**Draft Environmental Assessment/Initial Study**

# South Valley Water Bank Authority
# Pixley Groundwater Banking Project


**March 2016**

# Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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## Attachments

## Abbreviations and Acronyms

| | |
|---|---|
| Act | San Joaquin River Settlement Act |
| AF | Acre Feet |
| AF/yr | Acre Feet per Year |
| APE | Area of Potential Effects |
| ARB | California Air Resources Board |
| Authority | South Valley Water Bank Authority |
| CARB | California Air Resources Board |
| CDC | California Department of Conservation |
| CDFW | California Department of Fish and Wildlife |
| CEQ | Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| cfs | Cubic Feet per Second |
| $CH_4$ | Methane |
| CHRIS | California Historical Resources Information System |
| CNDDB | California Natural Diversity Database |
| CO | Carbon Monoxide |
| $CO_2$ | Carbon Dioxide |
| CRHR | California Register of Historical Resources |
| CVP | Central Valley [Water] Proposed Project |
| DEID | Delano-Earlimart Irrigation District |
| DFIRM | Digital Flood Insurance Rate Map |
| District | Tulare Irrigation District |
| DOC | Department of Conservation |
| DPM | Diesel-Exhaust Particulate Matter |
| DWR | Department of Water Resources |
| EA/IS | Environmental Assessment/Impact Study |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| FKC | Friant-Kern Canal |
| FMMP | Farmland Mapping and Monitoring Program |
| FWCA | Fish and Wildlife Coordination Act |
| GHG | Greenhouse Gases |
| GSA | General Services Administration |
| IPac | U.S. Fish and Wildlife Service's Information for Planning and Conservation |
| ITA | Indian Trust Assets |
| KDWSD | Kaweah Delta Water Conservation District |
| LOA | Live Oak Associates, Inc. |
| MBTA | Migratory Bird Treaty Act |
| mg/L | Milligrams per Liter |
| NAHC | Native American Heritage Commission |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |

| | |
|---|---|
| NOAA | National Oceanic and Atmospheric Administration |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Oxides of Nitrogen |
| NRCS | Natural Resources Conservation Service |
| NRDC | Natural Resources Defense Council |
| NRHP | National Register of Historic Places |
| PEIS/R | Program Environmental Impact Statement/Impact Report |
| PID | Pixley Irrigation District |
| PM | Particulate Matter |
| $PM_{10}$ | Particulate Matter Less Than 10 Microns in Diameter |
| $PM_{2.5}$ | Particulate Matter Less Than 2.5 Microns in Diameter |
| Reclamation | Bureau of Reclamation |
| ROD | Record of Decision |
| ROG | Reactive Organic Gases |
| RWQCB | Regional Water Quality Control Board |
| SCADA | Supervisory Control and Data Acquisition |
| SF | Square Feet |
| SGMA | Groundwater Sustainability Management Act |
| SHPO | State Historic Preservation Officer |
| SJRRP | San Joaquin River Restoration Proposed Project |
| SJVAB | San Joaquin Valley Air Basin |
| SJVAPCD | San Joaquin Valley Air Pollution Control District |
| SVWBA | South Valley Water Bank Authority |
| SWP | State Water Project |
| SWPPP | Storm Water Pollution Prevention Plan |
| TDS | Total Dissolved Solids |
| TID | Tulare Irrigation District |
| U.S. | United States |
| USBR | United State Bureau of Reclamation |
| USDA | United States Department of Agriculture |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |

# Section 1 Introduction

## 1.1 Background

The South Valley Water Bank Authority (Authority) is a Joint Powers Authority between Pixley Irrigation District (PID) and Delano-Earlimart Irrigation District (DEID). The Authority is proposing to implement the Pixley Groundwater Banking Project (Proposed Action/Proposed Project, hereafter, Project)

The Authority desires to finance, manage, construct, and operate the Project. The Pixley Groundwater Banking Facility is planned to be a 30,000 acre-feet per year dry-year return water bank, with total groundwater storage availability of 90,000 acre-feet. The Project would include approximately 532 acres dedicated to recharge basins with eleven recovery wells in a well field located within the boundaries of the basins. Water would be conveyed to this new facility via the Friant-Kern Canal (FKC). Additional information about the Project is described in Section 2.2 of this EA/IS.

In 1988, a coalition of environmental groups, led by the Natural Resources Defense Council (NRDC), filed a lawsuit challenging renewal of long-term water service contracts between the United States and Central Valley Project (CVP) Friant Division (Friant Division). After more than 18 years of litigation, *NRDC, et al., v. Kirk Rodgers, et al.*, a settlement was reached (Settlement). In September of 2006, the Settling Parties, including NRDC, Friant Water Users Authority (now represented by Friant Water Authority), and the U.S. Departments of the Interior and Commerce, agreed on the terms and conditions of the Settlement, which was subsequently approved by the U.S. Eastern District Court of California on October 23, 2006. The Settlement establishes two primary goals:

- Restoration Goal – To restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.

- Water Management Goal – To reduce or avoid adverse water supply impacts on all of the Friant Contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

The Secretary of the Interior is authorized and directed to implement the terms and conditions of the Settlement in the San Joaquin River Settlement Act (Act), included in Public Law 111-11. The San Joaquin River Restoration Program (SJRRP) is implementing the Settlement. The SJRRP Implementing Agencies are: U.S. Bureau of Reclamation (Reclamation), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), National Resources Defense Council, State of California Department of Water Resources (DWR), and State of California Department of Fish and Wildlife, and Friant Water Authority.

The SJRRP Programmatic Environmental Impact Statement/Impact Report (PEIS/R) was finalized in July 2012 and the corresponding Record of Decision (ROD) was issued on September 28, 2012 (Reclamation 2012a and 2012b). The PEIS/R and ROD analyzed at a project-level the reoperation of Friant Dam to release Interim and Restoration Flows to the San Joaquin River, making water supplies available to Friant Division long-term contractors at a pre-established rate, and the recapture of Interim and Restoration Flows at existing facilities within the Restoration Area and the Delta.

Part III of Title X, Subtitle A of Public Law 111-11 (Part III) authorizes the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), to provide financial assistance to local agencies within the Central Valley Project (CVP) of California for the planning, design, environmental compliance, and construction of local facilities to bank water underground, or to recharge groundwater to reduce, avoid, or offset the quantity of expected water supply impacts to Friant Division long-term contractors caused by Restoration flows authorized by Public Law 111-11. Because the Part III Guidelines were in development at the time of preparation of the SJRRP PEIS/R, potential actions in accordance with Part III were not included as an element of any of the alternatives analyzed in the PEIS/R.

The Authority desires to finance roughly 20% of the Project pursuant to the SJRRP Part III grant funding.

This EA/IS is being prepared in accordance with NEPA and CEQA, with Reclamation as the lead agency for NEPA and the Authority as the lead Agency for CEQA.

## 1.2 Purpose and Need

The release of Restoration Flows would reduce annual surface water deliveries to Friant Division water contractors, potentially placing greater stress on the region's groundwater basins and the region's agricultural economy. The purpose of the proposed action is to contribute to achieving the Settlement Water Management Goal by reducing, avoiding, or offsetting the quantity of expected water supply impacts to Friant Division long-term contractors caused by the release of Restoration Flows by facilitating groundwater banking and recharge activities by local districts in accordance with Part III.

Key water supply objectives of the Project envisioned by the Project proponents include:

- Develop firm water supplies able to prevent loss of permanent plantings during drought conditions.
- Meet the State's requirements for an adequate groundwater supply as an urban water supply.
- Utilize geologically and hydrologically conducive lands within the Pixley Irrigation District (PID) to operate a groundwater bank.
- Utilize a site that is proximal to the FKC.

- Provide opportunities for Bank Partners to bank water in wet years, including floodwater, Section 215 water[1], or carryover Class 1[2] and 2[3] allocations that would otherwise leave the Friant Division service area as unusable flood water and recover water in normal and dry years to reduce impacts to water users from implementation of the San Joaquin River Restoration Settlement;
- Provide a dry-year water supply to Bank Partners to prevent fallowing, crop loss, or municipal water supply reductions and/or to provide Reclamation the same opportunity to buy shares for participation in the Project (to the benefit of the SJRRP) on the same basis as Friant Long-term Contractors.
- Provide water supply benefits to PID by the capture and recharge of unregulated Deer Creek flood flows, the construction of additional water distribution facilities, increases in groundwater recharge as effected by the proposed 10 percent "leave-behind" fraction and the raising of groundwater levels in PID by banking of water for others (to reduce groundwater pumping costs). PID is directly impacted by the implementation of the San Joaquin River Restoration Program, as it relies heavily on purchasing surplus Friant CVP water when available from Reclamation and from other Friant Contractors which will be reduced in availability as a result of implementation of the San Joaquin River Restoration Settlement;
- Reduce subsurface groundwater outflow from Delano-Earlimart Irrigation District (DEID) and other neighboring long-term Friant contractors into PID through improved groundwater conditions resulting from storage of banked water and groundwater replenishment.

[1] Section 215 water is defined under Section 215 of the Reclamation Reform Act of 1982 (RRA), as unstorable irrigation water to be released due to flood control criteria or un-managed flood flows. Section 215 water is exempt from the full cost provisions of the RRA. Section 215 Water Rates are the rates per acre/foot assessed on contractors who subsequently "take" Section 215 Water. M&I "spill" water has essentially the same characteristics as 215 water, but is referenced differently as the RRA provides only for unstorable irrigation. The following paragraphs just reference Section 215 water, but the comments apply to M&I "spill" water as well. Source: http://www.usbr.gov/mp/cvpwaterrates/rate_process/special_rates.html#special_215_rates

[2] Friant Division Class 1: The supply of water in or flowing through Millerton Lake which, subject to the contingencies described in the water service or repayment contracts, will be available for delivery from Millerton Lake and the Friant-Kern and Madera Canals as a dependable water supply during each Contract Year.

[3] Friant Division Class 2: The supply of water which can be made available subject to the contingencies described in the water service or repayment contract for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 water. Because of its uncertainty as to availability and time of occurrence, such water will be undependable in character and will be furnished only if, as, and when it can be made available.

