.

In or near urban Coalinga, there may be an opportunity to use reclaimed water (including residential gray water) to conduct a wildlife-friendly habitat restoration project with significant local historical precedent. If it were properly located on suitable floodplain clay soils, designed and engineered, treated wastewater from the City's wastewater treatment facility could be transported (through "purple pipes") to help establish and sustain a small seasonal freshwater marsh habitat at or near historical Poso de Chane. Originally known by the Spanish as Arroyo Poso de Chane, this small oasis, just east of the modern-day City of Coalinga,

(http://archiver.rootsweb.ancestry.com/th/read/NORCAL/1998-06/0897846734) attracted the first Spanish settlers to this area well before the establishment of Coalinga, as it is known today. In its natural state, a large "swamp" and a Poso, or deep pool of water, were present here. Such a wetland, with the vegetation and birds it would attract, could be a focal feature of the proposed bikeway along Los Gatos Creek from Coalinga to the San Benito County line. As an example of how valuable even a small wetland can be for wildlife, existing ponds just three miles northwest of the City's wastewater treatment facility provided habitat for tricolored blackbirds in June 1992.

Proposals to construct a flood control dam at Pasajero Gap, about one-mile west of Interstate 5 have been raised over the past 20 years (see the first internet reference in the Literature Cited section for the October 1999 proposal by the United States Environmental Protection Agency pertaining to the Atlas Asbestos Mine Superfund Site). This proposal entails construction of an 8,400 foot long by 100 foot high earth-fill gravity dam with an impervious core at Pasajero Gap and construction of a two-mile long backflow levee parallel to Jayne and Alpine avenues. The resulting detention basin would have a capacity of 59,000 acre feet. This dam would flood much of the remaining endangered species habitat in Pleasant Valley downstream from Coalinga including all of California Department of Fish & Game's 1,013-acre Pleasant Valley Ecological Reserve. It would also flood an additional 5,400 acres of native habitat that is privately owned, primarily by Chevron USA, Inc. (Arroyo Pasajero Investigation, Feasibility Report, US Army Corps of Engineers 1999). This habitat loss would be extremely difficult to mitigate, especially in light of the fact that the Pleasant Valley Ecological Reserve was itself acquired as mitigation for the building of Pleasant Valley State Prison and it is not clear where 32,000 acres of occupied endangered species habitat could be acquired if the expected 5:1 mitigation ratio is required by U.S. Fish & Wildlife Service.

An alternative solution, included as a proposal in the U.S. Army Corps of Engineers' Arroyo Pasajero Investigation, Feasibility Report (1999), would raise embankments along the existing flood control basin and expand the flood basin right of way south of Gale Avenue to provide a total storage capacity of 55,000 acre feet. This would include construction of a levee around the eastern perimeter of the City of Huron and would relocate Highway 269 to Dorris, Butte and Tornado avenues. Various public and private facilities would be improved or relocated under both alternatives. From an ecological standpoint, the latter alternative is preferable.

A number of flood water-management techniques could be explored in this area. Development of an Integrated Regional Watershed Management Plan (IRWMP) for the drainage could include the following measures:

1. Construct a series of small range improvement dams in the foothills and mountains to improve grazing and provide some flood control benefit;
2. Install a series of check dams in the lower elevations where the streams (especially Zapato Chino and Jacalitos creeks) are heavily incised to raise the creek beds. This will reduce erosion and minimize siltation issues in the flood control basin at the Aqueduct and allow the channels to re-form natural flood plains so water can spread out to reduce the destructive energy of flood flows;
3. Construct one or two small flood control basins*, in areas with suitable sandy soils to capture and contain volumes of floodwater and to foster ground water recharge in farmland areas along the floodplain of each creek; and

4. Consider emergency flooding of sand and gravel quarry sites.

    * The location of such basins would need to be given careful consideration in order to minimize the risk of flooding any remaining endangered species habitat in Pleasant Valley.

The flood control system east of Interstate 5 could be improved by building an overpass or underpass for flood water at the California Aqueduct and designating a floodway which could carry Arroyo Pasajero flood flows northeast towards the Kings River. Any flood water that flows east of the Aqueduct could be:

1. Stored in newly created flood basins designed to recharge ground water (on sandy soil sites) or to provide seasonal freshwater marsh habitat (on historical floodplain heavy clay soils), or
2. Allowed to enter the Fresno Slough Complex where it would be routed north to the San Joaquin River.

Both of these approaches, which offer conjunctive use solutions to flood control, would provide additional wildlife habitat as well as opportunities to recharge ground water basins between Interstate 5 and Lemoore Naval Air Station.

Flood control and wetlands can go hand-in-hand along the Arroyo Pasajero Riparian Corridor Complex. There is potential to obtain grant funds to purchase floodplain and wetland easements which could provide flood protection to Coalinga, Huron and Lemoore Naval Air Station, agricultural production and habitat for water birds and riparian birds, including Neotropical migratory species. In many areas this would consist of setting levees back 100 to 200 feet, while in other areas, ponds could be created and connected by slough channels with native vegetation. These ponds could provide wetland habitats while being managed conjunctively to help recharge groundwater resources in the area.

All potential flood control solutions should be developed with input from federal and state agencies, private landowners and Resource Conservation Districts as early in the process as possible.

Fresno Slough Riparian Corridor

Description – Fresno Slough is the main connecting waterway between the Tulare Basin and the San Joaquin Valley. Historically, when Tulare Lake reached its maximum level, Fresno Slough was the channel which carried overflow water from higher elevation portions of the Tulare Basin in Kings, Tulare and Kern counties north through Fresno County into the San Joaquin River. Today, flood water is routed through this channel and the Fresno Slough Bypass to keep it from flooding farm land in the Tulare Lakebed. Fresno Slough is located almost entirely in Fresno County, with only four miles of its 44-mile length located in Kings County. This waterway is located entirely on the valley floor. The highest elevation of the waterway is near Hanford at 208 feet and the lowest elevation is 163 feet at Mendota Pool where it merges with the San Joaquin River, a drop of approximately one foot per mile. The 44 mile-long waterway provides drainage for the Kings, Kaweah, Tule and Kern rivers and numerous smaller

drainages. Fresno Slough flows northwest from about four miles south of Riverdale where it meets the North Fork of the Kings River, continues west of the small towns of Lanare, Burrel and San Joaquin, then east of the town of Tranquility, through Mendota Wildlife Area, continues north on the east side of Mendota and finally joins the San Joaquin River three miles northeast of Mendota at Mendota Pool.

The Fresno Slough Bypass, also known as the James Bypass, diverges from the main channel of Fresno Slough between the communities of Burrel and Helm and converges again at the eastern boundary of the Mendota Wildlife Area. It is located from one to five miles east of Fresno Slough and was constructed in 1912 to move flood water from the Kings River to the San Joaquin River and to avoid the Fresno Slough with its many twists, turns and oxbows.

The Fresno Slough waterway contains 20 of the 85 habitat types found in Fresno County (Sawyer & Keeler-Wolf 1995). There are well-developed mixed stands of mulefat, red willow, and black willow along the channel. Wildlife habitat along the channel ranges from areas of moderate quality to areas that support no natural habitat; many channel banks are kept entirely free of vegetation. This report provides in-depth analysis only for the 40-mile portion of the Fresno Slough Riparian Corridor that is in Fresno County.

Attributes – The Fresno Slough Riparian Corridor, with a score of 22, is the highest rated corridor in this report. This corridor was chosen for detailed study because of its importance as the hydrological outlet to the Tulare Lake Basin and as a wildlife corridor between the Tulare Basin and the San Joaquin Valley. A total of 332 acres of riparian habitat are located along this corridor. Most of the adjacent areas are farmed in row crops such as cotton or field crops such as alfalfa. We analyzed a total of 31,206 acres of which 17,156 acres (55%) were farmed, 7,434 acres (24%) were native habitat, and 6,542 acres (21%) were wetlands. Smaller acreages were canals (59 acres; <1%) and developed (18 acres; <1%). A relatively large proportion of the area (35%) is protected at the Mendota Wildlife Area (6,849 acres) and through Natural Resources Conservation Service Wetland Reserve Easements (3,937 acres). An additional 1,709 acres are owned by other government agencies, primarily reclamation and irrigation districts.

