

Notice of Determination

To:

County Clerk
County of Kern
1115 Truxtun Avenue
Bakersfield, CA 93301

cc:

Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

From: Kern Water Bank Authority
c/o YOUNG WOOLDRIDGE
1800 30th Street, Fourth Floor
Bakersfield, CA 93301

Subject: Filing of Notice of Determination in Compliance with Section 21108 or 21152 of the Public Resources Code.

Project Title: Implementation of the Kern Water Bank - Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan. This is an addendum to the Monterey Agreement EIR certified by Central Coast Water Authority on October 26, 1995.

State Clearinghouse Number: 95023035

Lead Agency: Kern Water Bank Authority

Contact Person: Ernest A. Conant, Counsel

Phone: (805) 327-9661

Project Location and Description:

The Project Area is the Kern Fan Element of the Kern Water Bank, located west of the City of Bakersfield, Kern County.


This Addendum to the previously certified Monterey Agreement EIR only relates to the Kern Water Bank and does not affect any other matters covered by the Monterey Agreement EIR. This Addendum provides for implementation of measures outlined in the Monterey Agreement EIR relative to the Kern Water Bank by providing technical details as to how the Kern Water Bank will be implemented. In particular, it addresses and provides for implementation of a Habitat Conservation Plan/Natural Community Conservation Plan which has been developed by the Kern Water Bank Authority in cooperation with the California Department of Fish & Game and the U. S. Fish & Wildlife Service.

This is to advise that the Board of Directors of Kern Water Bank Authority on June 3, 1997 approved the Project and has made the following determinations with respect to the Kern Fan Element:

1. The entire project, as revised by the mitigation measures, will have no significant effect on the environment.
2. An Addendum to the Monterey Agreement EIR was prepared for this project pursuant to the provisions of CEQA and the Board of Directors of the Kern Water Bank Authority reviewed and considered the Addendum prior to approving the project.
3. Mitigation measures were made a condition of the approval of the Project.
4. A statement of overriding considerations was not adopted for this project. However, the findings include a statement of benefits of the program and the project that override potentially significant environmental impacts had there been any.
5. Findings were made pursuant to the provisions of CEQA.

This is to certify that the Addendum and record of project approval are available at YOUNG WOOLDRIDGE, 1800 30th Street, Bakersfield, California 93301 to the attention of Ernest A. Conant, Counsel.

6-3-97
Date:


By: PEGGY POOR
Secretary to the Board

Date Received for Posting by County

Clerk _____

BEFORE THE BOARD OF DIRECTORS
OF THE
KERN WATER BANK AUTHORITY

Resolution No. 97-01

In the matter of:

RESOLUTION MAKING FINDINGS
AND ADOPTING MITIGATION MEASURES
PURSUANT TO THE CALIFORNIA
ENVIRONMENTAL QUALITY ACT -
IMPLEMENTATION OF KERN WATER BANK

WHEREAS, certain disputes had arisen among various State Water Contractors, and between certain State Water Contractors and the State. Those disputes were the subject of intensive negotiations among the interested parties, and in December 1994 those negotiations culminated in an agreed upon set of principles upon which a settlement of those disputes could be achieved, commonly referred to as the Monterey Agreement. Among the principles agreed to was the exchange of 45,000 acre-feet of SWP entitlement from the SWP Agricultural Contractors for the Kern Fan Element of the Kern Water Bank Property ("KFE"); and

WHEREAS, a Final Program Environmental Impact Report was prepared on the Monterey Agreement ("Monterey Agreement EIR"), which this Board approved on October 30, 1995 as a responsible agency, following which the Monterey Agreement was implemented, including transfer of the KFE to the Kern Water Bank Authority; and

WHEREAS, the Authority staff and consultants have prepared and the Board has received and reviewed an "Initial Study and Addendum to Monterey Agreement EIR for the Kern Water Bank Authority - Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan" ("KWB Addendum EIR"), which is incorporated by this reference;

WHEREAS, attached to this Resolution as Exhibit A are Findings and Mitigation Measures for Implementation of the Kern Water Bank;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Kern Water Bank Authority that:

1. The Findings pursuant to the California Environmental Quality Act of 1970, attached hereto as Exhibit A, are hereby adopted and determined to be true.

2. The Authority's Secretary is hereby authorized and directed to file all required Notices of Determination pursuant to CEQA for the KWB Addendum EIR.

3. This Resolution shall take effect immediately.

ALL OF THE FOREGOING being on motion of Director Bellue, seconded by Director Boschman, was authorized by the following vote, to wit:

AYES: Directors Phillimore, Leon, Boschman, Bellue, Hamilton, Johns & Dmohowski

NOES: None

ABSTAIN: None

ABSENT: None

I HEREBY CERTIFY that the foregoing Resolution is a Resolution of said Board as duly passed and adopted by said Board of Directors on the 3rd day of June, 1997.

WITNESS my hand and seal of said Board of Directors this 3rd day of June, 1997.


Secretary of the Board of Directors

[DISTRICT SEAL]

EXHIBIT A

KERN WATER BANK AUTHORITY

FINDINGS AND MITIGATION MEASURES

IMPLEMENTATION OF KERN WATER BANK - KERN WATER BANK HABITAT CONSERVATION PLAN/ NATURAL COMMUNITY CONSERVATION PLAN

I. PROJECT DESCRIPTION

The Initial Study and Addendum to the Monterey Agreement EIR of the Kern Water Bank Authority ("KWB Addendum EIR") analyzes potential environmental impacts associated with implementation of the Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan (the "Project"). The KWB Addendum EIR is incorporated by this reference. The Project includes the construction, operation and maintenance of the Kern Water Bank (KWB), a water recharge and recovery, farming and conservation bank project and related habitat conservation activities proposed for 19,900 acres of land in Kern County, California. The Kern Water Bank is owned and will be operated by the Kern Water Bank Authority (KWBA), a California joint powers authority.

The effects of the Project were previously evaluated in a Program Environmental Impact Report entitled Final Program Environmental Impact Report, Implementation of the Monterey Agreement Statement of Principles by the State Water Contractors and the State of California, Department of Water Resources for Potential Amendments to the State Water Supply Contracts (the "Monterey Agreement EIR"). (State Clearinghouse No. 95023035.) The Monterey Agreement EIR was approved by KWBA as a responsible agency.

Environmental review under the California Environmental Quality Act (CEQA) is required for any project undertaken directly by a public agency. (Public Resources Code, section 21065, subdivision (a).) The CEQA Guidelines provide that "subsequent activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared." (CEQA Guidelines, § 15158.) The Guidelines indicate that, prior to the approval of activities within the program, the agency should evaluate whether a subsequent EIR is required as provided in Guidelines Section 15162.

Section 15162, in turn, prohibits agencies from requiring a subsequent EIR unless the agency determines:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR; or
3. New information of substantial importance which was not known and could not have been known shows (i) that the project will have one or more significant effects not discussed in the prior EIR, (ii) significant effects previously examined will be substantially more severe, (iii) mitigation or alternatives previously determined to be not feasible and found to be feasible, or (iv) mitigation measures or alternatives which are considerably different would substantially reduce the significant effects of the project and the project proponent declines to adopt the mitigation measure.

Section 15164 of the Guidelines provides that it is appropriate to prepare an addendum to a prior EIR where (a) conditions described at Section 15162 of the Guidelines have not occurred (see above), (b) the project involves technical changes and additions to carry out the project of the prior EIR and (c) changes and additions in the addendum do not raise important new issues concerning significant effects on the environment.

The Project incorporates mitigation and compensation for impacts to wildlife habitat and other natural resources resulting from implementation of the Project. Approximately 10,349 acres, or over 52% percent, of the Project area will be set aside and limited to uses that are compatible with the habitat values of the property. These lands will be protected and managed for their wildlife habitat values throughout the life of the Project. Certain lands will be protected from development in perpetuity upon the approval of the Project. Other lands will be protected in perpetuity upon the use of conservation credits established by the Project.

As part of the Project, and as more particularly described in the KWB Addendum EIR, KWBA has applied for two permits pursuant to the federal Endangered Species Act from the United States Fish and Wildlife Service (USFWS) to take endangered and threatened species incidental to the operation of the Project, and two management authorizations from the California Department of Fish and Game (CDFG) pursuant to the California Endangered Species Act and the Natural Community Conservation Planning Act to allow the

management and operation of the Project in accordance with the incidental take of endangered, threatened and certain other species (listed species). One permit and one management authorization (the Project Permit/Authorization) relates to the Project. The other permit and management authorization (the Master Permit/Authorization), relating to the conservation bank, will allow the incidental take of listed species by qualified third parties for activities that take place within Kern County, the Allensworth area of Tulare County, and the Kettleman Hills area of Kings County. Both Permits and both Master Authorizations are for a period of 75 years. A habitat conservation plan / natural community conservation plan ("HCP/NCCP"), an implementation agreement ("IA"), and a federal environmental assessment ("EA") have been prepared as part of the permit/authorization process. These documents are hereby incorporated by reference.

As more particularly described in the KWB Addendum EIR, the Monterey Agreement EIR described the KWB in considerable detail. The land uses under the Project are similar to Scenario B analyzed in the Monterey Agreement EIR but provide more environmental benefits than Scenario B.

Of the 19,900 acres that constitute the KWB property, 5,900 acres will be used for routine recharge and 481 acres will be used for permanent water banking facilities. Between the basins will be areas that will never be purposely flooded. Some of these areas have existing populations of listed plants. These plants will be preserved in special areas totaling 960 acres. Other areas between basins totaling 5,592 acres will revert to habitat. Additionally, 530 acres will be preserved and managed for mitigation of DWR projects. Of the remaining land, 3,170 acres will be used for farming and 3,267 acres will be used as a conservation bank (to be used as potential mitigation for activities by third parties within designated areas of the Southern San Joaquin Valley). Of the 3,267 acres in the conservation bank, KWBA may use up to 490 acres for commercial development.

The following chart summarizes such land uses, the uses for which are more particularly described in the Addendum EIR:

LAND USE SUMMARY	AREA IN ACRES
Recharge Basins	5,900*
Other Water Banking Facilities	481
Compatible Habitat	5,592*
Sensitive Habitat	960
DWR Mitigation Land	530
Farming	3,170
Conservation Bank	3,267**
TOTAL	19,900

* KWBA Mitigation Land - 146 acres of Recharge Basins and 489 acres of Compatible Habitat totaling 635 acres will be covered by a conservation easement.

** KWBA may sell up to 490 acres out of the conservation bank for commercial development purposes. The 490 acres is indicated on Map 2 as the Commercial Development Zone.

II. CEQA FINDINGS

A. The Board of Directors of the KWBA hereby finds and certifies:

1. It is appropriate to prepare an Addendum to the Monterey Agreement EIR, consistent with Section 15164 of the Guidelines, because (a) the conditions described in Section 15162 of the Guidelines relating to subsequent EIR's have not occurred, (b) this Project involves technical changes and additions to carry out operation of the KWB as outlined in the Monterey Agreement EIR, and (c) the changes in the KWB Addendum EIR do not raise important new issues about significant effects on the environment.
2. The Board of Directors considers the Monterey Agreement EIR together with the KWB Addendum EIR to be adequate under CEQA for the Authority's approval of the Project.
3. The Board of Directors has reviewed and considered the information within the KWB Addendum EIR prior to approving the Project;
4. The KWB Addendum EIR reflects the Board of Directors' independent judgment; and,
5. No further mitigation measures beyond those described below are necessary and appropriate for the KWBA's approval of the Project.

B. CEQA requires analysis not only of direct or primary environmental impacts, but also of indirect or secondary impacts that may be caused by the project or program are later in time or are further removed in distance, but are reasonably foreseeable. The KWB Addendum EIR analyzes both direct and indirect environmental impacts from implementation of the Project, to the extent these impacts are reasonably foreseeable and presently ascertainable.

C. The KWB Addendum EIR also includes an analysis of the potential cumulative impacts that may arise from projects undertaken as part of the program and from other potential projects and programs that could occur at the same time the Project is being implemented or in the same geographical area.

D. CEQA requires the evaluation of reasonable and feasible alternatives to the project or program, as well as the evaluation of the environmental impacts which would result if the project or program were not implemented (the "No Project" alternative). The Monterey Agreement EIR previously analyzed the "No Project" alternative as well as scenarios that could occur, and alternatives that might be implemented in lieu of the Monterey Agreement Principles.

E. The Project before the KWBA is limited to approval of the Project. This approval includes the condition that KWBA adopts the mitigation measures described below that is within the Authority's jurisdiction.

F. Although the Project has potential for adverse environmental impacts, the program benefits, described below, outweigh these adverse impacts.

G. The Project will help provide and promote a safe and reliable water source to the Member Entities of the KWBA.

H. The KWBA finds and determines that the requirements of CEQA have been satisfied for KWBA's approval of this Project.

III. CEQA FINDINGS RE CUMULATIVE IMPACTS

The only cumulative impacts from the Project should be beneficial impacts. The KWB was transferred from DWR to KCWA and then to KWBA as part of the Monterey Principles. Implementation of the Monterey Principles, including the operation of the Project, should lead to fewer and smaller shortages of deliveries of water from the State Water Project ("SWP") to certain SWP contractors in drought years. Reducing the impact of droughts should result in beneficial impacts to the environment.

The possible beneficial and adverse impacts to the environment due to the implementation of the Monterey Principles was studied at length in the Monterey Agreement EIR. That analysis is incorporated herein by this reference.

Implementation of the conservation bank and sale of conservation credits to qualified third parties should have minimal cumulative impacts. Even under

the worst-case analysis, use of the conservation bank could lead to habitat loss of 3,000 acres within the Master Permit Credit Area. Moreover, activities using conservation credits will be limited to areas with limited habitat value, and will qualify for the use of conservation credits only with the approval of the Resource Agencies.

IV. MITIGATION MEASURES

The Project approved by the KWBA includes the following mitigation measures, further discussion of which is contained in the KWB Addendum EIR:

Mitigation Measure B-1. Biological Monitor

A qualified biologist shall monitor all ground-disturbing activities during construction in the Sensitive Habit Sector and will oversee measures undertaken to reduce take of listed species.

Mitigation Measure B-2. Construction Practices

a. Delineation of Disturbance Areas

During construction, KWBA shall clearly delineate disturbance area boundaries by stakes, flagging, or by reference to terrain features, as directed by CDFG and USFWS, to minimize degradation or loss of adjacent wildlife habitats during operation.

b. Signage

During construction, KWBA shall post signs and/or place fencing around construction sites to restrict access of vehicles and equipment unrelated to site operations.

c. Resource Agency Notification

At least 20 working days prior to initiating ground disturbance for project facilities in designated salvage/relocation areas, KWBA shall notify the Fresno Field Office of CDFG and the Sacramento Field Office of USFWS of its intention to begin construction activities at a specific location and on a specific date. The Agencies will have 10 working days to notify the KWBA of their intention to salvage or relocate listed species in the construction area. If KWBA is notified, it will wait an additional five days to allow the salvage/relocation to take place.

d. Salvage and Relocation

KWBA will allow time and access to USFWS and/or CDFG, or their designees, to relocate listed species, at the Resource Agencies' expense, from construction areas prior to disturbance of areas that have been identified by the

Resource Agencies as having known populations of the listed species they wish to salvage or relocate.

e. Construction Site Review

All construction pipes, culverts, or similar structures with a diameter of three inches or greater that are stored at a construction site on the Kern Water Bank for one or more overnight periods shall be thoroughly inspected for trapped kit foxes and other animals before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight shall be capped. If during construction a kit fox or other animal is discovered inside a pipe, that section of pipe will not be moved or, if necessary, will be moved only once to remove it from the path of construction activity until the animal has escaped.

f. Employee Orientation

An employee orientation program for construction crews, and others who will work on-site during construction, shall be conducted and shall consist of a brief consultation in which persons knowledgeable in endangered species biology and legislative protection explain endangered species concerns. The education program shall include a discussion of the biology of the listed species, the habitat needs of these species, their status under FESA and CESA, and measures being taken for the protection of these species and their habitats as a part of the project. The orientation program will be conducted on an as needed basis prior to any new employees commencing work on the Kern Water Bank. Every two years or at the beginning of construction for the Supply/Recovery canal, a refresher course will be conducted for employees previously trained. A fact sheet conveying this information shall also be prepared for distribution to all employees. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at KWBA's offices and shall be accessible by CDFG and USFWS.

g. Standards for Construction of Canals

Concrete lined canals will have a side slope of 1.5 to 1 or less and the sides will have a concrete finish which will assist in the escape of animals. If canals are determined by CDFG or USFWS to be substantial impediments to kit fox movement, plank or pipe crossings will be provided across concrete canals in areas identified as having high kit fox activity.

Mitigation Measure B-3. On-Going Practices

a. Equipment Storage

All equipment storage and parking during site development and operation shall be confined to the construction site or to previously disturbed off-site areas that are not habitat for listed species.

b. Traffic Control

KWBA's project representative shall establish and issue traffic restraints and signs to minimize temporary disturbances. All construction related vehicle traffic shall be restricted to established roads, construction areas, storage areas, and staging and parking areas. Project related vehicles shall observe a 25 MPH speed limit in all project areas except on county roads and state and federal highways.

c. Food Control

All food-related trash items such as wrappers, cans, bottles, and food scraps generated both during construction and during subsequent facility operation shall be disposed of in closed containers and shall be regularly removed from the site. Food items may attract kit foxes onto a project site, consequently exposing such animals to increased risk of injury or mortality.

d. Dog Control

To prevent harassment or mortality of kit foxes or destruction of kit fox dens or predation on this species, no domestic dogs or cats, other than hunting dogs, shall be permitted on-site.

e. Pesticide Use

Use of rodenticides and herbicides on the site shall be permitted in accordance with the Vegetation Management Plan, which incorporates by reference the Interim Measures for Use of Rodenticides in Kern County, and which will incorporate by reference any other applicable laws, rules and regulations regarding use of pesticides as they take effect.

Mitigation Measure B-4. Project Representatives

KWBA shall designate a specific individual as a contact representative between KWBA, USFWS, and CDFG to oversee compliance with protection measures detailed herein. KWBA shall provide written notification of the contact representative to CDFG and USFWS within 30 days of issuance of the Permits and the Management Authorizations. Written notification shall also be provided by KWBA to CDFG and USFWS in the event that the designee is changed.

Mitigation Measure B-5. Notification Regarding Dead, Injured or Entrapped Listed Animals

Any employee or agent of KWBA who kills or injures a San Joaquin kit fox, blunt-nosed leopard lizard, Tipton kangaroo rat, San Joaquin antelope squirrel, or other listed species listed as a threatened or endangered animal under FESA or CESA, or who finds any such animal either dead, injured, or entrapped on the Kern Water Bank shall report the incident immediately to KWBA's representative who shall, in turn, report the incident or finding to USFWS and CDFG. In the event that such observations are of entrapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape unimpeded. In the event that such observations are of injured or dead animals, KWBA shall immediately notify USFWS and CDFG by telephone or other expedient means. KWBA shall then provide formal notification to USFWS and CDFG, in writing, within three working days of the finding of any such animal(s). Written notification shall include the date, time, location, and circumstances of the incident.

The USFWS contact for this information shall be the Chief, Endangered Species Division, Sacramento Field Office. The CDFG contact shall be the Environmental Services Supervisor at the San Joaquin Valley-Southern Sierra Region Headquarters.

USFWS or CDFG will be notified within 3 days if any listed, proposed, candidate, or other species covered by the HCP is found dead or injured.

Mitigation Measure B-6. Construction of Supply/Recovery Canal

Before the Supply/Recovery Canal is constructed, KWBA shall conduct a limited SJKF survey to identify any kit fox dens in the construction zone. If any kit fox dens or other individuals or populations of covered species are found, KWBA shall notify USFWS and CDFG and allow them access to the area for relocation or salvage.

Mitigation Measure B-7. Take Avoidance Protocol for Fully-Protected Species.

Existing data on the blunt-nosed leopard lizard (BNLL) at the Kern Water Bank indicates that populations occur within habitat set asides (either sensitive, compatible, or conservation bank habitat). Thus the likelihood of take from project construction, operation and maintenance is negligible. However, in the future adaptive management measures may expand to areas of suitable habitat.

Until such time that the KWBA obtains appropriate authorization for take of the State designated Fully Protected blunt-nosed leopard lizard by the Fish and Game Commission, the following take avoidance protocol shall apply in any areas that contain suitable habitat of the BNLL:

1) A qualified biologist shall survey any areas for project related disturbance that contain suitable habitat for the blunt-nosed leopard lizard to determine the likelihood of presence. Suitable habitat consists of valley and foothill grasslands, saltbush scrub land, iodine bush grassland, and alkali flats.

2) If BNLL's are found to occur in areas proposed for project facilities construction or maintenance, consideration of avoidance should take place first. If avoidance is not practicable, then the BNLL will be trapped and relocated prior to disturbance at KWBA's expense in accordance with the applicable annual management plan. This work must be done by or under the direction of USFWS staff by persons with appropriate experience and with their own take for scientific purposes permits. This procedure will avoid any violation of state law.

Three other species which may be found on the Kern Water Bank are also State designated Fully Protected species. American peregrine falcon, Greater sandhill crane, and White-tailed kite. The likelihood of the take of any of these species from project construction, operation, and maintenance is negligible due to their mobility and preferred habitats. However, to avoid any take of these species, the same take avoidance protocol as set out for the BNLL shall apply to each of these three species.

Mitigation Measure C-1. Implementation of MOU

The Project will be operated subject to the October 26, 1995 Memorandum of Understanding between the KWBA and its member entities and surrounding agencies.

The KWBA MOU requires all the parties thereto to operate their projects in a manner to maintain and, when possible, enhance groundwater quality. If significant adverse effects are detected due to the operation of the Kern Water Bank, KWBA will curtail and/or relocate the recharge and recovery operations as necessary to avoid the impacts, consistent with the KWBA MOU. The KWBA MOU establishes a monitoring committee which bears the responsibility of ensuring that the parties meet their obligations under the KWBA MOU.

Mitigation Measure C-2. Hydrocarbon Contamination Monitoring

KWBA will continue to monitor the remediation of the current and any future hydrocarbon contamination. The Regional Water Quality Control Board has assumed jurisdiction of the Wait-Midway Pipeline, owned by Chevron Pipeline Company.

Mitigation Measure E-1. A watering truck will be used to minimize fugitive dust generated during grading when conditions require, such as on dry, windy days.

Mitigation Measure F-1. Location of Recharge and Recovery Facilities.

The location of the proposed basins and canals will be established to avoid conflicts with existing and future known mineral activities.

Mitigation Measure G-1. Implementation of Cultural Resources Report.

KWBA will comply with the mitigation procedures set forth in the Cultural Resources Assessment and Plan For the Kern Water Bank Authority Project Near Bakersfield, Kern County California, summarized below and incorporated by this reference, which are expected to reduce any impact to cultural resources within the KIWB to a level of insignificance.

A. Prior to any ground-disturbing work on the KWB, anthropologists or other qualified individuals from TG&S shall engage in pedestrian surveys of the areas to be impacted, with the survey reconnaissance to be at 5- to 15-meter transects.

B. Any cultural resources found during the survey process will be recorded, mapped, evaluated and mitigated prior to the ground-disturbing activity, pursuant to Section 106 of the National Historic Preservation Act.

C. The eight recorded archeological sites on the KWB will be evaluated and mitigated pursuant to Section 106.

D. If any human remains are found at any time on the KWB, work will be halted in the area of the discovery, and the Kern County coroner will be notified.

Mitigation Measure P-1. Implementation of Mosquito Abatement Plan.

In accordance with the Mosquito Abatement Plan, KWBA will engage in the following procedures which are expected to reduce any impact due to the breeding of mosquitoes in the recharge basins to insignificance:

- A. KWBA will notify staff of the Mosquito Vector Districts of planned use of recharge basins.
- B. KWBA will implement a water edge road construction pilot program to determine whether KWBA can successfully give Mosquito Vector District spray vehicles access to the recharge basins. If the pilot program is successful, KWBA will build further water edge roads as mutually agreed between KWBA and the Mosquito Vector District staff. If the program is unsuccessful, KWBA and Mosquito Vector District staff will develop an alternative program.
- C. Ponding in certain sections will be phased out. In these sections, KWBA will cycle the spreading process to keep water moving.
- D. KWBA will develop a mosquito fish breeding program in conjunction with Mosquito Vector District staff.
- E. Roads on the KWB will be kept in a reasonable condition to allow the districts access to the KWB.
- F. KWBA will include district staff in adaptive management planning to review the success of mosquito control techniques and to develop improved mosquito control techniques.

Mitigation Measure P-2. Avoidance of Valley Fever.

All construction workers at risk of inhaling dust shall wear masks with filters designed to trap spores of the size of valley fever fungus.

V. CEQA FINDING UNDER PUBLIC RESOURCES CODE SECTION 21081

There are no potentially significant environmental impacts of the Project that fall within the KWBA's jurisdiction. Alternatively, in the event it were determined there were significant impacts of the Project within the KWBA's jurisdiction, it is noted that such impacts have been mitigated to avoid significant effects as set forth at Section IV hereof, all consistent with Section 21081(a).

It is noted that the Project should have a number of benefits to the environment, including the following:

- The Project will have the following environmental benefits: The historic ground water recharge on the property will be continued.
- Diverse types of habitat including upland, riparian and intermittent wetland/rangeland will be preserved and restored on an ecosystem basis.
- In addition to preserving the two above mentioned types of habitat, special areas to protect sensitive native habitat are planned.
- Upland habitat suitable for the Tipton kangaroo rat, the blunt-nosed leopard lizard, and the San Joaquin kit fox will be preserved and enhanced by adaptive land management.
- Intermittent wetland/rangeland habitat which is scarce in the Southern San Joaquin Valley, and was lost with the introduction of intensive farming, will be restored on the property with benefits to a wide variety of waterfowl and other species.
- The preservation of Compatible Habitat, the natural design of the recharge basins and periodic flooding ensures terrestrial species have the opportunity to migrate thus facilitating genetic diversity.
- Areas adjacent to the Kern River habitat corridor will be preserved.
- Areas adjacent to the ARCO Coles Levee Ecosystem Preserve will be protected as upland habitat and be offered as habitat mitigation to third parties.
- Large areas of intensive agriculture on the KWB have been removed from production and will be set aside as Compatible Habitat.
- In addition to preserving two broad types of habitat, sensitive areas of native habitat are protected.
- Fewer and smaller water shortages to KWBA member entities and any others who participate in the Project.

INITIAL STUDY AND
ADDENDUM TO MONTEREY AGREEMENT EIR
OF THE
KERN WATER BANK AUTHORITY
KERN WATER BANK HABITAT CONSERVATION
PLAN/NATURAL COMMUNITY CONSERVATION PLAN

June 3, 1997

I. INTRODUCTION

A. Evaluation of Activities Previously Evaluated in a Program EIR.

This Initial Study and Addendum analyzes potential environmental impacts associated with the implementation of the Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan (the "Project"). The Project includes the construction, operation and maintenance of the Kern Water Bank (KWB), a water recharge and recovery, farming and conservation bank project and related habitat conservation activities proposed for 19,900 acres of land in Kern County, California. The Kern Water Bank is owned and will be operated by the Kern Water Bank Authority (KWBA), a California joint powers authority.

The effects of the Project were previously evaluated in a Program Environmental Impact Report entitled Final Program Environmental Impact Report, Implementation of the Monterey Agreement Statement of Principles by the State Water Contractors and the State of California, Department of Water Resources for Potential Amendments to the State Water Supply Contracts (the "Monterey Agreement EIR"). (State Clearinghouse No. 95023035.)

Environmental review under the California Environmental Quality Act (CEQA) is required for any project undertaken directly by a public agency. (Public Resources Code, section 21065, subdivision (a).) The CEQA Guidelines provide that "subsequent activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared." (CEQA Guidelines, § 15158.) The Guidelines indicate that, prior to the approval of activities within the program, the agency should evaluate whether a subsequent EIR is required as provided in Guidelines Section 15162. Section 15162, in turn, **prohibits** agencies from requiring a subsequent EIR unless the agency determines:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require **major** revisions of the previous EIR; or
3. New information of substantial importance which was not known and could not have been known shows (i) that the project will have one or more significant effects not discussed in the prior EIR, (ii) significant effects previously examined will be substantially more severe, (iii) mitigation or alternatives previously determined to be not feasible and found to be feasible, or (iv) mitigation measures or alternatives which are

considerably different would substantially reduce the significant effects of the project **and** the project proponent declines to adopt the mitigation measure.