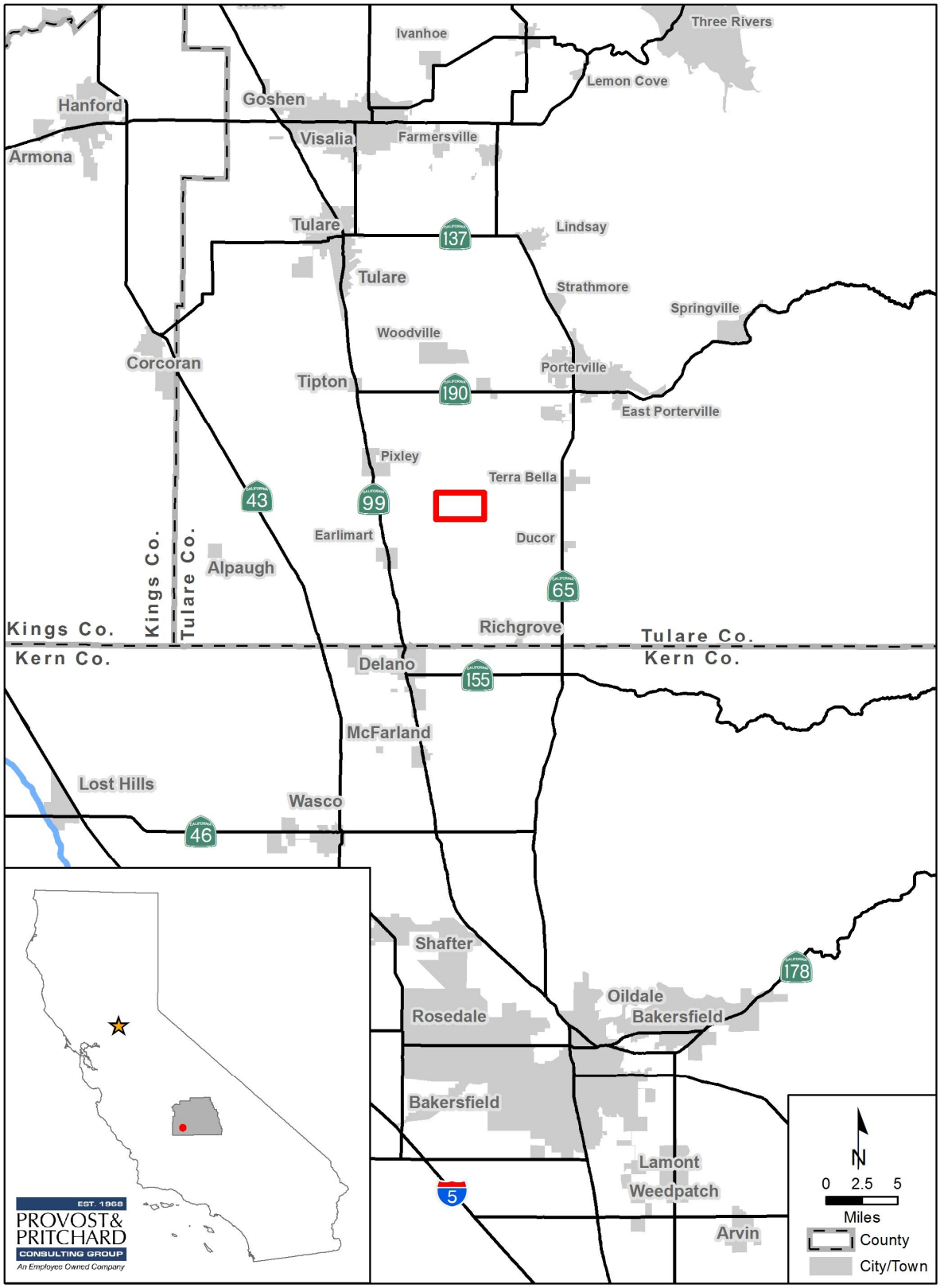


**Figure 1: Regional Map**

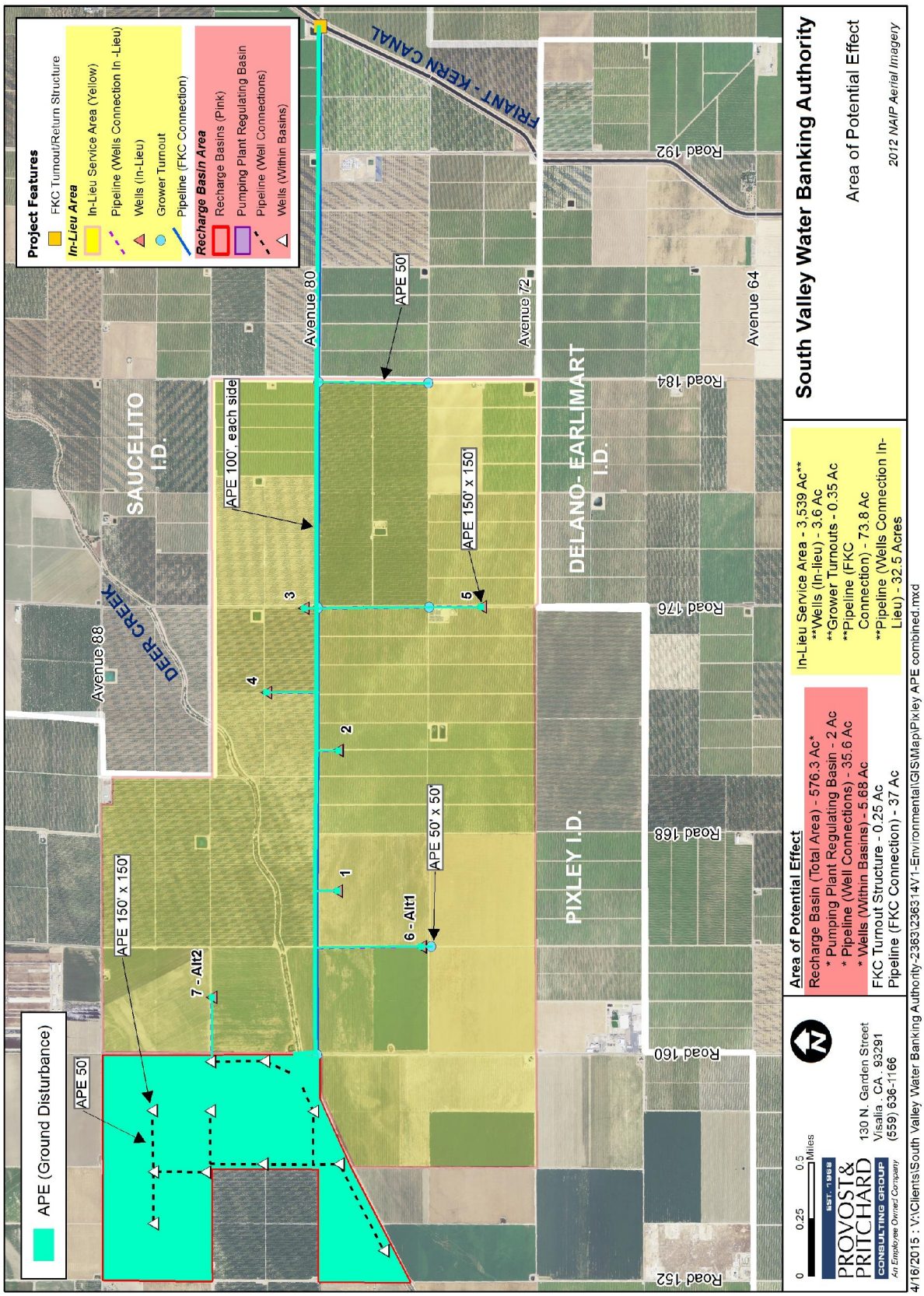


**Figure 2: Area of Potential Effect**

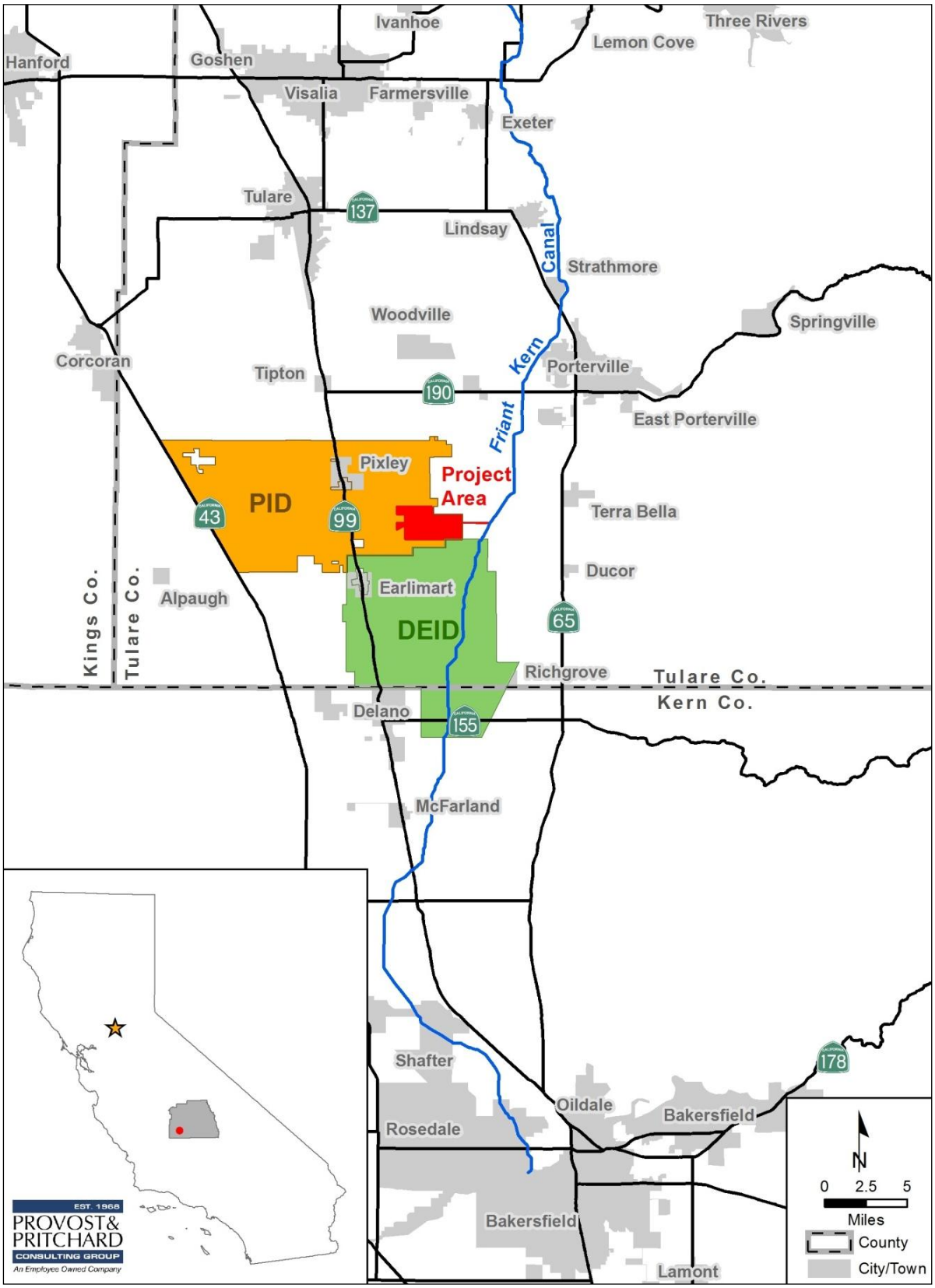


**Figure 3: Vicinity Map**

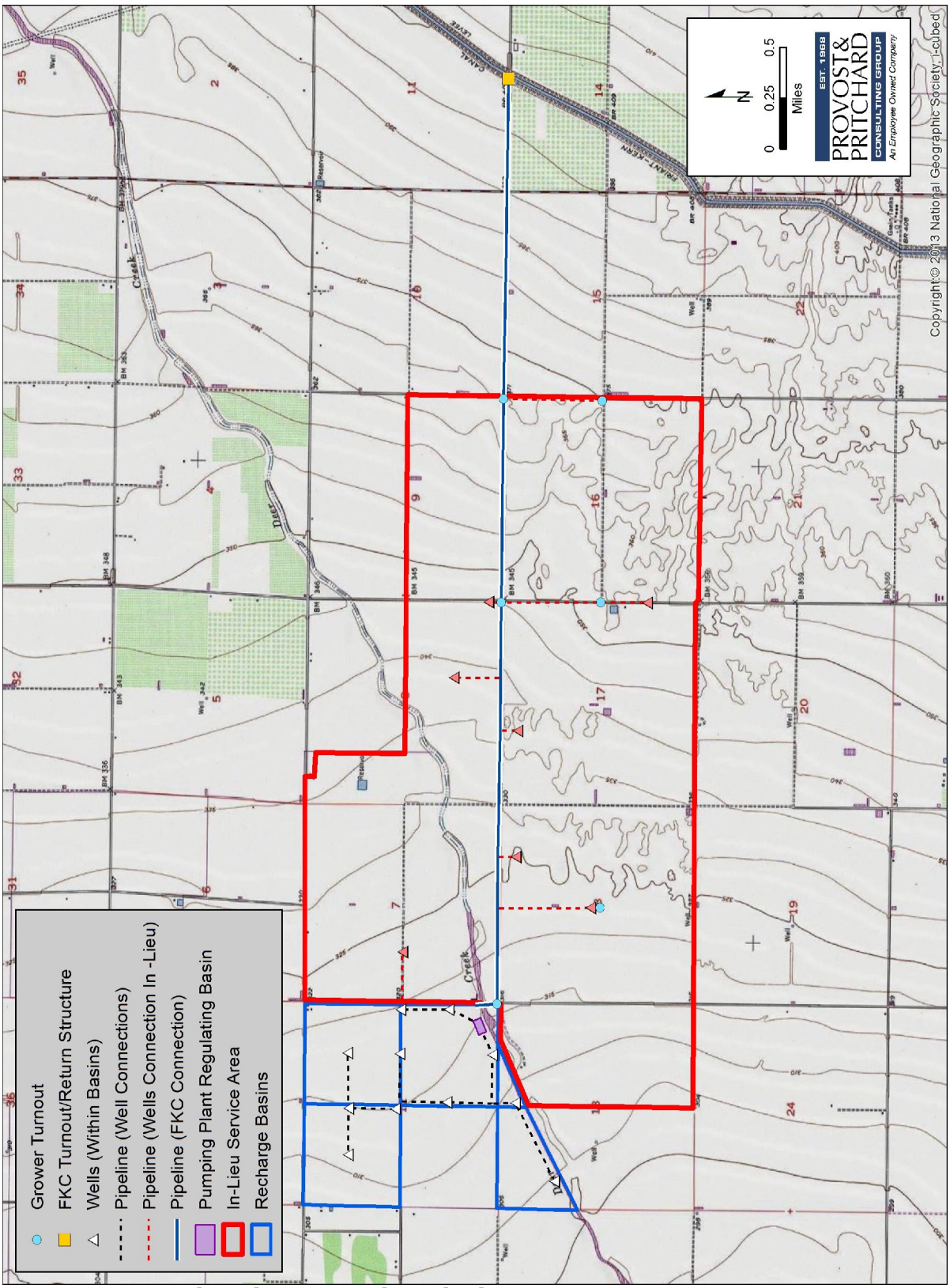


**Figure 4: USGS Topological Map, Sausalito School QUAD**

# Section 2 Alternatives

This EA considers two possible alternatives: the No Action/No Project Alternative and the Project. The No Action/No Proposed Project Alternative reflects future conditions without the Proposed Action/Proposed Project and serves as a basis of comparison for determining potential effects to the human environment.

## 2.1 No Action/No Project Alternative

Under the NEPA No Action Alternative, Reclamation would not provide additional funding for construction related to the USBR Part III Grant to the District for construction of the Pixley Groundwater Banking Project. Without the assistance of Federal funding resources, the Authority may elect to find alternative funding sources for the Proposed Project or seek to implement other actions, or construct nothing. Under the CEQA No Project Alternative, the Authority would not build the Project. The continued demand on water to meet irrigation supplies would force landowners to increase groundwater pumping and the depth to groundwater within the District would increase. Without any increased capacity for recharge, the DSouth istrict would be limited to only its current facilities; therefore, the continued loss and reliance on groundwater would cause water levels to further decline. Declining groundwater levels could lead to subsidence.

As the CVP Friant system loses water to the SJRRP, the amount of water available would be reduced during all years that Restoration Flows are allocated for release from Friant Dam. This reduction would decrease the availability of wet year recharge water and dry year irrigation supplies. This increased pressure on an already limited supply would force market prices for water up and create a significant impact to the conjunctive use of operations within the Pixley and Delano-Earlimart Irrigation Districts, which depend on a wet-year pricing structure to acquire large quantities of surface water for groundwater recharge.

Both districts will be required to implement the Sustainable Groundwater Management Act (SGMA) enacted by the State of California in 2014. However, because Groundwater Sustainability Agencies and Groundwater Sustainable Plans required by SGMA have not been prepared or implemented yet, it is uncertain what exactly that future holds. While the intent of the legislation is to improve groundwater management, there is uncertainty at present in how the act will be implemented and what its effects would be on the No Action/No Project Alternative conditions in the Pixley Groundwater Banking Project vicinity.

## 2.2 Proposed Action/Proposed Project Alternative

**Proposed Action/Proposed Project Description:**

Under the Proposed Action/Proposed Project, Reclamation would provide funding through the Part III grant to the Authority for constructing approximately 20% of the Pixley Groundwater Banking Proposed Project.

The Project includes the construction and operation of a 30,000-acre-foot per year dry-year return water bank with total groundwater storage availability of 90,000 acre-feet including the following elements:

1) An approximately 532-acre Recharge Basins facility,
2) A well field of eleven recovery wells within the Recharge Basins' boundary,
3) A new 48-inch turnout from the west bank of the Friant-Kern Canal (FKC),
4) A 4.5-mile long, 48-inch diameter, bi-directional concrete pipeline from the new turnout to the in-lieu service area,
5) An approximately 2 acre pumping plant and regulating basin,
6) Approximately 14 acres of grower turnouts, related control facilities, connecting pipelines, and up to five groundwater recovery wells within a 3,539-acre in-lieu service area,
7) A new 48-inch turnout to be built as an extension of the existing Deer Creek turnout structure, and