With the exception of the Mendota Wildlife Area and Mendota Pool, both of which are heavily used for recreation, including picnicking, fishing, boating and birdwatching, there are no other outdoor recreation sites in this area. Mendota Wildlife Area is also a popular winter destination for waterfowl hunters and at other seasons for pheasant, dove and small game hunters. Fresno Slough is crossed by nine roads along its 40-mile reach in Fresno County, with one road approximately every four-and-a-half miles.

Opportunities – Recreation and open space potential on the Fresno Slough Riparian Corridor is moderate to high. This corridor is a potential location for a hiking, bicycling and equestrian trail. The Fresno County rural bikeway plan calls for a bike trail along Lassen Avenue. An alternative would be to route much of this trial along the Fresno Slough. This project would require obtaining easements for the trail along the levees and for access to the trail. In Kern County, the Kern River Parkway includes over 6,000 acres of trails, parks and waterways extending over 30 miles from the mouth of the Kern Canyon west, nearly to Interstate 5 near

Highway 43/Enos Lane. The Fresno Slough Riparian Corridor trail, as envisioned here, would traverse far less of an urban environment than the Kern River Parkway and would provide a more scenic and rural experience with plenty of opportunities to enjoy the varied wildlife along this linear landscape mosaic of marsh, riparian, grassland and desert scrub scenery.

Flood control projects and management of wetland habitat for wildlife can go hand in hand along the Fresno Slough Riparian Corridor. There is potential to obtain grant funding to purchase floodplain and wetland easements which could provide both flood protection to the nearby towns and farmland as well as wetland habitat for waterfowl and riparian habitat for Neotropical migrant birds. In many areas this would consist of setting levees back 100 to 200 feet, while in other areas, large ponds could be created with setbacks of up to one-half-mile. These ponds could provide wetland habitat while being managed conjunctively to help recharge groundwater resources (in areas with suitable soils), especially during years with above average precipitation.

The top priority for conservation actions along this corridor is in the vicinity of Mendota Wildlife Area. There are several thousand acres of native habitat to the north and northeast of this Wildlife Area and the adjacent Alkali Sink Ecological Reserve. This land could be developed as a mitigation bank or protected with conservation easements or fee title purchase. A wildlife corridor should also be developed to connect Alkali Sink Ecological Reserve to the Kerman Ecological Reserve four miles to the east.

To enhance wildlife habitat, open space opportunities and help alleviate flooding problems, the Natural Resources Conservation Service's Wetland Reserve Program is a proven tool. Tulare County already has more than 3,000 acres of easements in this program and nearly 7,000 acres are under easement in Kern County. During flood years, these wetlands have enormous capacity to accept flood waters and to reduce pressure on infrastructure such as levees, roads and recharge basins. These easements are typically managed as hunting clubs or duck clubs. They infuse the local economy with money from hunters, wildlife enthusiasts and club operators.

Fresno County has several existing Wetland Reserve Program agreements totaling about 2,000 acres, including Wheatville Ranch along the Kings River and the Gragnani site (along with other landowners) along the Fresno Slough. Though these sites provide valuable open space and associated wildlife opportunities, these areas currently have relatively low wetland habitat quality. These Wetland Reserve Program agreements currently have no water supply or surface water agreement. It might be possible for the County to partner with these landowners to reduce farmland flooding problems along Fresno Slough or adjacent riparian corridors by redirecting flood flows away from valuable infrastructure and into wetland habitat instead.

In problem areas such as Arroyo Pasajero, Fresno Slough, Kings River and other corridors with flood-control problems, marginal farmland or perched water tables, Fresno County could suggest voluntary conservation agreements to landowners as a way of solving County-wide problems at the local level.

Landowners who do not wish to sell a conservation easement, but are interested in enhancing wildlife habitat, improving water quality or other conservation-oriented activities could utilize a 10-year Wetland Reserve Program agreement, with no easement sale, the Environmental Quality

Incentive Program or the Wildlife Habitat Improvement Program. These are cost-share programs and with additional County or grant funding, these improvements could offer County-wide benefits at low or no cost to the landowner. In addition, the California Department of Fish & Game has wildlife interests on the Fresno Slough and Kings River and might be willing to explore funding enhancement or easement opportunities in the area.

To summarize the recommendations relative to the Wetland Reserve Program in Fresno County:

1. Implement Natural Resources Conservation Service Wetland Reserve Program, Environmental Quality Incentive Program or Wildlife Habitat Improvement Program projects as flood control, wildlife enhancement and open space tools;
2. Collaborate with the Natural Resources Conservation Service and the California Department of Fish & Game to find water for Fresno County Wetland Reserve Program agreements to improve existing habitats;
3. Conduct outreach to landowners in problem areas to educate landowners on voluntary options.

Corridors Not Selected for Detailed Study in This Plan

Panoche Creek – Panoche Creek scored 13 in the corridor rating and was not included for a detailed account. While this intermittent creek courses through excellent wildlife habitat, its value as a corridor connecting to Fresno Slough, Mendota Wildlife Area or other important valley floor sites is minimal. The riparian habitat ends a few miles west of the California Aqueduct and flood water that reaches Belmont Avenue simply flows east towards Mendota in the roadway. It is a large watershed of approximately 300,000 acres that drains the Panoche Plain of San Benito County and the Inner Coast Range of Fresno County. The highest point in the watershed is at 5,248 feet on San Benito Mountain.

In 1989, a joint effort between federal, state and local agencies, landowners and water districts created the Panoche-Silver Creek Coordinated Resource Management and Planning Program. Current projects include the installation of riparian filter strips, revegetation and revetment and stabilization of the channel bed. Erosion control structures are being developed to reduce the flow and velocity of runoff. An inventory of invasive riparian tree species, including salt cedar (*Tamarix* species), is being carried out as a first step toward the development of an eradication program. The Central Valley Project and the Bureau of Land Management have designated the watershed as an Improvement Area and plan to purchase a nine-mile-long, one-mile-wide corridor for land retirement and flood control. By concentrating on flood protection, erosion and sedimentation, the stakeholders and partners in this effort hope to improve water quality and wildlife habitat which will benefit the regional economy and all of the watershed's inhabitants. Support of this effort would be a high priority conservation action.

Cantua Creek – Cantua Creek scored 12 in the corridor rating and was not included for a detailed account. This watershed of approximately 110,000 acres flows east from the Inner Coast Range with the highest elevation of 4,209 feet on Three Sisters peak. The Coast Range portions of this creek, west of Interstate 5, contain some excellent grassland and desert scrub wildlife habitat with populations of several endangered and threatened species. The riparian habitat ends

a few miles east of the California Aqueduct and flows in this corridor no longer reach the Fresno Slough, as they did historically following rain flood events. The Department of Water Resources has conducted a study of possible flood control measures, including an up-stream dam, expanded flood control ponding basin either east or west of the Aqueduct, as well as channel improvements, but no decisions have been reached.

Wahtoke Creek – Wahtoke Creek scored 12 in the corridor ratings and was not included for a detailed account. It is a low elevation stream with its headwaters on Tivy Mountain at 2,855 feet and a watershed of approximately 100,000 acres in extent. The upper watershed is undeveloped grazing land while the lower watershed is intensively farmed with orchards and vineyards. The riparian corridor is not well developed in the upper watershed and has been removed throughout most of the lower watershed, providing limited benefits as a wildlife corridor. The primary environmental attributes associated with Wahtoke Creek include several hundred acres of valley oak woodland and Great Valley riparian woodland habitat near the creek's confluence with the Kings River and a small number of vernal pools in a remnant unplowed grassland (cattle pasture) east of Wahtoke Creek and west of Porter Avenue.