The Project incorporates mitigation and compensation for impacts to wildlife habitat and other natural resources resulting from implementation of the Project. Approximately 10,349 acres, or over 52% percent, of the Project area will be set aside and limited to uses that are compatible with the habitat values of the property. These lands will be protected and managed for their wildlife habitat values throughout the life of the Project. Certain lands will be protected from development in perpetuity upon the approval of the Project. Other lands will be protected in perpetuity upon the use of conservation credits established by the Project.

As part of the Project, KWBA has applied for two permits pursuant to the federal Endangered Species Act from the United States Fish and Wildlife Service (USFWS) to take endangered and threatened species incidental to the operation of the Project. KWBA has also applied for two management authorizations from the California Department of Fish and Game (CDFG) pursuant to the California Endangered Species Act and the Natural Community Conservation Planning Act to allow the management and operation of the Project in accordance with the incidental take of endangered, threatened and certain other species (listed species). One permit and one management authorization (the Project Permit/Authorization) relates to the Project. The other permit and management authorization (the Master Permit/Authorization), relating to the conservation bank, will allow the incidental take of listed species by qualified third parties for activities that take place within Kern County, the Allensworth area of Tulare County, and the Kettleman Hills area of Kings County. Both Permits and both Master Authorizations are for a period of 75 years. A habitat conservation plan / natural community conservation plan ("HCP/NCCP"), an implementation agreement ("IA"), and a federal environmental assessment ("EA") have been prepared as part of the permit/authorization process. These documents are hereby incorporated by reference. These documents are summarized herein. Copies of these documents are available from KWBA at the following address:

Kern Water Bank Authority
P.O. Box 80607
Bakersfield, CA 93380-0607
Tel: (805) 399-8735
Fax: (805) 399-9751

B. Monterey Principles and Evaluation of Project in Monterey Agreement EIR.

On December 1, 1994, the water contractors of the State of California and others entered into the Monterey Principles, a mediated agreement to change a number of provisions of the contracts governing the administration of the State of California water project (SWP). Pursuant to the Monterey Principles, DWR transferred KWB to Kern County Water Agency (KCWA) on August 9, 1996 in exchange for 45,000 acre feet of SWP entitlement. KCWA subsequently transferred KWB to KWBA.

The environmental effects of the Monterey Principles were analyzed in the Monterey Agreement EIR. The Monterey Agreement EIR analyzes the environmental effects of the Project. Where appropriate and applicable, this Initial Study and Addendum will refer to and incorporate by reference the Monterey Agreement EIR.

The Monterey Agreement EIR described the Kern Water Bank in considerable detail. The Monterey Agreement EIR identified three alternative scenarios for the development of the KWB (in addition to the No Project Alternative) and evaluated the environmental effects of the three scenarios for the Kern Water Bank. The table below describes the components of the scenarios evaluated in the Monterey Agreement EIR and compares them to the proposed Project.

	Scenario A	Scenario B	Scenario C	Project
Recharge Facilities	3,258	5,258	7,758	5,900
Irrigated Farmland	0	0	0	3,170
Native/Dist Veget.	2,000	4,500	7,100	10,349 ^{1/}
Prev. Irrigated/Undesig	14,798	10,298	5,198	0
Other	490	490	490	481

The various land use categories of the proposed Project are well within the land use components of the three scenarios evaluated in the Monterey Agreement EIR. The proposed Project will have less impacts and more environmental benefits than Scenario C. The land uses proposed for the Project are similar to those evaluated for Scenario B, but provide more environmental benefits than Scenario B.

While Scenario B assumed that 4,500 acres would remain as open space and not devoted to ponds or other recharge facilities, the proposed Project would set aside

1. Includes 5,592 acres of Compatible Habitat, 960 acres of Sensitive Habitat, 530 acres of DWR Mitigation Land, and 3,267 acres of Conservation Bank lands.

10,349 acres for various habitat conservation purposes. In summary, the proposed Project is consistent with the KWB project as described in the Monterey Agreement EIR. It would not require major revisions to the Monterey Agreement EIR or otherwise require the preparation of a subsequent EIR under the standards set forth in Section 15162 of the CEQA Guidelines.

The sections below (1) describe the Project in greater detail, (2) describe the environmental setting, (3) evaluate the environmental effects of the Project, and (4) compare those effects to the effects of the Project evaluated in the Monterey Agreement EIR.

II. PROJECT DESCRIPTION

A. Location

The Project is located on 19,900 acres of property located in Kern County, California about 20 miles west of Bakersfield and 10 miles south of Buttonwillow (see Maps 1 and 2). Interstate 5 bisects the Project, as does the Kern River.

B. Background

Prior to agricultural development of the KWB, much of the land was flooded periodically by high flows on the Kern River. The area is unique in the State in its ability to absorb water at an extremely high rate and to retain it in aquifers. Prior to agricultural development the intermittent wetland supported a variety of plants and wildlife.

In the 1880's, earthen canals and levees were constructed to aid the spreading of water, the resulting feed being used for cattle grazing. Land on the west side of the property was developed for farming during the late 1930's through the early 1950's. During this same period much of the property was explored for oil and gas resulting in a number of wells being drilled and pipelines constructed. From about 1960 to the early 1970's most of the remainder of the property was developed for agriculture. Throughout this time the land was still flooded in wet years to recharge water into the underground aquifer. This was done in a free form manner with the water being herded by bulldozers. In 1988 the land was purchased by the Department of Water Resources (DWR). DWR ceased most of the farming by 1991 in order to preserve water during a severe drought.

In 1995, the Kern County Water Agency (KCWA) received permits/authorizations from the USFWS and CDFG to initiate an interim water banking project as a result of the high availability of water from a heavy snow pack in the Sierras. The interim project was carried out in two stages:

Stage 1 resulted in the rehabilitation of disused canals and inundation of approximately 1518 acres of former agricultural land. Preconstruction surveys of the Stage 1 area revealed poor habitat values throughout the area and no suitable habitat for the listed species. Therefore, Stage 1 activities were expected not to result in a take of listed species. Stage 2 resulted in inundation of an estimated 1516 acres of grassland and fallow agricultural land. Based on planned Stage 2 flooding, there was a potential for the take of listed species. Therefore, biological surveys for listed species were conducted in all areas proposed to be disturbed by construction of facilities (levees, roads, boxes) or flooded.

The recharge basins were constructed by building low earth berms, approximately three feet in height, along natural contours of the land using soil adjacent to the berms. The bottom of the basins were left in a natural condition thus allowing vegetation to continue to grow. Vegetation on the basin bottoms is believed to enhance the basins' ability to recharge water.

In 1995, maintenance of the Project area included repairs to levees and the removal of tumbleweed from roads, canals and basins. For more information refer to the Interim Water Recharge Project Biological Monitoring Report for the Period April 1995-March 31, 1996 which is incorporated herein by reference. A copy of the Biological Monitoring Report is available at the offices of KWBA listed above.

KCWA received two extensions on the interim permits/authorizations for 1996 and is authorized to carry out the Stage 1 and 2 banking activities that may result in incidental take of listed species through July 31, 1997. In 1996 the basins constructed the previous year were utilized for water recharge.

C. Land Use

Of the 19,900 acres that constitute the KWB property, 5,900 acres are proposed for routine recharge and 481 acres will be used for permanent water banking facilities. Between the basins will be areas that will never be purposely flooded. Some of these areas have existing populations of listed plants. These plants will be preserved in special areas totaling 960 acres. Other areas between basins totaling 5,592 acres will revert to habitat. Additionally, 530 acres will be preserved and managed for mitigation of DWR projects. Of the remaining land, 3,170 acres will be used for farming and 3,267 acres will be used as a conservation bank (to be used as potential mitigation for activities by third parties within designated areas of the Southern San Joaquin Valley). Of the 3,267 acres in the conservation bank, KWBA may use up to 490 acres for commercial development.

TABLE 1 - LAND USE SUMMARY

LAND USE SUMMARY	AREA IN ACRES
Recharge Basins	5,900*
Other Water Banking Facilities	481
Compatible Habitat	5,592*
Sensitive Habitat	960
DWR Mitigation Land	530
Farming	3,170
Conservation Bank	3,267**
TOTAL	19,900

* KWBA Mitigation Land - 146 acres of Recharge Basins and 489 acres of Compatible Habitat totaling 635 acres will be covered by a conservation easement.

** KWBA may sell up to 490 acres out of the conservation bank for commercial development purposes. The 490 acres is indicated on Map 2 as the Commercial Development Zone.

a) Water Recharge Facilities. Permanent operation of the banking facilities will include the flooding of basins, construction of facilities for recovery of the water from underground aquifers, and maintenance of all project facilities. In all, about 6,381 acres of land comprising the recharge basins, surrounding levees and other banking facilities will be developed as part of the permanent recharge project.

b) Water Recovery and Other Banking Facilities. Recovery of the water recharged will be through a system of water wells, pipelines and canals. This system, when built-out, may include up to 132 wells and would be spread over the entire property to allow flexibility in the recovery of water. There are 66 existing agricultural wells on the property which could be utilized for water recovery. DWR, through the "Ground Water Extraction Operations at the Kern Fan Element" rehabilitated 28 of these wells and constructed pipelines and canals. The remaining 38 existing wells may be rehabilitated. Approximately 66 additional wells may be drilled and conveyance pipelines and small canals may be constructed for water recovery.

c) Supply/Recovery Canal Project. A supply/recovery canal or canals located within the Supply/Recovery Canal Zone as shown on Map 2 (Permitted Area) may be constructed to facilitate water delivery to and from the California Aqueduct. The canal or canals would be lined with concrete and would utilize pump stations to lift the water as required. Turnouts may be constructed to deliver water to the recharge areas. Recovery pipelines and small canals from the water wells may be connected to the canals.

d) Kern River Reverse Flow Canal Project. The Kern River channel may be utilized to deliver water from the California Aqueduct to the project. By constructing earth berms and pump stations, water could be lifted up the river channel for conveyance to the recharge areas. If KWBA decides to implement the Reverse Flow Canal project, KWBA will engage in the necessary environmental analysis and obtain such permits as may be required pursuant to state and federal environmental laws.

e) Compatible Habitat. A total of 5,592 acres of compatible habitat will be preserved and managed around the banking facilities. Much of this area is higher ground between the basins and will provide upland habitat for the San Joaquin kit fox and other upland species.

f) KWBA Mitigation Land. To compensate for the 481 acres that may be permanently impacted by the Project, the KWBA will grant a conservation easement to CDFG on a 515 acre parcel comprised of 369 acres of Compatible Habitat and 146 acres of Recharge Basins surrounding the DWR Mitigation land. The KWBA will manage this land as compatible habitat in perpetuity.

g) Sensitive Habitat. Three areas containing remnant native saltbush and valley sink scrub habitat have been identified on the KWBA. These areas, comprising 960 acres, have been designated as sensitive habitat and will be protected throughout the life of the Project Permit/Authorization. Populations of listed plant species occur in some of the sensitive habitat.

h) DWR Mitigation Land Conservation Easement. This 530-acre area is covered by a conservation easement which was recorded in mitigation of projects carried out by DWR. Management of this easement will be carried out by the KWBA in accordance with an existing management plan for the area (refer to the "Agreement regarding Assumption of Mitigation Responsibility and Consent to Transfer of Kern Water Bank Lands"). KWBA acknowledges that this mitigation obligation is a separate obligation and is not considered mitigation for the Project. Mitigation obligations which will be conducted on this parcel are contained in Exhibit B to the KWBA HCP Implementation Agreement. The mitigation obligations will continue in perpetuity.

i) Farming. 3,170 acres of the project site may be farmed in a manner appropriate to the soil conditions found on site. Crops historically grown in the area include cotton, grapes, etc. This land may also be used for any other permitted activity covered in this HCP, including water recharge.

j) Conservation Bank. The remaining 3,267 acres on the Project site will be used as a conservation bank. Under the Master Permit/Authorization, qualified third parties may acquire conservation credits from KWBA in order to mitigate for impacts to Covered Species caused by the third parties on their projects. Each credit represents one acre of land in the conservation bank. The Conservation Credits created through the establishment of the Conservation Bank may be utilized to mitigate for impacts by third parties conducting low impact activities within the Master Permit Credit Area shown on Exhibit C to the Conservation Bank Agreement. The use of Conservation

Credits will be limited to activities that would qualify for a low effect habitat conservation plan under the Habitat Conservation Plan Handbook approved by the U.S. Fish and Wildlife Service. In addition, in order to further ensure that the Conservation Credits would not result in significant impacts, activities could only utilize Conservation Credits with the agreement of the Fish and Wildlife Service (with regard to impacts to federally listed species) and the California Department of Fish and Game (with regard to state-listed species). Prior to authorizing the use of the Conservation Credits, third parties would have to demonstrate to the satisfaction of FWS and /or DFG that the use of the Credits as mitigation is appropriate under the standards described in Section G below.

If the FWS and/or DFG approved the use of the Conservation Credits for third parties, on an annual basis, KWBA will convey a conservation easement to CDFG representing the number of credits sold in the conservation bank. KWBA will bear the obligation in perpetuity of maintaining the land in the conservation bank on which a conservation easement has been recorded.

D. Construction of KWB

To achieve its water management objectives, the KWBA constructed recharge basins, and will construct additional basins, water conveyance facilities and water wells. The existing basins were created by constructing low levees along contours. This approach created minimal disturbance of the ground surface compared to other alternatives. The basin bottoms were left, as much as possible, in their natural condition. Future basins will be constructed in a similar manner.

Existing and future recharge basins will be formed by creating approximately 55 miles of levees approximately 3 feet in height. 66 water wells currently exist on the property and more wells may be added before the project is complete. Several canals exist on and run along side the property to facilitate water conveyance and new canals are proposed that would provide linkage among the spreading areas, wells, Kern River Canal and the California Aqueduct. The existing and proposed construction is set forth below in the "Table 2 - Acreage Breakdown".

TABLE 2 - ACREAGE BREAKDOWN

	Unit	Quantity	Width feet	Area acre	Total acre
Recharge Facilities					
Existing Basins					3,034
Proposed Basins					2,866
Total					5,900
Permanent Water Banking Facilities (1)					
Recovery Facilities					
Wells - Existing Hooked Up	ea	28		0.5	14

Wells - Existing Not Hooked Up	ea	38		0.5	19
Wells - Proposed New	ea	66		0.5	33
Conveyance Facilities					
Proposed - Lined	mi	18	40		87
Existing - Unlined	mi	31	60		225
Supply/Recovery Canal	mi	6	100		73
Pump Stations	ea	4		3	12
Kern River Reverse Flow					
Earthwork	mi	1	30		4
Pump Stations					
River	ea	2		5	10
City 2800 Acres	ea	4		1	4
Total					481
Temporarily Disturbed Areas					
Canal Construction	mi	6	100		73
Pipelines - Proposed	mi	30	60		218
Total	mi	30	60		291

(1) Includes new roads where required

Recharge Basin Construction. The recharge basins will be built utilizing the natural topography by constructing low earth berms to serve as levees along contours of the land. The levee will be built utilizing soil adjacent to the levee inside the basin. Typical construction includes pad clearing, soil moving and soil compaction.

Recharge Conveyance Canal Construction. The conveyance canals will be sized as required to convey water from the turnout structures to the recharge areas. Canals will have associated turnouts, weirs, flow control, measurement structures and road crossings as required.

Existing Water Well Rehabilitation. Rehabilitating water wells consists of cleaning motors, pumps and electrical panels, and checking out equipment to evaluate if service is required.

Construction of New Wells. The following construction activities will be typical for installation of new wells: digging sumps for retention of water used for drilling and discharge of drill cuttings; setting up drilling rigs and drilling pipe trailers at well sites; and installation of casing, gravel, concrete seals, pumps, motors, concrete pads, electrical equipment and discharge piping.

Construction of Underground Recovery Pipelines. Lateral pipeline construction consists of clearing, trenching, pipe delivery, unloading, pipe installation, backfilling and final grading. The initial operation will include clearing of the proposed alignment of the pipeline. Trenching will be accomplished using either an excavator or trencher. Spoil piles will be located directly adjacent to the trench. Pipe will be delivered by trucks and unloaded using a crane or forklift along the trench in position for pipe laying activities. A crane will hoist and position the pipe in the trench. A loader will

move soil excavated from the trench to backfill the pipe. Compaction equipment will be utilized to achieve required compaction. After backfilling is complete the pipeline corridor will be final graded with the excess material being mounded over the pipe to allow for settlement.

Construction of Recovery Canals. Concrete lined recovery canals will connect recovery pipelines and recovery wells to off site conveyance facilities. The canals will be constructed similar to the recharge canals described above but will have a concrete lining.

Supply/Recovery Canal Construction. The supply/recovery canal will convey water to the recharge areas and from the recovery wells. It may be a single concrete-lined canal or it may be two parallel canals, an earthen canal for supply with a parallel smaller concrete-lined canal for recovery. The determination of the exact design will be made at a future date. Construction for the canal will be similar to the construction of the recovery canals. The supply/recovery canal will be located within the zone as shown on the Map 2 (Project Permit/Authorization Area).

Recovery Pump Stations. Where necessary, recovery pump stations will be constructed. Pump station sites will be cleared, grubbed and moisture conditioned. Excavation will be required to allow for construction of retaining walls, foundations, and concrete. Pumps, motors and electrical panels will be installed. This effort will require cranes, delivery trucks, water trucks, compactors, excavators and graders.

Kern River Reverse Flow. The Kern River channel will be utilized to convey water from the California Aqueduct to the recharge areas. At two or more locations along the existing river bed sand earth berms would be constructed utilizing scrapers, water trucks, bulldozers and graders. At these locations, pumps and bypass pipelines will be installed. Pile drivers will install piles for support of pump platforms. Piping, pumps and motors will be installed using cranes, delivery trucks and back hoes. Control structures will be constructed using similar equipment.

E. Management of Operations and Maintenance

Recharge Basins. The recharge basins will be managed to maximize the use of available water supplies and to minimize cost for conveyance and operation. The basins will be designed into several systems and will be located on the property to take advantage of the different sources of available water. A hierarchy of basin filling will be established so when water is recharged, specific basin systems will be utilized frequently, while others may only be filled on an occasional basis.

Within each system the water will flow from basin to basin through an interbasin structure which will control the water level in the proceeding basin and the flow rate to the next basin in the chain. To prevent impacts on nesting birds, the basins, to the extent possible for the period March through July, shall be kept at a

constant level, except for the basins at the end of a chain which will accommodate fluctuating flows.

If a basin has been idle for more than two years, subsequent filling shall be done slowly if possible, mimicking heavy rainfall, so that any listed species that may have inhabited the basin bottoms or sides may escape before drowning occurs.

Flooding Frequency. Flooding frequency of recharge basins is dependent upon seasonal precipitation rates. Although models have been prepared to predict water availability over a long period of time, final operations will depend on actual rain and snowfall totals each year. During normal rainfall years, annual flooding would take place. During above normal years the basins will be flooded to their full capacity. The frequency in which the basins will be used for recharge is projected to vary; infrequently (1 year in 10) 5,900 acres are estimated to be flooded; on an intermediate basis (2 years in 10) 4,830 acres are estimated to be flooded; and on a frequent basis (5 years in 10) 2,110 acres are expected to be flooded. The duration of flooding each year will vary depending on weather conditions (see Map 4, Recharge Frequency Plan).

Canal and Basin Bank Management. Seasonal release, conveyance and storage of water results in emerging wetland vegetation in canals and basins. Tall growth of this vegetation impairs water flow and recharge capability, reduces the ability to control mosquitoes, and therefore must be managed. Vegetation management methods under consideration for canals and basins bank vegetation include hand control, use of light weight equipment (weed eaters), grazing, mowing, and burning. Mowing is proposed to maintain seasonal wetland vegetation that inhabit the basin edges adjacent to roads. Riparian vegetation on promontories, peninsulas, and islands will be allowed to achieve full canopy cover. When basins are to remain dry for extended periods of up to five years, prescribed burning may be used for weed control. Silt removal from canals and recharge basins will be done using excavators, backhoes or loaders.

Canals for water recharge or recovery will be located according to the topography and location of existing facilities. The present network of internal access roads would be extended across a new canal to provide short, infrequently traveled bridges which would serve for connectivity for even small vertebrates during those periods when the canal was not dry. The bottom of recovery canals would be concrete lined to retard water loss and would not require management for Russian thistle as do earthen canals in the area. Canal side slopes would be shallow enough to allow animals to escape from the interior.

Roads and Levees. Maintenance work on roads and levees will be based on routine inspections during operating periods and periodically during non-operating periods. Typical work will include: clearing vegetation; grading roads and levees; mowing of vegetation; repair and replacement of weak sections of levees; removal of silt and repair of erosion.

F. Project Permit/Authorization

The Project may result in the take of listed species. However the Project will result in a substantial increase of habitat for the listed species compared to the conditions prior to the date the Kern Water Bank lands were acquired by DWR. KWBA will return some of the Kern Water Bank to its historic intermittent rangeland/wetland habitat. The Project Permit/Authorization will authorize incidental take of the following species (the listed species) and the species listed on Exhibit D hereto, incorporated herein by this reference. The species on Exhibit D are those species for which it is expected that the species may come to occupy the KWB and that the species may become listed due to its current known population and range.

TABLE 3 - COVERED SPECIES

Scientific Name (2)	Common Name (3) and Plant Community Associations (6)	Status (1)		
		Federal	State	Other
Federally Listed Species				
Plants				
<i>Caulanthus californicus</i>	California jewelflower (4) VSG	E	E	CNPS 1B
<i>Eremalche parryi ssp. kernensis</i>	Kern mallow (4) VSS, VSG, GVMS	E		CNPS 1B
<i>Eriastrum hooveri</i>	Hoover's eriastrum (5) VSS, VSG	T		CNPS 1B
<i>Lembertia congdonii</i>	San Joaquin woolly-threads (5) VSS, VSG, NNG	E		CNPS 1B
<i>Opuntia basilaris var. treleasei</i>	Bakersfield cactus (4) MFS, NNG	E	E	CNPS 1B
Birds				
<i>Branta canadensis leucopareia</i>	Aleutian Canada goose Wetlands	E		MBTA
<i>Falco peregrinus anatum</i>	American peregrine falcon (4) ALL	E	E	MBTA
Invertebrates				
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp Wetlands	E		
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp Wetlands	T		
<i>Branchinecta</i>	Longhorn fairy shrimp	E		

<i>longiantenna</i>	Wetlands			
<i>Lepidurus packardi</i>	Vernal pool tadpole shrimp Wetlands	E		
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle (4) MFS, GVCRF	T		
Reptiles				
<i>Gambelia sila</i>	Blunt-nosed leopard lizard (5) VSS, VSG, GVMS	E	E	
<i>Thamnophis gigas</i>	Giant garter snake Wetlands	T	T	
Mammals				
<i>Dipodomys ingens</i>	Giant kangaroo rat (4) VSS, VSG, NNG, GVMS	E	E	
<i>Dipodomys nitratoides nitratoides</i>	Tipton kangaroo rat (5) VSS, VSG, NNG, GVMS	E	E	
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox (5) ALL	E	T	
Species Listed Only by the State of California				
Plants				
<i>Atriplex tularensis</i>	Bakersfield saltbush (4) VSS, GVMS	C1	E	CNPS 1B
Birds				
<i>Buteo swainsoni</i>	Swainson's hawk (4) ALL		T	MBTA
<i>Grus canadensis tubida</i>	Greater sandhill crane Wetlands			MBTA
Mammals				
<i>Ammospermophilus nelsoni</i>	San Joaquin antelope squirrel (5) VSS, VSG, NNG	C1	T	
Other Species of Concern				
Plants				
<i>Atriplex cordulata</i>	Heart-leaved saltbush (4) VSS, GVMS			CNPS 11B
<i>Atriplex miniscula</i>	Lesser saltbush (4) VSS, GVMS			CNPS 11B
<i>Atriplex vallicola</i>	Lost Hills saltbush (4) VSS, GVMS			CNPS 1B
<i>Cirsium crassicaule</i>	Slough thistle (5) MFS, GVCRF			CNPS 2C
<i>Cordylanthus mollis ssp. hispidus</i>	Hispid bird's-beak (4) Saline Marshes and Flats			CNPS 1B
<i>Delphinium recurvatum</i>	Recurved larkspur (5)			CNPS 1B

	VSS, VSG, GVMS			
<i>Hemizonia pallidus</i>	Kern tarplant (4) VSS, VSG, NNG			CNPS 4
<i>Layia leucopappa</i>	Comanche Point layia (4) VSG			CNPS 1B
<i>Calochortus striatus</i>	Alkaki mariposa lily (4) VSG			
Amphibian				
<i>Scaphiopus hammondi</i>	Western spadefoot toad (5) VSS, VSG, NNG, MFS		SSC	
Reptiles				
<i>Clemmys marmorata marmorata and/or C. m. pallida</i>	Western pond turtle (4) Wetlands		SSC	
Birds				
<i>Agelaius tricolor</i>	Tricolored blackbird (4) Wetlands, NNG		SSC	MBTA
<i>Athene cunicularia</i>	Burrowing owl (5) VSG, NNG		SSC	MBTA
<i>Buteo regalis</i>	Ferruginous hawk (4) ALL		SSC	MBTA
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover (4) Wetlands		SSC	MBTA
<i>Charadrius montanus</i>	Mountain plover (4) VSG, NNG		SA	MBTA
<i>Lanius ludovicianus</i>	Loggerhead shrike (5) GVCRF		SSC	MBTA
<i>Plegadis chihi</i>	White-faced ibis Wetlands		SSC	MBTA
<i>Toxostoma lecontei</i>	Le Conte's thrasher (4) Saltbush Scrub		SSC	
Mammals				
<i>Eumops perotis californicus</i>	Greater western mastiff bat (4) Cliffs, crevices, tunnels		SSC	
<i>Plecotus townsendii</i>	Pacific western big-eared bat (4) Cliffs, crevices, tunnels		SSC	
<i>Sorex omatus relictus</i>	Buena Vista Lake shrew (4) Wetlands, MFS, GVCRF	C1	SSC	
<i>Taxidea taxus</i>	American badger (5) ALL		SSC	

Notes:

(1) Federal: E = endangered; T = threatened; C1 = taxa for which there is substantial information to propose listing, based on species vulnerability and threats.

- State: E = endangered; T = threatened; SSC = species of special concern.
 Other: CNPS = California Native Plant Society;
 CNPS 1B = plants rare and endangered in California and elsewhere,
 CNPS 2 = plants rare, threatened or endangered in California, but more common
 elsewhere;
 CNPS 4 = not rare, but of limited distribution;
 CNDDDB SA = California Natural Diversity Data Base Special Animal;
 MBTA = bird protected under the Federal Migratory Bird Treaty Act.
- (2) Species are listed in alphabetical order by scientific name, within taxonomic groups.
 - (3) Plant common names follow CNPS nomenclature.
 - (4) Sensitive species that may move into the HCP area after implementation of the project.
 - (5) Sensitive species known to occur on Kern Water Bank land.
 - (6) Associated Plant Communities
 - VSS = Valley Saltbush Scrub
 - Wetlands = recharge basins and canals
 - VSG = Valley Sacaton Grassland
 - NNG = Non-native Grassland
 - MFS = Mule Fat Scrub
 - GVMS = Great Valley Mesquite Scrub
 - GVCRF = Great Valley Cottonwood Riparian Forest
 - ALL = Associated with all plant communities

Source: DWR 1993, Thomas Reid Associates 1996

Pursuant to section 10(a)(2) of the federal Endangered Species Act of 1973 (ESA), and sections 2081 and 2835 of the California Fish and Game Code, KWBA has submitted a Natural Communities Conservation Plan / Habitat Conservation Plan (HCP) with the Project Permit/Authorization applications to USFWS and CDFG. The HCP, a statutory requirement of the Project Permit/Authorization applications, estimates the level of incidental take expected to occur during the proposed activities and specifies how the impacts of the taking will be minimized and mitigated. In addition, KWBA has requested that the USFWS and CDFG enter into an Implementing Agreement (IA) that addresses any currently unlisted species, pursuant to KWBA's HCP, should they become listed under ESA and/or California ESA in the future.