8) The creation of a Groundwater Monitoring Committee.

These Project components will be described in further detail in subsequent paragraphs. Collectively, these actions would allow the Authority to improve regional groundwater recharge efforts and improve monitoring of groundwater levels. The Project facilities would be located east of SR-99 and west of the Friant-Kern Canal in the Pixley Irrigation District, southeast of the community of Pixley within an agricultural region of the mid-southern portion of Tulare County, CA.

Under the Project, Reclamation would provide partial funding for construction of the Pixley Groundwater Banking Facility and the associated components briefly referenced above. This includes the approximately 532-acre Recharge Basins facility area west of Road 160 and north of Deer Creek. The basins would be split into cells of 40 to 80 acres each and excavated to a depth of approximately 3-4 feet below natural grade with 1-2 foot high berms built up above natural grade. All water stored in the recharge basins would sit below surrounding natural grade. It is estimated the recharge basins would have the ability to direct the recharge approximately 45,000 acre-feet per year to the groundwater aquifer.

The Project would include a well field of eleven (11) recovery wells located within the recharge basins' boundary. The 11 new wells would have the capability to recover from the groundwater approximately 25,400 acre-feet of water over an eight-month period. The recharge basins

facility area would also include an approximately 2-acre pumping plant and regulating basin area with associated electrical and control facilities to boost water recovered from the recharge basins and in-lieu service area's groundwater recovery wells east to the Friant-Kern Canal to meet scheduled irrigation deliveries of CVP contractors and others within the Deer Creek, White River, Poso Creek and Kern checks of the Friant-Kern Canal. A new 48-inch turnout would be built as an extension of the existing Deer Creek turnout structure commonly referred to as the Harris Ditch Turnout. This new turnout structure from Deer Creek would allow water to be diverted from Deer Creek into the recharge basins for direct recharge.

Approximately 14 acres of grower turnouts, related control facilities, connecting pipelines and up to five (5) groundwater recovery wells would be established under the Project within a 3,539-acre in-lieu service area. The in-lieu service area has an effective recharge capacity of up to approximately 6,500 acre-feet per year. The five wells would have a potential to recover approximately 8,500 acre-feet of water from the groundwater bank over an 8-month period that could be returned to the Friant-Kern Canal. This return water may be composed of both Project and non-project water. Any non-project water introduced into the Friant-Kern Canal must be preceded with a Warren Act Contract from Reclamation and will likely require further environmental documentation.

Additionally, a new 48-inch turnout from the west bank of the FKC would be constructed generally at the Road 80 intersection with the FKC. Water from this turnout would be conveyed via gravity delivery to the in-lieu service area and the Recharge basins through the planned 4.5-mile long, 48-inch diameter, bi-directional, concrete pipeline along the north side of Road 80. This main pipeline would also convey water recovered from the Pixley Groundwater Banking facilities via both the well field at the Recharge basins and from the wells located within the in-lieu service area back to the Friant-Kern Canal. This new turnout would require permitting under current Reclamation policy for construction of new Friant-Kern Canal turnouts. Further, this turnout would be a new point of diversion for Pixley Irrigation District, Delano-Earlimart Irrigation District, and other CVP contractors wishing to bank water in the Project, as determined by Reclamation.

The new turnout would be owned and maintained under license with Reclamation by the South Valley Water Banking Authority.