Murphy Slough – Murphy Slough scored 11 in the corridor ratings and was not included for a detailed account. It flows from east to west on the valley floor and connects Cole Slough, which branches off to the west of the Kings River just after the river crosses Highway 99 and first enters Kings County to Fresno Slough. It is currently engineered to carry flood water from the Kings River system and keep it from reaching the Tulare Basin. The best stands of valley oak woodland, with large numbers of mature specimen oaks, are present along the eastern part of the slough in the vicinity of Laton and Riverdale. In addition, there are marshy areas present along western portions of the slough where waterfowl nest. A modest amount of habitat restoration and enhancement, such as has taken place with plantings of native creeping wildrye along the north bank of Murphy Slough both east and west of Dower Avenue, could turn this degraded channel into a valuable east – west wildlife corridor connecting the Kings River and the Fresno Slough. In its current condition though, its value is minimal.

Biota

Conserving wildlife corridors in Fresno County will be most effective by applying a watershed-level or basin-wide approach. In order for populations of special status species to persist, there must be enough suitable habitat for species to breed and disperse. Populations, especially rare or dispersal-limited species, are more viable if they are linked by corridors. Corridors also serve a role which can buffer impacts to important habitat due to climate change. Australia's Great Eastern Ranges corridor, for example, will be established along almost the entire east coast of Australia, allowing plants and animals to move as climate changes.

TBWP searched the California Natural Diversity Data Base for records of special status species along all corridors (Appendix 2). This data was then incorporated into a geographic information system to create maps where the viewer can visualize situations where Measure C infrastructure improvement projects may overlap with special status species occurrences along and adjacent to the corridors. This step was designed to better evaluate potential Measure C-related impacts to

special status species. TBWP searched the literature for additional species records and added species that were observed during field surveys.

Fresno County hosts 199 special status species that are tracked by the California Natural Diversity Data Base. Approximately 61 of these species are found in the planning area addressed by this corridor study (Appendix 2). These special status species include vernal pool fairy shrimp, valley elderberry longhorn beetle, blunt-nosed leopard lizard, giant garter snake, fulvous whistling-duck, Swainson's hawk, mountain plover, burrowing owl, tricolored blackbird, San Joaquin kit fox, California jewel-flower, recurved larkspur and San Joaquin Valley orcutt grass, among other rare species.

Using information from the California Natural Diversity Data Base and additions from field observations, TBWP determined that there are records of:

- 26 special status species along Kings River/Wahtoke Creek;
- 46 species along Fresno Slough;
- 28 along the drainages of the Arroyo Pasajero Riparian Corridor Complex;
- nine along Cantua Creek;
- six along Panoche Creek; and
- 12 along Murphy Slough.

It is noteworthy that there are records of 46 special status species along Fresno Slough, which is 18 more species than recorded for the Arroyo Pasajero Riparian Corridor Complex (which has the second highest number of sensitive species). The Fresno Slough Riparian Corridor also has four to five times more records of those 46 special status species than several of the other corridors. In terms of conservation value, this statistic underscores the importance of the landscape mosaic of upland and wetland habitats present along the Fresno Slough.

The following recommendations address special status species along corridors:

1. Consider establishing a mitigation banking reserve system to pre-mitigate impacts as a result of road improvement projects and urban expansion.
2. Each road improvement project will require a project-level Environmental Impact Report to identify specific impacts at the project level and identify exact mitigation needs and secure them. The current analysis can only provide a general idea of the species that occur in an area since USGS 7.5 minute quadrangles are the maximum resolution for this study; more information will be identified in the EIR process.
3. Incorporate the current recommendations into county-wide mitigation, conjunctive use and project specific planning efforts to guide project-level analysis and promote conjunctive use for the greatest benefit. This report provides general information on the corridors in the Tulare Basin portion of Fresno County.
4. Evaluate projects based on the number of species, including rare and common species, which would benefit and focus conservation activities on corridors where the most benefit can be gained.

Potential Partners

For land conservation projects to have the greatest value for mitigation purposes and for public benefit, efforts must focus both on local areas to ensure enough habitat remains to sustain local populations of native flora and fauna and regionally to ensure that remaining habitat areas will be connected via corridors. There will be a need to work with a variety of partners to ensure the maximum local and regional benefit. Some of the potential partners include:

California Department of Fish & Game – The California Department of Fish & Game can be a partner by providing support for conservation activities along corridors and in areas that are valuable for wildlife. They currently own and manage land in the Coalinga area. The agency utilizes Conceptual Area Protection Plans to focus financial resources on specific areas for the benefit of wildlife. The Wildlife Conservation Board is the agency's land protection and restoration funding arm. The Wildlife Conservation Board has already funded important conservation efforts in Fresno County, such as the purchase of land and habitat/species management at the Pleasant Valley Ecological Reserve and the management of wetland resources at Mendota Wildlife Area.

US Fish & Wildlife Service – The U.S. Fish & Wildlife Service is a landowner in several of the watersheds. The agency may be an important partner not only in establishing mitigation banks, but also for technical expertise, and for financial partnerships with landowners through the Partners for Fish and Wildlife program. In some cases, they may also manage mitigation banks after all the mitigation credits have been sold.

Large landowners – Large landowners are vital to the health and conservation not only of corridors in Fresno County, but of entire watersheds. It will be important to partner with willing large landowners for recreation access and conjunctive use projects. Irrigation districts and other water districts are often key landowners of important properties along many of the corridors. These entities and other landowners might support integrated regional planning and may be willing to partner for conservation easements, preserves, recreation areas or restoration opportunities.

Wildlands, Inc. – Wildlands Inc. is a potential partner in private sector mitigation banking and is active in establishing mitigation banks in Fresno County. Wildlands Inc.'s mitigation bank lands are also important areas for wildlife along corridors in western Fresno County.

Sierra Foothill Conservancy – Sierra Foothill Conservancy is a major landowner, chiefly along the Kings River corridor. The organization also undertakes and executes restoration projects, owns conservation land, holds conservation easements and allows recreation and educational access to local preserves.

Westervelt Ecological Services – Westervelt Ecological Services is a potential partner in private sector mitigation banking and is active in establishing mitigation banks in Fresno County.

Center for Natural Lands Management – The Center for Natural Lands Management is also an active conservation land manager in the San Joaquin Valley and could be a partner in establishing and managing mitigation banks.

Kings River Conservancy – Kings River Conservancy is an organization committed to protecting and enhancing environmental values, ensuring public access to open space for recreation, preserving agricultural lands, and the encouraging sound public conservation practices along the Kings River corridor from Pine Flat Dam to Highway 99. The Kings River Conservancy is currently working on an interpretive environmental education trail in the Kings River corridor at China Creek Ranch near Centerville.

Recreation Interests – Recreation interests, such as Fly Fishers for Conservation may be an important group of partners, especially to generate a vision of potential projects and to garner public support in the communities for particular corridor projects in the County.

Measure C Impacts and Mitigation Needs

Measure C Projects

There are a number of projects proposed for Measure C transportation improvements, including road widening, intersection widening and traffic light installation. Many projects may require mitigation under the federal Endangered Species Act, California Endangered Species Act or the California Environmental Quality Act.