The purpose for issuing the Project Permit/Authorization and implementing the associated HCP is to authorize incidental taking of the federally and state listed species listed above, during the construction, operation, and management of the Kern Water Bank as well as for third-party projects within the Master Permit Credit Area. Such authorization is necessary because activities associated with the proposed action may result in take of any of the federally and/or state listed species despite the comprehensive mitigation program proposed by KWBA in the HCP. The proposed Kern Water Bank Project may affect other species, and KWBA has requested that the IA between the USFWS, CDFG and it provide assurances that, should the currently unlisted species be subsequently listed, the HCP would be deemed adequate and no further mitigation would be required.

G. Conservation Bank / Master Permit/Authorization

The conservation bank can be used by third parties that require USFWS and/or CDFG take authorization or that require mitigation as a result of a Section 7 consultation with the USFWS (projects requiring federal permits). The conservation bank can also be used by a third party that already has take authorizations, such as the City of Bakersfield, and needs to provide mitigation land to meet the requirements of its HCP.

Third-party projects that lie within the Master Permit Credit Area are eligible to obtain take authorization protection under the Kern Water Bank if land lost, either temporarily or permanently, as a result of project implementation:

- 1) Contains habitat of comparable value to the replacement habitat found in the conservation bank,
- 2) Is occupied or has the potential to be occupied by San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, and/or San Joaquin antelope squirrel; and
- 3) The impacts of the activity would qualify for a low effect habitat conservation plan in accordance with the HCP Handbook.

Third parties seeking to use conservation bank lands for listed species whose presence is then undocumented on the conservation bank land, such as giant kangaroo rat, would have to provide proof that the species is found on the conservation bank lands.

Eligible projects would be those having minor or negligible effects on federally listed, proposed, or candidate species and their habitats, and minor or negligible effects on other environmental values or resources.

The USFWS and CDFG will require a Landowner/Applicant to provide a biological survey of the project area and discuss specific impacts of the proposed project. The USFWS and CDFG will ultimately make decisions on whether a project lying within the Master Permit Credit Area is eligible to be covered by the Master Permit/Authorization, and whether any additional environmental assessment is necessary.

The conservation bank comprises 3,267 acres. Using typical mitigation ratios of USFWS and CDFG for compensable habitat within the Master Permit Credit Area, use of the conservation bank could result in the following impacts:

For projects with temporary disturbance, such as oil and gas projects where disturbed vegetation is restored, the USFWS and CDFG typically require a 1.1:1 replacement ratio (habitat replaced to habitat lost). Thus, if all 3,267 acres of the conservation bank were purchased to mitigate projects with temporary disturbance,

then as much as 2,940 acres of temporary disturbance could occur within the Master Permit Credit Area.

For permanent mitigation of compensable habitat the USFWS and CDFG typically require a 3:1 replacement ratio. Thus the 3,267 acres could accommodate up to 1,089 acres of permanent disturbance in the Master Permit Credit Area. However, it is more likely that a combination of both permanent and temporary disturbance would take place, such that anywhere between 1,000 to 3,000 acres could be disturbed in the Master Permit Credit Area through the 75 year life of the Master Permit/Authorization.

Impacts on species will depend on the loss of habitat resulting from each eligible project and what measures, if any, are required to minimize on-site impacts (such as allowing animals to escape, or through trapping and relocation).

The Master Permit/Authorization will result in the loss of listed species in the Master Permit Credit Area through ground disturbance to construct buildings, roads, pipelines, and other facilities. For the Tipton kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel, ground disturbance could cause take through collapsing of burrows, crushing by grading equipment, and harassment.

The mitigation of impacts of activities of third parties through the conservation bank has a number of environmental benefits including the following:

1. The lands within the conservation bank will be managed, along with the other lands within the Kern Water Bank, in a coordinated fashion for the benefit of the Covered Species.
2. The conservation bank lands will be protected from development activities in advance of any impacts to Covered Species that occur as a result of third party activities.
3. Because the conservation bank lands are part of the 19,900 acres of the Kern Water Bank, the benefits to Covered Species will be greater than the mitigation of third party activity impacts through piecemeal, project-by-project mitigation that often results in isolated habitat reserves.
4. The KWB HCP/NCCP Area is close to other large natural areas that have been protected from development (i.e., the Coles Levee Ecosystem Preserve). The conservation bank lands are also in close proximity to the Elk Hills Naval Petroleum Reserve which has been managed by the Department of Energy in accordance with the terms of Section 7 consultations under the Federal ESA to provide substantial benefits to a number of the Covered Species. The KWB HCP/NCCP Area is also in close proximity to the areas proposed for substantial conservation in the Kern County Valley Floor Habitat Conservation Plan ("VFHCP"). The VFHCP has identified the areas in the Valley Floor area of Kern County that have the highest conservation values and that are appropriate for

long-term conservation (the "red zones" and "green zones"). Only limited development activities would be allowable under the VFHCP within the red and green zones. The VFHCP sets a limit on development of 10 percent of the lands in the red zones and 25 percent of the lands in the green zones. Collectively, the KWB HCP/NCCP, the VFHCP, and the Coles Levee Reserve will result in the long-term conservation of a large percentage of the remaining natural lands in western Kern County.

5. Through the establishment of the HCP/NCCP, one of the largest remaining natural areas in the Southern San Joaquin Valley will be protected from urban and other development activities.
6. Because the habitat found within the Master Permit Credit Area is expected to be of a lesser conservation value than the habitat found within the KWB HCP Area, it is anticipated that the conservation and restoration of the lands in the HCP/NCCP area will contribute to the survival and recovery of the Covered Species. This is particularly the case because the HCP/NCCP will result in the implementation of a key component of the conservation strategy developed by the Resource Agencies for the San Joaquin Valley.

H. Conclusion

The Project will have the following environmental benefits:

- The historic ground water recharge on the property will be continued.
- Diverse types of habitat including upland, riparian and intermittent wetland/rangeland will be preserved and restored on an ecosystem basis.
- In addition to preserving the two above mentioned types of habitat, special areas to protect sensitive native habitat are planned.
- Upland habitat suitable for the Tipton kangaroo rat, the blunt-nosed leopard lizard, and the San Joaquin kit fox will be preserved and enhanced by adaptive land management.
- Intermittent wetland/rangeland habitat which is scarce in the Southern San Joaquin Valley, and was lost with the introduction of intensive farming, will be restored on the property with benefits to a wide variety of waterfowl and other species.
- The preservation of Compatible Habitat, the natural design of the recharge basins and periodic flooding ensures terrestrial species have the opportunity to migrate thus facilitating genetic diversity.
- Areas adjacent to the Kern River habitat corridor will be preserved.
- Areas adjacent to the ARCO Coles Levee Ecosystem Preserve will be protected as upland habitat and be offered as habitat mitigation to third parties.

- Large areas of intensive agriculture on the KWB have been removed from production and will be set aside as Compatible Habitat.
- In addition to preserving two broad types of habitat, sensitive areas of native habitat are protected.

III. ENVIRONMENTAL SETTING

A. *Vegetation*

Prior to 1988 when DWR purchased the Kern Water Bank project area, approximately 17,068 acres of the property was utilized for intensive agriculture. The remainder of the property was leased for oil recovery facilities and contained 1,515 acres of isolated native plant communities (saltbush scrub, mesquite savanna, and valley sacaton grassland), and 1,317 acres of non-native grassland. Except for canals used to convey water for agriculture, no wetland habitat occurred on the KWB prior to the DWR purchase.

The Kern Water Bank recharge facilities were designed to avoid the majority of existing native plant communities. As a result, virtually all of the remnant saltbush scrub, mesquite savannah and valley sacaton grassland plant communities are primarily located in the sensitive habitat with the remaining occurrences found in portions of the compatible habitat and the conservation bank property. See Table 4 for a list of the location and land use status of the native plant communities in the Kern Water Bank. In addition, approximately 90% of the non-native grassland plant community is included in the conservation bank.

TABLE 4 - LOCATIONS OF COVERED PLANT COMMUNITIES

LOCATION		
T30S R25E		
Section 12 NE QS	Saltbush	Sensitive
Section 12 SE QS	Saltbush	Compatible
Section 13 NW QS	Mesquite and Saltbush	Compatible
Section 14 North Half	Mesquite and Saltbush	Sensitive
Section 15 NE QS	Mesquite and Saltbush	Compatible and Sensitive
Section 19 South Half	Mesquite and Saltbush	Compatible
Section 20 South Half	Mesquite, Saltbush, Grassland	Compatible
Section 23 NW QS	Saltbush	Compatible
Section 23 NE QS	Grassland	Compatible
Section 24 SW QS	Mesquite and Saltbush	Compatible
Section 25 SW QS	Mesquite	Sensitive
Section 25 SE QS	Mesquite	Conservation Bank
Section 27 NW QS	Saltbush	Compatible
Section 28 NE QS	Saltbush	Compatible/Recharge Basin
Section 36 NE QS	Mesquite and Saltbush	Sensitive
Section 36 NW QS	Mesquite and Saltbush	Compatible/Recharge Basin
T30S R26E		
Section 7 NW QS	Mesquite and Saltbush	Sensitive
Section 8 SW QS	Mesquite and Saltbush	Compatible
Section 28 South Half	Mesquite and Saltbush	Conservation Bank
Section 31 NW QS	Saltbush	Conservation Bank

QS = quarter section

Valley saltbush scrub is generally found in the southwestern San Joaquin Valley on dissected alluvial fans with flat to gently rolling relief. Soils are sandy and loamy soils without surface alkalinity. This community is dominated by gray-green or blue-green shrubs of the Goosefoot family (*Chenopodiaceae*) with a sparse understory of short, annual herbaceous vegetation. Stands of valley saltbush scrub range from open to more dense (10 to 40 percent shrub cover).

Characteristic perennial shrub species of valley saltbush scrub include valley saltbush (*Atriplex polycarpa*), spiny saltbush (*Atriplex spinifera*), alkali heath (*Frankenia grandifolia* var. *campestris*), and pale-leaf golden bush (*Haplopappus acradenius*)

bracteosus). Except for saltbush, most of these perennials flower from May to September. Valley saltbush scrub understory typically consists of annual species such as common tarplant (*Hemizonia pungens*), birds-eye gilia (*Gilia tricolor*), goldfields (*Lasthenia* spp.), filaree (*Erodium* spp.), fescue (*Vulpia* spp.), and peppergrass (*Lipidium* spp.). These annuals flower from January to April.

Great valley mesquite scrub is an open or savanna dominated by mesquite (*Prosopis glandulosa torreyana*) and valley saltbush. In many ways, this community is very similar to valley saltbush scrub and non-native grassland with the addition of mesquite. Even where mesquite is present, it may occur in densities as low as two to three per acre. This community occurs on sandy loams of alluvial origin. Since mesquite is a deep-rooted plant dependent on groundwater rather than direct rainfall, it requires a high water table. Understories, grassy in years of adequate rainfall, are usually dominated by non-native annuals. The grassy understory is comparable to non-native grassland. Typical species of this community include mesquite, valley saltbush, red brome, and pale-leaf golden bush.

Valley sacaton grassland is a medium height (39 inches) native grassland dominated by the tussock-forming bunchgrass, alkali sacaton (*Sporobolus airoides*). Valley sacaton grassland and the more widespread non-native grassland both occur on fine-textured soils, but sites supporting valley sacaton grassland are poorly drained, and are usually characterized by alkaline soils. Most sites have seasonally high water tables or are overflowed during winter and spring flooding.

Typical species in this community include saltgrass (*Distichlis spicata*), alkali barley (*Hordeum depressum*), and alkali sacaton (*Sporobolus airoides*).

Non-native grassland is found throughout most of California, primarily below 3,000 feet in elevation on fine-textured, usually clay soils. Non-native grassland is dominated by introduced annual grasses in association with many species of showy-flowered native forbs ("wildflowers"), especially in years of abundant rainfall.

Characteristic non-native species typically present in this plant community are red brome, soft chess (*Bromus mollis*), riggut brome (*Bromus diandrus*), hare barley (*Hordeum leporinum*), wild oats (*Avena* spp.), Italian ryegrass (*Lolium multiflorum*), Arabian schismus (*Schismus arabicus*), rat-tail fescue (*Vulpia myuros*), filaree, and bur-clover (*Medicago polymorpha*). Native plant species found in the non-native grassland include few-flowered fescue (*Vulpia microstachys*), fiddleneck (*Amsinckia* spp.), goldfields, peppergrass, various species of tarplant (*Hemizonia* spp.), lupine (*Lupinus* spp.), gilia (*Gilia* spp.), owl's clover, and phacelia.

These grasses and flowers germinate with the onset of late fall and winter rains. Growth, flowering, and seed-set occur from winter through spring. Most annuals in this community die by summer and persist as seeds until the winter rains return.

The isolated native plant communities support two federally listed plant species: the San Joaquin woolly-threads (*Lembertia congdonii*), and Hoover's eriastrum (or

woolly-star)(*Eriastrum hooveri*). Two others species have the potential to occur in the saltbush and mesquite plant communities, but have not been documented on the Kern Water bank: the Kern mallow (*Eremalche kernensis*), and California jewelflower (*Caulanthus californicus*), both federally listed as endangered.

San Joaquin Woolly-threads (*Lembertia congdonii*)

The San Joaquin woolly-threads is an annual herb belonging to the sunflower family (Asteraceae) which produces several, frequently-branching stems arising from the base and small yellow disk-flowers from March to April.

The USFWS report supporting federal endangered species status for *Lembertia congdonii* in the Federal Register 19 July 1990 states:

Associated with the valley saltbush scrub, only 12 populations of [the San Joaquin woolly-threads] remain in the San Joaquin Valley and adjoining foothills from the vicinity of Panoche Pass (San Benito County) southeasterly to Caliente Creek, east of Bakersfield (Kern County) (Taylor 1987). Another seven populations occur to the southwest in the Cuyama Valley (San Luis Obispo and Santa Barbara Counties) and Carrizo Plain (San Luis Obispo County). Primarily as a result of ag-land conversion, 33 populations or 63% of the 52 historical populations of the species have been lost (Taylor 1987).

Known populations occur in the Kettleman and Panoche Hills, Lost Hills, and the Carrizo and Elkhorn Plains (Mitchell 1991). Within the Kern County Valley floor area, this species is known from at least eight widely scattered isolated populations: south of Blackwell's Corner; southeast of Lost Hills; between the Semitropic Preserve and Kern National Wildlife Refuge; west of Bakersfield near Highway 43 and Rosedale Highway; and southeast of Bakersfield at Sand Ridge in Caliente Creek area near its junction with Highway 58.

The plant is found in drifted sand or clayey, often alkaline soil in areas of annual grassland and saltbush scrub at elevations between 250 to 2500 feet. It is possible that it grows only in years of more than normal rainfall.

Within the Kern Water Bank, populations of the woolly-threads are known to occur in T30S, R26E, southwest quarter section of Section 8, and T30S, R25E northeast quarter of Section 12.

Hoover's Eriastrum (*Eriastrum hooveri*)

Hoover's woolly-star, an annual herb of the phlox family (Polemoniaceae), produces many wire-like branches and small white flowers from February to May (Abrams 1940). It is endemic to the southern San Joaquin Valley and adjoining South Coast Ranges, including the Elkhorn Plain, Carrizo Plain, Cuyama Valley from Kern to

Fresno County, and east to San Luis Obispo County. Historical distribution of the species is discontinuous, i.e. there are no documented occurrences of *E. hooveri* in Kings or Tulare Counties.

Hoover's woolly-star grows in the sandy soils of rolling plains of valley saltbush scrub and valley sink scrub below 500 feet. Northern populations (Fresno County) are located on more alkaline soils than southern populations (Kern County). Distribution on alkali sinks is patchy. Colonies are often located only within the patches of cryptogamic soils.

Twelve of the 39 historical and extant populations of the species have been extirpated due to habitat loss (Taylor and Davilla 1986). More recently conducted surveys have both confirmed the status of existing populations as well as previously unrecorded populations on the lands of Naval Petroleum Reserve #1 within the Elk Hills and adjacent lands including the Buena Vista Valley and Buena Vista Hills (EG&G 1988; Russ Lewis pers. comm. 9 September 1989 to USFWS). These two surveys brought the total of remaining populations of *Eriastrum hooveri* to 118. However, of these 118 known populations, 100 are currently threatened by oil and gas development, ag-land conversion, urbanization or reservoir construction. One population is within a preserve, the Nature Conservancy's Paul Paine/Semitropic Ridge Preserve.

Within the Kern Water Bank Hoover's eriastrum has been documented as occurring in T30S, R25E, northeast quarter of Section 12, in the north half of Section 14, in the southeast quarter of Section 25, in the northeast quarter and south half of Section 36, and in T30S, R26E in the southwest quarter of Section 8, and the southwest quarter of Section 28.

Kern Mallow (*Eremalche kernensis*)

Kern mallow is a small erect annual plant that is branched from the base with stems from 2 to 4 inches tall. The stems have scattered stellate hairs and support three-to five-lobed leaves that are 0.5 to 1.5 inches long and about as wide. Petioles may be as long as 1 inch. Bractlets are filiform and taper gradually to a slender tip. Flowers are white or lavender-pinkish and appear in early spring (March to April). Fruits resemble small segmented wheels of cheese.

The extant distribution of Kern mallow is restricted to the dry open clay flats between 600 and 900 feet above mean sea level that are found in the southwestern portion of the lower San Joaquin Valley. The habitat for Kern mallow consists of saltbush scrub vegetation, with an approximate saltbush shrub canopy cover of 20 percent. Shrub canopy cover is commonly provided by either Valley saltbush and/or spiny saltbush. Within this habitat, Kern mallow grows in areas where the annual grass cover is low, such as old tire tracks or small exposed "balds" with cryptogamic crusts. Soils tend to be silty loams and are classed somewhere between the heavily alkaline sinks and the non-saline soils now largely converted to agricultural uses on the floor of the San Joaquin Valley (Taylor and Davilla 1986).

The systematic position of this plant, as either a full species or subspecies of Parry's mallow (*E. parryi*) is not clear. Research suggests that two or more subspecies may be present in the San Joaquin Valley. In the strict sense, white-flowered plants in Kern County are called Kern mallow (Bates 1993).

California Jewelflower (*Caulanthus californicus*)

The California jewelflower is an annual herb of the mustard family (Brassicaceae), usually one foot tall, with several flower branches. The lower leaves of the jewelflower are dry, oblanceolate and lobed with wavy margins. The base of the lower leaves cling to the stem of the plant and are egg-shaped or oblong. The flowers are translucent white with purple tips that turn green at full bloom (Taylor and Davilla 1986). Thin, narrow seed pods up to one inch long are one of the factors which distinguish this plant from related species (USFWS 1989).

Historically, the California jewelflower was distributed in the general area bounded by the present-day cities or communities of Coalinga and Fresno in Fresno County, New Cuyama in Santa Barbara County and Bakersfield in Kern County (Taylor and Davilla 1986). The jewelflower was extirpated from most of its former range as a result of the expansion of agriculture and livestock grazing coupled with the conversion of San Joaquin Valley grasslands from native annual plants to European annual plants (Taylor and Davilla 1986).

Today, the California jewelflower is represented by approximately twenty populations at four locations along the western edge of its range. These locations include the foothills of southwestern Fresno County, two sites on the Carrizo Plain in San Luis Obispo County, and in the Cuyama Valley of Santa Barbara County. The latter locations supports the largest populations of this species, but is privately-owned (CDFG 1992, Skinner and Pavlik 1994).

The California jewelflower is thought to be extirpated from Kern County. A transplanted population is being maintained in alkali grassland at The Nature Conservancy's Semitropic Ridge Preserve in Kern County. The U.S. Forest Service is attempting to establish new populations of this species on public lands (CDFG 1992).

The introduced population grows, in wet years, on the alkali plains in The Nature Conservancy's Paul Paine/Semitropic Ridge Preserve. Historical records indicate the jewelflower was found on the floor of the San Joaquin Valley in sandy, grassland type habitat (Taylor and Davilla 1986) and on slopes under 3000 feet on the surrounding foothills (Munz 1973).

There are no documented occurrences of the California jewelflower on the Kern Water Bank.

Wetlands.

Although the baseline condition of the Kern Water Bank was dry land when DWR acquired it, activities carried out by the Kern Water Bank Authority have and will continue to convert some dry land to wetlands. The following types of wetlands may emerge.

Open water aquatic habitat is found where standing or slow moving water is at least 5 to 6 feet deep. Within the study area this may include sloughs, canals, and ditches that do not dry up in the summer as well as the large open water recharge basins. The vegetation supported in this habitat includes pondweeds (*Potamogeton sp.*), duckweed (*Lemna sp.*), *Elodea sp.*, mare's tail (*Hippuris vulgaris*), yellow waterweed (*Jussiaea repens*), water milfoil (*Myriophyllum sp.*), and smartweed (*Polygonum amphibium, P. sp.*).

This habitat provides cover, food and oxygen for the invertebrates (crayfish, clams, etc.), amphibian larvae and juvenile fish that become prey items for the higher trophic levels including giant garter snakes, larger game and non-game fish, and migratory waterfowl.

Emergent marsh is found in areas where the water depths do not exceed 6.5 feet. They are typically associated with the channels, ditches, sloughs and basins either as narrow bands along the edge or spreading out from sloping margins. The vegetation that dominates these permanently to semi-permanently submerged areas are cattails (*Typha latifolia*), tules (*Scirpus acutus*) and rushes (*Juncus sp.*) toward the lower margins and river bulrush (*S. fluviatilis*), sedges (*Carex sp., Cyperus sp.*), and vervain (*Verbena hastata*) in the upper margins. The tricolored blackbird (*Agelaius tricolor*), a federal species of concern, occurs in this habitat.

Emergent marshes are important to both resident and migratory species. These areas are used for nesting or spawning, foraging, and protection from predators. Birds sighted in these habitats include great egret, great blue heron, green-backed heron, night crowned heron, American coot, greater yellowlegs, pied-billed grebe, belted kingfisher, common yellowthroat and song sparrow.

Riparian scrub-shrub habitat is characterized by thickets of woody shrubs, seedlings and sapling trees growing along the upland margins of canals, sloughs, and ditches. Periodic disturbances such as mowing, discing, burning and spraying have prevented young trees of various species -- valley oak (*Quercus lobata*), walnut (*Juglans californica var. hindsii*), cottonwood (*Populus fremonti*), maple (*Acer negundo*), and willow (*Salix gooddingii*) -- from maturing into a riparian woodland. The dominant shrubs of this habitat include button willow (*Cephalanthus occidentalis*), blackberry (*Rubus ursinus*), arroyo willow (*Salix lasiolepis*), sandbar willow (*Salix hindsiana*) poison oak (*Toxicodendron diversilobum*), wild rose (*Rosa californica*), and elderberry (*Sambucus mexicana*).

The disturbance regime normally found in riparian scrub-shrub also facilitates an aggressive herbaceous component typically found in ruderal fields and non-native grasslands. Red brome (*Bromus rubens*), wild oat (*Avena fatua*), bermuda grass (*Cynodon dactylon*), ryegrass (*Lolium perenne*), wild mustard (*Brassica campestris*), star thistle (*Centaurea solstitialis*), horseweed (*Conyza canadensis*), fennel (*Foeniculum vulgare*), dock (*Rumex sp.*), knotweed (*Polygonum sp.*), and chicory (*Cichorium intybus*) intergrade with the more mesic understory of the riparian scrub-shrub: smartweed (*Polygonum amphibium*), sedge (*Carex barbarae*, *Carex sp.*), nutsedge (*Cyperus egrostis*) mugwort (*Artemisia douglasiana*) and creeping spikerush (*Eleocharis palustris*).

Although not as structurally complex as the riparian forest, and therefore less biologically diverse, this habitat will support the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), a federally listed threatened species.

The following table shows the disposition of land proposed by the project.

TABLE 5 - HABITAT STATUS

Pre-Project	1991 DWR	KWB HCP
acres	acres	acres
<i>Upland Habitat</i>	<i>Upland Habitat</i>	<i>Upland Habitat</i>
Sensitive Plants (1) 1,515	Sensitive Plants (1) 1,515	Compatible Habitat 5,592
Non-native Grassland 1,317	Non-native Grassland 1,317	(Sensitive Plants - 240)
	Fallow - Occupied 6,880	(Fallow - 5,352)
		Sensitive Habitat (2) 960
		(Sensitive Plants - 960)
		DWR Mitigation 530
		(Fallow - 530)
		Conservation bank 2,777
		(Sensitive Plants - 315)
		(Non-native grassland - 1,177)
		(Fallow - 1,285)
		<i>Intermittent Wetland Habitat (4)</i>
		Recharge Basins 5,900
		(Fallow - 5,900)
<i>Non-Habitat</i>	<i>Non-Habitat</i>	<i>Non-Habitat</i>
Farmland/Disturbed 17,068	Fallow - Not Occupied 10,188	Other Facilities 481
		(Fallow - 481)
		Commercial Development (3) 490
		(Non-native grassland - 140)
		(Fallow - 350)
		Farming 3,170
		(Fallow - 3,170)
Total 19,900	Total 19,900	Total 19,900

(1) Gross area that contains known populations of covered plant species.

(2) Contains all known populations of San Joaquin woolly-threads on the KWB.

(3) Assumes KWBA sells or develops 490 acres. Can also be sold as mitigation credits.

(4) Habitat potentially suitable for species such as western pond turtle, Buena Vista lake shrew.

B. Wildlife

Numerous species of wildlife are supported by habitat found on the Kern Water Bank. Three of the species are federally listed as threatened or endangered species; these are the blunt-nosed leopard lizard (*Gambelia silus*), Tipton kangaroo rat (*Dipodomys nitratiodes*), and San Joaquin kit fox (*Vulpes macrotis mutica*), and one is a state listed threatened species: the San Joaquin antelope squirrel (*Ammospermophilus nelsoni*). The federally-listed giant kangaroo rat (*Dipodomys ingens*) is not documented on the Kern Water Bank, but there are known populations just to the south.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

The kit fox species, *Vulpes macrotis*, represents the smallest of the four species of foxes found in North America. Of the various subspecies of kit fox, San Joaquin kit fox (*Vulpes macrotis mutica*) is the largest in size (USFWS 1983). Adult kit fox are slender, weighing 1.4 to 2.7 kg (3 to 6 pounds). Head and body length is 38 to 51 cm (15 to 20 inches) with a 23 to 30 cm (9 to 12 inch) cylindrical, bushy, black-tipped tail. The inner side of their exceptionally large ears are covered with dense, stiff white hairs (USFWS 1983). Pelage color ranges from a pale grey with rust colors to a buffy yellow; the belly is whitish (Burt and Grossenheider 1976). The underfur is heavy and slightly harsh in texture while overhairs are scattered and meagerly developed (Grinnell et al. 1937).

Kit foxes are primarily nocturnal, emerging at sunset to hunt. Primary prey species are kangaroo rats (*Dipodomys ingens*, *Dipodomys nitratiodes*, *Dipodomys heermanni*). Black-tailed jackrabbits (*Lepus californicus*), desert cottontails (*Sylvilagus auduboni*) and California ground squirrel (*Spermophilus beecheyi*) may be primary prey species in some areas and secondary prey species to the kangaroo rat in others (Zoellick et al. 1987; O'Farrell and Scrivner 1987).

Dens are usually found in areas of low to moderate relief in loose textured soils (O'Farrell and McCue 1981, O'Farrell et al. 1980, cited by USFWS 1983). Man-made structures such as culverts, well casings, irrigation pipes and man-made dens constructed specifically for the San Joaquin kit fox have been used by kit foxes for both transient and natal dens (Egoscue 1956, 1962 and Morrell 1972, cited by McGrew 1979; Knapp 1978; O'Farrell and Scrivner 1987).

Prior to the introduction of irrigated agriculture in the valley, the prime habitat for the San Joaquin kit fox is thought to have been in the valley saltbush scrub, alkali sink and lower Sonoran grassland ecological communities. Today, within Kern County, kit foxes still inhabit valley saltbush, valley scrub, non-native grassland and valley sink scrub communities. They have been found to disperse through various types of disturbed habitat including agriculture fields, oil fields, highways, aqueducts and canals (Kato 1982). In the Bakersfield area, railroad tracks and canals are used by kit fox to travel from one habitat area to another. Habitat suitable for the San Joaquin kit fox is found throughout the Kern Water Bank.