The Project also includes the creation of a Groundwater Monitoring Committee to monitor groundwater conditions, including depth to groundwater, well interference (if any), and groundwater quality of Bank operations on an on-going basis. The Monitoring Committee will notify the Authority immediately of any effects taking place that have the potential to or that are adversely affecting any well operations in the project vicinity and will recommend immediate steps to be taken to minimize these effects to less than significant, including but not necessarily limited to the following:

- reduction of the volume of water being pumped by the Project facilities when the neighbor's wells are running;

- rotation of which wells in the well field are running to spatially move the cones of depression to avoid pumping close to neighbors' wells that may be running; movement of the season of extraction to a time of year when the neighbors' wells aren't running.

The Authority will establish a program of groundwater banking and recovery including necessary contracts and supporting actions to provide the ability to place into groundwater storage up to 30,000 acre-feet per year of CVP Friant Division water, other CVP water, State Water Project (SWP) water of the Kern County Water Agency and/or its member units, the Dudley Ridge Water District or the Tulare Lake Basin Water Storage District or other local water supplies from within the Friant Division service area. Ten (10) percent of the water placed into storage would not be returnable and would be left to improve groundwater conditions in the area. Up to 90,000 acre-feet of water could be stored at any one point in time. Up to 30,000 acre-feet of water could be returned to Bank Partners in any one year.

Potential Bank Partners include Friant Division CVP contractors, Reclamation, CVP contractors within the Cross Valley, Delta-Mendota Unit, San Luis Unit and Exchange Contractors service areas, the Kern County Water Agency and/or its member units, the Dudley Ridge Water District, the Tulare Lake Basin Water Storage District, and other water agencies, entities or individuals within the Friant Division service area of the CVP.

Water so banked will be banked and returned consistent with state and Federal law including State of California authorized places-of-use as permitted or licensed.

The Authority also intends to use the proposed facilities to deliver irrigation water from the Friant-Kern Canal or from Deer Creek to the in-lieu service area and to recharge the groundwater in the Pixley Irrigation District at times when the proposed facilities are not obligated for use by Bank Partners.

**Operation and Maintenance:**

The Groundwater Monitoring Committee discussed in Section 2.2 will ensure that operation of the Proposed Action/Proposed Project will not adversely affect the groundwater pumping conditions of any property owners in proximity of the groundwater bank.

The Project would utilize SCADA equipment that would allow the Authority, if they so desire, to remotely operate and monitor well and pump facilities. Occasionally, service employees may be on-site for scheduled, preventive maintenance as well as unscheduled service. Site maintenance would include levee maintenance, weed abatement, trash removal, periodic sediment removal and water-control structure adjustments and maintenance.

**Construction:**

Construction activity for the Project would commence in 2017, with recharge basin site preparation and grading. In 2018, recharge basin infrastructure, in-lieu banking, lift station, and pipeline construction would begin. Construction of the pipeline is expected to continue into 2019.

The Project construction would require the use of scrapers, graders, compacters, trenchers, backhoes, forklifts, front-end loaders, water trucks, and materials and equipment hauling trucks. The aforementioned vehicles are diesel and gasoline-powered equipment.

### 2.2.1 Environmental Commitments

The following environmental commitments will be incorporated into the proposed action/project:

Water Resources Commitments

- Allow the initial flows of Deer Creek to continue past the Project, until the water turbidity is at a level acceptable to the Project, typically at less than 40 NTU, before beginning recharge operations. This measure would mitigate the unwanted introduction of silts that would likely reduce basin infiltration.
- Zone sampling will be performed on test wells or during initial well construction (prior to any water being discharged into/returned to the Friant Kern Canal). The results of the sampling will be used in well design. Dilution or other industry-accepted remediation methods will be employed as needed and appropriate to reduce any unacceptable levels of constituents of concern to meet Reclamation's then current water quality requirements before the Project begins returning water to the FKC. Continued sampling in accordance with Reclamation's then current water quality requirements will also be performed with necessary remediation of unacceptable constituents of concerns or other mitigation measures employed immediately. These measures will avoid adverse impacts to FKC water quality from the Proposed Project to be.
- Additionally, all of the well water being returned to the FKC will be mixed together before introduction into the FKC, further reducing the potential that any water returned to the FKC would be of unacceptable water quality for delivery to water users. Dilution or other industry-accepted remediation methods will be employed as needed and appropriate to reduce any unacceptable levels of constituents of concern to meet Reclamation's then current water quality requirements before the Proposed Project would begin returning water to the FKC. Continued sampling in accordance with Reclamation's then current water quality requirements will also be performed with necessary remediation of unacceptable constituents of concerns or other mitigation measures employed immediately.
- Special engineering consideration will be incorporated in the design of the berms to protect the recharge basins from 100-year flood related failure.

Biological Commitments:

**San Joaquin kit fox (SJKF)**

- **(*Pre-Construction Surveys*).** A Service-approved biologist will conduct pre-construction surveys no fewer than 14 days and no more than 30 days prior to the onset of any ground disturbing activity. The primary objective is to identify kit fox habitat features (e.g. potential dens and refugia) on the project site and evaluate their use by kit foxes through use of remote monitoring techniques such as motion triggered cameras and tracking medium. If an active kit fox den is detected within or immediately adjacent to the area of

work, all construction activities associated with the project will be halted immediately. The project will be place on hold until consultation with the USFWS and CDFW is completed. Sightings of San Joaquin kit fox will also be reported to the CNDDB.

- ***(Avoidance).*** Should an active kit fox den be detected within or immediately adjacent to the area of work, a minimum 50-foot disturbance-free buffer will be established around the den in consultation with the USFWS and CDFW, to be maintained until a qualified biologist has determined that the den is no longer occupied. Known kit fox dens may not be destroyed until they have been vacant for a period of at least three days, as demonstrated by use of motion-triggered cameras or tracking medium, and then only after obtaining take authorization from the USFWS.

- ***(Minimization).*** Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes. Minimization measures will include restriction of project-related vehicle traffic to established roads a daytime speed limit of 15-mph throughout the site in all project areas. Off-road traffic outside of designated Project Areas and construction at night will be prohibited. All food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed on in securely closed containers and removed at least once a week from the project site. No firearms or pets will be permitted on the project site. Covering of structures (e.g., pipes) and installation of escape structures will be implemented to prevent the inadvertent entrapment of kit foxes. Use of rodenticide will not be allowed. Upon completion of the project, all areas subject to temporary ground disturbances, including staging areas, temporary roads, and borrow sites will be re-contoured if necessary and revegetated with native seed to promote restoration of the area to pre-project conditions.

- ***(Employee Education Program).*** Prior to the start of construction, the applicant will retain a Service-approved biologist to conduct one tailgate meeting to train construction staff that will be involved with the Proposed Project on the San Joaquin kit fox. This training will include a description of the kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of the measures being taken to reduce impacts to the species during project construction. The training will include a hand out with all of the training information included. The project manager will use this handout to train any additional construction staff that was not in attendance at the first meeting, prior to starting work on the Proposed Project.

- No pets will be permitted in the Project Area.

- No firearms will be allowed on the project site

- Upon completion of the Project, all areas subject to temporary ground disturbances, including staging areas temporary roads, and borrow sites will be recontoured, if necessary, and revegetated, as appropriate, to promote restoration of the area to pre-Project conditions.

- Although not anticipated in the project vicinity, SJKF sightings will be reported to CNNDB.[4]

**Swainson's hawk**

- ***(Avoidance).*** In order to avoid impacts to Swainson's hawks from Project construction, construction will occur between September 1st and January 31st, outside the Swainson's hawk nesting season to the extent feasible.

- ***(Pre-construction Surveys).*** If construction must occur between February 1st and August 31st, a qualified biologist will conduct a pre-construction survey for Swainson's hawk nests on the Project site and on lands within a half mile from the Project site within 30 days of the onset of these activities.

- ***(Establish Buffers).*** Should any active nests be discovered in or near proposed construction zones, the biologist will establish a half-mile no disturbance buffer, unless a smaller buffer can adequately protect the nest as determined by the biologist, in coordination with the District, Reclamation, the USFWS and CDFW, pending the nature of disturbance and the presence or absence of disturbance barriers between the nest and construction. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.[5]

**Migratory Bird Nests**

- **(*Avoidance*).** In order to avoid impacts to all nesting migratory birds from grading and construction, these activities will occur outside of the typical avian nesting season, between September 1 and January 31, to the extent feasible.

- ***(Pre-construction Surveys).*** If applicable activities must occur during the nesting season (February 1-August 31), a qualified biologist will conduct preconstruction surveys for active raptor and migratory bird nests within 30 days of the onset of these activities. Surveys for raptors will include areas on and within 500 feet, and migratory birds on and within 250 feet of the site, where accessible. If no active nests are found within the survey area, no further mitigation is required.

  ***(Establish Buffers).*** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest in coordination with the District, Reclamation, CDFW and/or the USFWS. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.

[4] Appendix C of Attachment 1, Live Oak Associates, Inc. Biological Resources Report for the Proposed Pixley Groundwater Bank Proposed Project. March 2015. Page 35-36.
[5] Appendix C of Attachment 1, Live Oak Associates, Inc. Biological Resources Report for the Proposed Pixley Groundwater Bank Proposed Project. March 2015. Page 37-38.

- **Burrowing Owl**

  - ***(Take Avoidance Surveys).*** A take avoidance survey for burrowing owls will be conducted by a qualified biologist between 14 and 30 days prior to the start of construction. This take avoidance survey will be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The survey area will include all suitable habitats on and within 200 meters of Project impact areas, where accessible.

  - ***(Avoidance of Active Nests).*** If Project activities are undertaken during the breeding season (February 1-August 31) and active nest burrows are identified within or near Project impact areas, a 200-meter disturbance-free buffer will be established around these burrows, or alternate avoidance measures implemented by the District in consultation with CDFW. The buffers will be enclosed with temporary fencing or flagging to prevent construction equipment and workers from entering the setback area. Buffers will remain in place for the duration of the breeding season, unless otherwise arranged with CDFW. After the breeding season (i.e. once all young have left the nest), passive relocation of any remaining owls may take place as described below.

  - ***(Passive Relocation of Resident Owls).*** During the non-breeding season (September 1-January 31), resident owls occupying burrows in Project impact areas may either be avoided, or passively relocated to alternative habitat. If the Authority chooses to avoid active owl burrows within the impact area during the non-breeding season, a 50-meter disturbance-free buffer will be established around these burrows, or alternate avoidance measures implemented in consultation with CDFW. The buffers will be enclosed with temporary fencing, and will remain in place until a qualified biologist determines that the burrows are no longer active. If the Authority chooses to passively relocate owls during the non-breeding season, this activity will be conducted in accordance with a relocation plan prepared by a qualified biologist. Passive relocation may include one or more of the following elements: 1) establishing a minimum 50-foot buffer around all active burrowing owl burrows, 2) removing all suitable burrows outside the 50-foot buffer and up to 50 meters outside of the impact areas as necessary, 3) installing one-way doors on all potential owl burrows within the 50-foot buffer, 4) leaving one-way doors in place for 48 hours to ensure owls have vacated the burrows, and 5) removing the doors and excavating the remaining burrows within the 50-foot buffer.