The Urban Tier 1 Project List transportation infrastructure improvements may have impacts on vernal pools, which are protected wetlands, as well as the associated fauna, such as California tiger salamander, vernal pool fairy shrimp and flora, such as San Joaquin Valley orcutt grass. After further study and assessment, mitigation may be needed to compensate for these impacts. The following list is from the Urban Tier 1 Project List (Measure C Expenditure Plan):

1. State Route 180 East, Clovis to Temperance, new four lane freeway within six-lane right of way.
2. State Route 180 West, Brawley to Hughes/West
3. State Routes 41/168/180, added capacity for safe connection between state Routes, new braided ramps.
4. Willow Avenue, Barstow to Copper, complete to six-lane divided, retrofit bike paths.
5. Temperance Avenue, Bullard to Shepherd widen to four-lane divided
6. Ventura Boulevard, State Route 41 to State Route 99, widen to four-lane divided.
7. State Route 99, Monterey Avenue bridge improvement/improved access to downtown from West Fresno.
8. California Avenue, Ventura to West, widen to four-lane divided.
9. Peach Avenue, State Route 180 to Jensen Avenue, widen to four-lane
10. State Route 41, State Route auxiliary lane, Tulare to "O" widen/ auxiliary lanes and improve on and off ramps
11. Herndon Avenue, State Route 99 to DeWolf, complete to six lane divided/retrofit bike paths
12. State Route 99, North and Cedar Avenue interchange, improve interchange
13. Veteran's Boulevard, Herndon to Grantland, connection and grade separation.

Fresno County rural infrastructure improvements may also have impacts to special status species; below they are addressed individually. The following list is from the Rural Tier 1 Project List (Measure C Expenditure Plan):

1. State Route 180 West, Yuba Avenue to James Avenue, passing lanes addition may have impacts on California tiger salamander, burrowing owl, blunt-nosed leopard lizard and San Joaquin kit fox.
2. State Route 180 East, Temperance to Academy, widening to four lane divided expressway may impact single oak trees. Valley elderberry longhorn beetles occupy habitat along the Kings River and impacts to this federally-listed species will need to be mitigated. Impacts to riparian habitat with the potential to support populations of other state species of special concern, such as yellow-breasted chat, may require some mitigation to satisfy California Environmental Quality Act guidelines.
3. State Route 180 East, Academy to Trimmer Springs, widen to two-lane expressway on four-lane right of way, along the Kings River, large patches of riparian habitat and vernal pools may be affected.
4. State Route 180 East, Trimmer Springs to Frankwood, widen to two-lane expressway on four-lane right of way, as above.
5. Friant Road, Copper to Millerton, widen to four-lane divided. Improvements may have impacts on vernal pools and associated species.
6. Golden State Boulevard, American to Tulare County line corridor improvements may affect San Joaquin kit fox, further study will be needed.
7. State Route 269 Bridge, located between State Route 198 and Huron, new bridge and channel to address seasonal road closures due to flooding. These improvements may impact San Joaquin kit fox, blunt-nosed leopard lizard, burrowing owl and riparian habitat in the channel.
8. State Route 180 west, extend to Interstate 5 (I-5) as a two-lane undivided. There may be impacts on California tiger salamander, burrowing owl, blunt-nosed leopard lizard and San Joaquin kit fox.
9. Mountain View Avenue, Bethel to Tulare County line, widen to four-lane divided. These improvements may affect San Joaquin kit fox and single oaks trees.
10. Mendocino Avenue, Manning to Industrial Park, widen to four-lane divided. Improvement projects may impact single oak trees and large patches of riparian habitat along the Kings River. Valley elderberry longhorn beetles occupy habitat along the Kings River and impacts to this federally-listed species will need to be mitigated
11. State Route 99, American Avenue interchange improvements. Not immediate affects, further study is needed.
12. Interstate 5 at State Route 198, constructing interchange improvements may have impacts on burrowing owl, blunt-nosed leopard lizard and San Joaquin kit fox.

High Speed Rail Mitigation Needs

Rail Alignment

The current proposed alignment for the High Speed Rail line in Fresno County is south of the City of Fresno and southwest of State Route 99. As currently planned, the project may impact riparian habitat along Murphy's slough and thus may affect associated special status species. Construction of new lines may require mitigation under the federal Endangered Species Act, California Endangered Species Act or the California Environmental Quality Act.

In summary, there will likely be significant impacts to regional and county biota during infrastructure improvements both from the Measure C Tier 1 projects, the High Speed Rail alignment and other infrastructure improvement projects in the County that must be mitigated to comply with the federal Endangered Species Act and California Endangered Species Act. These impacts should be mitigated by purchasing mitigation credits or establishing mitigation banks within existing wildlife corridors identified in this study, thereby maximizing the value and sustainability of conservation banks. Mitigation/conservation banks should focus on protecting (but not be limited to):

- Upland banks: San Joaquin kit fox, blunt-nosed leopard lizard and burrowing owl;
- Protected wetland banks: California tiger salamander and vernal pool fairy shrimp; and
- Riparian habitat: Swainson's hawk and valley elderberry longhorn beetle.

Regional Planning

The lands within the Fresno County riparian corridors are critical for the implementation of several existing management plans, habitat conservation plans and recovery plans. There are a number of existing conservation plans that supplement the current study, including:

1. **U.S. Fish & Wildlife Service Upland Species Recovery Plan** – This 1998 plan calls for the following recovery tasks in the portion of Fresno County covered by this study:
    a. # 2.1.6 – Acquire title or easement to native habitat in vicinity of Alkali Sink Ecological Reserve.
    b. # 2.1.10 – Acquire title or easement to native habitat in vicinity of Kettleman Hills.
    c. # 2.1.15 – Protect and manage range land in Kreyenhagen Hills.
    d. #2.1.17 – Restore and enhance natural communities on the California Department of Fish & Game's Kerman and Alkali Sink ecological reserves.
    e. #2.1.18 – Manage areas of Mendota Wildlife Area for threatened and endangered species that are not currently managed for waterfowl.
2. **Pacific Gas & Electric Habitat Conservation Plan** – This 2006 plan identifies impacts to a variety of special status species and prescribes measures to mitigate impacts. It is a model for pre-mitigation and utilizing biological data for multi-species benefit.
3. **San Joaquin Valley Blueprint** - The regional San Joaquin Valley Blueprint sets a vision for the eight county San Joaquin Valley region and establishes goals and policy

objectives relative to open space in Fresno County. The vision for Fresno County is: A healthy and sustainable environment where air, aquifers, surface waters, forests, soil, agriculture, open space and wildlife resources are enhanced and protected.

Goal 3: Encourage the identification and protection of strategic farmland ("Strategic Farmland" will be defined in the ongoing Partnership seed grant study : Farmland Conservation Model Program.) open space, and natural resource areas. Support implementation strategies protecting and directing growth away from strategic agricultural land. Encourage the adoption of an agricultural element in all general plans within Fresno County. Support County land development Reduction in strategic farmland conversion

Goal 5: Support creation of environmental resource constraint maps to guide development strategies and permit approvals in areas where special considerations are needed for water. Identify a clearinghouse in which to locate these resources. promote mapping units identifying areas of special considerations concerning water supplies, floodplains, development buffers, water-short areas, contaminated aquifers, strategic farmland, natural water drains, and wildlife areas. Maps identifying areas with environmental constraints

Goal 9: Promote the preservation or creation of open space connectivity for habitat and wildlife, as well as recreational users of the region. Promote preservation and multiple public uses, wherever possible, of natural terrain, drainage and vegetation areas in environmental resources.

This study can assist with many of these goals and conservation of wildlife corridors will help achieve the vision and goals of the Blueprint process.

4. **Fresno County Planned Rural Bikeway System Plan** – The 2007 Regional Transportation Plan recommends establishing a network of bike paths to facilitate alternative modes of transportation, transportation efficiency and physical fitness of the public, among other things. Bike paths are planned for areas adjacent to the Kings River and Los Gatos Creek.

Potential Project Mitigation Areas

TBWP included site-specific recommendations from their Sand Ridge – Tulare Lake Conservation Plan, as well as other sites studied during the Fresno County Riparian and Wildlife Corridor Study as potential project mitigation areas. Sites were selected based on the criteria listed below.

At a minimum, establishing a mitigation bank involves writing a prospectus for agencies such as: U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, California Regional Water Quality Control Boards, U.S. Fish & Wildlife Service, and California Department of Fish & Game. It is important to consider costs such as permitting, endowment, monitoring and a legal defense fund when establishing mitigation banks.