Historically, this fox occurred throughout the San Joaquin Valley and western portions of the Sacramento Valley from Contra Costa County south to southern Kern County, as well as the arid valleys, plains and lower foothills of the Inner Coast Range (Carizzo Plain, Salinas Valley, Temblor Range, Cholame Hills, Elkhorn Plain and Elk Hills). The original range was estimated to be approximately 5,570,000 acres (O'Farrell 1983). Today, Central Valley kit fox populations are highly fragmented and restricted to the remaining native vegetation associations of the Valley floor and surrounding foothills from near Los Banos, Merced County southward to southern Kern County (CDFG 1992).

The Kern County Valley floor area harbors some of the highest densities of kit fox. These areas occur along the west side of the Valley floor, from the Lokern Area southward to Maricopa. Elsewhere, occurrences are highly fragmented, with low to moderate densities south and east of the Kern National Wildlife Refuge and north and east of the City of Bakersfield. The latter populations are connected to the populations on the west side of the Valley by a series of small populations inhabiting the Kern River flood plain.

Preserves for the San Joaquin kit fox should be able to support an average of 1.4 animals per square mile (USFWS 1983), be composed of native communities or non-native grasslands, support prey populations, contain adequate denning sites, and have few human intrusions, particularly roads. Corridors should be wide enough to provide safety to migrating animals. The Recovery Plan calls for the protection and/or acquisition of 35,000 acres (55 square miles) of kit fox habitat in areas mapped as first priority for protection in order to meet interim plan objectives of halting the decline of the species and increase population size above 1981 levels. Meeting these interim objectives could result in the changing of the San Joaquin kit fox status from federally "endangered" to "threatened".

The DWR 91 data shows scattered occurrences of the San Joaquin kit fox (SJKF) on the Kern Water Bank throughout the idle agricultural lands.

Wildlife surveys conducted for the interim recharge project found 69 potential kit dens but monitoring of these sites showed no signs of activity and they were closed prior to 1995 construction.

Night spotlight wildlife surveys were conducted on a 55 mile route within the boundaries of the Kern Water Bank on June 18, 19, and 27, and July 3, 7, and 10, 1996. Also set up were twenty-five scent stations throughout the water bank during 7 days in August 1996. San Joaquin kit fox prints were noted at three of the scent stations (2 in the south half of Section 20 of T30S, R25E, and 1 in the south half of Section 19, T30S, R26E). The scent stations also revealed sign of 6 coyotes and 3 striped skunks. During the spotlighting, one SJKF was sighted in the southeast quarter section of Section 12, T30S, R25E. Other species sighted were: 67 barn owls, 18 burrowing owls, 9 coyotes, and 6 striped skunk.

Blunt-nosed Leopard Lizard (*Gambelia silus*)

The blunt-nosed leopard lizard (BNLL) is a relatively large and long-lived lizard. It is so-named because of its short, broad skull and blunt snout. The robust body and long tail display a prominent pattern of dark spots and pale cross-bars. Adult males range from 90 mm to 120 mm (3.5 to 4.8 inches) in the body (snout-to-vent length) and are slightly larger than adult females which average 85 to 107 mm SV (3.4 to 4.2 in) (USFWS 1985). If severed, the lizard's tail is able to regenerate itself.

The leopard lizard does not dig its own burrow for escape, cover, shelter, or as egg-laying sites. Instead, it uses existing small mammal burrows, made by kangaroo rats, ground squirrels, pocket gophers, pocket mice and other rodents. Leopard lizard may prefer burrows in pond loam and clay loam soils on sparsely vegetated slopes of less than 30%, canyon floors, low foothills, especially in large washes and arroyos (Montanucci 1965, Chesemore 1980 cited by Uptain et al. 1985; Uptain et al. 1985).

Prey of the leopard lizard includes insects, spiders and occasionally other lizards as well as other leopard lizards (Dick 1977). Due to its foraging habits, the lizard prefers areas of relatively sparse ground cover which is more prevalent during the dry seasons and in dry years. Chesemore (1980) suggests that 15 to 30% bare ground may be the optimum openness for the blunt-nosed leopard lizard, and a site with 50% or more open ground may not be suitable for the species. Conversely, dense vegetative cover appears to interfere with running and hunting ability, thermoregulatory behavior and visibility of potential mates during the breeding season (Snow 1972; Montanucci 1965; Stebbins 1966).

The leopard lizard's historic range extended from Stanislaus County south to the southern edge of Kern County and included San Joaquin Valley, Kettleman Plain, Carrizo Plain and Cuyama Valley (Montanucci 1965, Smith 1946, Tollestrup 1979, cited by USFWS 1985).

Populations of BNLL on the Valley floor have been dramatically reduced in size and area, due to loss of habitat. Extant Valley floor populations are severely fragmented. Within the Kern County Valley floor area, small, isolated populations are scattered north and northeast of Bakersfield and between Elk Hills, bordering the southwestern side of the Valley floor, between Maricopa and Highway 33. BNLL are also common in grazed grasslands between the Pleito Hills and Wheeler Ridge, and elsewhere in the southern and southwestern portions of the Kern County Valley floor (Van Denburgh 1922, The Planning Center 1991, Weintraub 1991).

Blunt-nosed leopard lizards are known to occur in valley and foothill grassland, saltbush (*Atriplex*) scrub land, iodine bush (*Allenrolfea*) grassland, *Sueda* flats. They are most numerous where large *Atriplex* and *Isomeris* bushes were numerous and widespread. Chesemore (1980) found a correlation between the presence of the blunt-nosed leopard lizard and *Schismus arabicus* (Arabian grass) which could not be reconfirmed in later studies (Uptain et al. 1985). Blunt-nosed leopard lizards were

observed in areas totaling approximately 720 acres of the Kern Water Bank (DWR, 1991).

The Blunt-nosed Leopard Lizard Revised Recovery Plan (USFWS 1985) recommends that populations should meet or exceed a level of one blunt-nosed leopard lizard per acre average density to maintain a viable population. While Tollestrup 1976 suggested that one square mile (640 acres) of good habitat might meet minimum area requirements for perpetuating a leopard lizard population, this estimate has not been substantiated by other studies. To disperse from one area to another, the leopard lizards require natural, undisturbed washes or dirt roads with shrub vegetation along the edges for cover. The Recovery Plan identifies a minimum of 30,000 acres of essential habitat be protected within five distinct areas of the blunt-nosed leopard lizard range before the species may be re-classified as threatened, rather than endangered.

The DWR 1991 study also showed very few documented occurrences of the blunt-nosed leopard lizard on the Kern Water Bank. Occurrences were restricted to areas of poor soil type associated with very sparse vegetation and areas of open ground. The DWR 1991 documented occurrences of BNLL are almost exclusively located in areas designated as either sensitive habitat (NW quarter of Section 7, T30S, R26E and SW quarter of Section 36, T30S, R25E), or compatible habitat (S half of Section 6, SW quarter of Section 5, NE quarter of Section 7, NW quarter of Section 8, SE quarter of Section 20, T30S, R25E, and NW quarter of Section 20, T30S, R26E).

Tipton Kangaroo Rat (*Dipodomys nitratooides*)

The Tipton kangaroo rat, whose head and body measure from 100 to 110 mm long (3.9 to 4.3 inches), is a subspecies of the smallest species of kangaroo rat, *Dipodomys nitratooides* (Williams 1985). Its tail is longer than its body length and ranges from 125 - 130 mm (4.9 to 5.1 inches). It weighs an average of 36.5 grams (1.3 ounces) (Grinnell 1920) and is slightly larger than *Dipodomys nitratooides exilis* but smaller than *D. n. brevinasus*.

Like all kangaroo rats, the Tipton is adapted for bipedal locomotion (jumping), having greatly enlarged hind limbs, a long thickened tail, a short neck and a large head. The ears and eyes are on the upper sides of the head. Fur-lined cheek pouches hold seeds and other food for transport to caches which the animal locates close to its burrow. The forelimbs of the Tipton Kangaroo Rat are short, with long, stout claws and four dexterous finger-like toes.

The Tipton kangaroo rat commonly digs burrows on elevated spots which are not subject to flooding. Sometimes, areas which are flooded in winter and spring are colonized during the dry seasons. Preferred habitat for Tipton burrows are within alluvial fans and flood plains and include highly alkaline fine sands and, to a lesser degree, alkaline sandy loams. The animal is most commonly associated with Alkali Sink Scrub and Valley Saltbush Scrub on the floor of the Tulare Basin. These communities provide a habitat of sparsely scattered shrubs and a scant-to-moderate groundcover of grasses and forbs.

Historic populations of the Tipton kangaroo rat are roughly estimated to have been 17,164,800 individuals (CDFG 1990). Habitat loss from agricultural conversion of lands after the completion of the Central Valley Project is the main cause of the decline of the species. Tipton kangaroo rats were formerly occupied a range that included the Tulare Lake Basin in parts of Fresno, Kings, Tulare and Kern counties. The former range of approximately 1,716,500 acres has been reduced to 63,400 acres or 3.7 percent of the original range (CDFG 1990).

Tipton kangaroo rats are associated with habitats on the floor of the Tulare Subbasin. Typically, this species occupies scrub and grassland communities in level or near-level terrain with alluvial fan-flood plain soils (alkaline fine sands and sandy loams) and sparse grasses and woody vegetation such as iodine bush, saltbush, sea blite, and mesquite. These areas generally have a high water table. In areas subjected to seasonal flooding, Tipton kangaroo rats construct burrows on elevated ground (Grinnell 1933, Williams 1985 & 1986, Williams and Kilburn 1992).

Within the Kern County Valley floor area, known occurrences of Tipton kangaroo rats are highly disjunct. Because of agricultural conversion of valley floor habitats, populations are now restricted to isolated parcels of native habitat, primarily east of the California Aqueduct (Williams 1985). Populations are concentrated east and south of the Kern National Wildlife Refuge, to Delano on the east and Maricopa on the south along the western edge of the Valley floor. The Kern River flood channel between Highway 99 southwest of the mouth at the site of historic Buena Vista Lake, north of Pixley National Wildlife Refuge, and within and west of the City of Bakersfield, were expected by Williams (1985) to support this subspecies. Approximately 200 acres of habitat supporting Tipton kangaroo rats still remained along the western border of Buena Vista Lake bed, and the site north of Pixley National Wildlife Refuge may have contained over 2,500 acres of habitat for the Tipton kangaroo rat.

The DWR 91 data shows scattered occurrences of the Tipton kangaroo rat throughout the idle agricultural lands of the Kern Water Bank.

San Joaquin Antelope Squirrel (*Ammospermophilus nelsoni*)

The San Joaquin antelope squirrel has a yellowish-brown pelage with a creamy white line on each side of the back extending from shoulder to hip and a tail with a white underside. The head and body are 152 to 165 mm (6 to 6.5 inches) long and tail length is 64 to 76 mm (2.5 to 3 inches) (Burt and Grossenheider 1976). It weighs from 84 to 154 grams (3 to 5.5 ounces).

The squirrel is omnivorous mainly feeding on grass and forb seeds as well as insects (CDFG 1990). It will co-occupy giant kangaroo rat precincts and digs burrows in road cuts and arroyos (Williams 1979; 1985). Williams (1979) states that the range of the antelope squirrel most nearly coincides with the range of the giant kangaroo rat, but its microhabitats are different.

The historic range of the San Joaquin antelope squirrel included the western and southern portions of the Tulare Basin, San Joaquin Valley and areas to the west including the Cuyama Valley, Carrizo Plain and Elkhorn Plain. The western half of the range extended north to western Merced County. San Joaquin antelope squirrel were found the San Joaquin valley floor in Kern County and along the Valley's eastern edge north to Tipton in Tulare County (CDFG 1990).

In Kern County the San Joaquin antelope squirrel was distributed throughout the valley floor (Williams and Kilburn 1992). The squirrel was apparently naturally unevenly distributed throughout this region, occurring in abundance at only a few localities (Williams 1980, Williams and Kilburn 1992, citing Grinnell and Dixon 1918). Populations are currently restricted to approximately 102,000 acres of marginal habitats in the foothills along the western edge of the Tulare Subbasin. The Elk Hills region, between Buttonwillow and Taft, contains the only substantial populations of the species remaining within the Kern County valley floor area. Elsewhere, viable populations are also found on the Carrizo and Elkhorn plains in San Luis Obispo County (Williams and Kilburn 1992).

The San Joaquin antelope squirrel is found in flat to sloping terrain with loam or sandy loam soils in the western and southern portions of the Tulare Basin. The antelope squirrel could be found in association with the Interior Coast Range saltbush scrub, upper Sonoran subshrub scrub, non-native grassland and valley sink scrub. The habitat normally consists of species such as salt bush (*Atriplex* spp.), ephreda (*Ephreda viridis*), bladder pod (*Isomeris arborea*), goldenbush (*Haplopappus* spp.) and snakeweed (*Gutierrezia californica*). Grinnell and Dixon (1918) and Hawbecker (1953) observed that it more rarely occurred in valley floor habitats with alkaline soils (i.e. ephemerally flooded with a high water table) dominated by iodine bush (*Allenrolfea occidentalis*) and spiny salt bush (*Atriplex spinifera*). It has been observed in the non-native grassland community (Hawbecker 1958).

The home range of the San Joaquin antelope squirrel is thought to be approximately 10 to 50 acres with an average of 35.5 acres (CDFG 1990). The squirrel has a high affinity with its home range and remains there from year to year. However, each animal covers up to half of its range per day (Hawbecker 1958).

The San Joaquin antelope squirrel has had only one documented occurrence at the Kern Water Bank, which was in an area designated as sensitive habitat (E half of Section 36, T30S, R25E). This area will be maintained as a habitat preserve throughout the life of the permit. If populations expand into recharge basin areas, loss of individuals may occur from levee and canal maintenance activity, flooding and project related traffic.

Giant Kangaroo Rat (*Dipodomys ingens*)

The giant kangaroo rat is the largest of all the kangaroo rats and measures a total length of 311 to 348 mm (12.2 to 13.7 inches). Compared to other kangaroo rats, the ears and tail of the giant kangaroo rat are short in relation to its total body length. It is also the heaviest of the species weighing from 131 to 180 g (4.6 to 6.4 ounces) with males somewhat heavier than females. The fifth toe appears only on the hind foot and is diagnostic for the giant kangaroo rat. Other kangaroo rats within the range of the giant kangaroo have four toes on the hind foot and are smaller in weight as adults (CDFG 1988).

The giant kangaroo rat prefers to dig its burrows in open areas on flat to gently sloping terrain, usually less than 10 percent slopes. The soil in these areas is fine sandy loams with a covering of annual grasses and herbs. The giant kangaroo rat usually does not occur in areas of highly alkaline soils and seasonal flooding (Grinnell 1932, Williams 1981 cited by CDFG 1988).

Original habitat of the giant kangaroo rat may have been 1,303,700 acres from Merced County south to Kern County, west to eastern San Luis Obispo County and northern Santa Barbara County (Williams in prep, cited by CDFG 1988). Of this original habitat, an estimated 97-98% has been lost to agricultural conversion of natural lands (CDFG 1988).

The last relatively large blocks of suitable habitat are at the southern edge of the historic range of the species, in the upper Buena Vista Valley of western Cuyama Valley of northern Santa Barbara County. Most of the extant populations are small, ranging from fewer than 10 to several hundred individuals. Despite successful translocation efforts to protected lands in the Carrizo Plain, populations of this species are considered to be declining due primarily to continued habitat loss and the use of rodenticides to control California ground squirrels (CDFG 1992).

There are no documented occurrences of the giant kangaroo rat on the Kern Water Bank.

C. Climate

The San Joaquin Valley has a Mediterranean climate of cool, moist winters and hot, dry summers. Summer daytime high temperatures frequently exceed 100 degrees. Mean annual temperature is 65 degrees. With less than six inches of rainfall annually, much of the Valley is classified as desert. Precipitation normally occurs from September through April. A dense persistent, ground fog known as "Tule Fog" can develop during the winter months resulting in overcast, damp, cool weather (THC 1984).

D. Topography

The Project site is located in the southern San Joaquin Valley trough on the Kern River Fan. This trough, bounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast Range to the west, follows a northwest to southeast course and forms the valley floor.

The Project location is characterized by a gently sloping land surface with a maximum relief of about 120 feet. Land surface elevations over the Project facilities range from 280 feet to 340 feet above sea level.

E. Hydrology

The western slopes of the Sierra Nevada Mountains are the source of the numerous rivers and streams that cross the San Joaquin Valley. The Valley is divided into two distinct sub-basins: the San Joaquin Sub-basin to the north and the Tulare Sub-basin to the south. Rivers of the San Joaquin Sub-basin join the San Joaquin River as it drains into the Sacramento River flowing into San Francisco Bay. The rivers of the Tulare Sub-basin have no natural perennial surface outlet and, in the past, formed large temporary, shallow inland lakes (Katibah 1984). The Tulare Sub-basin contains roughly 2.5 million acres of nearly flat valley floor (USFWS 1989).

The Kern River, which bisects the Project area, is the most southern of the major rivers draining into the Tulare Sub-basin. The river is now regulated by Lake Isabella, a reservoir created in 1954 to protect the City of Bakersfield and agricultural lands downstream from flooding. The waters from Lake Isabella are used primarily for irrigation, recreation and power generation.

F. Soils

Soils within the Project area range from highly permeable, coarse sandy soils to silty loam with very low permeability. Generally, most of the 19,900 acres can be characterized as having deep, well-drained sandy loam soils. These soils usually have moderate to rapid permeability with low water-holding capacity. A few pockets of clay loam soils also can be found on the far west side of the Project lands. These soils have low permeability and are often associated with saline-alkali conditions (DWR 1986).

The Project property east of I-5 are characterized by Cajon sandy loam soils. These soils have moderate permeability and low available water holding capacity. Kimberlina fine sandy loam soils also found in this area have characteristics similar to the Cajon soils but have slightly lower permeability. The dominant soil south of the Kern River is the Excelsior sandy loam. These deep, well-drained soil has moderate permeability and moderate available water holding capacity (DWR 1986).

North and south of State Highway 119 (Taft Highway), the saline-alkali, Kimberlina fine sandy loam is predominate. This soil is characterized by a moderately

low permeability and a low available water holding capacity. Isolated pockets of poorly drained Panoche clay loam with low permeability can be found in this area north of Taft Highway and south of Panama Lane (DWR 1986).

ENVIRONMENTAL IMPACTS CHECKLIST

(Explanation for all "yes" and "maybe" responses are provided on attached sheets. Beneficial impacts shown in parenthesis: (x))

<u>Issue Area</u>	<u>Potential Impact?</u>			<u>Is it Significant?</u>		
	<u>Yes</u>	<u>Maybe</u>	<u>No</u>	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
1. Geology, Soils, and Topography. Will the proposal result in:						
a. Change in topography or ground surface relief features?	<u>X</u>	—	—	—	—	<u>X</u>
b. Disruptions, displacements, Compaction or overcovering of soil?	<u>X</u>	—	—	—	—	<u>X</u>
c. Unstable earth conditions or in changes in geological substructures?	—	—	<u>X</u>	—	—	—
d. The destruction, covering or modification of any unique geological, paleontological or physical features?	—	<u>X</u>	—	—	—	<u>X</u>
e. Any increase in wind or water erosion of soils, either on or off the site?	—	<u>X</u>	—	—	—	<u>X</u>
f. Exposure of people or property to geological hazards such as earthquakes, landslides, fault ruptures, high seismicity, subsidence, liquefaction, expansive soils, mudslides, ground failure, or similar hazards?	—	—	<u>X</u>	—	—	—
g. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or bed of the ocean or any bay, inlet or lake?	—	—	<u>X</u>	—	—	—
2. Water Resources. Will the proposal result in:						
a. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?	—	—	<u>X</u>	—	—	—

Issue Area	Potential Impact?			Is it Significant?		
	Yes	Maybe	No	Yes	Maybe	No
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	<u>(X)</u>	—	—	—	—	<u>X</u>
c. Alteration to the course or level of flood waters?	—	<u>(X)</u>	—	—	—	<u>X</u>
d. Exposure of people or property to water related hazards such as flooding or tidal waves?	—	—	<u>X</u>	—	—	—
e. Change in the amount of surface water in any water body?	—	—	<u>X</u>	—	—	—
f. Discharge into surface waters, or any alteration of surface water quality?	—	<u>(X)</u>	—	—	—	<u>X</u>
g. Change in the quantity of ground waters, through additions, withdrawals, change in recharge area, or through exposure of an aquifer by cuts or excavations?	<u>(X)</u>	—	—	—	—	<u>X</u>
h. Change in ground water quality?	—	<u>X</u>	—	—	—	<u>X</u>
i. Alteration of the direction or rate of the flow of ground waters?	<u>X</u>	—	—	—	—	<u>X</u>
j. Reduction in the amount of water otherwise available for public water supplies?	—	—	<u>X</u>	—	—	—
3. Air Quality. Will the proposal result in:						
a. Air emissions or deteriorations of ambient air quality?	<u>X</u>	—	—	—	—	<u>X</u>
b. The creation of objectionable odors?	—	<u>X</u>	—	—	—	<u>X</u>
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	—	<u>X</u>	—	—	—	<u>X</u>
4. Botanical Resources. Will the proposal result in:						
a. Change in the diversity of species, or number of any species of plants?	<u>(X)</u>	—	—	—	—	<u>X</u>
b. Reduction of the numbers of habitat of any rare, endangered, or otherwise sensitive species of plants?	—	<u>X</u>	—	—	—	<u>X</u>

Issue Area	Potential Impact?			Is it Significant?		
	Yes	Maybe	No	Yes	Maybe	No
c. Disturbance of any sensitive plant community or valuable tree specimens?	—	<u>X</u>	—	—	—	<u>X</u>
d. Introduction of new species of plants into an area, or an impediment to the normal reproductive and growth of existing species?	—	<u>X</u>	—	—	—	<u>X</u>
5. Fish and Wildlife. Will the proposal result in:						
a. Alteration or loss of fish or wildlife habitat?	<u>(X)</u>	—	—	—	—	<u>X</u>
b. Change in the diversity of species, or numbers of any species of animals (mammals, birds, amphibians, reptiles, fish, shellfish, benthic organisms or insects)?	<u>(X)</u>	—	—	—	—	<u>X</u>
c. Reduction of the numbers or habitat of any endangered or otherwise sensitive species?	<u>X</u>	—	—	—	—	<u>X</u>
d. Introduction of new species of fish or wildlife into an area, or result in a barrier to the migration or movement of species?	<u>(X)</u>	—	—	—	—	<u>X</u>
6. Agriculture. Will the proposal result in:						
a. Reduction in acreage or production of any agricultural crop?	—	—	<u>X</u>	—	—	—
b. Disruption of agricultural activities, including cropping and grazing?	—	—	<u>X</u>	—	—	—
c. Use of Williamson Act lands for non-agricultural uses?	—	—	<u>X</u>	—	—	—
7. Natural Resources. Will the proposal result in:						
a. Increase in the rate of extraction and use of any natural resources?	—	—	<u>X</u>	—	—	<u>X</u>
8. Cultural Resources. Will the proposal result in:						
a. Alteration or destruction of a prehistoric or historic archaeological site?	—	<u>X</u>	—	—	—	<u>X</u>

<u>Issue Area</u>	<u>Potential Impact?</u>			<u>Is it Significant?</u>		
	<u>Yes</u>	<u>Maybe</u>	<u>No</u>	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
b. Adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	—	—	<u>X</u>	—	—	—
c. A physical change which would affect unique ethnic cultural values?	—	—	<u>X</u>	—	—	—
d. Restrict existing religious or sacred uses within the potential impact area?	—	—	<u>X</u>	—	—	—
9. Land Use and General Plan Consistency. Will the proposal result in:						
a. Conflicts with existing land uses and community character?	—	—	<u>X</u>	—	—	—
b. Conflicts with future planned land uses and community character?	—	—	<u>X</u>	—	—	<u>X</u>
c. Inconsistency with General Plan polices?	—	—	<u>X</u>	—	—	<u>X</u>
10. Recreation. Will the proposal result in:						
a. Impact upon the quality or quantity of existing and future recreational opportunities?	—	<u>(X)</u>	—	—	—	<u>X</u>
11. Aesthetics. Will the proposal result in:						
a. Obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	—	—	<u>X</u>	—	—	—
12. Light and glare. Will the proposal result in:						
a. New light or glare?	—	—	<u>X</u>	—	—	—
13. Noise. Will the proposal result in:						
a. Increases in existing noise levels?	—	—	<u>X</u>	—	—	—
b. Exposure of people to disturbing noise levels?	—	—	<u>X</u>	—	—	—
14. Population. Will the proposal result in:						
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?	—	—	<u>X</u>	—	—	—
15. Housing. Will the proposal result in:						
a. Affect existing housing, or create a demand for additional housing?	—	—	<u>X</u>	—	—	—

Issue Area	Potential Impact?			Is it Significant?		
	Yes	Maybe	No	Yes	Maybe	No
16. Transportation/Circulation. Will the proposal result in:						
a. Generation of additional vehicular movement and traffic volume?	<u>X</u>	—	—	—	—	<u>X</u>
b. Impact upon existing automobile transportation systems and circulation patterns?	—	—	<u>X</u>	—	—	—
c. Effects on existing parking facilities, or demand for new parking?	—	—	<u>X</u>	—	—	—
d. Alteration to waterborne, rail or air traffic?	—	—	<u>X</u>	—	—	—
e. Increase in traffic hazards to motor vehicles, bicycles or pedestrians?	—	—	<u>X</u>	—	—	—
17. Public Services. Will the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:						
a. Fire protection?	—	<u>X</u>	—	—	—	<u>X</u>
b. Police protection?	—	—	<u>X</u>	—	—	—
c. Schools?	—	—	<u>X</u>	—	—	—
d. Parks or any other recreational facilities?	—	—	<u>X</u>	—	—	—
e. Maintenance of public facilities, including roads?	—	—	<u>X</u>	—	—	—
f. Other governmental services?	<u>X</u>	—	—	—	—	<u>X</u>
18. Utilities. Will the proposal result in:						
a. A need for new systems, or substantial alterations to public utilities?	—	—	<u>X</u>	—	—	—
19. Human Health. Will the proposal result in:						
a. Creation of any health hazard or potential health hazard (excluding mental health)?	—	<u>X</u>	—	—	—	<u>X</u>
b. Exposure of people to potential health hazards?	—	<u>X</u>	—	—	—	<u>X</u>

Issue Area	Potential Impact?			Is it Significant?		
	Yes	Maybe	No	Yes	Maybe	No
20. Risk of Upset. Will the proposal result in:						
a. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset condition?	—	—	<u>X</u>	—	—	—
21. Energy. Will the proposal result in:						
a. Use of substantial amounts of fuel or energy?	—	—	<u>X</u>	—	—	—
22. Mandatory Findings of Significance. Will the proposal result in:						
a. Potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	—	<u>X</u>	—	—	—	<u>X</u>
b. Potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment in one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)	—	—	<u>X</u>	—	—	—
c. Impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	—	—	<u>X</u>	—	—	—
d. Environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	—	—	<u>X</u>	—	—	—

IV. ENVIRONMENTAL CONSEQUENCES

A. *Geology, Soils, and Topography*

The Project involves construction of recharge basins and levees. Construction of these facilities will require grading of local topography. However, the maximum extent of excavation and/or levee construction is expected to be less than three feet. In addition, basin levees will be constructed along existing contours to blend in with the landscape. Accordingly, the activity is not considered to change the topography or ground surface significantly. (Checklist, Item 1(a).)

Construction of the basins and levees will require only minor grading compaction of local surface soils at the location of the Project facilities. The Project will not uncover or expose any unstable earth conditions and/or unstable geologic substructures. (Checklist, Item 1(b).)

The Project site contains very deep alluvial materials and is not expected to contain significant paleontological resources in the upper soil where grading would occur. (Checklist, Item 1(d).)

No major faults are located at the site. However, potential seismic impacts could occur from strong ground motion of the deep unconsolidated sediments at the Project site, resulting in liquefaction and subsidence. This condition could be exacerbated by the increase in ground water storage and ground water elevation at the site. However, this action is not expected to be significantly different than other adjacent lands upon which ground water recharge projects or farming are carried out and therefore the Project is not considered likely to significantly degrade the environment.