**Roosting Bats**

  - ***(Temporal Avoidance).*** If removal of mature orchard or native riparian trees must occur, to avoid potential impacts to maternity bat roosts, removal of mature trees will, to the extent feasible, occur outside of the period between April 1 and September 30, the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse.

  - ***(Preconstruction Surveys).*** If removal of trees is to occur between April 1 and September 30 (general maternity bat roost season), a qualified biologist will survey affected trees for the presence of bats within 30 days prior to these activities. The

biologist will look for individuals, guano, and staining, and will listen for bat vocalizations. If necessary, the biologist will wait for nighttime emergence of bats from roost sites. If no bats are observed to be roosting or breeding, then no further action would be required, and construction would proceed.

- ***(Minimization).*** If a non-breeding bat colony is detected during preconstruction surveys, the individuals will be humanely evicted via partial dismantlement of trees prior to full removal under the direction of a qualified biologist to ensure that no adverse impact to any bats occurs as a result of construction activities.

- ***(Avoidance of Maternity Roosts).*** If a maternity colony is detected during preconstruction surveys, a disturbance-free buffer will be established around the colony and remain in place until a qualified biologist deems that the nursery is no longer active. The disturbance-free buffer will range from 50 to 100 feet as determined by the biologist.

- ***Mitigation Measure 3.3.5e (Consultation if Maternity Roosts Cannot be Avoided).*** If roosts are determined to be present and must be removed, the bats will be excluded from the roosting site before the tree is removed. A mitigation program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with CDFW before implementation. Exclusion methods may include use of one-way doors at roost entrances or sealing roost entrances when a site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g. during hibernation or while females in maternity colonies are nursing young).

- ***Mitigation Measure 3.3.6 (Compensation for Habitat Loss).*** The loss of each roost will be replaced, in consultation with CDFW, and may include construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site(s). Roost replacement will be implemented before bats are excluded from the original roost site(s). Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost sites, the tree(s) may be removed.

**Riparian and other Sensitive Habitats**

- ***(Revegetation of Disturbed Areas).*** After construction, all disturbed areas within Deer Creek will be restored to the original contours. The small area of Deer Creek to be disturbed is anticipated to re-vegetate naturally.

  ***(Replacement Planting).*** Should avoidance of riparian trees not be possible, the applicant will provide compensation. Replacement planting will be implemented at a ratio of 3:1 for trees between 4-24 inches in diameter at breast height (DBH), and at a ratio of 10:1 for trees greater than 24 inches in DBH. Species chosen for the plant pallet will include native riparian trees such as valley oaks, Oregon ash and Fremont's cottonwoods. Seed and cuttings will be gathered from its lands fronting the Deer Creek watershed, if possible. These trees will be planted as container plants and cuttings. All planting material will be installed in the late fall or early winter. All plantings will be monitored annually for a minimum of five years. A revegetation plan acceptable to the

CDFW will be completed for the project, which will detail the maintenance, monitoring, performance criteria and success rate for trees planted within the project site.

Cultural and Paleontological Commitments:

- If, in the course of Project construction or operation, any archaeological, paleontological or historical resources are uncovered, discovered, or otherwise detected or observed, activities within one hundred (100) feet of the find will be ceased and the Authority will be notified immediately. The proponent will retain a qualified archaeologist to assess the significance of the find and make mitigation recommendations, if warranted. The archaeologist will document the resources using DPR 523 forms and file said forms with the California Historical Resources Information System (CHRIS). The resources will be photo-documented and collected by the archaeologist for submittal to the Santa Rosa Rancheria's Cultural and Historical Preservation Department. The archaeologist will be required to submit to the County for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the area of discovery will not be allowed until the preceding steps have been taken.

Air Quality Commitments:

- The following measures will be implemented daily in the field, and records maintained to document such implementation, by construction contractor to reduce mobile-source emissions associated with the use of off-road construction equipment:
  - When not in use, construction equipment will be turned off and will not be allowed to idle.
  - All construction equipment will be maintained in proper working condition according to manufacturer's specifications. The equipment will be checked by a certified mechanic and determined to be running in proper condition before it is operated.
  - Low-emission off-road construction equipment will be used. At a minimum, construction equipment, 50 hp and greater, will meet U.S. EPA Tier II emission standards.

Geology and Soils Commitments:

The District shall complete a Storm Water Pollution Prevention Plan (SWPPP) prior to any ground moving activities. As part of the SWPPP, the Authority would be required to incorporate any or all of the following Best Management Practices (BMPs), as deemed appropriate for the Project by the SWRCB, to further protect the topsoil:

- *Grading and Preservation of Existing Vegetation:* Existing vegetation shall be preserved to the maximum extent practicable. Clearing and grubbing shall only be performed in areas where new foundations, utilities, or internal access drives are planned.
- *Soil Compaction:* All soil compaction and subgrade preparation specifications will be per the site-specific recommendations of a California-licensed Geotechnical Engineer, and will be based on his field exploration prior to construction. Typically, trench backfill and

subgrade compaction consists of either hand-held vibratory, rolled-drum equipment, or tracked equipment. Compaction would be 90 percent of maximum density as calculated by ASTM D1557 Modified Proctor.

- *Hydroseeding:* Disturbed areas will be seeded upon completion of construction in order to protect exposed soils from erosion by wind and water. Upon completion of an earth disturbance activity, disturbed areas shall be covered with a minimum uniform 70 percent perennial vegetative cover, with a density capable of resisting accelerated erosion and sedimentation. The vegetative cover will also be chosen to be appropriate for the proposed sheep grazing activities in the event the continued farming concept is chosen.

- *Straw Mulch:* Straw mulch will be used to temporarily stabilize disturbed areas until soil can be prepared for revegetation. Straw mulch will be anchored immediately after application to prevent being windblown. Straw or hay will be "crimped" into the soils by running tracked machinery across the surface.

- *Non-Vegetative Stabilization:* A non-combustible surface will surround the project site to function as a fire break as well as provide a stabilized surface for post-construction access. Non-vegetative stabilization methods, such as gravel mulch, will be used to provide a stabilized 12-foot wide access.

- *Stabilized Construction Entrance/Exit:* A stabilized construction entrance/exit will be maintained at each construction site entrance/exit to reduce tracking of sediment as a result of construction traffic. The entrance/exit will be constructed per the detail included with the Erosion and Sediment Control Drawings (ESCDs).

- *Stabilized Construction Roadway:* The construction access route into the site will also be maintained to prevent erosion and to control tracking of mud and soil material onto adjacent roads. The ESCDs will specify the construction access locations. A regular maintenance program will be conducted to replace sediment-clogged stabilization material with new stabilization material as required.

- *Entrance/Outlet Tire Wash:* Tire wash racks will be installed if soil and/or traffic conditions on-site require washing the construction vehicle wheels prior to exiting the site to avoid excessive tracking of mud onto the roadway.

- *Street Sweeping and Vacuuming:* Road sweeping and vacuuming will occur as necessary during construction to keep street surfaces clear of soil and debris. Washing sediment onto streets will not occur.

- *Dust Control:* During windy conditions (forecast or actual wind conditions of approximately 25 mph or greater), dust control will be applied to disturbed areas, including construction access roads, to adequately control wind erosion. Water will be applied to disturbed soil areas of the project site using water trucks as required by

weather conditions to control dust. Water application rates will be minimized as necessary to prevent runoff and pooling from excess water.

# Section 3 Affected Environment and Environmental Consequences

This section analyzes the potential effects of the alternatives in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The analysis in this section is coordinated and consistent with the Initial Study Checklist provided herein as Attachment 1 with its Appendices A-I. While the NEPA environmental effects analysis compares the Proposed Action to the No Action condition, the CEQA environmental impact analysis is based on the change that would result from Proposed Project implementation and operation compared to existing conditions. The No Action/No Proposed Project condition is similar to existing conditions for most of the resources addressed in this analysis, with differences highlighted as appropriate in the sections below.

### Environmental Issues Not Further Analyzed

The Proposed Action/Proposed Project would have no impacts to aesthetics due to the low profile nature of the groundwater banking infrastructure and the fact that no lights are proposed in this Project. The Project would not involve the use or transport of hazardous materials and there are no mineral resources in the Proposed Action/Project vicinity. The Project itself does not involve the addition of any new housing and would not require the need for any additional public services or recreational facilities. The Project would not cause an increase in local traffic nor would it create additional demand from utility providers. There would be no impacts regarding the above-mentioned topical areas; therefore, they are not further analyzed.

## 3.1 Water Resources

Much of the information contained in this section is derived from the technical report *Hydrology and Water Quality Impacts Analysis, Pixley Groundwater Banking Proposed Project, Tulare County* (Amec Foster Wheeler 2015) attached to this EA/IS as, Appendix H of Attachment 1.

### 3.1.1 Affected Environment

#### *Water Supply*

The Authority was formed as a Joint Powers Authority, whose members include the PID and the DEID. The proposed Pixley Groundwater Banking Project (Project) would be located within PID.

Pixley Irrigation District is one of seven agencies that are Cross Valley Canal Contractors. Others are Lower Tule River Irrigation District, Tulare County, Fresno County, Kern-Tulare Water District, Hills Valley Irrigation District, Tri-Valley Irrigation District.

PID is an agricultural irrigation district that covers approximately 70,000 acres in southern Tulare County, California. It is located immediately to the north of DEID (**see Figure 1: Regional Map)** Deer Creek, a local ephemeral stream, flows from east to west through the middle of the

District. The District enjoys excellent groundwater quality. Depths to static groundwater within PID average approximately 300 feet. There is significant groundwater storage potential within the District. PID holds a water service contract with Reclamation for a maximum of 31,102 acre-feet per year of water from the Cross Valley Division of the CVP.