Selection Criteria

Criteria considered when selecting projects for recommendation to the Fresno County Transportation Authority are as follows and are listed in order of importance.

Level 1 Selection Criteria

Element Occurrences: Threatened, endangered, sensitive or special status species must occur on the property under consideration. This criterion must be satisfied for the land to be considered for use as mitigation property. Additional points will be awarded for increasing numbers (diversity) of threatened, endangered, sensitive or special status species. Once this criterion is satisfied, the following three selection criteria levels will help rate a site for mitigation suitability.

Level 2 Selection Criteria

Disturbance History: Has the site been artificially altered by disking, deep-ripping, or leveling? Has it been invaded by non-native plant and/or animal species? Have natural disturbance processes, such as fire, flooding, grazing, etc., been in effect during the site's history? Because of the nature of federal regulations protecting waters of the United States, wetland mitigation entails unique criteria; sites under consideration for wetland mitigation typically must have been previously disturbed to qualify. All sites must have no Phase 1 issues (no toxic dumps, etc.). Other significant issues, such as power line easements, mineral rights, etc., must be identified early in the process

Connectivity: Does it connect to or form a bridge between existing natural lands or help to create those connections? Can wildlife move safely between natural areas and/or can plants disperse? Is it connected to water or is it located along a waterway? Is it a travel, migratory or other type of corridor?

Size: Larger parcels or projects will rate higher than smaller projects.

Proximity: Is it near or does it connect to other protected lands? Is it near or connected to other sites with element occurrences?

Level 3 Selection Criteria

Multiple Conjunctive Uses: If sites exhibit any, a combination of, or all of the following criteria, their priority status will be elevated:

- Public Benefit (Quality of Life)
- Environmental Education (Outdoor classroom)
- Recreation/Public Access
- Flood Protection
- Groundwater Banks
- Groundwater Recharge Areas
- Greenhouse Gas/Global Warming Reduction
- Open Space

- Economic Benefit/Business Opportunities

Level 4 Selection Criteria

Feasibility:

- Availability: Is the property for sale?
- Cost: What is the price?
- Matching funds/leverage: Are there matching funds available to enlarge the area purchased?
- Level of preparedness: Is this project ready to go right now? If not, when will it be?
- Shows immediate results: When will the project be complete?
- Ownership (Private/Public): If public, is there an agency/entity that will manage the land?

Site Recommendations

Listed below are Fresno County mitigation site recommendations organized by habitat type:

1. Habitat type: valley floor upland, including alkali sink, saltbush scrub and grassland. These habitat types feature the following element occurrences: blunt-nosed leopard lizard, San Joaquin kit fox and burrowing owl. Specific mitigation site recommendations include:
    a. High quality native habitat is located in the vicinity of Pleasant Valley Ecological Reserve in the Arroyo Pasajero Riparian Corridor Complex. Approximately 6,000 acres of native land is located along Los Gatos Creek between Coalinga and Interstate 5. The California Department of Fish & Game Ecological Reserve totals approximately 1,100 acres. The remaining 4,900 acres of native land (located in T20S, R16E, Sec. 27, 28, 31, 32, 33, 34, and 34) would be an ideal location for mitigating valley floor upland habitat under Measure C.
    b. High quality habitat areas along Jacalitos Creek (T21S, R15E, Sec. 26,27,32, 33, and 34 and T22S, R15E, Sec 3, 4, 5, and 6) are interspersed with Bureau of Land Management land as well as a new mitigation bank owned by Wildlands Inc. This combination of lands would likely qualify as multiple-species mitigation sites for loss of valley floor upland habitat under Measure C.
    c. Approximately 2,240 acres of very high quality native upland habitat is located in the vicinity of the California Department of Fish & Game's Alkali Sink Ecological Reserve (T13S, R15E Sec. 35 and 36, and T14S, 15E, Sec. 1 and 2) and would be an excellent location for mitigating for loss of valley floor upland habitat under Measure C.
2. Habitat type: vernal pool. This habitat type features the following element occurrences: California tiger salamander, vernal pool fairy shrimp, rare *Atriplex* (annual saltbush) species and San Joaquin Valley orcutt grass. Unprotected vernal pool lands available for acquisition are a scarce commodity in Fresno County. The following mitigation site recommendations are offered as a tentative list to be updated and corrected as additional site information becomes available:

a. Vernal pool habitat is still present along Porter Avenue in Clark Valley north of Highway 180.
b. Vernal pool habitat may still be present near Round Mountain just east of Friant-Kern Canal between the Shaw Avenue and Bullard Avenue alignments.
c. Vernal pool habitat suitable for vernal pool fairy shrimp may still be available for purchase on the large alkali grassland property north of Highway 180 (Whitesbridge Road) and San Mateo Avenue and on alkali sink property between San Mateo Avenue and Fresno Slough about 1.2 miles north of Highway 180 (Whitesbridge Avenue). It is unlikely, due to the wrong soils and short-duration of these vernal pools, that this property is suitable habitat for California tiger salamanders.

3. Habitat type: riparian, including valley oak riparian forest; sycamore alluvial woodland; Great Valley cottonwood willow. These habitat types feature the following element occurrences: Valley elderberry longhorn beetle, Swainson's hawk and yellow-billed cuckoo. Specific mitigation site recommendations include:
    a. Prime riparian habitats are located along the Kings River Riparian Corridor. There are many sites that could serve for mitigating riparian habitat loss under Prop. C. Ideally, mitigation sites would be adjacent to existing protected land.
4. Habitat type: blue oak woodland. This habitat type features the following element occurrences: Valley elderberry longhorn beetle and California tiger salamander. Specific mitigation site recommendations include:
    a. Ideal mitigation sites for this habitat would be near existing protected land such as Fresno County Parks and preserves owned by the Sierra Foothill Conservancy.

In addition to mitigating for loss of wildlife habitat, we also recognize the importance of mitigating for the loss of farm and ranch land in Fresno County. Currently, the Council of Fresno County Governments is using a partnership seed grant to partner with American Farmland Trust. The purpose of the grant is to evaluate prime farm land for protection in the eight counties of the southern San Joaquin Valley. Lessons learned from these efforts will help the county better prepare for mitigating these significant lands.

It is important to recognize that Fresno County may have mitigation needs in addition to those funded by Measure C and that planning for additional mitigation and mitigation sites ought to be pursued in a strategic manner for maximum benefit.

While conjunctive use of conserved land maximizes public benefit, TBWP recognizes that regulatory restrictions may constrain state and federal agencies from consideration of certain conjunctive uses at mitigation banks.

Going forward, some questions remain:

1. Will the funds from Measure C be used for a public mitigation bank, or is the intent to mitigate only for specific Measure C impacts?;
2. Are funds available from Measure C intended to mitigate current impacts only, or are the resources meant to be spread over a period of years?; and

3. Is the intent of actions under Measure C to establish a mitigation bank, or to mitigate potential impacts at the project level?

Conclusion

In Fresno County, the Kings River Riparian Corridor, Arroyo Pasajero Riparian Corridor Complex (including Los Gatos, Warthan, Jacalitos and Zapato Chino creeks), and Fresno Slough Riparian Corridor provide the highest potential for habitat/wildlife conservation, recreation, and conjunctive uses, such as flood control, groundwater recharge, tourism and opportunities for private landowner involvement. These corridors all feature diverse opportunities for both people and wildlife.

There are a number of projects proposed for Measure C transportation improvements including road widening, intersection widening and traffic light installation and the construction associated with the High Speed Rail. Many projects may require mitigation under the federal Endangered Species Act, California Endangered Species Act or the California Environmental Quality Act.

To address special status species in Fresno County riparian corridors, TBWP recommends working with agencies, private landowners, schools, non-profits, businesses and other interests to establish a mitigation banking reserve system. This will enable the County to pre-mitigate for impacts as a result of road improvement projects and urban expansion while protecting the flora and fauna in this unique region and providing opportunities for public enjoyment.