The Project is located in a closed basin with no drainage to the ocean.

The Monterey Agreement EIR, at Section 4.1 relating to the Kern Fan Element, analyzed possible impacts to geology and soils of the KWB due to the Project. The Monterey Agreement EIR found no adverse impact and no mitigation measures would be required. This Initial Study incorporates by reference this analysis, set forth at pages 4-1 to 4-3 of the Monterey Agreement EIR. (Checklist, Item 1.)

B. *Vegetation and Wildlife*

While incidental take of some listed species and other unlisted species is expected to occur during construction, operation and maintenance, through collapsed burrows, being run over, crushed by grading equipment, harassment, habitat loss, drowning, etc., the Project will provide a net increase of habitat for the species compared to pre-DWR purchase conditions. The construction of proposed facilities will be phased. If all of the proposed facilities are built 481 total acres of habitat will be

disturbed for permanent facilities and 291 acres disturbed temporarily for construction of underground pipelines.

The operation of the recharge facilities will be cyclical. Depending of the availability of water and the basin flooding frequency, some basins may lie unused for periods of a few to several years. Based on historic hydrology and projected requirements (see Map 4, Recharge Frequency Plan) a prediction of recharge basin utilization shows that a large percentage of the time areas designated for recharge basins will be available for habitat. During the time these basins are idle, they may become colonized by the listed species resulting in recurring habitat change as well as potential take of individuals once flooding begins again.

The potential impact on these transient colonies and any individuals disturbed by construction will be mitigated by preservation and management of the adjacent compatible habitat as permanent refugium for source populations of listed species. To minimize loss of individuals from flooding, to the extent practical, the basins will be filled slowly, so that any animals using the idle basins can escape to higher ground.

The analysis in the Monterey Agreement EIR regarding impacts to biological resources on the Kern Fan Element due to the Project, set forth at section 4.4, pages 4-38 to 4-50 and 4-62 to 4-66, is incorporated herein by this reference.

The use of the Conservation Bank could also result in impacts to listed and un-listed species in the Master Permit Credit Area. The maximum loss of total habitat loss in the entire Master Permit Credit Area, consisting of Kern County, the Allensworth area of Tulare County and the Kettleman Hills area of Kings County, as a result of the operation of the Conservation Bank is likely to be 3,000 acres. This is considered to be a worst-case assessment for the following reasons:

1. Activities using conservation credits will be limited to areas with limited habitat value, and will qualify for the use of the credits only with the approval of the Resource Agencies.
2. The Resource Agencies have historically required 3:1 compensation for activities on undeveloped lands within the Valley Floor. At a 3:1 compensation ratio, the use of the bank would result in a loss of 1,089 acres of habitat. This loss is anticipated to be offset through the permanent protection and management of the lands in the conservation bank.

(Checklist, Items 4 & 5.)

Mitigation Measure B-1. Biological Monitor

A qualified biologist shall monitor all ground-disturbing activities during construction in the Sensitive Habit Sector and will oversee measures undertaken to reduce take of listed species.

Mitigation Measure B-2. Construction Practices

a. Delineation of Disturbance Areas

During construction, KWBA shall clearly delineate disturbance area boundaries by stakes, flagging, or by reference to terrain features, as directed by CDFG and USFWS, to minimize degradation or loss of adjacent wildlife habitats during operation.

b. Signage

During construction, KWBA shall post signs and/or place fencing around construction sites to restrict access of vehicles and equipment unrelated to site operations.

c. Resource Agency Notification

At least 20 working days prior to initiating ground disturbance for project facilities in designated salvage/relocation areas, KWBA shall notify the Fresno Field Office of CDFG and the Sacramento Field Office of USFWS of its intention to begin construction activities at a specific location and on a specific date. The Agencies will have 10 working days to notify the KWBA of their intention to salvage or relocate listed species in the construction area. If KWBA is notified, it will wait an additional five days to allow the salvage/relocation to take place.

d. Salvage and Relocation

KWBA will allow time and access to USFWS and/or CDFG, or their designees, to relocate listed species, at the Resource Agencies' expense, from construction areas prior to disturbance of areas that have been identified by the Resource Agencies as having known populations of the listed species they wish to salvage or relocate.

e. Construction Site Review

All construction pipes, culverts, or similar structures with a diameter of three inches or greater that are stored at a construction site on the Kern Water Bank for one or more overnight periods shall be thoroughly inspected for trapped kit foxes and other animals before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight shall be capped. If during construction a kit fox or other animal is discovered inside a pipe, that section of pipe will not be moved or, if necessary, will be moved only once to remove it from the path of construction activity until the animal has escaped.

f. Employee Orientation

An employee orientation program for construction crews, and others who will work on-site during construction, shall be conducted and shall consist of a brief consultation in which persons knowledgeable in endangered species biology and legislative protection explain endangered species concerns. The education program

shall include a discussion of the biology of the listed species, the habitat needs of these species, their status under FESA and CESA, and measures being taken for the protection of these species and their habitats as a part of the project. The orientation program will be conducted on an as needed basis prior to any new employees commencing work on the Kern Water Bank. Every two years or at the beginning of construction for the Supply/Recovery canal, a refresher course will be conducted for employees previously trained. A fact sheet conveying this information shall also be prepared for distribution to all employees. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at KWBA's office and shall be accessible by CDFG and USFWS.

g. Standards for Construction of Canals

Concrete lined canals will have a side slope of 1.5 to 1 or less and the sides will have a concrete finish which will assist in the escape of animals. If canals are determined by CDFG or USFWS to be substantial impediments to kit fox movement, plank or pipe crossings will be provided across concrete canals in areas identified as having high kit fox activity.

Mitigation Measure B-3. On-Going Practices

a. Equipment Storage

All equipment storage and parking during site development and operation shall be confined to the construction site or to previously disturbed off-site areas that are not habitat for listed species.

b. Traffic Control

KWBA's project representative shall establish and issue traffic restraints and signs to minimize temporary disturbances. All construction related vehicle traffic shall be restricted to established roads, construction areas, storage areas, and staging and parking areas. Project related vehicles shall observe a 25 MPH speed limit in all project areas except on county roads and state and federal highways.

c. Food Control

All food-related trash items such as wrappers, cans, bottles, and food scraps generated both during construction and during subsequent facility operation shall be disposed of in closed containers and shall be regularly removed from the site. Food items may attract kit foxes onto a project site, consequently exposing such animals to increased risk of injury or mortality.

d. Dog Control

To prevent harassment or mortality of kit foxes or destruction of kit fox dens or predation on this species, no domestic dogs or cats, other than hunting dogs, shall be permitted on-site.

e. Pesticide Use

Use of rodenticides and herbicides on the site shall be permitted in accordance with the Vegetation Management Plan, which incorporates by reference the Interim Measures for Use of Rodenticides in Kern County, and which will incorporate by reference any other applicable laws, rules and regulations regarding the use of pesticides as they take effect.

Mitigation Measure B-4. Project Representatives

KWBA shall designate a specific individual as a contact representative between KWBA, USFWS, and CDFG to oversee compliance with protection measures detailed herein. KWBA shall provide written notification of the contact representative to CDFG and USFWS within 30 days of issuance of the Permits and the Management Authorizations. Written notification shall also be provided by KWBA to CDFG and USFWS in the event that the designee is changed.

Mitigation Measure B-5. Notification Regarding Dead, Injured or Entrapped Listed Animals

Any employee or agent of KWBA who kills or injures a San Joaquin kit fox, blunt-nosed leopard lizard, Tipton kangaroo rat, San Joaquin antelope squirrel, or other listed species listed as a threatened or endangered animal under FESA or CESA, or who finds any such animal either dead, injured, or entrapped on the Kern Water Bank shall report the incident immediately to KWBA's representative who shall, in turn, report the incident or finding to USFWS and CDFG. In the event that such observations are of entrapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape unimpeded. In the event that such observations are of injured or dead animals, KWBA shall immediately notify USFWS and CDFG by telephone or other expedient means. KWBA shall then provide formal notification to USFWS and CDFG, in writing, within three working days of the finding of any such animal(s). Written notification shall include the date, time, location, and circumstances of the incident.

The USFWS contact for this information shall be the Assistant Field Supervisor for Endangered Species, Sacramento Field Office. The CDFG contact shall be the Environmental Services Supervisor at the San Joaquin Valley-Southern Sierra Region Headquarters.

USFWS or CDFG will be notified if any other animal which is otherwise a listed species is found dead or injured.

Mitigation Measure B-6. Construction of Supply/Recovery Canal

Within sixty days prior to the construction of the supply/recovery canal within the zone marked within the Map of the Kern Water Bank, KWBA shall conduct a limited survey within the area of the Kern Water Bank which will be affected by that construction, with the sole goal of identifying potential San Joaquin kit fox dens. KWBA shall contact USFWS and CDFG pursuant to the salvage procedures set forth above if any kit fox dens are found.

Mitigation Measure B-7. Take Avoidance Protocol for Fully-Protected Species

Existing data on the blunt-nosed leopard lizard (BNLL) at the Kern Water Bank indicates that populations occur within habitat set asides (either sensitive, compatible, or conservation bank habitat). Thus the likelihood of take from project construction, operation, and maintenance is negligible. However, in the future adaptive management measures may expand to areas of suitable habitat.

Until such time that the KWBA obtains appropriate authorization for take of the State designated Fully Protected blunt-nosed leopard lizard by the Fish and Game Commission, the following take avoidance protocol shall apply in any areas that contain suitable habitat of the BNLL:

- 1) A qualified biologist shall survey any areas proposed for project related disturbance that contain suitable habitat for the blunt-nosed leopard lizard to determine the likelihood of presence. Suitable habitat consists of valley and foothill grasslands, saltbush scrub land, iodine bush grassland, and alkali flats.
- 2) If BNLLs are found to occur in areas proposed for project facilities construction or maintenance, consideration of avoidance should take place first. If avoidance is not practicable, then the BNLL will be trapped and relocated prior to disturbance at KWBA's expense in accordance with the applicable annual management plan. This work must be done by or under the direction of USFWS staff by persons with appropriate experience and with their own take for scientific purposes permits. This procedure will avoid any violation of state law.

Three other species which may be found on the Kern Water Bank are also State designated Fully Protected species: American peregrine falcon, Greater sandhill crane, and White-tailed kite. The likelihood of the take of any of these species from project construction, operation, and maintenance is negligible due to their mobility and preferred habitats. However, to avoid any take of these species, the same take avoidance protocol as set out for the BNLL shall apply to each of these three species.

C. *Water Resources*

1. *Off-Site Impacts*

a) *State Water Project Water*

Consistent with existing biological opinions, SWP entitlement and interruptible entitlement water will be available for recharge. During this Project, some member entities and others may have entitlement water excess to their immediate in-district demand. In the past, such water was sold to other districts through a KCWA pool or turned back to the State. The Project contemplates that to the extent compatible with the Project, such water could be recharged in the Project area.

b) *Central Valley Project Water*

In the past, the Kern Water Bank Authority ("Authority") and others have purchased Section 215 (Reclamation Reform Act of 1982) water from the Central Valley Project ("CVP") via the Friant-Kern Canal through temporary contracts with the United States Department of the Interior, Bureau of Reclamation. Such water may be available for this Project. This water is not subject to the ownership and acreage limitations of Federal Reclamation law and can be made available on short notice.

In addition, consistent with existing biological opinions, CVP water may be available for recharge by CVP contractors via the Friant-Kern Canal or the California Aqueduct either directly or by exchange or transfer according to contract provisions with the Bureau of Reclamation.

c) *Kern River Water*

The Kern River interests encourage every effort to maximize the recharge of Kern River water into the ground water basin. To prevent significant property and flood damage, flood waters are diverted to the Kern River and to the California Aqueduct Intertie facilities. Since 1978, over 1,000,000 acre-feet of Kern River water has flowed through the Kern River-California Aqueduct Intertie. During the same period an additional 430,000 acre-feet of Kern River water bypassed the Intertie via the Kern River flood channel. These generally represent flood waters which exceeded the available capacity of recharge facilities in Kern County since the Intertie was constructed in 1977. In the event of a very wet year during this Project, it is anticipated that significant quantities of flood waters that otherwise would be diverted into the Intertie will be available for recharge in the Project area. At other times other Kern River water may be available from Kern River water right holders, which rights are generally pre-1914 appropriative rights, for recharge in the Project area.

d) *Local Stream Groups Interconnected to the Friant-Kern Canal*

The flows of the Kaweah, Tule and Kings Rivers stream groups on the east side of the San Joaquin Valley can be diverted and conveyed via the Friant-Kern Canal to its terminus and enter either into the Kern River channel or by interconnection into the Cross Valley Canal and transported further west. Each of these stream groups, like the rest of the State, may experience significant above-normal precipitation and snowpack during this Project. Heavy snowmelt which if not diverted into the Friant-Kern Canal and conveyed south could cause significant property damage downstream. This potential exists and by diverting water into the Friant-Kern Canal for recharge onto the Project, flooding can be reduced and water supplies will be conserved.

2. **On-Site Impacts**

Historical ground water level measurement in the Project area have been collected and will continue to be utilized to monitor Project operations and to determine depths to ground water and how ground water levels change during wet years. Project water quality, ground water monitoring and ground water recharge losses will be addressed consistent with the Memorandum Of Understanding, dated October 26, 1995, between KWBA, its members, and certain adjoining entities regarding operation and monitoring of the KWB ground water banking program (the "KWBA MOU"), a copy of which is attached hereto as Exhibit A. (Checklist, Item 2(g).)

The quality of water to be used for recharge purposes is very good and is not expected to increase the total dissolved solids and organic constituent concentrations in the local ground water. However, the quality of water for recharge will vary and must be monitored in order to avoid degradation of local water quality and exacerbation of negative salt balance in the region. Areas of soil contamination from previous oil and agricultural operations occur at or near several proposed recharge areas. These areas will be avoided to prevent percolation through these soils which could adversely affect ground water quality. Hydrocarbon contamination has been detected as deep as 70 feet along the Wait-Midway Pipeline owned by Chevron Pipeline Company to the northeast of the Property. This same pipeline also traverses the Property. Although no new recharge basins will be located immediately over this pipeline, KWBA will hold Chevron accountable so that KWBA can utilize the KWB. Remediation of this contamination will be coordinated by the Regional Water Quality Control Board, which has assumed jurisdiction of this matter. Several other pipelines exist in the Project area in addition to the Chevron pipeline. These alignments have been investigated by boring holes with a hand auger along the alignments at 100 foot spacings without encountering hydrocarbon soil contamination. (Checklist, Item 2(h).)

The Project will cause an increase in the diversion of surface water from the Kern River channel to adjacent recharge basins under certain circumstances. The water will be diverted to new recharge basins outside the Kern River Channel when river flows are high. (Checklist, Item 2(f).)

During recharge periods, the Project will change the absorption rate and pattern at the project because water will be impounded to maximize conservation of water within the Project area. (Checklist, Item 2(b).)

The Project facilities will have a beneficial impact on flood levels in the area because flood waters will be diverted from the Kern River under high flow conditions. (Checklist, Item 2(c).)

The basins will not create flood hazards under Project conditions because there are no private structures, buildings, or properties near the basins that could be adversely affected.

The Project will have no impact on the water level or surface area of any existing pond, lake or reservoir.

Temporary erosion and sedimentation associated with construction activities may occur; however, this impact would be localized, incidental and short-term. (Checklist, Item 1(e).)

The Project will increase the amount of ground water at the Project site during recharge periods. The Project is designed and intended significantly to enhance local ground water supplies by conserving surplus surface water supplies.

The Project may cause local mounding of ground water during extended periods of recharge. This activity would result in lower cost of pumping and may result in changes in the direction and movement of ground water.

The Project will increase the amount and reliability of public water supplies provided by the Agency. Overall, the Project is considered to have a net beneficial impact on public water supplies.

The Monterey Agreement EIR found no substantial impact to either to surface water or to groundwater due to the Project. This Initial Study hereby incorporates that analysis by reference. See Monterey Agreement EIR section 4.2, at pp. 4-4, 4-8, and 4-31 - 4-32.

Mitigation Measure C-1. Implementation of MOU

The KWBA MOU requires all the parties thereto to operate their projects in a manner to maintain and, when possible, enhance groundwater quality. If significant adverse effects are detected due to the operation of the Kern Water Bank, KWBA will curtail and/or relocate the recharge and recovery operations as necessary to avoid the impacts, consistent with the KWBA MOU. The KWBA MOU establishes a monitoring committee which bears the responsibility of ensuring that the parties meet their obligations under the KWBA MOU.

Mitigation Measure C-2. Hydrocarbon Contamination Monitoring

KWBA will continue to monitor the remediation of the current and any future hydrocarbon contamination. The Regional Water Quality Control Board has assumed jurisdiction of the Wait-Midway Pipeline, owned by Chevron Pipeline Company..

D. Air Quality

Slight increases in wind generated fugitive dust may occur during initial grading; however, this impact can be minimized by the use of a watering truck. The Project site has very little relief and therefore, an increase in local water erosion from surface water runoff resulting in increased off-site sedimentation is not expected to occur.

The Project will result in increased air emissions from vehicles and equipment during the operation and construction period. However, the emissions will be short term and will be in compliance with all applicable standards. These emissions will be non-recurring and in any event would be approximately equal to the emissions normally associated with agricultural activities on similarly sized parcels. (Checklist, Item 3(a).)

The Project may result in the generation of objectionable odors, due to the decomposition of organic matter within the basins. This impact is not expected to be significant, however, because no sensitive receptors should be within range of any objectionable odor. (Checklist, Item 3(b).)

The Project has the potential to increase the levels of humidity at the Project site during periods of recharge due to the presence of extensive surface water. (Checklist, Item 3(c).)

The analysis in the Monterey Agreement EIR regarding impacts to air quality on the Kern Fan Element caused by the Project, set forth at section 4.3, pages 4-36 to 4-38, is incorporated herein by this reference.

Mitigation Measure E-1. A watering truck will be used to minimize fugitive dust generated during grading when conditions require, such as on dry, windy days.

E. Agriculture

The Kern Water Bank Project was purchased by DWR in 1988. Agricultural activities on the land have been phased out by DWR due to drought in 1990/1991, as such, the proposed water banking facilities will occur on lands no longer under production, and therefore will not cause a reduction in agricultural acreage. Some land fallowed by DWR will be returned to agriculture usage. The Project will increase the amount and reliability of agricultural water supplies, and contribute beneficially to agricultural production in the region.

None of the lands at the Project site are under a Williamson Act contract.

The analysis in the Monterey Agreement EIR regarding impacts to land use on the Kern Fan Element caused by the Project, set forth at section 4.6, pages 4-76 to 4-83, is incorporated herein by this reference.

F. Natural Resources

There are mineral interests over a significant portion of the Project site which are not owned by KWBA.

Mitigation Measure F-1. Location of Recharge and Recovery Facilities.

The location of the proposed basins and canals will be established to avoid conflicts with existing and future known mineral activities.

G. Cultural Resources

A number of prehistoric sites have been recorded at or near the Project site, several of which appear to be significant due to their potential to yield important information about prehistory and because some of the sites may contain burials. Preliminary field reconnaissance surveys indicate that other sites are present in areas of slightly higher elevation. Generally, areas of higher elevation are not suitable for recharge and will not be inundated.

No historic or prehistoric buildings or structures are present at the sites. Based on information developed to date, no unique ethnic resources are present at the sites. Based on information developed to date, the sites have not been used for religious purposes. KWBA has retained Three Girls & a Shovel (TG&S) to prepare an initial report and develop procedures for constructing KWB facilities so as to mitigate impacts on cultural resources. A copy of this report is incorporated herein as Exhibit B. (Checklist, Item 8(a).)

The analysis in the Monterey Agreement EIR regarding impacts to cultural resources on the Kern Fan Element caused by the Project, set forth at section 4.5, pages 4-66 to 4-76, is incorporated herein by this reference.

Mitigation Measure G-1. Implementation of Cultural Resources Report.

KWBA will comply with the mitigation procedures set forth in the Cultural Resources Assessment and Plan For the Kern Water Bank Authority Project Near Bakersfield, Kern County California, summarized below and incorporated by this reference, which are expected to reduce any impact to cultural resources within the KWB to a level of insignificance:

A. Prior to any ground-disturbing work on the KWB, anthropologists or other qualified individuals from TG&S shall engage in pedestrian surveys of the areas to be impacted, with the survey reconnaissance to be at 5- to 15-meter transects.

B. Any cultural resources found during the survey process will be recorded, mapped, evaluated and mitigated prior to the ground-disturbing activity, pursuant to Section 106 of the National Historic Preservation Act.

C. The eight recorded archeological sites on the KWB will be evaluated and mitigated pursuant to Section 106.

D. If any human remains are found at any time on the KWB, work will be halted in the area of the discovery, and the Kern County coroner will be notified.

H. Recreation

The KWB Project is located near the Buena Vista Aquatic Recreation Area and the Tule Elk Preserve. In addition, the Kern River traverses the Project. The upstream portions of the Kern River in the 2010 Planning Area are designated as recreational and open space areas in which land uses are regulated by the joint City of Bakersfield and the Kern County Kern River Plan. This plan includes the development of a future bikeway from Bakersfield to the Buena Vista Aquatic Recreational Area. Development of basins and canals will not impede these plans because the bikeways can be routed through the Project site in the long term. There is a potential for private hunting clubs on the Project site using portions of the new recharge basins. (Checklist, Item 10(a).)

The analysis in the Monterey Agreement EIR regarding impacts to recreation on the Kern Fan Element caused by the Project, set forth at section 4.7, pages 4-83 and 4-89, is incorporated herein by this reference.

The Project is expected to have a beneficial impact on recreation.

I. Aesthetics

The establishment of basins will enhance the visual setting of the project site, particularly from Highway 5. No obstruction of any scenic vista or view open to the public will occur.

J. Light and Glare

No nighttime lighting will be permanently installed as part of the proposed Project.

K. Noise

Construction of new facilities will temporarily increase local noise levels due to construction equipment. However, there are no noise-sensitive land uses in proximity to the proposed facilities that could be affected.

L. Population

The proposed Project will not displace any residents. Construction will be accomplished with existing local contractors and will not require the importation of workers. The Project recovers water during dry years and will regulate existing water supplies and not create new water supplies.

M. Transportation

During construction, there will be additional vehicular and truck traffic on local roads and highways, and on dirt roads within the Project site. However, the volume of this short-term traffic is expected to be very low and readily accommodated by available capacity on local public roads and highways. (Checklist, Item 16(a).)

The Project will not alter existing public road systems or circulation patterns because no public road will be closed or re-aligned as a result of the Project. Construction of the Project will increase the number and location of private access roads within the Project area.

All parking during construction of the Project will occur on site and will have no effect on public facilities.

Construction-related traffic will be routed along public roads according to state requirements and is not expected to increase the level of hazards along nearby public roads.

N. Public Services

The proposed Project will not:

- increase the level of fire hazard in the area,
- increase the need for patrols by the Sheriffs Department,
- result in greater population and need for schools,
- increase the need for public recreational facilities, or
- increase the need for maintenance of public facilities including roads.

(Checklist, Item 17.)

O. Utilities

Pumps to convey water to and from the site and, to a limited degree to move water on the site, could be powered by electricity and natural gas and provided by

Pacific Gas and Electric and by temporary, diesel powered pumps. Electrical power will be delivered within the site by a system of low-voltage wooden power poles.

P. Human Health

Ponding of water for recharge may result in potential mosquito concerns. However, this vector will be controlled by the local mosquito abatement district and no adverse human health hazard is expected. As a mitigation measure, the KWBA has submitted a written mosquito abatement plan to both West Kern Mosquito Vector District and the Kern Mosquito Vector District. A copy of the plan is attached hereto as Exhibit C and incorporated by this reference. (Checklist, Item 19.)

Construction and maintenance workers may be exposed to valley fever during earth moving activities by inhaling spores, if the fungus is present in the soils. No cases of valley fever were reported following construction of the first 3000 acres of basins. When appropriate, masks to avoid inhaling dust, as is customary in the industry.

The analysis in the Monterey Agreement EIR regarding impacts to human health on the Kern Fan Element caused by the Project, set forth at section 4.9, pages 4-103 to 4-104, is incorporated herein by this reference.

Mitigation Measure P-1. Implementation of Mosquito Abatement Plan.

In accordance with the Mosquito Abatement Plan, KWBA will engage in the following procedures which are expected to reduce any impact due to the breeding of mosquitoes in the recharge basins to insignificance:

- A. KWBA will notify staff of the Mosquito Vector Districts of planned use of recharge basins.
- B. KWBA will implement a water edge road construction pilot program to determine whether KWBA can successfully give Mosquito Vector District spray vehicles access to the recharge basins. If the pilot program is successful, KWBA will build further water edge roads as mutually agreed between KWBA and the Mosquito Vector District staff. If the program is unsuccessful, KWBA and Mosquito Vector District staff will develop an alternative program.
- C. Ponding in certain sections will be phased out. In these sections, KWBA will cycle the spreading process to keep water moving.
- D. KWBA will develop a mosquito fish breeding program in conjunction with Mosquito Vector District staff.
- E. Roads on the KWB will be kept in a reasonable condition to allow the districts access to the KWB.

F. KWBA will include district staff in adaptive management planning to review the success of mosquito control techniques and to develop improved mosquito control techniques.

Mitigation Measure P-2. Avoidance of Valley Fever.

All construction workers at risk of inhaling dust shall wear masks with filters designed to trap spores of the size of valley fever fungus.

Q. Secondary Impacts

Any secondary impacts, such as growth-inducing impacts, from the Project should be minimal.

The Project is expected to have a maximum storage capacity of about 1.1 million acre feet of water, and a maximum recovery rate of about 300,000 acre feet of water per year. However, the amount of water that will be in the KWB at any time and therefore available for recovery is entirely speculative. Since the availability of water at any time in the future will be always be speculative, it is highly unlikely that any new growth, either urban or agricultural, will develop as a result of the Project.

One likely use of water from the Project is to increase the availability and therefore lower the price of SWP water during drought years. Since, according to the Monterey Agreement EIR, the cumulative annual entitlement of all SWP contractors exceeds 4 million acre feet annually, the availability of an additional 300,000 acre feet represents only another 7%. This small increase is not likely, of itself, to lead to any growth-inducing impacts.

R. Cumulative Impacts

The only cumulative impacts from the Project should be beneficial impacts. As discussed above in Section II.C, the KWB was transferred from DWR to KCWA and then to KWBA as part of the Monterey Principles. Implementation of the Monterey Principles, including the operation of the Project, should lead to fewer and smaller shortages of deliveries of water from the SWP to certain SWP contractors in drought years. Reducing the impact of droughts should result in beneficial impacts to the environment.

The possible beneficial and adverse impacts to the environment due to the implementation of the Monterey Principles was studied at length in the Monterey Agreement EIR. That analysis is incorporated herein by this reference.

Implementation of the conservation bank and sale of conservation credits to qualified third parties should have minimal cumulative impacts. Even under the worst-case analysis, use of the conservation bank could lead to habitat loss of 3,000 acres

within the Master Permit Credit Area. Moreover, activities using conservation credits will be limited to areas with limited habitat value, and will qualify for the use of conservation credits only with the approval of the Resource Agencies.

V. LAND USE AND GENERAL PLAN CONSISTENCY

The lands at the Kern Water Bank site were acquired by KWBA for the express purpose of recharge and recovery. Secondary land uses will include wildlife habitat and oil development in between recharge facilities. The proposed Project will be consistent with these land uses. The proposed uses are consistent with existing land uses on Project lands outside the Kern Water Bank.

The Kern County General Plan use designations at the Project site include Intensive Agriculture (8.1) and Mineral and Petroleum Development (8.5). Water storage is a compatible land use with Intensive Agriculture designation, but is not specifically identified as an allowable use in Mineral and Petroleum areas.