In addition to its CVP water service contract of 31,102 AF/yr, PID also has a contract to purchase temporary un-storable (Section 215) water from the Friant Division of the CVP and has a long history of purchasing surplus water from other Friant Division contractors. PID has long-term water management programs with the Stone Corral Irrigation District and Kern-Tulare Water District. Those programs will transfer a total of 36,000 acre-feet of Friant CVP supply to PID within the next 10 years. PID also has a Memorandum of Understanding with Lower Tule River ID, which allows PID to purchase Class 2 water from Lower Tule River ID during periods of Uncontrolled Season water availability from Friant Division facilities. PID can also access its Cross Valley supply from the Friant Division per article 3(f) of the PID Cross Valley Water Service Contract. These relationships make it evident that PID, while not a long-term Friant contractor, has a significant dependence upon Friant Division operations for surface water supply, and has been and will be impacted by the San Joaquin River Settlement.

DEID is an agricultural irrigation district encompassing approximately 56,500 acres that borders PID to the south in southern Tulare County and northern Kern County. DEID has a Friant Division CVP Repayment water contract that includes the largest Class 1[6] water supply maximum entitlement in the Friant Division of 108,800 AF/yr. It also has a maximum Class 2[7] contract entitlement of 74,500 AF/yr. As a long-term Friant Division contractor, DEID has a history of accessing temporary un-storable (Section 215 water[8]) CVP water supplies (surplus to contract supplies and/or project purposes) and banking water for future needs both within the District as well as outside of the District. The District successfully completed the development of the Turnipseed Basin Groundwater Bank Phase II Proposed Project and has also entered into two separate agreements with North Kern Water Storage District and Rosedale Rio Bravo Water Storage District to bank water for dry-year return.

Potential Bank Partners include water users or districts with the Friant Division long-term contractors would be the preferred Bank Partners. Other potential Bank Partners include, CV Contractors, Reclamation, the Delta-Mendota Canal Unit and San Luis Unit CVP contractors, the San Joaquin River Exchange Contractors, the Kern County Water Agency and/or its member units, the Dudley Ridge Water District, and the Tulare Lake Basin Water Storage District. Bank Partners would provide water for recharge in the Bank and pay all costs of acquisition and

[6] Friant Division Class 1: The supply of water in or flowing through Millerton Lake which, subject to the contingencies described in the water service or repayment contracts, will be available for delivery from Millerton Lake and the Friant-Kern and Madera Canals as a dependable water supply during each Contract Year.

[7] Friant Division Class 2: The supply of water which can be made available subject to the contingencies described in the water service or repayment contract for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 water. Because of its uncertainty as to availability and time of occurrence, such water will be undependable in character and will be furnished only if, as, and when it can be made available.

[8] Section 215 water is defined under Section 215 of the Reclamation Reform Act of 1982 (RRA), as unstorable irrigation water to be released due to flood control criteria or un-managed flood flows. Section 215 water is exempt from the full cost provisions of the RRA. Section 215 Water Rates are the rates per acre/foot assessed on contractors who subsequently "take" Section 215 Water. M&I "spill" water has essentially the same characteristics as 215 water, but is referenced differently as the RRA provides only for unstorable irrigation. The following paragraphs just reference Section 215 water, but the comments apply to M&I "spill" water as well.

delivery of water to the Bank. Effective delivery of water would be canal-side in the Friant-Kern Canal (FKC) at the new turnout location near the Road 80 crossing or at the Deer Creek turnout when available.

The Bank would provide a total of 30,000 shares that would provide the benefit of firm dry-year return of water to partners who pay to participate in the Bank. Water could be banked or "put" into the Bank using Central Valley Project (CVP) water supplies such as Class 1[9], Class 2[10], Section 215[11] water or Article 16(b) water (often referred to as "$10 Settlement water[12]"), or other typically wet-year water supplies. These waters would be stored in PID's groundwater aquifer until needed. Other sources of CVP or non-CVP water (such as unregulated water, water from Deer Creek not otherwise put to beneficial use, or natural flows out into the floodplain,) are also able to be stored in the Bank.

### *Location and Physiography*

The Project is located within the Central Valley physiographic province of California. The Central Valley can be divided into the northern San Joaquin Basin that drains into the Sacramento Delta and the southern Tulare Basin, which is hydrologically closed. The Project is located within Tulare Lake Hydrologic Region, within the Tule Groundwater Sub-Basin number 5-22.13 (Tule Basin) as defined by California Department of Water Resources (DWR) Bulletin 118 (DWR, 2003). The Tule Basin comprises approximately 467,000 acres and is bordered by Kern County to the south, Tulare Lake to the west, Kaweah River to the north, and the foothills to the east. There are three major surface watersheds located within the boundary of the Tule Groundwater Basin: Tule River, Deer Creek, and White River. (Appendix H of Attachment 1).

### *Surface Water Hydrology and Water Quality*

There are only two surface waters of significance near the Proposed Project: Deer Creek and the CVP FKC (Appendix H of Attachment 1).

- Deer Creek is an intermittent stream extending from the Greenhorn Mountains in the Sierra Nevada and terminating in the Lakeland and Homeland Canals near the Tulare/Kings County border. Prior to diversion for agricultural purposes, Deer Creek ran into the former Tulare Lake bed. Peak flows from 40 to 70 cubic feet per second (cfs) typically occur from January

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[10] Friant Division Class 2: The supply of water which can be made available subject to the contingencies described in the water service or repayment contract for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 water. Because of its uncertainty as to availability and time of occurrence, such water will be undependable in character and will be furnished only if, as, and when it can be made available.

[11] Section 215 water is defined under Section 215 of the Reclamation Reform Act of 1982 (RRA), as unstorable irrigation water to be released due to flood control criteria or un-managed flood flows. Section 215 water is exempt from the full cost provisions of the RRA. Section 215 Water Rates are the rates per acre/foot assessed on contractors who subsequently "take" Section 215 Water. M&I "spill" water has essentially the same characteristics as 215 water, but is referenced differently as the RRA provides only for unstorable irrigation. The following paragraphs just reference Section 215 water, but the comments apply to M&I "spill" water as well. Source: http://www.usbr.gov/mp/cvpwaterrates/rate_process/special_rates.html#special_215_rates

[12] Article 16(b) refers to Article 16(b) of the San Joaquin River Restoration Settlement Agreement. Said article provides for surplus water to be made available to Friant Division contractors to offset their loss of water diverted for Restoration purposes for the price of $10 per acre-foot (AF) of water. (One AF equals 43,560 cubic feet or one acre-foot/year is approximately 893 gallons per day.)

through May. The long-term average monthly discharge of Deer Creek is about 30 cfs (60.5 acre-feet per month [AF/m]).

- The CVP FKC passes within one mile of the eastern edge of the Proposed Project. It is operated and maintained by the Friant Water Authority and is used to convey water from the San Joaquin River (diverted at Friant Dam and stored in Millerton Lake) to Kern County and points in between. The canal originates at Friant Dam that is operated by the United States Bureau of Reclamation. The FKC flows southeasterly along the western flank of the Sierra Nevada foothills through Fresno, Tulare, and Kern Counties. The FKC has a capacity of approximately 5,300 cfs (10,510 AF/d), which decreases to about 2,500 cfs (4,959 AF/d) as demand decreases toward its end in the Kern River, near Bakersfield, California.

Surface water quality in the Tulare Lake Basin is generally good, with excellent quality exhibited by most eastside streams (RWQCB, 2004). Common water quality issues are a result of runoff from direct discharge from industrial and commercial activities, resource withdrawal, leaking sewer infrastructure, and illicit dumping during wet weather conditions. Further potential sources of polluted water within the area include past waste disposal practices, agricultural chemicals, and fertilizers applied to landscaping. Characteristic water pollutant contaminants include sediments, hydrocarbons and metals, pesticides, nutrients, bacteria, and trash. (Appendix H of Attachment 1)

Irrigated agriculture accounts for most water used in the Tulare Lake Basin. Agricultural drainage, depending on management and location, carries varying amounts of salts, nutrients, pesticides, trace elements, sediments, and other by-products to surface and ground waters (RWQCB, 2004). (Appendix H of Attachment 1)

The water from the San Joaquin River that is delivered via the FKC is considered to be of excellent quality. The U.S. Bureau of Reclamation (USBR) maintains guidelines for the quality of any water to be introduced into the FKC that does not originate from the San Joaquin River (USBR, 2008). These guidelines generally specify that any water introduced into the FKC must meet Title 22 State drinking water quality standards (the Domestic Water Quality and Monitoring Regulations specified by the State of California, Health and Safety Code (Sections 4010- 4037), and Administrative Code (Sections 64401 et seq.), as amended). (Appendix H of Attachment 1)

### *Groundwater Levels, Quality, and Overdraft*

Groundwater levels near the Proposed Project have been measured on a semi-annual basis by DWR and cooperating agencies. Long-term hydrographs for wells near the Proposed Project show that groundwater levels have decreased as much as 100 feet since the 1940s. The regional groundwater decline was somewhat arrested by the availability of CVP water starting in the 1950s; however, CVP water is not available in the immediate vicinity of the Proposed Project. Groundwater levels continue to decrease in Pixley Irrigation District. (Appendix H of Attachment 1)

In the northern portion of the Tule Basin the water is characterized as calcium bicarbonate (USGS, 1968), while the southern portion of the Tule Basin is better characterized as sodium bicarbonate (USGS, 1963). Total dissolved solids (TDS) values typically range from 200 to 600

milligrams per liter (mg/L) which is understood to be usable for most agricultural uses. TDS values of shallow groundwater in drainage problem areas are as high as 30,000 mg/L (USGS, 1995) which is not usable for most agricultural crops. The Department of Health Services, which monitors Title 22 water quality standards, reports TDS values in 65 wells ranging from 20 to 490 mg/L, with an average value of 256 mg/L. The eastern side of the Tule Basin, including areas near the proposed Bank location, have localized nitrate pollution, likely as a result of agricultural fertilizers. (Appendix H of Attachment 1)

The groundwater quality characteristics of the Deer Creek/White River Watershed vary from east to west. In general, water quality on the east side of the valley floor of the county in this area is characterized by diminished quality where nitrates, phenols, and salts are present in different concentrations and in different locales. On the westerly side of the Deer Creek/White River Watershed, groundwater quality again declines into unacceptable conditions. Principal among these conditions are elevated levels of arsenic and micro-sand (very fine sand entrained in the water) conditions (Tulare County, 2012). (Appendix H of Attachment 1)

Over pumping of groundwater beneath the Corcoran Clay has resulted in historical land subsidence of 12 to 16 feet due to deep compaction of fine-grained units beneath portions of the Tule Basin (USGS, 1984). Between 2007 and 2011, continued overdraft pumping in the Tule basin has resulted in an additional 0.5 to 1 foot of subsidence in the Proposed Project area (LSCE, 2014). (Appendix H of Attachment 1)

An overdraft for the Tulare Lake Basin is projected at 820,000 AF/y (Tulare County, 2012). The Tule sub-basin has been identified and defined by Water Code §12924 as a basin in critical condition of overdraft. This designation indicates a basin where a continuation of present water management practices would likely result in significant adverse overdraft-related environmental, social, or economic impacts (DWR, 2003).