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Appendix 1. Riparian and Wildlife Corridor Ratings

	Rating Criteria	Kings River	Arroyo Pasajero	Fresno Slough	Panoche Creek	Cantua Creek	Whatoke Creek	Murphy Slough
1	Extent of Urban Development	2	2	3	3	3	2	3
2	Channel Hydrology & Morphology - Flood Risk	2	3	2	2	2	2	2
3	Condition of Adjacent Uplands	2	2	3	2	2	2	1
4	Riparian Habitat Quality & Continuity	3	2	3	2	2	1	1
5	Presence of Special Status Species	2	2	3	2	2	1	2
6	Opportunities for Conjunctive Use	3	3	2	1	1	1	1
7	Importance to Basin Wetlands	3	1	3	0	0	1	0
8	Community, Social, & Agency Considerations	3	3	3	1	1	2	1
	Score	**20**	**18**	**22**	**13**	**13**	**12**	**11**

Appendix 2. Special Status Species Results for the Fresno County Planning Area

Scientific Name	Common Name	Kings River	Fresno Slough	Arroyo Pasajero	Cantua Creek	Panoche Creek	Murphy Slough	Corridors Found	Total Corridors	Proportion of Corridors	State & Federal Status
Branchinecta lynchi	Vernal Pool Fairy Shrimp	■	■					2	6	33.3%	Endangered
Lepidurus packardi	Vernal Pool Tadpole Shrimp		■					1	6	16.7%	Endangered
Lytta hoppingi	Hopping's Blister Beetle			■				1	6	16.7%	
Lytta molesta	Molesta Blister Beetle		■	■				2	6	33.3%	
Lytta morrisoni	Morrison's Blister Beetle			■				1	6	16.7%	
Desmocerus californicus dimorphus	Valley Elderberry Longhorn Beetle	■					■	2	6	33.3%	Threatened
Ambystoma californiense	California Tiger Salamander	■	■					2	6	33.3%	Threatened
Spea hammondi	Western Spadefoot	■	■	■			■	4	6	66.7%	Sensitive
Emys (=Clemmys) marmorata pallida	Southwestern Pond Turtle	■	■	■	■			4	6	66.7%	SSC
Gambelia sila	Blunt-nosed Leopard Lizard		■	■	■	■		4	6	66.7%	SE,FE
Phrynosoma coronatum (frontale)	Coast (California) Horned Lizard		■	■				2	6	33.3%	SSC
Masticophis flagellum ruddocki	San Joaquin Whipsnake		■	■				2	6	33.3%	SSC
Thamnophis gigas	Giant Garter Snake	■	■				■	3	6	50.0%	FT,ST
Dendrocygna bicolor	Fulvous Whistling-Duck		■					1	6	16.7%	SSC
Botaurus lentiginosus	American Bittern		■					1	6	16.7%	Sensitive
Ixobrychius exilis	Least Bittern		■					1	6	16.7%	SSC
Ardea herodias	Great Blue Heron	■	■					2	6	33.3%	Sensitive
Ardea alba	Great Egret	■	■					2	6	33.3%	
Egretta thula	Snowy Egret		■					1	6	16.7%	Watch List
Nycticorax nycticorax	Black-crowned Night-Heron	■	■					2	6	33.3%	Sensitive
Plegadis chihi	White-faced Ibis		■					1	6	16.7%	CNDDB
Elanus leucurus	White-tailed Kite	■	■				■	3	6	50.0%	Full Pro.
Haliaeetus leucocephalus	Bald Eagle	■						1	6	16.7%	SE,FT
Circus cyaneus	Northern Harrier	■	■					2	6	33.3%	SSC
Buteo swainsoni	Swainson's Hawk	■	■	■	■	■	■	6	6	100.0%	ST
Buteo regalis	Ferruginous Hawk	■	■	■			■	4	6	66.7%	CNDDB
Aquila chrysaetos	Golden Eagle			■				1	5	20.0%	SSC, Full Pro.
Falco columbarius	Merlin		■	■				2	6	33.3%	CNDDB
Grus canadensis tabida	Greater Sandhill Crane	■	■					2	6	33.3%	ST
Charadrius montanus	Mountain Plover		■	■		■		3	6	50.0%	SSC
Coccyzus americanus occidentalis	Yellow-billed Cuckoo		■					1	6	10.0%	ST, F cand.
Athene cunicularia	Burrowing Owl	■	■	■	■	■	■	6	6	100.0%	SSC
Asio otus	Long-eared Owl			■				1	6	16.7%	SSC
Asio flammeus	Short-eared Owl		■					1	6	16.7%	SSC
Picoides nuttallii	Nuttall's Woodpecker	■		■			■	3	6	50.0%	Watch List
Lanius ludovicianus	Loggerhead Shrike	■	■	■	■	■	■	6	6	100.0%	SSC