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A CULTURAL RESOURCES ASSESSMENT AND PLAN FOR THE KERN WATER BANK
AUTHORITY PROJECT NEAR BAKERSFIELD, KERN COUNTY, CALIFORNIA

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INTRODUCTION

At the request of Peggy J. Poor representing the Kern Water Bank Authority, Three Girls and a Shovel (see Appendix III for qualifications) located at 2820 Alta Vista, Bakersfield, California requested a records search on the project area south of the city of Bakersfield in eastern Kern County. The Kern Water Bank Authority is preparing to drill wells and build percolation ponds for the purpose of banking water in the southern San Joaquin Valley. The project will involve digging for installation of new water wells and earth moving to build berms behind which water will stand in ponds to be percolated into the ground increasing the natural water table levels. The basins will be constructed using the natural contours of the land, leaving the basin bottoms as natural as possible, thereby, creating minimal disturbance to the ground. By selecting low-lying depression areas, the projects will possibly avoid the mounds and hillocks historically preferred by the prehistoric Native American inhabitants of the land.

Historically, most of the project area has been used as farmland for cotton, grains, alfalfa, and other crops. Possibly future farming may be permitted as a secondary land use within the subject area. It should be noted here that agriculture does not destroy archaeological sites. Murphy (1990) notes that plowing and ripping disturb and move surface artifacts but the cultural deposit is not physically removed from the site. Therefore, important data remain.

Present oil extraction activities on the project area will continue.

The purpose of this study was to satisfy CEQA requirements for the identification and protection of archaeological resources on lands proposed for development and to satisfy Federal regulations related to the National Environmental Policy Act (NEPA) concerning the identification and protection of significant cultural resources. The assessment must find that the project will not result in adverse effects to any cultural resource properties eligible for listing in the National Register of Historic Places, pursuant to Section 106 of the National Historic Preservation Act as outlined in the Code of Federal Regulations (36 CFR 800).

In order for potential impacts to cultural resources to be considered significant under federal law, the resources in question must be found to be eligible or potentially eligible for listing in the National Register of Historic Places (NRHP) according to criteria for eligibility published in 36-CFR 60.4.

EXECUTIVE SUMMARY

A cultural resources assessment and a proposed phased work program was prepared by Three Girls and a Shovel (TG&S) for the Kern Water Bank Authority (KWBA) of Bakersfield, Kern County, California. The KWBA is proposing a water banking and management program to be located on a 19,900 acre site southwest of Bakersfield. The program would require the construction of recharge basins, water conveyance facilities, and water wells.

This assessment consists of a required records search prepared by the Southern San Joaquin Valley Information Center located at the California State University, Bakersfield, and a proposed management plan for completing the archaeological requirements as set forth in the California Environmental Quality Act (CEQA). The assessment includes a discussion of the records search, an ethnography of the Southern Valley Yokuts, a statement of policy regarding confidentiality of archaeological sites, an outline of standard archaeological procedures, a scope of work for the management plan, and recommendations for the protection of any cultural resources that may be found on the project area. No field work was conducted at this time.

The project area is archaeologically sensitive. There are numerous recorded archaeological sites on and adjacent to the project area.

The criteria for eligibility for listing in the NRHP as indicated in 36 CFR 60.4 are as follows:

The quality of significance in American History, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and Local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history, or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack distinction; or
- (d) that have yielded, or may be likely to yield, information important to prehistory or history.

PROJECT LOCATION

The project area is located in the southern end of the San Joaquin Valley, south of Bakersfield, and further, south of Taft Highway. The project area occupies part or all of Sections 1, 12, 13, 24, 25, 26, T. 30 S., R. 25 E., MDBM, as shown on the USGS Stevens, California 7.5' series topographic quadrangle, part or all of Sections 6, 7, 17, 18, 19, 20, 28, 31, 32, 33, T. 30 S., R. 26 E., MDBM, as shown on the USGS Stevens, California 7.5' series topographic quadrangle, and part or all of Sections 12, 13, 24, 5, 7, 18, 19, 8, 17, 20, 4, 9, 16, 21, 3, 10, 15, 22, 27, 34, 11, 14, 23, 26, and 35, T. 30 S., R. 25 E., as shown on the USGS Tupman, California 7.5' series topographic quadrangle (Fig. 1).

RECORDS SEARCH

A Records Search of the subject property, and the area immediately surrounding it, was conducted at the Southern San Joaquin Valley Archaeological Information Center at California State University, Bakersfield (CSUB) (Appendix I). The records search indicated there are eight recorded sites, one reported site, and two isolate finds on the subject property. Two of the

recorded sites have been test excavated. There are over 30 recorded sites within a mile radius of the project area. There have been four surveys conducted on the project area and fifteen surveys on land immediately adjacent or within two miles of the project area.

CA-KER-667 is a prehistoric site consisting of a scatter of shell and milling tool fragments including a steatite bowl fragment, a sandstone metate fragment and a mano fragment.

CA-KER-2076 is a prehistoric site consisting of flake scatter of chert, chalcedony, basalt, and obsidian debitage.

CA-KER-2279 is a prehistoric site consisting of one northern side-notch point base of obsidian, one rhyolite core, one chalcedony core, and chert, chalcedony and basalt flakes.

CA-KER-2080 is a low mound where a flake of chert, a flake of basalt, and fresh water clam shells were observed.

CA-KER-2281 is a prehistoric site consisting of several chert and basalt flakes.

CA-KER-2282 is a prehistoric site consisting of a mano fragment, flakes, fire affected rock, and burnt bone. A test excavation was conducted on a portion of this site off KWBA property.

CA-KER-3073 (CA-KER-3089) is a prehistoric site consisting of 50 plus chert and chalcedony flake tools, 20 basalt flake tools, jasper flakes, a basalt core, retouched flakes and flake debris, fire affected groundstone fragment and other groundstone fragments. Originally recorded as two separate sites, it was subsequently determined that this was one large site area. Test excavation was conducted on this site.

CA-KER-3280 is a prehistoric site consisting of a flake scatter and groundstone fragments.

The reported site is called the fire department site and has not been formally recorded. Located on an east/west trending mound, artifacts are reported to be found every time the fire department conducts subsurface activities on the mound.

The records search also shows a number of archaeological sites recorded on property immediately adjacent to the KWBA project area. Adjacent on the west is the Tule Elk Preserve. This area is unique in the valley in that the terrain is virtually unmodified. Natural mound and slough areas exist

intact, with archaeological sites undamaged by farming or construction activities.

Twelve archaeological sites are recorded on the Tule Elk Preserve, including three that touch the KWBA project boundary and two others that are within 200 meters of the boundary.

Immediately adjacent on the east is McAllister Ranch. One mound site, CA-KER-2283, lies on both KWBA property and McAllister Ranch property. Eleven other sites are recorded on McAllister Ranch within one mile of the KWBA project.

One of these eleven sites is CA-KER-668, also known as the Dance House Site. This site was originally recorded in 1979 and has been the subject of additional studies within the last three years. The site lies on a long mound and surface artifacts include the typical flakes, goundstone, and shell beads. However, unique to the site are the remains of a large semi-subterranean structure. The remains form a large depression measuring approximately 20 meters across.

Originally there would have been wooden supports and a roof, probably of tule thatch or mats. The roof and supports are long since gone, the sides presently slope inward, and a hard packed floor is visible. Cremation remains are eroding out of the floor of the structure. Full interments are known to exist on other areas of the mound.

It is called the Dance House because it is a large structure and was probably used for ceremonial purposes. Such dance house structural remains are common in northern California. However, this is the only dance house remains known in southern California. It is remarkable that these remains still exist relatively undisturbed. The mound remains untouched except for a subsurface pipeline constructed through one end. The land to the north is in agriculture, and, oil field activities are located to the south.

Because of the eight recorded sites on the project area and the numerous sites on adjacent property, this project area is considered to be archaeologically sensitive.

ENVIRONMENTAL BACKGROUND

The project area lies in the extreme southern end of the San Joaquin Valley at an elevation of about 300 to 325' and supports a typical desert plant community. Plants known in the area are saltbush, sage, buckwheat, and Mormon tea. The terrain is flat with a generally southerly slope. There is some evidence of alluvial action.

PREHISTORIC ENVIRONMENTAL SETTING

A recounting of the prehistoric environment of California and the San Joaquin Valley is presented in Michael J. Moratto's "California Archaeology" (1984). The following is excerpted and paraphrased from that source.

The pre-contact Native Americans were completely reliant upon their natural resources. They had extensive knowledge about habitats and animals, plants, climate, rocks, and minerals. They knew how to place villages to maximize the environmental surroundings. Their cultures were strongly influenced by natural conditions and it is necessary to understand California's environmental setting to understand its pre-historic inhabitants and interpret the later archaeological record.

California covers approximately 157,207 square miles and includes many geomorphic provinces. With such a large area, including a long coast line, mountains, and deserts, there is great variety and contrast in the state's physiography, geology, climate, flora, and fauna. Of special concern here is the Great Central Valley, consisting of the Sacramento Valley, the Delta, and the San Joaquin Valley.

The floor of the valley is 750 km long and 30-80 km wide and is enclosed by the Siskiyou, Sierra Nevada, Tehachapi, and Coast Mountain ranges. It is underlain, mainly, by Sierran stream sediments up to 17 km deep. Elevation ranges from sea level to 100 m, broken only by the 600 m high Sutter Buttes. The Sacramento and San Joaquin River systems drain the valley and merge into the channels and marshes of the Sacramento-San Joaquin Delta. The waters later pass through a gap in the Coast Range and empty into San Pablo Bay.

Over the centuries the valley experienced many dramatic environmental changes, including: faunal extinctions and replacement at the end of the Pleistocene, the emergence of wetlands, flooding, massive siltation, cyclical appearance and evaporation of shallow lakes, and biogeographic shifts in response to climatic fluctuations.

In ancient times lakes, marshes, and sloughs covered more than 5,000 square km in the San Joaquin Valley alone. The largest lake, Tulare, occupied a structural basin created by downwarping. Additionally, Tulare and Buena Vista Lakes were partially contained by alluvial fans reaching into the valley from the King's River and Los Gatos Creek. These coalesced into a ridge and lands to the south were so arid that runoff was often not able to maintain a discharge through the alluvium. This natural dam thus contributed to the impoundment of Tulare Lake

and its swampy basin. A similar projection from the Kern River fan westward to the McKittrick Hills formed a second dam behind which lie Kern and Buena Vista Lakes. At flood levels the Buena Vista and Tulare Lakes spilled into a single basin and with the waters of the Kern Kaweah, and King's Rivers, flowed into the San Joaquin River system. The lakes are now mostly dry due to historic drainage projects.

The Central Valley was attractive to the early inhabitants. The climate was locally varied, but generally pleasant. Precipitation was also variable and in the southern San Joaquin Valley, where it was scant, the water was supplemented by the snow melt from the mountains. The Central Valley's plains and wetlands had abundant game and vegetal foods. The bottomlands produced lush swamp vegetation valued for food, fiber, and building materials. Riparian woodlands grew along the watercourses. The waterways also provided the habitats for river mussels and many species of fish. Steatite and asphaltum occurred in the southern part of the valley and salt deposits were found in the north. With so many abundancies, resources that were lacking, such as obsidian, were easily obtainable through trade with outside areas. With such an abundance of resources and comfortable living conditions, the eighteenth century aboriginal population was 105,000, with 53,000 people in the Sacramento Valley and 52,000 in the San Joaquin.

During the long prehistory of the Central Valley there have been diverse and changing environments, along with many population movements, waves of cultural influences from neighboring groups, and a complex interplay between local and regional cultural forces. The oldest evidence for occupation of the valley comes from Tracy, Tulare, and Buena Vista Lakes and dates to about 11,500-7,500 years ago. Since the floor of the valley is covered with a thick layer of alluvium, it is likely that most of the earliest habitation evidence lies buried beneath it. This would account for the modest antiquity of artifacts, especially in the valley lowlands of the San Joaquin and Sacramento River drainages. In these areas 10 m of sediments have accumulated just during the past 5,000-6,000 years.

ETHNOGRAPHY SOUTHERN VALLEY YOKUTS

The Yokuts have been broken into three geographical divisions, the Northern, Foothill, and Southern Valley Yokuts. The project area lies within the territory of the Southern Valley Yokuts. The following information is excerpted from "Southern Valley Yokuts" by William J. Wallace (1978).

The territory of the Southern Valley Yokuts included Tulare, Buena Vista, and Kern Lakes, their connecting sloughs, and the lower portion of the Kings, Kaweah, Tule, and Kern Rivers. The area consisted of extensive swamps and marshlands which provided an enormous variety and abundance of wildlife and aquatic flora. The southern San Joaquin Valley received only 5-10 inches of rain annually and was dependent upon the additional water being brought in from the melting snows of the Sierra Nevadas. As the Yokuts adapted to this abundance of subsistence resources they developed a culture of comparatively greater material wealth and tended to live in large, more permanent settlements. It is estimated that this way of life lasted approximately 2,000 years. At the beginning of the historic period 15 different Yokuts groups were identified in the area.

Adapting to their environment, the southern Valley Yokuts developed a mixed economy subsistence pattern. It emphasized fishing, hunting waterfowl, and collecting shellfish, roots, and seeds. Most of their region was treeless except for the cottonwoods, sycamores, and willows that lined the river channels and sloughs. Oaks did not extend very far onto the valley floor and, therefore, acorns were not readily available. They were generally obtained by trade with neighboring groups.

Small land mammals and birds were only a small portion of the native diet and the Southern Valley Yokuts rarely ventured into the open country to capture antelope and elk. They did, however, capture many of the larger mammals when they came to the lakes and sloughs for water.

Various cooking methods were employed. Tule roots and seeds were ground into meal, mixed with water, and stone-boiled in baskets. Fish and meat were broiled and roasted on coals and ashes. Small earth ovens were used to bake both vegetable and animal foods. Salt grass was used for seasoning. Firewood was at a premium and dried tules were usually substituted.

Single family residences were constructed by using long poles, limbs, or sticks with one end set on the ground in an oval pattern, and the other ends brought together at the top to form a frame that was then covered with mats made from tule reeds. Some groups, using the same materials, built a distinctive long, steep-roofed communal house. This structure would shelter ten or more families. Each family would have a fireplace and outside door. Along the front of the house a long open shade porch was constructed and many of the domestic activities, such as cooking, were performed there. Additionally, each village had a communally-owned sweathouse. The men did their daily sweating and occasionally slept there.

Clothing worn by the Southern Valley Yokuts was minimal. Males were either naked or used a breechcloth. Females wore a narrow fringed apron in front and a larger back piece. In cold weather both sexes wrapped themselves in skin cloaks. Generally feet were bare, though simple skin moccasins were used when travelling over rocky, brushy terrain. The hair was worn long by men and women and held in place by a string tied around the forehead. Women, who bore the heaviest burdens, wore basketry caps to protect the forehead from the tumpline band when carrying heavy burdens. Men carried loads in net backpacks held by a chest strap. Simple design tattooing was worn mainly by women. The design consisted of lines, zigzags, and rows of dots down the chin and across from the corners of the mouth. Children had their earlobes and nasal septa pierced for insertion of an ornament.

The Yokuts technology was also shaped by the source of raw materials available. The very important tule provided the basis for their highest technological skill - basket weaving. The baskets varied in shape and use and included bowl-shaped cooking containers, conical burden baskets, flat winnowing trays, seed beaters, and a unique necked water bottle. Wood and stone crafts were quite undistinguished. Wood and many lithic materials were imported. Even stone mortars and pestles were obtained by trade. Marine shells were secured from trade with coastal peoples and used for currency and personal adornment.

Canoe-shaped rafts were constructed of dried tules and constituted the Yokuts favored mode of travel. The rafts could hold six people and their belongings.

The basic domestic and economic unit in southern Valley Yokuts society was the nuclear family. The families were grouped into patrilineal totemic lineages. A totem, an animal or bird, was a symbol representing the father's line. The totem was dreamed about, prayed to, and forbidden to kill or eat by that lineage. The lineage was a mechanism for transmitting offices, performing certain ceremonial duties, and creating mutual loyalties. These lineages were further organized into two moieties, or groups. The moieties had little to do with day-to-day life, but did serve certain functions. They would serve as opposing teams for games and as reciprocal groups in mourning rites and first-fruits ceremonies. Moiety exogamy was customary but not absolute.

There was no overall political unity among the tribes. They were split into self-governing local groups. Each group had a name, spoke a different dialect, and had a territory that was collectively owned. Some official positions were filled through

patrilineal inheritance. In the Tachi tribe each settlement had a chief for each moiety and the pair shared equal authority.

Generally Yokuts groups were peaceful, but occasional warfare did break out. Fighting was on a small scale and very little ritual was attached to warfare.

There were four occasions regarded as significant and crucial in the life of each Yokuts: birth, a girl's puberty, marriage, and death. Each of these periods required special care, attention, and ceremony.

One of the most important ceremonies was the ritual honoring the tribal dead. This usually took place annually, lasted six days, and included outside local groups. Guests came by the hundreds for the festival. The shamans were the only religious specialists of the Yokuts. They also served as "doctors".

Many rituals were accompanied by songs and instrumental music. Musical instruments included the cocoon rattle, bone and wood whistle, flute, musical bow, and a cleft-stick rattle. The major artistic accomplishment of the Southern Valley Yokuts was the decorative patterns woven into their baskets.

No significant number of Southern Valley Yokuts came under the control of the coastal Franciscan missionaries, however, significant impact to their culture resulted from infiltration of escaped natives from the missions. The runaways introduced foreign practices from their cultures which had suffered greatly from non-practice and practices acquired from the missions. Complete cultural breakdown and near-total disappearance of native peoples from the San Joaquin Valley came with the annexation of California by the United States. The land passed quickly into the hands of the settlers. The process was relatively easy since the native peoples offered little effective resistance.

Because of the early and rapid decimation of the Southern Valley Yokuts and the rapid collapse of their culture, there is relatively little published literature regarding them, and ethnographic descriptions obtained from aged informants is certainly incomplete.

STATEMENT OF CONFIDENTIALITY

Only general information about archaeological sites and artifacts can be released to the public. The information contained in the site records and site location maps is exempt under the Freedom of Information Act due to the sensitive nature of the data. Therefore, all site records and site location maps

should be maintained in a separate appendix and not included in documents distributed to the public.

SCOPE OF WORK

Standard archaeological procedures involve three phases:

Phase I: Phase I consists of a records search and a field survey. The records search is prepared by or obtained from the Southern San Joaquin Valley Information Center, housed at California State University, Bakersfield. The field survey is an on-foot survey conducted by an archaeologist. If sites are found on the project area, then the procedure moves into Phase II.

Phase II. Phase II consists of a testing program to determine the "importance" of the site, based on the California Environmental Quality Act Guidelines. One or more of the following means are usually employed: test unit excavations, surface collecting, trenching, auguring, and archival research.

After testing, if the site is deemed "unimportant" the testing in Phase II is sufficient mitigation and the procedure stops. If, however, the site is considered "important", then Phase III must be undertaken.

Phase III: Phase III consists of mitigation measures. Usually this is salvage excavation, some form of preservation, or a combination of the two.

The proposed Phase I scope of work includes:

- (1) Records search. (Completed)
- (2) Pedestrian survey of all areas to be impacted either by primary or secondary land use. Due to the archaeological sensitivity of the area, all survey reconnaissance is to be intensive (5 to 15 meter transects).
- (3) Recordation of archaeological sites discovered during Phase I reconnaissance, to include Section 106 review.
- (4) Report, with ongoing addenda, as the work progresses, project by project.
- (5) Recommendations for mitigation measures to reduce any impacts to cultural resources to an acceptable level of insignificance.

RECOMMENDATIONS

- 1) Phase I survey and report must be completed prior to any ground disturbing activities.
- 2) Cultural resources discovered during Phase I survey will be recorded, mapped, evaluated, and mitigated prior to ground disturbing activities.
- 3) Recommendations apply equally to both primary and secondary land use.
- 4) The eight previously recorded archaeological sites to be evaluated under Section 106.
- 5) Should human remains be discovered on the project area at any time, work must halt in the area of the area of the discovery and the Kern County coroner must be notified. (In Kern County the coroner is the sheriff.)
- 6) Any artifacts collected during archaeological activities belong to the landowner. However, it is recommended that any artifacts be curated at the Kern County Museum.
- 7) Local Native American groups should be contact regarding any concerns they may have for this project (see Appendix II).

REFERENCES

- Ancient Enterprises
1979 Archaeological Investigations at CA-KER-1051. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Beardsley, R.K.
1954 Temporal and Areal Relationships in Central California Archaeology. Berkeley: University of California Archaeological Survey Reports 24, 25.
- Gayton, A.H.
1948 Yokuts and Western Mono Ethnography, I: Foothill Yokuts. University of California Anthropological Records 10(1).
- Gifford, E.W. and W. Egbert Schenck
1926 Archaeology of the Southern San Joaquin Valley, California Publications in American Archaeology and Ethnology 23(1).
- Hartzell, Leslie
1992 Hunter-Gatherer Adaptive Strategies. Ph.D. dissertation pages 265-295. Dissertation on file at the Southern San Joaquin Valley Archaeological Information Center.
- Heizer, Robert F. and Albert B. Elsasser
1980 The Natural World of the California Indians. Berkeley: University of California Press.
- Heizer, Robert F. and M. A. Whipple
1971 The California Indians. A Source Book. 2nd edition. Berkeley: University of California Press.
- Jackson, Scott R.
1990 An Archaeological Assessment for Two Pipeline Corridors. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Kroeber, A.L.
1925 Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78.
- Latta, Frank
1977 The Handbook of the Yokuts Indians. Santa Cruz: Bear State Books.

- McManus, James
1985 Widening Project 06-KER-119 P.M. 14.9/19.8. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Moratto, Michael
1984 California Archaeology. Orlando: Academic Press.
- Murphy, Peggy B.
1990 An Archaeological Assessment of 450 Acres of Land Owned by North of the River Sanitation District Northwest of Bakersfield, Kern County, California. Report on file at the Southern San Joaquin Valley Information Center.
- Osborne, Richard
1994 Negative Archaeological Survey Report 06-KER-5 P.M. 38.7.9. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Osborne, Richard and Mark Sutton
1993 Archaeological Inventory and Assessment of the Proposed Pacificana Project. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Parr, Robert E.
1995 An Archaeological Survey Report for a Proposed Route Adoption on Highway 58/First Addendum. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Parr, Robert
1995 An Archaeological Survey for a Proposed Route Adoption on Highway 58/First Addendum. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Parr, Robert and Richard Osborne
1992 Archaeological Testing of Site CA-KER-3073 in the Southern San Joaquin Valley. Report on file at the Southern San Joaquin Valley Archaeological Information Center.
- Parr, Robert and Richard Osborne, et. al.
1992 An Archaeological Survey for a Proposed Route Adoption Study for CalTrans on Highway 58. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Peak & Associates

1991 A Cultural Resource Assessment of Sample Areas of NPR No. 1, Kern County, California. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Peak & Associates

1992 Report on Archaeological Testing of 12 Sites on NPR #1, CA-KER-3076 through 3087. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Pruett, Catherine Lewis

1991 An Archaeological Assessment of a Portion of the S.W. Quarter of Section 32, T. 29S., R. 25E., Located in West Bakersfield. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Schiffman, Robert

1987 An Archaeological Investigation for Southern California Gas Company's 24' Gas Line. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Schiffman, Robert

1988 An Archaeological Investigation for 40 Acre Subdivision. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Schiffman, Robert

1991 Archaeological Investigation of Jasman Development Project. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Schiffman, Robert

1976 Ten Section Oil Field Survey. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Schiffman, Robert

1993 Archaeological Test Excavations for McAllister Ranch. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Singer, Clay

1994 Stage I Boundary Testing at CA-Ker-668. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Uli, J. and Robert Schiffman

1984 Rosedale Wastewater Sewage Treatment Plant. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Valdez, Sharynn

1992 An Archaeological Assessment of 41.69 Acres of Land West of Bakersfield. Report on file at the Southern San Joaquin Valley Archaeological Information Center.

Wallace, William J.

1978 Southern Valley Yokuts. In: The Handbook of North American Indians, Vol. 8, California. Washington D.C.: Smithsonian Institution.

APPENDIX I: RECORDS SEARCH

California
Archaeological
Inventory



FRESNO
KERN
KINGS
MADERA
TULARE

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To: Catherine Pruett, Archaeologist
Three Girls & A Shovel (T G & S)
2820 Alta Vista Drive
Bakersfield, CA 93305

(RS# 96-547)

RE: Kern Water Bank Authority Project

County: Kern

Map(s): Stevens and Tupman 7.5's

The Information Center is under contract to the State Office of Historic Preservation and is responsible for the local management of the California Historical Resources Inventories. The Center is funded solely by research fees, and a grant from the State Office of Historic Preservation. The Information Center does not conduct fieldwork and is not affiliated with any archaeological consultants who conduct fieldwork.

CULTURAL RESOURCES RECORDS SEARCH

The following are the results of a search of the cultural resources site files at the Southern San Joaquin Valley Information Center. These files include known and recorded archaeological and historic sites, inventory and excavation reports filed with this office, and properties listed on the National Register of Historic Places (9/96), the California Historical Landmarks, The California Inventory of Historic Resources, and The California Points of Historical Interest.

The following summarizes the current information available on the subject property based on the records outlined above.

PRIOR CULTURAL RESOURCE INVENTORIES OF THE SUBJECT PROPERTY AND SURROUNDING AREAS

There have been four previous archaeological surveys conducted within the project area. There has been two archaeological surveys conducted on the immediately adjacent property. There have been eight surveys conducted within a mile of the project boundaries. Survey locations and references are enclosed.

KNOWN CULTURAL RESOURCES ON THE SUBJECT PROPERTY AND SURROUNDING AREAS

There are nine recorded sites in the project area. There are four recorded sites on the immediately adjacent property whose boundaries cross over into the project area. See the enclosed map for details.

(RS# 96-547)

There are 31 recorded sites within a mile of the project area boundaries. This project area is adjacent to the McAlister Ranch project and the Dance House Site, CA-KER-668.

There have been excavations conducted on various sites, three of which are within the project boundaries.

There are no resources in the project area that are listed on the National Register of Historic Places, The California Historical Landmarks, The California Inventory of Historic Resources, or California Points of Historical Interest.

COMMENTS

For additional information regarding this project, the Native American Heritage Commission in Sacramento will, upon request, supply you with a list of Native American individuals/organizations who may have concerns regarding resources in this vicinity. The NAHC will also consult their "Sacred Lands Inventory" file in order to determine if such resources are in this project area and the way in which these resources should be dealt with.

Survey locations and bibliographic references are plotted on the enclosed map. Enclosed are copies of the site records, survey reports, excavation reports and the materials relating to McAlister Ranch as you requested. If you need any additional information for this project, please don't hesitate to contact me at (805) 664-2289.

By:



Adele Baldwin
Assistant Coordinator

Date: December 16, 1996

Fee: \$90.00/hr.

Invoice # 6937

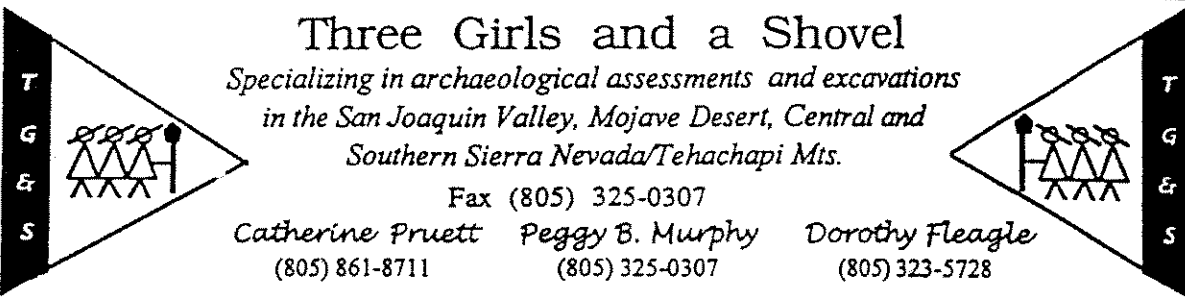
c: Larry Myers, Executive Secretary
Native American Heritage Commission

APPENDIX II: NATIVE AMERICAN CORRESPONDENCE

Three Girls and a Shovel
*Specializing in archaeological assessments and excavations
in the San Joaquin Valley, Mojave Desert, Central and
Southern Sierra Nevada/Tehachapi Mts.*

Fax (805) 325-0307

Catherine Pruett *Peggy B. Murphy* *Dorothy Fleagle*
(805) 861-8711 (805) 325-0307 (805) 323-5728



Larry Meyers
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, California 95814

January 6, 1997

Dear Mr. Meyers,

We are under contract with the Kern Water Bank Authority (KWBA) to provide a cultural resources assessment for their EIR. We have conducted a records search at the Southern San Joaquin Valley Information Center and are aware that nine prehistoric sites are currently recorded within KWBA property. We are also aware of the numerous prehistoric sites immediately adjacent to KWBA property and consider much of the KWBA project area is be archaeologically sensitive.