- The estimated irrigation demand for Delano-Earlimart Irrigation District is approximately 177,000 AF/y. To meet agricultural demand, it is estimated that between 35,000 and 40,000 acre feet is pumped by private landowner wells (P&P, 2008).
- Pixley Irrigation District has a total irrigated demand of 157,600 AF/y, while the District's total water sold to growers averages only 21,600 AF/y. The 136,000 AF/y deficit is assumed to be pumped from private groundwater wells. (Appendix H of Attachment 1)

### *Flooding*

Portions of the Proposed Project Area are located within the 100-year flood plain of Deer Creek (Appendix H of Attachment 1, Figure 8). The 100-year flood is defined as a flood flow that has a 1 percent chance of being equaled or exceeded in any given year (FEMA, 2009). 100-year flood zones are located throughout southern Tulare County from a number of waterways, including the White and Tule Rivers, and Deer Creek (FEMA, 2009). A portion of the Proposed Project Area is within the 100-year flood plain of Deer Creek.

### 3.1.2 Environmental Consequences

#### *No Action Alternative*

Under the No Action/No Project Alternative, Reclamation would not help fund construction of the groundwater banking and recovery program and the Authority would not build and operate the proposed Bank. Groundwater levels underlying PID would not be able to benefit from the additional recharge. The proposed 10 percent "leave-behind" fraction and the raising of groundwater levels in PID by this banking of water for other districts (resulting in reduced groundwater pumping costs) would not occur. Subsurface groundwater outflow from DEID and other neighboring long-term Friant contractors into PID would not be reduced. Property owners in the in-lieu service area would still rely on private wells for irrigation of agricultural crops.

Bank Partners would not be able to bank water in wet years and recover water in normal and dry years. The additional dry-year water supply would not be available to Bank Partners to prevent fallowing, crop loss, or municipal water supply reductions and/or to provide supplemental supplies for the SJRRP that would occur under existing conditions and without the new groundwater bank and recovery program. Members of the Authority would continue to use their surface water and groundwater supplies as has historically occurred subject to reduced availability due to the release of SJRRP Restoration Flows.

#### *Proposed Action/Proposed Project*

The proposed Pixley Groundwater Banking Project relies on CVP surface water taken from the FKC, the capture of unregulated flow diverted from Deer Creek (when available and acceptable) and other alternative supplies noted previously. Banked water would be recharged and returned to Bank Partners consistent with state and Federal law including the State of California authorized water rights place-of-use and Reclamation Law. A turnout would be constructed as part of the Project that would allow water from Deer Creek to be routed into the recharge basins. Although not a Proposed Project purpose/objective, some flood water could be diverted into the recharge basins, providing an increment of additional protection for areas further down-stream from inundation.

The CEQA checklist questions are covered in Appendix A of Attachment 1. The issues addressed herein are water supply, groundwater levels and other landowner wells, groundwater quality, and drainage patterns including alteration of flood flows.

#### *Water Supply*

The Project would not alter existing CVP water supply contracts or existing exchange and water bank agreements. Rather, it would improve the reliability of water provided under these existing contracts and other arrangements and would capture/redirect flood flows from Deer Creek to a new groundwater bank with a capacity of 90,000 AF. After a 10 percent leave-behind, up to 30,000 AF/yr of this water would then be put to beneficial use within the in-lieu service area for irrigation or for irrigation use by other banking partners. In short, water would be banked in wet water years and recovered in normal and dry years to reduce the losses in firm water supply to

provide SJRRP Restoration Flows. The storage of Section 215[13] water or carryover Class 1[14] and 2[15] allocations or other wet year water allocations that would otherwise leave the Friant Division service area as unusable flood water would have a potential beneficial effect on water supply for participating districts.

### *Groundwater Levels and Other Landowner Wells*

The Project would provide a program of long-term groundwater banking where up to 30,000 AF/yr of surface water would be recharged to groundwater up to a maximum of 90,000 AF. The Project would provide opportunities for partners to bank water during wet years and recover water in normal and dry years. Most important to groundwater levels in the Tule Basin or more locally within the PID/DEID basins is that the bank would operate on a 10 percent "leave-behind" fraction, where water recovered would not exceed more than 90 percent of the previously recharged water, creating a minimum net benefit to groundwater levels of at least 10 percent of the banked groundwater. The simulation results indicate that the Proposed Action/Proposed Project would result in a net benefit (increased aquifer storage and higher groundwater elevations) at the end of the 40-year simulation period compared to the Baseline simulation (see Appendix A of Attachment 1). Because of the proposed Bank, the groundwater levels would increase in and around the Project site, as compared to existing conditions and the No Action/No Project condition with a probable continual decline in water level elevations. Therefore, the Proposed Project would not substantially deplete groundwater supplies, interfere with groundwater recharge, or result in a net deficit to groundwater levels. However, there is the potential for localized short-term impacts to groundwater levels and nearby landowner well operations from the localized drawdown effects of the proposed recovery wells operating simultaneously. The modeling evaluated potential impacts of recovery pumping (at maximum rates) when volumes of water stored were partially depleted, but yet substantial enough to continue to allow water to be withdrawn from the Bank. The Project recovery impacts would consist of an additional 30-40 feet of pumping lift to wells on neighboring lands immediately bordering the recovery well field (Appendix A of Attachment 1). The modeling also evaluated the potential water level impacts within and immediately surrounding the proposed recovery wells. The 30-40 feet of pumping lift calculated represents the average head (or drawdown) within the 40-acre model cell. The head (or drawdown) within each recovery well calculated indicates up to 116 feet of drawdown within the recovery well itself due to well design and aquifer characteristics. However, the lateral extent of the recovery well drawdown is limited to the area immediately surrounding the well; the cell average head (or drawdown) is more

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[15] Friant Division Class 2: The supply of water which can be made available subject to the contingencies described in the water service or repayment contract for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 water. Because of its uncertainty as to availability and time of occurrence, such water will be undependable in character and will be furnished only if, as, and when it can be made available.

representative of the conditions that neighbors to the Bank would experience (Appendix A of Attachment 1).

The Project also includes the creation of a Groundwater Monitoring Committee comprised of neighboring landowners and others interested in the Bank's short and long-term operations. The Committee will monitor the Bank's operations and the changes to groundwater conditions created by the Bank and will recommend immediate steps that will be taken should anything regarding Bank operations-- including but not limited to depth to groundwater, well interference and groundwater quality, rise to a level of concern. The Groundwater Monitoring Committee will notify the Authority immediately of any effects taking place that have the potential to or that are adversely affecting any private well operations and will recommend immediate steps needed to minimize these impacts, including but not necessarily limited to the following:

a. Reduce the volume of water being pumped by the Project when the neighbors' wells are running;

b. Rotate which wells in the well field are running to spatially move the cones of depression to avoid pumping close to neighbors' wells that may be running.

c. Move the season of extraction to a time of year when the neighbors' wells are not running.

***Surface Water and Groundwater Quality***

The Project could result in temporary adverse effects/impacts to groundwater quality and then on the quality of the extracted water that would be introduced into the FKC (surface water) and used subsequently in the Bank Partners' service areas.

Surface water applied to the recharge basins and in-lieu lands would be delivered via Deer Creek and the FKC. The water quality of these deliveries, because of their similar tributary origins, would be comparable to historic water qualities that have naturally recharged the underlying groundwater. Hence, no long-term negative effect or impact on groundwater quality would be expected. However, residual concentrations of nitrates and other agricultural related chemicals (if present) could be mobilized beneath the recharge basins with initial water applications. This would result in short-term impacts to groundwater quality. Assuming a 20 foot thick zone of impacted soils, with soils possessing 15 percent void space, and 30,000 AF/yr of applied water, the 20 foot zone would be flushed more than 16 times in the first year of recharge, significantly diluting potential impacts to groundwater. Additionally, water quality sampling before Project implementation, and continued sampling during the first year of operation, would quantify the impacts (if any) of any chemical concentrations and the effects of dilution by applied water. Likewise, care would be taken when recharging the first runoff waters from Deer Creek each season. (Appendix H of Attachment 1)

**Mitigation Measures.** The Proposed Project will include implementation of the following measures:

- **WAT-1**: Allow the initial flows of Deer Creek to continue past the Project, until the water turbidity is at a level acceptable to the Project, typically at less than 40 NTU, before beginning recharge operations. This measure would mitigate the unwanted introduction of silts that would likely reduce basin infiltration.
- **WAT-2**: **:** Zone sampling will be performed on test wells or during initial well construction (prior to any water being discharged into/returned to the Friant Kern Canal). The results of the sampling will be used in well design. Dilution or other industry-accepted remediation methods will be employed as needed and appropriate to reduce any unacceptable levels of constituents of concern to meet Reclamation's then current water quality requirements before the Project begins returning water to the FKC. Continued sampling in accordance with Reclamation's then current water quality requirements will also be performed with necessary remediation of unacceptable constituents of concerns or other mitigation measures employed immediately. These measures will avoid adverse impacts to FKC water quality from the Proposed Project to be.
- **WAT-3**: Additionally, all of the well water being returned to the FKC will be mixed together before introduction into the FKC, further reducing the potential that any water returned to the FKC would be of unacceptable water quality for delivery to water users. Dilution or other industry-accepted remediation methods will be employed as needed and appropriate to reduce any unacceptable levels of constituents of concern to meet Reclamation's then current water quality requirements before the Proposed Project would begin returning water to the FKC. Continued sampling in accordance with Reclamation's then current water quality requirements will also be performed with necessary remediation of unacceptable constituents of concerns or other mitigation measures employed immediately.

### *Drainage Patterns*

The Project would construct 4 to 5 foot deep recharge basins with 1 to 2 foot tall berms over an approximate 532 acre area. The construction of the basins would alter the existing drainage pattern and could increase the rate of erosion at the site during construction. Implementation of erosion and sediment control measures including a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the Clean Water Act would reduce erosion rates during and after construction.

Unregulated water from Deer Creek, when available and acceptable, would be captured and recharged to the proposed basins. The capture of this water would temporally divert water from Deer Creek without permanently altering the course of the creek. The potential for surface runoff to result in flooding on or off site would not be substantial. The redirection of flood flows into the basins would reduce downstream inundation. To the extent that flood flows are diverted from Deer Creek and redirected to the recharge basins, properties that would be impacted under a 100-year flood under existing conditions and the No Action/No Proposed Project Alternative would benefit from reduced flooding.