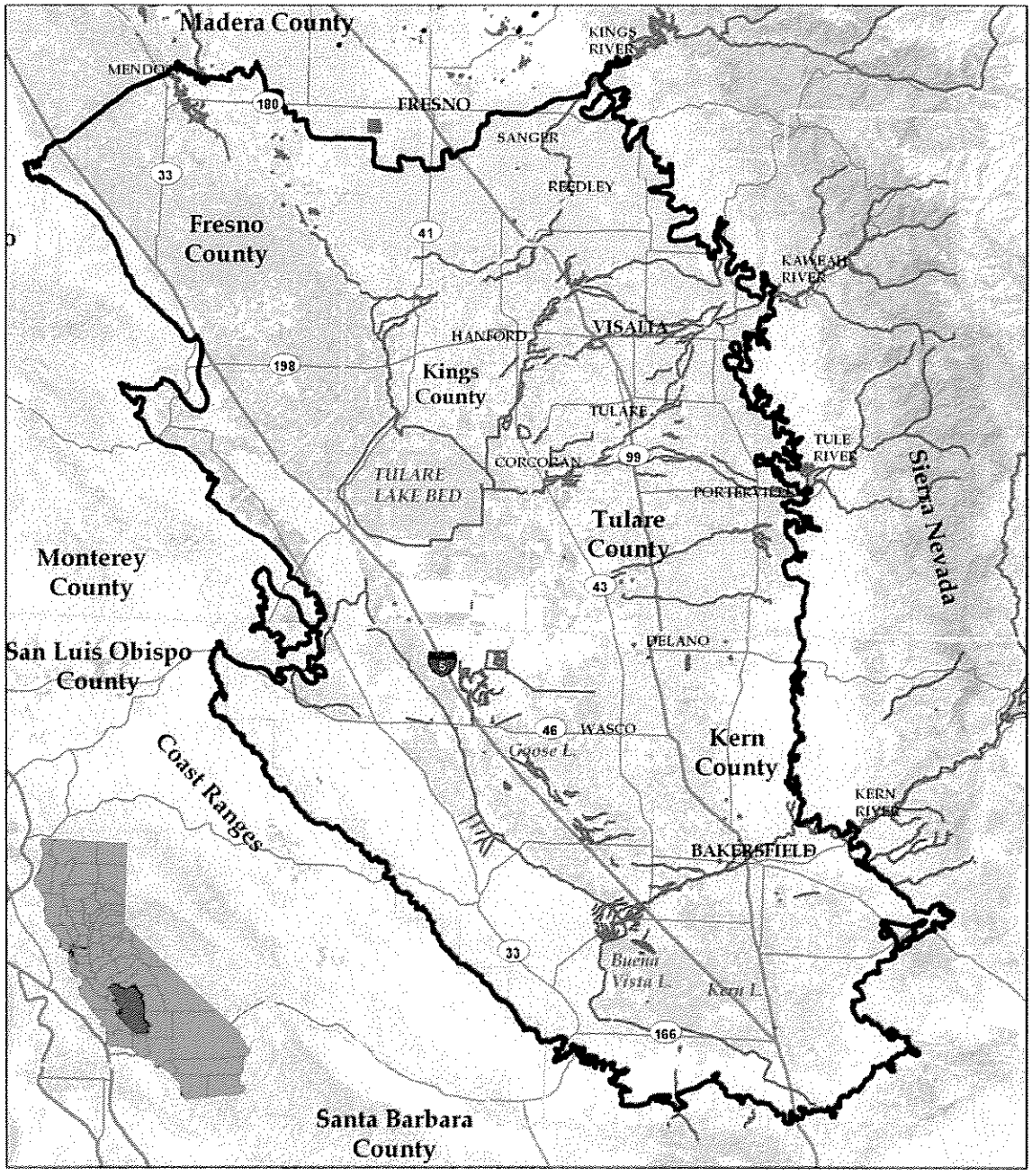
Scientific Name	Common Name	Kings River	Fresno Slough	Arroyo Pasajero	Cantua Creek	Panoche Creek	Murphy Slough	Corridors Found	Total Corridors	Proportion of Corridors	State & Federal Status
Eremophila alpestris actia	California Horned Lark		■		■			2	6	33.3%	CNDDB
Toxostoma lecontei	LeConte's Thrasher			■				1	6	16.7%	SSC
Dendroica petechia brewsteri	Yellow Warbler	■						1	6	16.7%	SSC
Icteria virens	Yellow-breasted Chat	■						1	6	16.7%	SSC
Agelaius tricolor	Tricolored Blackbird		■	■			■	3	6	50.0%	SSC
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		■					1	6	16.7%	SSC
Ammospermophilus nelsoni	San Joaquin Antelope Squirrel		■	■	■			3	6	50.0%	ST
Dipodomys ingens	Giant Kangaroo Rat				■			1	6	16.7%	SE,FE
Dipodomys nitratoides exilis	Fresno Kangaroo Rat	■	■					2	6	33.3%	SE,FE
Perognathus inornatus inornatus	San Joaquin Pocket Mouse		■	■				2	6	33.3%	BLM-Sen.
Onychomys torridus tularensis	Tulare Grasshopper Mouse			■				1	6	16.7%	SSC
Vulpes macrotis mutica	San Joaquin Kit Fox	■	■	■	■	■	■	6	6	100.0%	ST,FE
Taxidea taxus	American Badger		■	■				2	6	33.3%	SSC
Atriplex cordulata	Heartscale		■					1	6	16.7%	CNPS 1B
Atriplex depressa	Brittlescale	■	■	■			■	4	6	66.7%	CNPS 1B
Atriplex minuscula	Lesser Saltscale		■					1	6	16.7%	CNPS 1B
Atriplex subtilis	Subtle Orache		■					1	6	16.7%	CNPS 1B
Atriplex vallicola	Lost Hills Crownscale		■					1	6	16.7%	CNPS 1B
Caulanthus californicus	California Jewel-flower			■				1	6	16.7%	SE,FE
Cordylanthus palmatus	Palmate-bracted Bird's-beak		■					1	6	16.7%	SE,FE
Delphinium recurvatum	Recurved Larkspur	■	■	■				3	6	50.0%	CNPS 1B
Lasthenia ferrisiae	Alkali Goldfields		■					1	6	16.7%	CNPS 4
Monolopia congdonii	San Joaquin Woollythreads		■	■				2	6	33.3%	FE
Orcuttia inaequalis	San Joaquin Valley Orcutt Grass	■						1	6	16.7%	SE,FT
Sidalcea keckii	Keck's Checkerbloom	■						1	6	16.7%	FE
	Total by Corridor	**26**	**46**	**28**	**9**	**6**	**12**				

Total Number of Sensitive Species: 61

Records from California Natural Diversity Database, California Department of Fish & Game Refuge checklist, and authors' field notes

Appendix 3. Maps

Tulare Basin Project Area



Legend

Tulare Basin Hydrologic Unit and Project Area | County Boundaries | Rivers | Roads

10 0 10 20 30 40 Miles

1: 1,000,000

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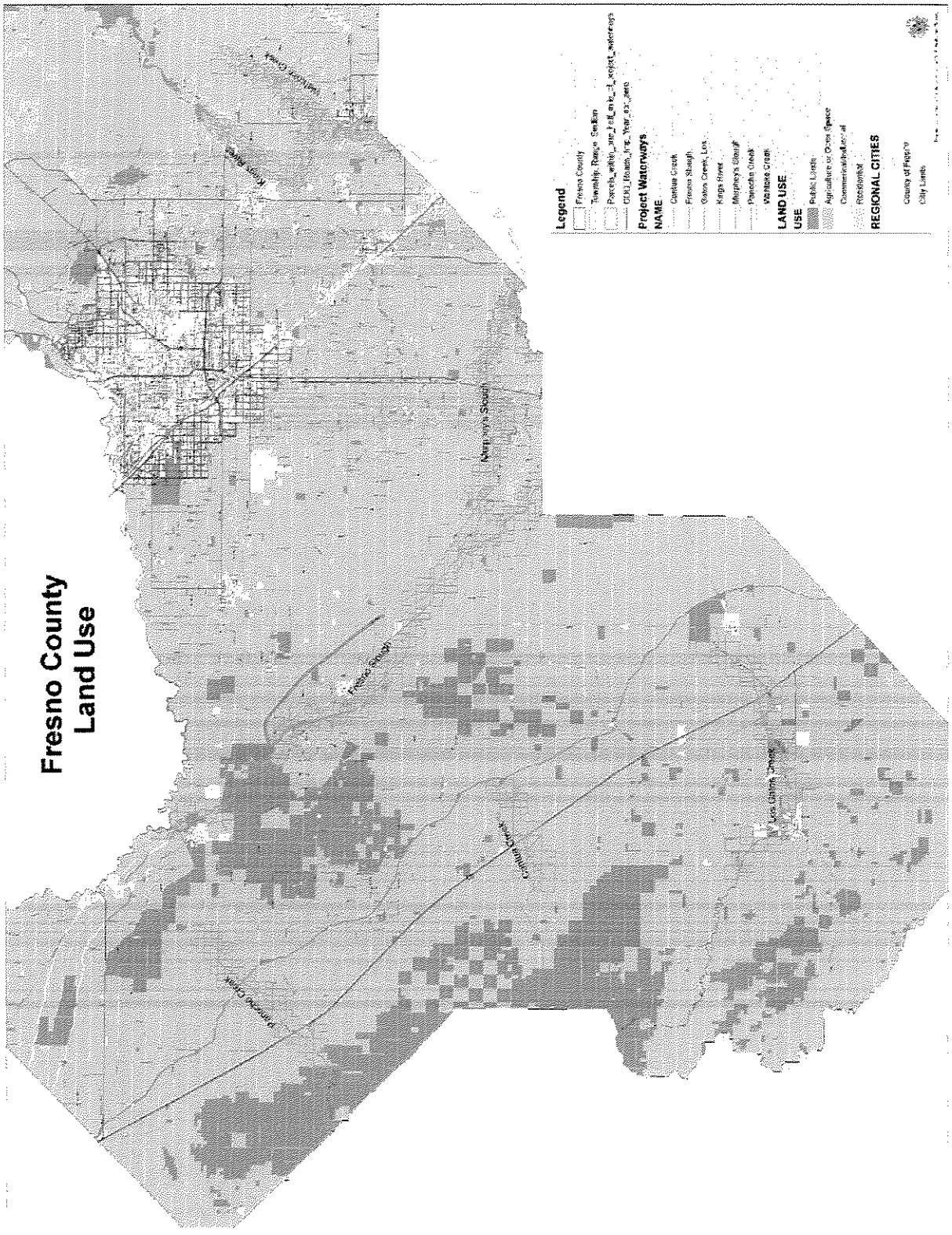
Tulare Basin Wildlife Partners