Enclosed is a map of KWBA property. The property is located on the Stevens and Tupman 7.5' topographic maps, within Township 30S, Range 25E and 26E.

Please review your Sacred Lands File and provide us with any information pertinent to this project. Also, please send us your list of Most Likely Descendants for the Southern San Joaquin Valley.

Sincerely,

Catherine Lewis Pruett

Three Girls and a Shovel
*Specializing in archaeological assessments and excavations
 in the San Joaquin Valley, Mojave Desert, Central and
 Southern Sierra Nevada/Tehachapi Mts.*

Fax (805) 325-0307

Catherine Pruett Peggy B. Murphy Dorothy Fleagle
 (805) 861-8711 (805) 325-0307 (805) 323-5728

J.R. Manuel
 Native American Heritage Preservation Council
 Route 7, Box 251
 Porterville, CA 93257

January 6, 1997

Dear J.R.,

We are under contract with the Kern Water Bank Authority (KWBA) to provide a cultural resources assessment for their EIR. We have conducted a records search at the Southern San Joaquin Valley Information Center and are aware that nine prehistoric sites are currently recorded within KWBA property. We are also aware of the numerous prehistoric sites immediately adjacent to KWBA property and consider much of the KWBA project area is be archaeologically sensitive.

Enclosed is a map of KWBA property. The property is located on the Stevens and Tupman 7.5' topographic maps, within Township 30S, Range 25E and 26E.

Please let us know if you, or any members of the NAHPC have information, questions, or concerns regarding this project. Feel free to contact me if you would like to discuss this project further.

Very truly yours,

Catherine Lewis Pruett

APPENDIX III: QUALIFICATIONS OF PROJECT PERSONNEL

Catherine Lewis Pruett
2820 Alta Vista Drive
Bakersfield, California 93305

EDUCATION

1987	MA Behavioral Science, CSU Bakersfield
1984	BA Anthropology, CSU Bakersfield
1977	AA Anthropology, Bakersfield College

SPECIALTY:

Archaeology of southern California, in particular the southern Sierra Nevada/Tehachapi Mountains, the southern San Joaquin Valley, and the western Mojave Desert.

AREAS OF FIELDWORK:

Active in archaeological investigations since 1978. Experience in the central and southern San Joaquin Valley, the southern Sierra Nevada/Tehachapi Mountains, the Temblor and Coast Ranges, and the Mojave Desert.

SUMMARY OF EXPERIENCE:

Twenty years of field experience in central and southern California, participation in over 200 surveys and excavations, 14 years as Assistant Coordinator and three years as Coordinator of the Southern San Joaquin Valley Archaeological Information Center. Two years as Assistant Director of the Cultural Resource Facility, California State University, Bakersfield. One year as a private consultant.

A complete vita is available upon request.

Dorothy Fleagle
822 Niles St.
Bakersfield, California 93305

EDUCATION

1996	MA Behavioral Science, California State University, Bakersfield (in progress)
1990	BA Anthropology, California State University, Bakersfield
1988	AA Anthropology, Bakersfield College

SPECIALTY:

Archaeology of the southern Sierra Nevada Mountains, Great Basin pertaining to Tubatulabal, and California pertaining to Tubatulabal, and contemporary Tubatulabal specifically.

AREAS OF FIELDWORK:

Experience in the southern Sierra Nevada/Tehachapi Mountains, the southern San Joaquin Valley, the San Bernardino Mountains, and the western and Mojave Desert.

SUMMARY OF EXPERIENCE:

Seven years of field experience in southern and central California, participation in over 75 surveys and excavations. Six years as staff archaeologist with the Cultural Resource Facility, California State University, Bakersfield. One year as a private consultant.

A complete vita is available upon request.

Peggy Murphy
205 Hagin Street
Bakersfield, California 93309

EDUCATION

1989 BA Anthropology, California State
University, Bakersfield

SPECIALTY: Archaeology of southern California, in particular the southern Sierra Nevada, Tehachapi Mountains, the southern San Joaquin Valley, and the western Mojave Desert.

AREAS OF FIELDWORK: Active in field investigations since 1985. Experience in the southern Sierra Nevada Mountains, the southern San Joaquin Valley, and the Mojave Desert.

SUMMARY OF EXPERIENCE: Ten years of field experience in southern and central California, participation in over 75 surveys and excavations. Seven years as staff archaeologist with the Cultural Resource Facility, California State University, Bakersfield, two years as a private consultant.

A complete vita is available upon request.

MEMORANDUM OF UNDERSTANDING
REGARDING OPERATION AND MONITORING
OF THE
KERN WATER BANK
GROUNDWATER BANKING PROGRAM

This Memorandum of Understanding is entered into the 26th day of October, 1995, by and among DUDLEY RIDGE WATER DISTRICT, KERN COUNTY WATER AGENCY, SEMITROPIC WATER STORAGE DISTRICT, TEJON CASTAC WATER DISTRICT & WESTSIDE MUTUAL WATER COMPANY, LLC, and WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT, which have collectively formed the KERN WATER BANK AUTHORITY ("KWBA") hereinafter collectively referred to as "Project Participants," and BUENA VISTA WATER STORAGE DISTRICT ("BVWSD"), ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT ("RRBWSD"), KERN DELTA WATER DISTRICT ("KDWD"), HENRY MILLER WATER DISTRICT ("HMWD"), and WEST KERN WATER DISTRICT ("WKWD"), hereinafter collectively referred to as "Adjoining Entities."

RECITALS

WHEREAS, Project Participants expect title to that certain real property more particularly shown on the map attached hereto as Exhibit "A" and incorporated herein by this reference ("Project Site") to be transferred to the KWBA as provided for in the "Statement of Principles . . . for the Development, Operation and Maintenance of the Kern Fan Element of the Kern Water Bank" ("Statement of Principles") agreed to March 30, 1995; and

WHEREAS, the KWBA intends to develop and improve the Project Site as necessary to permit the importation, percolation and storage of water in underground aquifers for later extraction, transportation and use for the benefit of Project Participants, all as more fully described in Exhibit "B" attached hereto and incorporated herein by this reference ("Project"); and

WHEREAS, Adjoining Entities encompass lands and/or operate existing projects lying adjacent to the Project Site as shown on said Exhibit A; and

WHEREAS, in recent years, water banking, extraction and transfer programs in Kern County have become increasingly numerous and complex; and

WHEREAS, it is appropriate and desirable to mitigate or eliminate any short-term and long-term significant adverse impacts of new programs upon potentially affected projects and landowners within the boundaries of Adjoining Entities; and

WHEREAS, Adjoining Entities and Project Participants desire that the design, operation and monitoring of the Project be conducted and coordinated in a manner to insure that the beneficial effects of the Project to the Project Participants are maximized but that the Project does not result in significant adverse impacts to water levels, water quality or land subsidence within the boundaries of Adjoining Entities, or otherwise interfere with the existing and ongoing programs of Adjoining Entities;

NOW THEREFORE, BE IT RESOLVED that, based upon the mutual covenants contained herein, the parties hereto agree as follows:

1. Project Design and Construction. Project Participants have completed a preliminary design of the Project described in Exhibit B hereto representing the maximum facilities for the Project. Said preliminary design has been reviewed and approved by the Parties hereto. The KWBA intends to, and if it does so will, construct all or a portion of the Project

consistent with such preliminary design. Any major modifications of the facilities and/or significant changes from that described in Exhibit B and in the environmental documentation for the Project will be subject to additional environmental review pursuant to CEQA and will be subject to review of the Monitoring Committee prior to implementation.

2. Project Operation. The Project shall be operated to achieve the maximum water storage and withdrawal benefits for Project Participants consistent with avoiding, mitigating or eliminating, to the greatest extent practicable, significant adverse impacts resulting from the Project. To that end, the Project shall be operated in accordance with the Statement of Principles and the following Project Objectives and the Minimum Operating Criteria:

a. Project Objectives. Consistent with the Project Description, the Project Participants will make a good faith effort to meet the following objectives, which may or may not be met:

(1) The Parties should operate their projects in such manner as to maintain and, when possible, enhance the quality of groundwater within the Project Site and the Kern Fan Area, as shown at Exhibit C.

(2) If supplies of acceptable recharge water exceed recharge capacity, all other things being equal, recharge priority should be given to the purest or best quality water.

(3) Each project within the Kern Fan Area should be operated with the objective that the average concentration of total dissolved salts in the recovered water will exceed the average concentration of total dissolved salts in the recharged water, at a minimum, by a percentage equal to or greater than the percentage of surface recharge losses. The average shall be calculated from the start of each Project.

(4) To maintain or improve groundwater quality, recovery operations should extract poorer quality groundwater where practicable. Blending may be used to increase

extraction of lesser quality groundwater unless doing so will exacerbate problems by generating unfavorable movement of lesser quality groundwater. It is recognized that the extent to which blending can help to resolve groundwater quality problems is limited by regulatory agency rules regarding discharges into conveyance systems used for municipal supplies, which may be changed from time to time.

(5) All groundwater pumpers should attempt to control the migration of poor quality water. Extensive monitoring will be used to identify the migration of poor quality water and give advance notice of developing problems. Problem areas may be dealt with by actions including, but not limited to:

(a) limiting or terminating extractions that tend to draw lesser quality water toward or into the usable water areas;

(b) increasing extractions in areas that might generate a beneficial, reverse gradient;

(c) increasing recharge within the usable water area to promote favorable groundwater gradients.

(6) It is intended that all recovery of recharged water be subject to the so-called "golden rule." In the context of a banking project, the "golden rule" means that, unless acceptable mitigation is provided, the banker may not operate so as to create conditions that are worse than would have prevailed absent the project giving due recognition to the benefits that may result from the project, all as more fully described at paragraph 2(b)12 below.

(7) The Project should be developed and operated so as to prevent, eliminate or mitigate significant adverse impacts. Thus, the Project shall incorporate mitigation measures as necessary. Mitigation measures to prevent significant adverse impacts from occurring include but are not limited to the following: (i) spread out recovery area; (ii) provide

buffer areas between recovery wells and neighboring overlying users; (iii) limit the monthly, seasonal, and/or annual recovery rate; (iv) provide sufficient recovery wells to allow rotation of recovery wells or the use of alternate wells; (v) provide adequate well spacing; (vi) adjust pumping rates or terminate pumping to reduce impacts, if necessary; (vii) impose time restrictions between recharge and extraction to allow for downward percolation of water to the aquifer; and (viii) provide recharge of water that would otherwise not recharge the Kern Fan Basin. Mitigation measures that compensate for unavoidable adverse impacts include but are not limited to the following: (i) with the consent of the affected overlying user, lower the pump bowls or deepen wells as necessary to restore groundwater extraction capability to such overlying user; (ii) with the consent of the affected overlying user, provide alternative water supplies to such overlying user; and (iii) with the consent of the affected overlying user, provide financial compensation to such overlying user.

b. Minimum Operating Criteria.

(1) The Monitoring Committee shall be notified prior to the recharge of potentially unacceptable water, such as "produced water" from oilfield operations, reclaimed water, or the like. The Monitoring Committee shall review the proposed recharge and make recommendations respecting the same as it deems appropriate. Where approval by the Regional Water Quality Control Board is required, the issuance of such approval by said Board shall satisfy this requirement.

(2) Recharge may not occur in, on or near contaminated areas, nor may anyone spread in, on or near an adjoining area if the effect will be to mound water near enough to the contaminated area that the contaminants will be picked up and carried into the uncontaminated groundwater supply. When contaminated areas are identified within or adjacent to the Project, the KWBA and the Project Participants shall also:

(a) participate with other groundwater pumpers to investigate the source of the contamination;

(b) work with appropriate authorities to ensure that the entity or individual, if any, responsible for the contamination meets its responsibilities to remove the contamination and thereby return the Project Site to its full recharge and storage capacity;

(c) operate the Project in cooperation with other groundwater pumpers to attempt to eliminate the migration of contaminated water toward or into usable water quality areas.

(3) Operators of projects within the Kern Fan Area will avoid operating recharge projects in a fashion so as to significantly diminish the natural, normal and unavoidable recharge of water native to the Kern Fan Area as it existed in a pre-project condition. If and to the extent this occurs as determined by the Monitoring Committee, the parties will cooperate to provide equivalent recharge capacity to offset such impact.

(4) The mitigation credit for fallowed Project land shall be .3 acre-feet per acre per year times the amount of fallowed land included in the Project Site in the year of calculation (which for the present approximately 19,890 acre Project Site is 5,967 acre-feet per year).

(5) The lands described in Exhibit A (19,883 acres) may be utilized for any purpose consistent with the Statement of Principles, by the KWBA provided, however, the use of said property shall not cause or contribute to overdraft of the groundwater basin. In this connection, any consumptive use of water on the Property which exceeds .3 acre-feet per acre (i.e., the mitigation credit) on a acre by acre basis shall be provided from supplemental sources that do not create or contribute to overdraft.

(6) Each device proposed to measure recharge water to be subsequently recovered and/or recovery of such water will be initially evaluated and periodically reviewed by the Monitoring Committee. Each measuring device shall be properly installed, calibrated, rated, monitored and maintained by and at the expense of the owner of the measuring device.

(7) It shall be the responsibility of the user to insure that all measuring devices are accurate and that the measurements are provided to the Monitoring Committee at the time and in the manner required by the Monitoring Committee.

(8) A producer's flow deposited into another facility, such as a transportation canal, shall be measured into such facility by the operator thereof and the measurement reported to the Monitoring Committee at the time and in the manner required by such Monitoring Committee.

(9) The Monitoring Committee or its designee will maintain official records of recharge and recovery activities, which records shall be open and available to the public. The Monitoring Committee will have the right to verify the accuracy of reported information by inspection, observation or access to user records (i.e., P.G.&E. bills). The Monitoring Committee will publish or cause to be published annual reports of operations.

(10) Losses shall be assessed as follows:

(a) Surface recharge losses shall be fixed and assessed at a rate of 6% of water diverted for recharge.

(b) To account for all other actual or potential losses (including migration losses), a rate of 4% of water placed in a bank account shall be deducted to the extent that the Project Participant has been compensated within three (3) years following the end of the calendar year in which the water was banked at the SWP Delta Water Rate charged by DWR at

the time of payment; provided further, however, that the water purchased and subtracted from a groundwater bank account pursuant to this provision shall only be used for overdraft correction.

(c) An additional 5% loss shall be assessed against any water diverted to the Project Site for banking by, for, or on behalf of any out-of-County person, entity or organization and/or against any banked water sold or transferred to any out-of-County person, entity or organization (except current SWP Ag Contractors).

(d) All losses provided for herein represent amounts of water that are non-bankable and non-recoverable by Project Participants.

(11) Recovery of banked water shall be from the Project Site and recovery facilities shall be located therein. Recovery from outside the Project Site may be allowed with the consent of the District or entity having jurisdiction over the area from which the recovery will occur and upon review by the Monitoring Committee.

(12) Recovery of banked water may not be allowed if not otherwise mitigated if it will result in significant adverse impacts to surrounding overlying users. "Adverse impacts" will be evaluated using data applicable in zones including the area which may be affected by the Project of approximately five miles in width from the boundaries of the Project as designated by the Monitoring Committee. In determining "adverse impacts," as provided at this paragraph and elsewhere in this MOU, consideration will be given to the benefits accrued over time during operation of the Project to landowners surrounding the Project Site including higher groundwater levels as a result of operation of the Project. In determining non-Project conditions vs Project conditions, credit toward mitigation of any otherwise adverse impacts shall be recognized to the extent of the 4% loss and 5% loss recognized under paragraphs 2.b.(10) (b) and (c), for the mitigation credit recognized under paragraph 2.b.(4), if any, and to the extent of recharge on the Project Site for overdraft correction.

(13) To the extent that interference, other than insignificant interference, with the pumping lift of any existing active well as compared to non-Project conditions, is attributable to pumping of any wells on the Project Site, KWBA will either stop pumping as necessary to mitigate the interference or compensate the owner for such interference, or any combination thereof. The Monitoring Committee will establish the criteria necessary to determine if well interference, other than insignificant interference, is attributable to pumping of Project wells by conducting pumping tests of Project wells following the installation of monitoring wells (if not already completed) and considering hydrogeologic information.

(14) The Kern Fan Element Groundwater Model, with input from the Project Participants and Adjoining Entities, and utilizing data from a comprehensive groundwater monitoring program, may be used by the Monitoring Committee as appropriate to estimate groundwater impacts of the Project.

3. Project Monitoring. Adjoining Entities agree to participate in a comprehensive monitoring program and as members of a Monitoring Committee, as hereinafter more particularly described, in order to reasonably determine groundwater level and water quality information under Project and non-Project conditions. The monitoring program will more particularly require the following:

a. Monitoring Committee. A Monitoring Committee shall be established, comprised of one representative of each of the Adjoining Entities (initially 5) and one representative of each of the Project Participants (initially 6). The Committee shall:

(1) Engage the services of a suitable independent professional groundwater specialist who shall, at the direction of the Committee, provide assistance in the performance of the tasks identified below;

(2) Meet and confer monthly or at other intervals deemed to be appropriate in furtherance of the monitoring program;

(3) Establish a groundwater evaluation methodology or methodologies;

(4) Prepare a monitoring plan and two associated maps, "Well Location, Water Quality Network," and "Well Location, Water Level Network," which plan and maps depict the location and types of wells anticipated to be used in the initial phase of groundwater monitoring (said plan and maps are expected to be modified from time to time as the monitoring program is developed and operated);

(5) Specify such additional monitoring wells and ancillary equipment as are deemed to be necessary or desirable for the purposes hereof;

(6) Prepare annual water balance studies and other interpretive studies, which will designate all sources of water and the use thereof within the study area;

(7) Develop criteria for determining whether excessive mounding or withdrawal is occurring or is likely to occur in an area of interest;

(8) Annually or as otherwise needed determine the impacts of the Project on each of the Adjoining Entities by evaluating with and without Project conditions; and

(9) Develop procedures, review data, and recommend Project operational criteria for the purpose of identifying, verifying, avoiding, eliminating or mitigating, to the extent practicable, the creation of significant imbalances or significant adverse impacts.

b. Collection and Sharing of Data. The Adjoining Entities will make available to the Monitoring Committee copies of all relevant groundwater level, groundwater quality, and other monitoring data currently collected and prepared by each. KWBA shall annually report, by areas of interest, water deliveries for banking and other purposes and groundwater withdrawals.

c. Monitoring Costs.

(1) The cost of constructing monitoring wells and ancillary equipment, as identified in Exhibit B, shall be borne by Project Participants. The cost of any additional monitoring wells and ancillary equipment shall be borne as may be determined by separate agreement of the Project Participants and Adjoining Entities.

(2) Each of the parties shall be responsible for the personnel costs of its representative on the Monitoring Committee. In addition, the Adjoining Entities shall be responsible for all costs of monitoring operations and facilities within their respective boundaries and the Project Participants shall be responsible for all costs of monitoring operations and facilities within the Project Site.

(3) All other groundwater monitoring costs, including employment of the professional groundwater specialist, collection, evaluation and analyses of data as adopted by the Monitoring Committee, shall be allocated among and borne by the parties as follows: Project Participants = 50%; Adjoining Entities = 50%. Cost sharing among Project Participants shall be as agreed by them. Cost sharing among Adjoining Entities shall be as agreed by them. Any additional monitoring costs shall be determined and allocated by separate agreement of those parties requesting such additional monitoring.

(4) It is intended that one Monitoring Committee shall deal with all projects operating within the Kern Fan Area. If, as and when existing or additional projects are brought within the purview of the Monitoring Committee, the participants in said projects and the adjoining entities for said projects may join the Monitoring Committee and, upon doing so, shall share in the costs of monitoring operations on the same basis as provided herein for the original parties.

4. Modification of Project Operations. The Monitoring Committee may make recommendations to the KWBA and Project Participants, including without limitation recommendations for modifications in Project operations based upon evaluation(s) of data which indicate that excessive mounding or withdrawal is occurring or is likely to occur in an area of interest. The Monitoring Committee and its members shall not act in an arbitrary, capricious or unreasonable manner.

5. Dispute Resolution.

a. Submission to Monitoring Committee. All disputes regarding the operation of the Project or the application of this agreement, or any provision hereof, shall first be submitted to the Monitoring Committee for review and analysis. The Monitoring Committee shall meet and review all relevant data and facts regarding the dispute and, if possible, recommend a fair and equitable resolution of the dispute. The Monitoring Committee and its members shall not act in an arbitrary, capricious or unreasonable manner. In the event that (1) the Monitoring Committee fails to act as herein provided, (2) any party disputes the Monitoring Committee's recommended resolution or (3) any party fails to implement the Monitoring Committee's recommended resolution within the time allowed, any party to this agreement may seek any legal or equitable remedy available as hereinafter provided.

b. Arbitration. If all of the parties agree that a factual dispute exists regarding any recommendation of the Monitoring Committee made pursuant hereto, or implementation thereof, such dispute shall be submitted to binding arbitration before a single neutral arbitrator appointed by unanimous consent and, in the absence of such consent, appointed by the presiding judge of the Kern County Superior Court. The neutral arbitrator shall be a registered civil engineer, preferably with a background in groundwater hydrology. The arbitration shall be called and conducted in accordance with such rules as the contestants shall agree upon, and, in the

absence of such agreement, in accordance with the procedures set forth in California Code of Civil Procedure section 1282, et seq. Any other dispute may be pursued through a court of competent jurisdiction as otherwise provided by law.

c. Burden of Proof. In the event of arbitration or litigation under this Agreement, all parties shall enjoy the benefit of such presumptions as are provided by law but, in the absence thereof, neither party shall bear the burden of proof on any contested legal or factual issue.

d. Landowner Remedies. Nothing in this agreement shall prevent any landowner within the boundaries of any party from pursuing any remedy at law or in equity in the event such landowner is damaged as a result of projects within the Kern Fan Area.

6. Term. This agreement shall commence on the day and year first above written and shall continue in force and effect until terminated by (1) operation of law, (2) unanimous consent of the parties, or (3) abandonment of the Project and a determination by the Monitoring Committee that all adverse impacts have been fully eliminated or mitigated as provided in this agreement.

7. Complete Agreement/Incorporation Into Banking Agreements. This agreement constitutes the whole and complete agreement of the parties regarding Project operation, maintenance and monitoring. Project Participants shall incorporate this agreement by reference into any further agreement they enter into respecting banking of water in or withdrawal of water from the Project Site.

8. Future Projects. With respect to any future project within the Kern Fan Area, the Parties hereto shall use good faith efforts to negotiate an agreement substantially similar in substance to this MOU.

9. Notice Clause. All notices required by this agreement shall be sent via first class United States mail to the following and shall be deemed delivered three days after deposited in the mail:

Project Participants

Dale Melville
Dudley Ridge Water District
286 W. Cromwell Avenue
Fresno, California 93711-6162

William Taube
Wheeler Ridge-Maricopa
Water Storage District
P.O. Box 9429
Bakersfield, CA 93389-9429

Tom Clark
Kern County Water Agency
P.O. Box 58
Bakersfield, California 93312

Bill Phillimore
Westside Mutual Water Company
33141 Lerdo Highway
Bakersfield, California 93302-0058

Will Boschman
Semitropic Water District
P.O. Box Z
Wasco, California 93280

Dennis Mullins
Tejon-Castac Water District
P.O. Box 1000
Lebec, CA 93243

Bill Phillimore, Chairman
Kern County Water Bank Authority
c/o YOUNG WOOLDRIDGE
1800 - 30th Street, Fourth Floor
Bakersfield, CA 93301

Adjoining Entities

Martin N. Milobar
Buena Vista Water Storage District
P.O. Box 756
Buttonwillow, CA 93206

Hal Crossley
Rosedale-Rio Bravo
Water Storage District
P.O. Box 867
Bakersfield, CA 93302-0867

L. Mark Mulkay
Kern Delta Water District
501 Taft Highway
Bakersfield, CA 93307

Joe Lutje
Henry Miller Water District
P.O. Box 9759
Bakersfield, CA 93389

Jerry Pearson
West Kern Water District
P.O. Box MM
Taft, CA 93268-0024

Notice of changes in the representative or address of a Party shall be given in the same manner.

10. California Law Clause. All provisions of this agreement and all rights and obligations of the parties hereto shall be interpreted and construed according to the laws of the State of California.

11. Amendments. This agreement may be amended by written instrument executed by all of the parties. In addition, recognizing that the parties may not now be able to contemplate all the implications of the Project, the parties agree that on the tenth anniversary of implementation of the Project, if facts and conditions not envisioned at the time of entering into this agreement are present, the parties will negotiate in good faith amendments to this agreement. If the parties cannot agree on whether conditions have changed necessitating an amendment and/or upon appropriate amendments to the agreement, such limited issues shall be submitted to an arbitrator or court, as the case may be, as provided above.

12. Successors and Assigns. This agreement shall bind and inure to the benefit of the successors and assigns of the parties.

13. Severability. The rights and privileges set forth in this agreement are severable and the failure or invalidity of any particular provision of this agreement shall not invalidate the other provisions of this agreement; rather all other provisions of this agreement shall continue and remain in full force and effect notwithstanding such partial failure or invalidity.

14. Force Majeure. All obligations of the parties shall be suspended for so long as and to the extent the performance thereof is prevented, directly or indirectly, by earthquakes, fires, tornadoes, facility failures, floods, drownings, strikes, other casualties, acts of God, orders of court or governmental agencies having competent jurisdiction, or other events or causes beyond the control of the parties. In no event shall any liability accrue against a party, or its

officers, agents or employees, for any damage arising out of or connected with a suspension of performance pursuant to this paragraph.

IN WITNESS WHEREOF the parties have executed this agreement the day and year first above written at Bakersfield, California.

PROJECT PARTICIPANTS

DUDLEY RIDGE WATER DISTRICT

BY: 
Dale Melville, Manager

BY: _____

WHEELER RIDGE-MARICOPA
WATER STORAGE DISTRICT

BY: 
William Taube, Engineer/Manager

BY: _____

SEMITROPIC WATER STORAGE DISTRICT

BY: 
Bill Boschman, Engineer/Manager


BY: _____

KERN COUNTY WATER AGENCY

BY: 
Adrienne J. Matthews, President

BY: October 26, 1995

WESTSIDE MUTUAL WATER COMPANY

BY: 
Bill Phillimore, Executive
Vice-President


BY: _____

TEJON-CASTAC WATER DISTRICT

BY: 
Dennis Mullins, President

BY: _____

KERN WATER BANK AUTHORITY

BY: 
Bill Phillimore, Chairman

BY: _____

ADJOINING ENTITIES

BUENA VISTA WATER STORAGE DISTRICT

BY: Martin Milobar
Martin Milobar, Engineer-Manager

BY: _____

WEST KERN WATER DISTRICT

BY: Bob G. Bledsoe
Bob G. Bledsoe, President

BY: _____

ROSEDALE RIO BRAVO WATER
STORAGE DISTRICT

BY: Hal Crossley
Hal Crossley, Manager

BY: _____

KERN DELTA WATER DISTRICT

BY: L. Mark Mulkay
L. Mark Mulkay, Engineer-Manager

BY: _____

HENRY MILLER WATER DISTRICT

BY: Joe Lutje
Joe Lutje, Manager

BY: _____

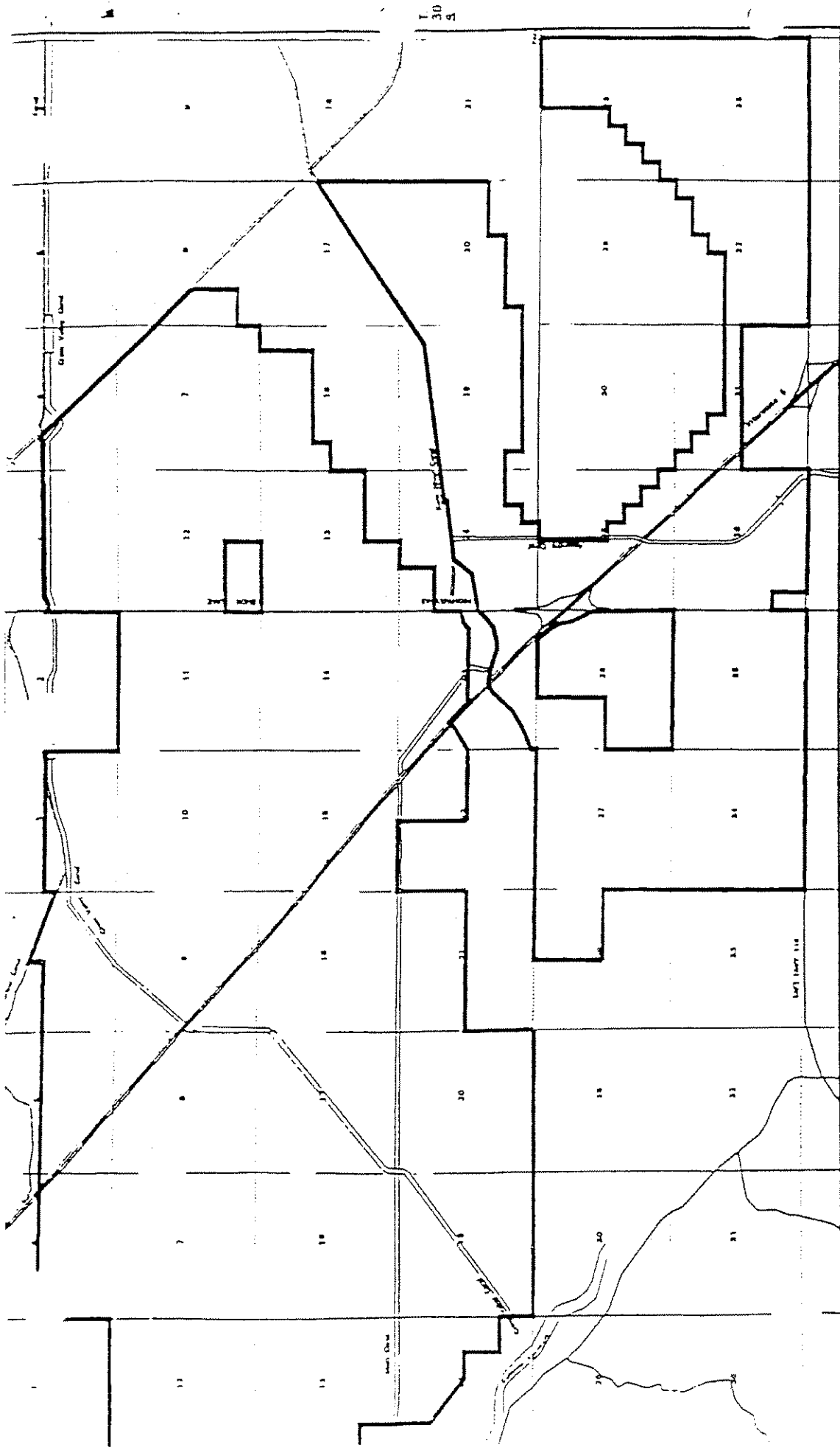


EXHIBIT A

Kern Water Bank Project Site



1 - 8280

PROJECT DESCRIPTION

Purposes

The primary water management objective of the Kern Water Bank (KWB) is to enhance water supplies for SWP contractors and entities in Kern County. Water would be stored in aquifers during times of surplus and either recovered during times of shortage or remain in the ground to assist with overdraft correction.

Sources of Water

It is anticipated that water from numerous sources will be recharged on the property in cooperation with the water rights holders and the approval of the necessary authorities. Such sources include: the Kern River, Friant-Kern, SWP, CVP, flood water and other sources that may be available from time to time.

Facilities

To achieve its water management objectives, the KWB will require the construction of recharge ponds, water conveyance facilities, and water wells. The ponds will be created by constructing low levees along contours. The ponds bottoms would be left, as far as possible, in their natural condition. The habitat surrounding and between ponds may be modified and enhanced depending on the outcome of negotiations with resources agencies and other habitat management objectives.

Of the 19,883 acres that presently constitute the Kern Water Bank property, approximately 5,000 acres are proposed for routine recharge, although, during high flow conditions, additional acreage may be utilized which would also serve to prevent flooding elsewhere in the Valley. In the wettest of years, it is hoped that close to a million acre feet can be recharged on the property. The ponds would be formed by constructing approximately 35 miles of levees with a maximum height of 3 feet.

It is proposed that water would be conveyed to and from the property using available capacity in any of the canals and conveyance facilities that may serve the property including: the Cross Valley Canal, the Friant Kern Canal, the California Aqueduct, the Pioneer Canal, the River Canal, the Kern River, Buena Vista's Main Canal and the Alejandro Canal. In each case the permission of the relevant authority will be sought for the use of each facility. It is also proposed to build a new canal that would link the River Canal to the California Aqueduct and would convey water to and from the property. Additionally, it is proposed that a diversion and conveyance facility be constructed that would divert water from the Kern River to the eastern end of the property. Such a conveyance facility would probably cross the north Pioneer property and, as such, is subject to approval from the KCWA and the City of Bakersfield.

Fifty-seven water wells currently exist on the property. Another 43 may be added before the project is complete to provide adequate recovery capacity and the necessary operational flexibility to avoid or minimize adverse impacts. Once build out of the recovery facilities is complete, the

recovery capacity will be maintained by constructing new wells to replace the capacity of older wells as they fail. New wells shall be placed no closer than one third mile from any functioning wells off the property. Wells on the property shall be located and operated so as to prevent significant non-mitigable adverse impacts to neighboring land owners.

Operation

The project shall be managed by the Kern Water Bank Authority. Day-to-day operation of the project may be contracted to other parties. Operation of the project shall be coordinated with adjoining projects.

KERN WATER BANK AUTHORITY MOSQUITO ABATEMENT PROGRAM

KWBA proposes an adaptive management approach to their cooperative efforts with the Mosquito Vector Districts, to reduce the mosquito breeding habitat on the Kern Water Bank property. This adaptive management approach recognizes the commitments and requirements imposed on the Kern Water Bank Authority by the Resource Agencies [California Department of Fish & Game and the United States Fish & Wildlife Service] in the formation of the Habitat Conservation Plan (HCP) on the overall project of the Kern Water Bank Authority.

- 1) KWBA staff will notify Mosquito Vector staff of anticipated flooding, pond usage and duration of water.
- 2) KWBA will, over a three year period, construct water edge roads on some of the existing ponds. All newly constructed ponds will have the water edge roads built in. KWBA will first construct the water edge roads on ponds S-3, S-4, S-5, S-6, S-7, S-10, and S-11 to determine whether the construction is successful in meeting the goals of allowing mosquito district vehicles access to the ponds for spraying. The roads will be constructed in 15' - 20' widths, raising the road elevation approximately 6" from the water line. The roads will be created only on sides that need access. Prior to any further road construction, KWBA and the Mosquito Vector Districts will analyze the first phase water edge roads to determine if they accomplished their objective of allowing access to the ponds and if not, to develop an alternative plan for pond spraying.
- 3) The informal ponding occurring in Sections 7, 8, 13, & 18 (west of the Cross Valley Canal) will be gradually phased out and until completely phased out, KWBA will cycle the spreading of water when possible so water is kept moving.
- 4) KWBA will work with the staff of the Vector Districts to design a mosquito fish breeding pond and will then start discussions with surrounding recharge districts for a joint construction and use of the pond. KWBA will supply and control the water in the ponds; the Vector Districts will manage and operate the pond and mosquito fish.
- 5) KWBA will maintain roads in a reasonable condition to allow Vector District vehicles access to the ponds.
- 6) KWBA will manage the pond bottom vegetation as allowed by the HCP Vegetation plan which includes burning and grazing. These methods will be used as pond bottom conditions dictate appropriate.
- 7) Prior to the commencement of each mosquito breeding season, KWBA staff would tour the ponds with staff of the Vector Districts to review the adaptive management program for the prior season and outline any necessary changes for the upcoming mosquito breeding season.

SUMMARY OF PROJECT IMPACTS ON SECONDARY COVERED PLANT SPECIES

Plant species listed here are species that either have special status, or could potentially reach special status. They have ranges which overlap with the Kern Water Bank project site, or are found in the surrounding region. Included are species that could colonize or be introduced into the created marsh and/or existing grassland and scrub habitats.

Scientific Name	Common Name and Habitat Associations *	Impacts of Project
Plants. Potentially sensitive plant species which could colonize or be introduced to Kern Water Bank during the life of the permit. List is composed of species found in grassland and/or wetland habitat types in Kern County.		
Wetland species that could colonize created marsh habitats on Kern Water Bank		
<i>Azolla mexicana</i>	Mexican Mosquito Fern Marshes and swamps CNPS List 4, RED 1-2-1	Negligible or Beneficial. Deliberate introductions would be restricted to managed wetlands. If any of these species expand to non-managed ponds, some loss could occur through routine maintenance activities or through the cessation of deliberate flooding.
<i>Lasthenia glabrata ssp. coulteri</i>	Coulter's goldfields Marshes and swamps Fed C2, CNPS List 1B, RED 2-3-2	
<i>Mimulus microphyllus</i>	Small-leaved Monkeyflower Meadows CNPS List 4, RED 1-1-3	
<i>Myosurus minimus ssp. apus</i>	Little Mousetail Vernal pools Fed C2, CNPS List 3, RED 2-3-2	
<i>Psilocarphus tenellus var. globiferus</i>	Round Woolly-marbles Coastal dunes, Vernal pools CNPS List 4, RED 1-2-1	
<i>Psoralea arborescens var. arborescens</i>	Mojave Indigo-bush Riparian scrub Fed C3c, CNPS List 4, RED 1-1-1	
<i>Sagittaria sanfordii</i>	Sanford's Arrowhead Marshes and Swamps Fed C2, CNPS List 1B, RED 2-2-3	
Grassland and scrubland plants that could colonize upland habitats on Kern Water Bank		
<i>Atriplex coronata var. coronata</i>	Crownscale Chenopod scrub, Valley and foothill grassland, Vernal pools Fed C2, CNPS List 4, RED 1-2-3	Negligible or Beneficial. Deliberate introductions of any of these species would occur in permanent habitat preserves only.
<i>Atriplex depressa</i>	Brittlescale Chenopod scrub, Valley and foothill grassland, Vernal pools CNPS List 1B, RED 2-2-3	

Scientific Name	Common Name and Habitat Associations *	Impacts of Project
<i>Clarkia tembloriensis</i> ssp. <i>calientensis</i>	Vasek's Clarkia Valley and foothill grassland Fed C1, CNPS List 1B, RED 3-3-3	Negligible or Beneficial. Deliberate introductions of any of these species would occur in permanent habitat preserves only.
<i>Convolvulus simulans</i>	Small-flowered Morning-glory Valley and foothill grassland CNPS List 4, RED 1-2-2	
<i>Eriogonum gossypinum</i>	Cottony Buckwheat Chenopod scrub, Valley and foothill grassland Fed C3c, CNPS List 4, RED 1-2-3	
<i>Eriogonum temblorense</i>	Temblor Buckwheat Valley and foothill grassland Fed C2, CNPS List 4, RED 1-1-3	
<i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i>	Tejon Poppy Valley and foothill grassland, other CNPS 1B, RED 3-3-3	
<i>Fritillaria agrestis</i>	Stinkbells Valley and foothill grassland, other Fed C3c, CNPS List 4, RED 1-2-3	
<i>Fritillaria striata</i>	Striped Adobe-lily Valley and foothill grassland, other State CT, Fed PT, CNPS List 1B, RED 3-3-3 Valley and foothill grassland, other	
<i>Goodmania luteola</i>	Golden goodmania Valley and foothill grassland, other CNPS List 4, RED 1-2-2	
<i>Lasthenia leptalea</i>	Salinas Valley Goldfields Valley and foothill grassland, other Fed C3c, CNPS List 4, RED 1-1-3	

Scientific Name	Common Name and Habitat Associations *	Impacts of Project
<i>Layia heterotricha</i>	Pale-yellow Layia Valley and foothill grassland, other Fed C2, CNPS List 1B, RED 3-3-3	Negligible or Beneficial. Deliberate introductions of any of these species would occur in permanent habitat preserves only.
<i>Layia munzii</i>	Munz's Tidy-tips Chenopod scrub, Valley and foothill grassland CEQA, CNPS List 1B, RED 2-2-3	
<i>Lepidium jaredii ssp. jaredii</i>	Jared's Pepper Grass Valley and foothill grassland Fed C2, CNPS List 1B, RED 3-2-3	
<i>Linanthus grandiflorus</i>	Large-flower Linanthus Valley and foothill grassland CNPS List 4, RED 1-2-3	
<i>Madia radiata</i>	Showy Madia Valley and foothill grassland, other CNPS List 1B, RED 2-3-3	
<i>Mucronea californica</i>	California spineflower Valley and foothill grassland, other CNPS List 4, RED 1-2-3	
<i>Nemacladus gracilis</i>	Slender nemacladus Valley and foothill grassland, other CNPS List 4, RED 1-1-3	
<i>Perideridia gairdneri ssp. gairdneri</i>	Gairdner's Yampah Valley and foothill grassland, Vernal pools Fed C2, CNPS List 4, RED 1-2-3	
<i>Stylocline citroleum</i>	Oil Neststraw Chenopod scrub, other Fed C2, CNPS List 1B, RED 3-3-3	
<i>Stylocline masonni</i>	Mason's Neststraw Chenopod scrub, other Fed C2, CNPS List 1B, RED 3-3-3	
<i>Trichostoma ovatum</i>	San Joaquin Bluecurls Valley and Foothill Grassland CNPS List 4, RED 1-2-3	

ABBREVIATIONS

State CT: State-listed threatened
Fed PT: Federally-proposed, threatened
C1: Enough data are on file to support federal listing
C2: Threat and/or distribution data are insufficient to support federal listing.
C3c: Too widespread and/or not threatened

CEQA: Indicates CEQA consideration is mandatory

CNPS List 1B: Plants Rare, Threatened or Endangered in California and Elsewhere.
List 4: Plants of Limited Distribution- a Watch List.

CNPS R-E-D Code (Rarity, Endangerment, Distribution)

Rarity

- 1 Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
- 2 Distributed in a limited number of occurrences, occasionally more if each occurrence is small.
- 3 Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported.

Endangerment

- 1 Not endangered
- 2 Endangered in a portion of its range
- 3 Endangered throughout its range

Distribution

- 1 More or less widespread outside California
- 2 Rare outside California
- 3 Endemic to California

Source: California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. February 1994. Special Publication No. 1. Fifth edition. Published by The California Native Plant Society, Sacramento, CA.

REFERENCES:

California Natural Diversity Database (CNDDDB). Species elements for Kern County. California Department of Fish and Game

SUMMARY OF PROJECT IMPACTS ON SECONDARY COVERED ANIMAL SPECIES

Animal species listed here are species that either have special status, or could potentially reach special status. They have ranges which overlap with the Kern Water Bank project site, or are found in the surrounding region. Included are species that could move in to use the created marsh habitats, as well as species that could be found in the existing grassland and shrubland habitats. This table does not list all potential species that could utilize the Kern Water Bank.

Scientific Name	Common Name/Habitat/ Status	Impacts of Project
Mammals. Though these species' distribution is currently distant from the Kern Water Bank, during the lifetime of the permit they may expand or be introduced into the water bank as a result of habitat improvements.		
<i>Lutra canadensis</i>	River Otter large rivers, lakes and estuaries	Negligible. Species may colonize or be introduced into the Kern River in future. The Kern Water Bank lands may provide potential habitat for river otters.
<i>Castor canadensis subaruratus</i>	Golden Beaver rivers, streams, lakes, ponds	
Mammals. Species whose current distribution overlaps with, or is near, the Kern Water Bank.		
<i>Bassariscus astutus</i>	Ringtail riparian forest CSC	Negligible. Suitable habitat for ringtails along the Kern River will be preserved.
<i>Felis concolor</i>	Mountain Lion all CPS	Negligible. The project will not reduce available habitat for Mountain lions.
<i>Felis rufus</i>	Bobcat riparian forest, brush and scrublands	Negligible. The project will not reduce available habitat for Bobcats.
<i>Cervus elaphus nannodes</i>	Tule Elk brush and scrublands, grassland	Negligible. Species may colonize or be introduced into the Kern Water Bank lands in the future. Species reside on adjacent preserved areas.
<i>Antilocapra americana</i>	Pronghorn brush and scrublands, grassland	
<i>Mustela frenata xanthogenys</i>	Yellow-cheeked Weasel grassland	Negligible. No records of these species on Kern Water Bank lands, but they could colonize preserved upland habitat areas.
<i>Mustela frenata pulchra</i>	Buttonwillow Weasel arid grassland, savannah	
<i>Myotis yumanensis oxalis</i>	San Joaquin Myotis all	
<i>Euderma maculatum</i>	Spotted Bat arid grassland, coniferous forest CSC	
<i>Antrozous pallidus</i>	Pallid Bat all CSC	

Scientific Name	Common Name/Habitat/ Status	Impacts of Project
<i>Perognathus inornatus inornatus</i>	San Joaquin Pocket Mouse grasslands	Negligible. No records of these species on Kern Water Bank lands, but they could colonize preserved upland habitat areas.
<i>Perognathus inornatus neglectus</i>	McKittrick Pocket Mouse grasslands, desert shrub	
<i>Onychomys torridus tularensis</i>	Tulare Grasshopper Mouse grassland desert-shrub CSC	
<i>Thomomys bottae ingens</i>	Buena Vista Lake Pocket Gopher grassland, desert shrub	
<i>Dipodomys nitratoides brevinasus</i>	Short-nosed Kangaroo Rat grassland, desert shrub CSC	
<i>Dipodomys heermanni tularensis</i>	Tulare Kangaroo Rat grassland, desert-shrub	
<i>Dipodomys heermanni swarthi</i>	Carrizo Plain Kangaroo Rat grassland, desert-shrub	
Birds — Raptors. Avian raptor species which may utilize Kern Water Bank ponds or preserved uplands as foraging and/ or nesting habitat..		
<i>Aquila chrysaetos</i>	Golden Eagle grasslands, shrublands CSC	Beneficial or Negligible. Species may utilize created ponds and/or preserved upland habitat. Pond refilling and vegetation removal will be prohibited in any areas where birds are nesting.
<i>Haliaeetus leucocephalus</i>	Bald Eagle large lakes and rivers FT, SE	
<i>Accipiter gentilis</i>	Northern Goshawk coniferous and riparian forest CSC	
<i>Accipiter striatus</i>	Sharp-shinned Hawk riparian forest CSC	
<i>Accipiter cooperii</i>	Cooper's Hawk riparian forest CSC	
<i>Buteo lineatus</i>	Red-shouldered Hawk riparian forest	
<i>Falco columbarius</i>	Merlin grasslands, marshes CSC	
<i>Falco mexicanus</i>	Prairie Falcon grasslands, scrublands CSC	

Scientific Name	Common Name/Habitat/ Status	Impacts of Project
<i>Circus cyaneus</i>	Northern Harrier marshes CSC	
<i>Asio otis</i>	Long-eared Owl riparian forest CSC	
<i>Asio flammeus</i>	Short-eared Owl grasslands, marshes CSC	
<i>Tyto alba</i>	Common Barn Owl grassland, shrubland, riparian forest	Beneficial or Negligible. Species may utilize created ponds and/or preserved upland habitat. Pond refilling and vegetation removal will be prohibited in any areas where birds are nesting.
<i>Pandion haliaetus</i>	Osprey Large lakes and rivers CSC	
<i>Gymnogyps californianus</i>	California Condor grassland, savannah, desert scrub FE, SE	Negligible. Kern Water Bank lands are within historic range, and species could utilize preserved upland habitat as a result of reintroduction efforts.
Birds -- Songbirds and other terrestrial birds. Species which may utilize riparian and adjacent habitats within the Kern Water Bank.		
<i>Progne subis</i>	Purple Martin montane and riparian forest CSC	Beneficial or Negligible. Species may utilize preserved upland habitat areas and/ or created ponds.
<i>Riparia riparia</i>	Bank Swallow riparian, coastal cliffs ST	
<i>Cypseloides niger</i>	Black Swift Rugged coastlines and canyons CSC	
<i>Chordeiles minor</i>	Common Nighthawk montane and coastal grasslands and freshwater wetlands	
<i>Chordeiles acutipennis</i>	Lesser Nighthawk desert scrub, desert riparian, grasslands	
<i>Picoides villosus</i>	Hairy Woodpecker coniferous and riparian forests	
<i>Melanerpes lewis</i>	Lewis's Woodpecker oak savannah, coniferous forest	
<i>Guiraca caerulea</i>	Blue Grosbeak riparian forest, grassland	
<i>Dendroica petechia brewsteri</i>	Yellow Warbler riparian, shrublands CSC	

Scientific Name	Common Name/Habitat/ Status	Impacts of Project
<i>Piranga rubra</i>	Summer Tanager desert riparian woodland CSC	Beneficial or Negligible. Species may utilize preserved upland habitat areas and/ or created ponds.
<i>Icteria virens</i>	Yellow-breasted Chat riparian forest CSC	
<i>Vireo bellii pusillum</i>	Least Bell's Vireo desert riparian woodland FE, SE	
<i>Coccyzus americanus occidentalis</i>	Western Yellow-billed Cuckoo riparian forest SE	
<i>Empidonax traillii</i>	Willow flycatcher montane riparian forest SE	
Birds - Waterfowl. Migratory birds who could potentially use Kern Water Bank as winter refuge habitat.		
<i>Phalacrocorax auritus</i>	Double-crested Cormorant estuaries, lakes, large rivers CSC	Beneficial. Ponds will create winter refuge habitat for these species.
<i>Gavia immer</i>	Common Loon large lakes and estuaries CSC	
<i>Aechmophorus occidentalis</i>	Western Grebe estuaries, lakes	
<i>Aechmophorus clarkii</i>	Clark's Grebe estuaries, Lakes	
<i>Aythya valisineria</i>	Canvasback estuaries, lakes, marshes	
<i>Numenius americanus</i>	Long-billed Curlew marshes CSC	
Birds - Waterfowl. Potentially resident waterfowl who require trees for nesting.		
<i>Casmerodius albus</i>	Great Egret grasslands, marshes	Beneficial. Ponds will create foraging habitat for these species.
<i>Ardea herodias</i>	Great Blue Heron grasslands, marshes	
<i>Butorides striatus</i>	Green-backed Heron riparian forest, marshes	
<i>Aix sponsa</i>	Wood duck riparian forest	
Birds - Waterfowl. Potential resident waterfowl which could nest on shorelines, islands, or in reeds within Kern Water Bank lands		

Scientific Name	Common Name/Habitat/ Status	Impacts of Project	
<i>Egretta thula</i>	Snowy Egret marshes	Beneficial. Ponds will create foraging and nesting habitat for these species. Pond refilling and vegetation removal will be prohibited in any areas where birds are nesting.	
<i>Pelecanus erythrorhynchos</i>	American White Pelican large lakes, salt ponds CSC		
<i>Ixobrychus exilis</i>	Least Bittern marshes F2, CSC	Beneficial. Ponds will create foraging and nesting habitat for these species. Pond refilling and vegetation removal will be prohibited in any areas where birds are nesting.	
<i>Nycticorax nycticorax</i>	Black Crowned Night Heron marshes		
<i>Botaurus lentiginosus</i>	American Bittern marshes		
<i>Dendrocygna bicolor</i>	Fulvous Whistling-duck freshwater marshes F2, CSC		
<i>Rallus limicola</i>	Virginia Rail marshes		
<i>Porzana carolina</i>	Sora Rail marshes		
<i>Chlidonias niger</i>	Black Tern estuaries, marshes F2, CSC		
<i>Sterna caspia</i>	Caspian Tern estuaries, marshes		
Amphibians. Species whose historic range may have included the Kern Water Bank, but where existing populations are distant from the Kern Water Bank. These species may expand or be introduced to the Water Bank during the life of the permit as a result of the long-term management of wetland habitat.			
<i>Ambystoma tigrinum</i>	California Tiger Salamander Ponds, grasslands F2, CSC		Negligible or Beneficial. Deliberate introduction would be confined to permanently managed wetlands established under cooperative agreement with CDFG, USFWS, and KWBA.
<i>Batrachoseps simatus</i>	Kern Canyon Slender Salamander woodlands, chapparal F2, ST		
<i>Batrachoseps stebbinsi</i>	Tehachipi Slender Salamander coniferous and riparian forest F2, ST		
<i>Batrachoseps pacificus relictus</i>	Relictual Slender Salamander woodlands CSC		
<i>Rana aurora draytonii</i>	California Red-legged Frog ponds, streams FE		

Scientific Name	Common Name/Habitat/ Status	Impacts of Project
Reptiles. Species whose historic range may included the Kern Water Bank, but where existing populations are distant from the Kern Water Bank. These species may expand or be introduced to the Water Bank during the life of the permit as a result of the long-term management of upland habitat.		
<i>Anniella pulchra</i>	California Legless Lizard valley-foothill chaparral, other CSC	Negligible or Beneficial. Deliberate introduction would be confined to permanently managed uplands established under cooperative agreement with CDFG, USFWS, and KWBA
<i>Phrynosoma coronatum frontale</i>	California Horned Lizard coniferous and riparian forests, other CSC	
<i>Charina bottae umbratica</i>	Southern Rubber Boa montane forests, chaparral F2, ST	
<i>Masticophis flagellum ruddocki</i>	San Joaquin Coachwhip grassland, desert, scrub CSC	
<i>Arizona elegans</i>	California Glossy Snake desert, chaparral, other	
<i>Tantilla hobartsmithi</i>	Southwestern black-headed Snake grassland, chaparral, other	
<i>Coluber constrictor mormon</i>	Western Yellow-bellied Racer grassland, other	
<i>Salvadora hexalepis</i>	Western Patch-nosed Snake chaparral, desert scrub F2, CSC	
Fish		
<i>Lampetra hubbsi</i>	Kern Brook Lamprey F2, CSC	Negligible. Kern Water Bank will not remove or provide suitable habitat for these species.
<i>Oncorhynchus mykiss gairdneri</i>	Kern River Rainbow Trout F2, CSC	
Invertebrates. Terrestrial insects of special concern which are known to occur in Kern County, but which are not currently known from the Kern Water Bank		
<i>Lytta moesta</i>	Moestan Blister Beetle meadows F2	Negligible or Beneficial. These insects may benefit from upland habitat enhancement at Kern Water Bank.
<i>Lytta morrisoni</i>	Morrison's Blister Beetle meadows F2	
<i>Lytta hoppingi</i>	Hopping's Blister Beetle meadows F2	
<i>Danaus plexippus</i>	Monarch Butterfly cismontane meadows	

Scientific Name	Common Name/Habitat/ Status	Impacts of Project
<i>Euproserpinus euterpe</i>	Kern Primrose Sphinx Moth desert scrub FT	Negligible or Beneficial. These insects may benefit from upland habitat enhancement at Kern Water Bank.
<i>Helminthoglypta callistoderma</i>	Kern Shoulderband riparian F2	

Abbreviations

FE: Federally Endangered
 FT: Federally Threatened
 F2: Category 2 candidate for listing
 SE: State Endangered
 ST: State Threatened
 CSC: California Species of Special Concern
 CPS: California Protected Species

References:

California Natural Diversity Database (CNDDDB). Species elements for Kern County. California Department of Fish and Game

Mammals Species of Special Concern in California. State of California, The Resources Agency, Department of Fish and Game.,

Amphibians and Reptiles Species of Special Concern in California. 1994. California Department of Fish and Game, Inland Fisheries Division.

California's Wildlife: Volumes I, II, and III. 1990. State of California, The Resources Agency, Department of Fish and Game, Sacramento, California.

Kern County Audubon Society List of Sensitive Birds and Mammals, in Metropolitan Bakersfield Habitat Conservation Plan, Appendix A. July 1991, prepared by Thomas Reid Associates.

Endangered and Sensitive Species of the San Joaquin Valley, California, Their Biology, Management, and Conservation. 1992. Published by California Energy Commission © The Wildlife Society, Western Section.