Creating Opportunities for Nature and People

NRCS


Fresno County
Land Use
Legend
Fresno County
Township, Range, Section
Project Waterways
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Fresno Slough
Gates Creek, Los
Kings River
Murphey's Slough
Panoche Creek
Westlake Creek
LAND USE
USE
Public Lands
Agriculture or Open Space
Commercial/Industrial
Residential
REGIONAL CITIES
County of Fresno
City Limits
Kings River
Murphey's Slough
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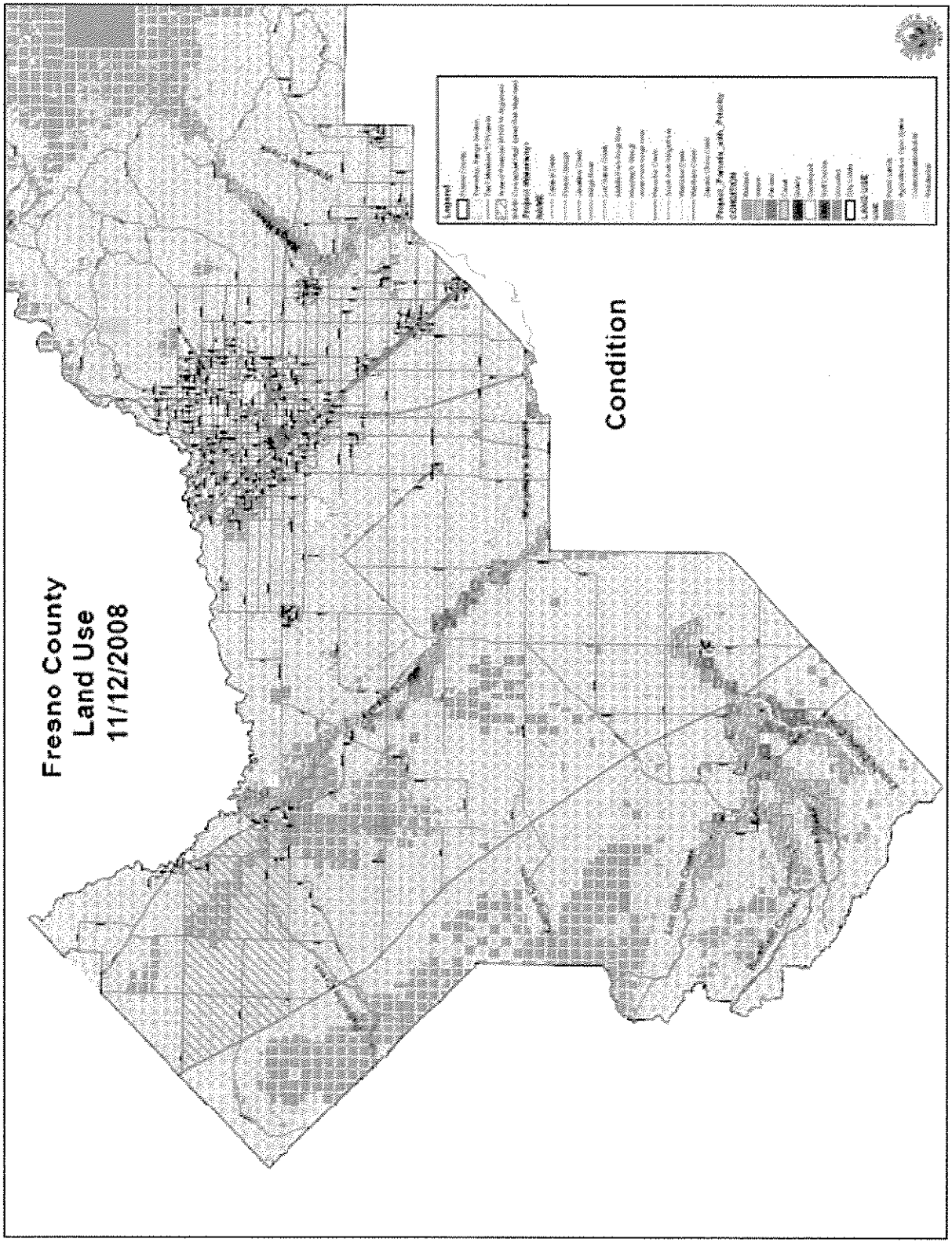
Cantua Creek
Los Gatos Creek
Panoche Creek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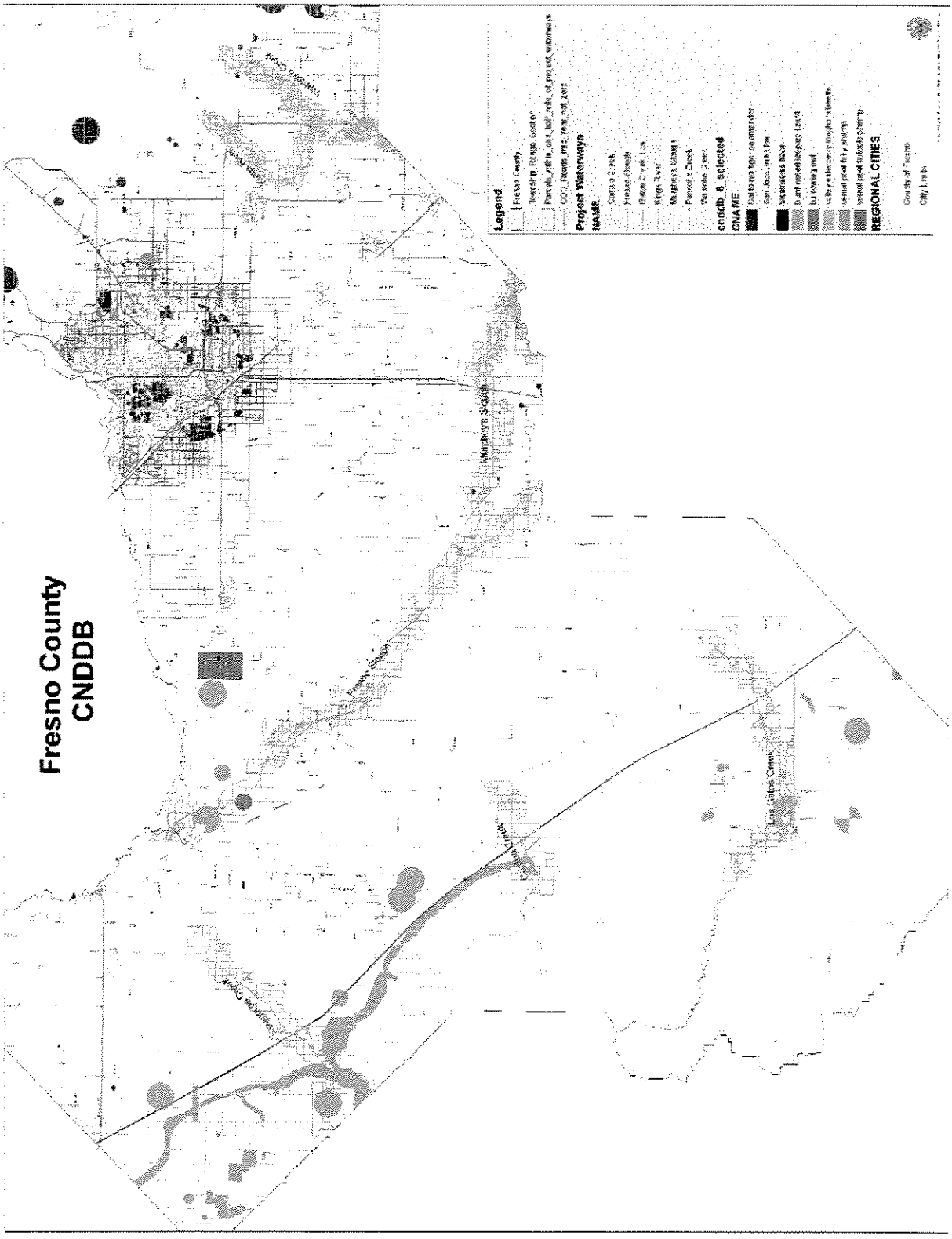
Land Use
11/12/2008
Condition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