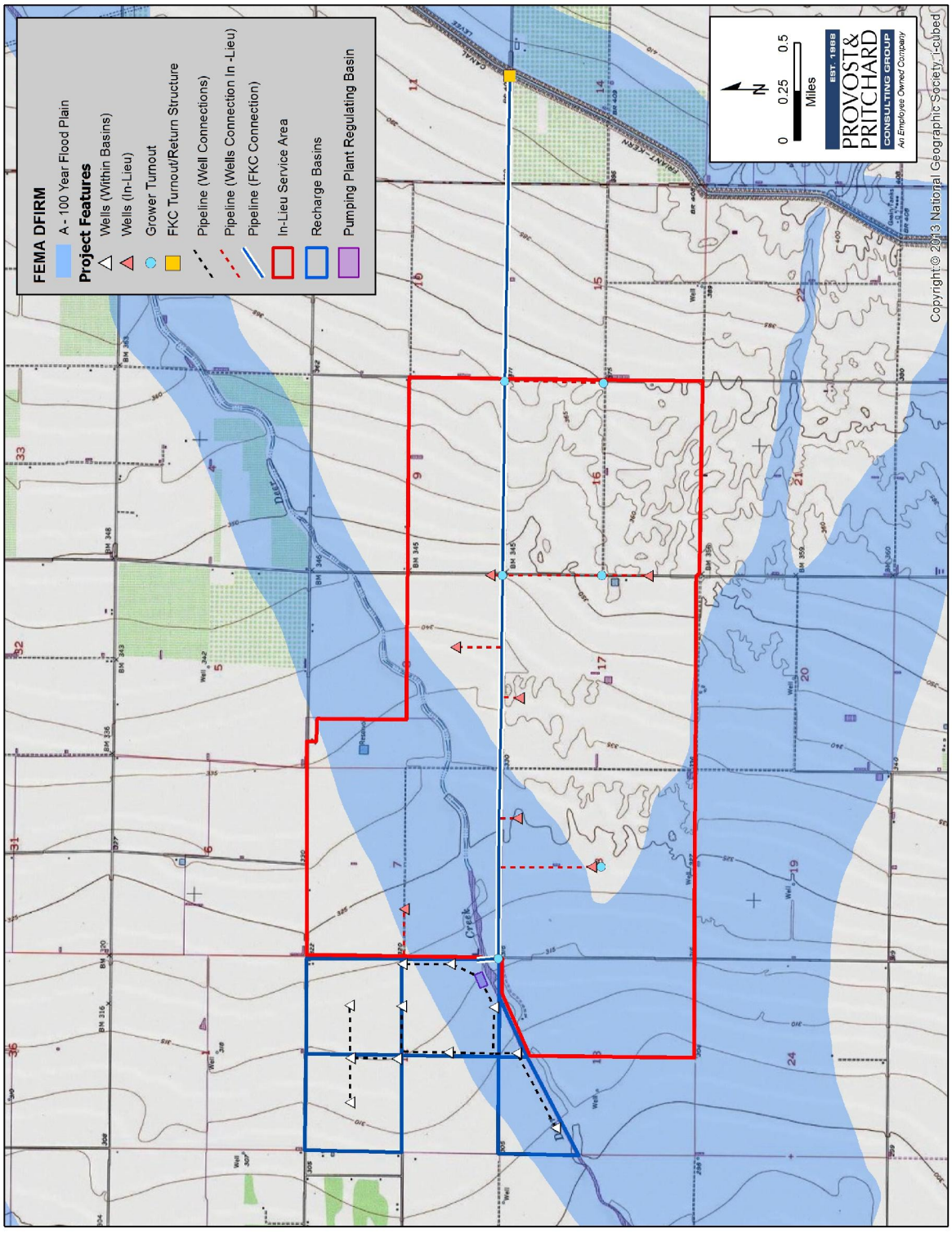


**Figure 5: FEMA DFIRM**

As shown on Figure 7: FEMA DFIRM , portions of the Project area, including portions of the recharge basins, fall within a 100-year flood zone. The 100-year flood is defined as a flood flow that has a 1 percent chance of being equaled or exceeded in any given year (FEMA, 2009). Special consideration would be taken in the engineering and construction of the berms such that the recharge basins are constructed in a way to capture flows to the extent that the basins are capable, thereby reducing inundation off-site, and in a manner that protects the berms from failure from a 100-year flood that could affect other properties.

**Mitigation Measure.** Prior to the construction of the Proposed Project all of the following measures will be implemented.

- **WAT-4:** Special engineering consideration will be incorporated in the design of the berms to protect the recharge basins from 100-year flood related failure.

## 3.2 Biological Resources

### 3.2.1 Affected Environment

Appendix C of Attachment 1 contains a Report of Biological Evaluation prepared by Live Oak Associates. The Report evaluates potential effects to biological resources from construction and operation of the Project. The report includes an analysis of: (1) Literature Search (2) Floristic Survey (3) Wildlife Survey and (4) Survey for Jurisdictional Waters. Additionally, the report includes the findings of a reconnaissance-level field survey of the Project site that was conducted in September and October 2014, by Live Oak Associates, Inc. (LOA) biologists. This survey consisted of driving the perimeter of the agricultural fields and along the onsite canals, and walking within and around representative habitats of the Project site. Information from that report is utilized below in the description of baseline conditions (environmental and regulatory), impact analysis, and recommended mitigation measures.

The study area includes areas within the footprint of the proposed groundwater recharge facilities, as well as the proposed in-lieu service area that would benefit from the Proposed Action/Proposed Project. With the exception of the wells and pipelines to be constructed, the Project does not propose any alteration of the lands within the in-lieu service area. Four land use/biotic habitats were identified within the study area, including agricultural land (orchards and field crops), ruderal areas (i.e. County road alignments, agricultural roads, Harris Ditch, and concrete-lined Friant-Kern Canal), intermittent channel of Deer Creek, and agricultural ponds (Appendix C of Attachment 1, Figure 4). Native and naturalized habitats were limited to the Deer Creek corridor. Natural terrestrial and aquatic communities were absent from the remainder of the study area. The vegetation associations and likely complement of wildlife species occurring on the study area are described below.

**Agricultural Land**

Agricultural land comprised the vast majority of the study area and consisted of orchard, vineyard, annual and perennial crops. More specifically, these lands consisted of orchards of almond (Prunus dulcis) and pistachio (Pistacia vera) trees, annual field crops of corn (Zea mays),

cotton (Gossypium hirsutum), and sorghum (Sorghum bicolor ssp. bicolor), and a small field of perennial alfalfa (Medicago sativa). All agricultural areas being cultivated with alfalfa are located south of the Deer Creek channel in the in-lieu fee area (see Figure 4 of Attachment1, Appendix C). Aside from the agricultural crops themselves, all agricultural areas supported little vegetation. The vegetation observed consisted primarily of non-native agricultural weed species such as Palmer's amaranth (Amaranthus palmeri), horseweed (Erigeron canadensis), large crabgrass (Digitaria sanguinalis), and Mexican sprangletop (Leptochloa fusca ssp uninervia), among others. Intensive agricultural practices within the agricultural lands limit their value to wildlife; however, some wildlife species would occur in these areas in limited numbers. Amphibians with the potential to use agricultural areas of the site include Pacific chorus frogs (Pseudacris regilla) and western toads (Bufo boreas). Reptiles that could occur in the fields include the side-blotched lizard (Uta stansburiana), Pacific gopher snake (Pituophis catenifer catenifer), and common kingsnake (Lampropeltis getulus).

Agricultural lands also provide foraging habitat for a number of avian species. Common resident species likely to forage in agricultural areas of the site include mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), western scrub jay (*Aphelocoma californica*), and northern mockingbird (*Mimus polyglottos*), as well as mixed flocks of Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), and European starling (*Sturnus vulgaris*). Summer migrants that would be common on agricultural lands of the site include the western kingbird (*Tyrannus verticalis*) while common winter migrants include the savannah sparrow (*Passerella sandwichensis*) and American pipit (*Anthus rubescens*).

A few mammal species may also occur within the agricultural lands of the site. Small mammals such as deer mice (*Peromyscus maniculatus*) and California voles (*Microtus californicus*) would occur in fluctuating numbers depending on the season and type of crop grown. Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Otospermophilus beecheyi*) generally concentrate their burrows around the perimeter of agricultural lands. Various species of bat may also forage in these areas for flying insects.

The presence of amphibians, reptiles, birds and small mammals is likely to attract foraging raptors and mammalian predators. Raptors such as red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*) would likely forage over agricultural lands of the site. Mammalian predators occurring in agricultural lands of the site would most likely be limited to raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*) and red fox (*Vulpes vulpes*), as these species are relatively tolerant of human disturbance.

**Ruderal**

Ruderal (disturbed) areas consist of the dirt and paved roads and road shoulders of the site, agricultural roads, as well as agricultural irrigation ditches and basins, and the concrete-lined bank and paved levee road of the FKC. Ruderal areas contain a sparse cover of common agricultural weeds, which include annual burweed (*Ambrosia acanthicarpa*), barnyard barley (*Hordeum murinum ssp. leporinum*), puncture vine (*Tribulus terrestris*), and Bermuda grass (*Cynodon dactylon*).

Although the wildlife habitat value of ruderal lands within the study area is relatively low, some wildlife species certainly occur within these lands on occasion. The reptile and amphibian species listed for agricultural lands could potentially occur in ruderal habitats of the site. Avian species occurring in agricultural lands would also be expected to occur within ruderal lands of the site. In particular, mourning dove, American crow, and the disturbance-tolerant killdeer (*Charadrius vociferous*), which was observed on the concrete banks of the Friant-Kern Canal. Small mammals that would be expected to occur on ruderal lands of the study area include California ground squirrel, Botta's pocket gopher, deer mouse, California vole, and house mouse. Mammalian predators with the potential to occur on ruderal lands of the study area include disturbance-tolerant species such as the raccoon, red fox, and coyote.

**Deer Creek**

Although a 2.5 mile stretch of Deer Creek falls within the study area, only 1,500 linear feet falls within the Project footprint (see **Figure 3: Vicinity Map**). At the time of the biological field survey, the segment of Deer Creek within the Project site consisted of vegetated channel banks with a dry, sandy bed nearly devoid of vegetation. A few riparian trees in poor to fair condition occurred sporadically along the channel banks, and included Fremont's cottonwood (*Populus fremontii*) and red willow (*Salix laevigata*). Shrubs were sparsely distributed, but included sandbar willow (*Salix exigua*) and mulefat (*Baccharis salicifolia*). Grasses observed in the Deer Creek corridor included non-wetland species such as ripgut (*Bromus diandrus*), red brome (*Bromus madritensis*), Johnson grass (*Sorghum halepense*), and barnyard barley. Forbs observed included horseweed, stinging nettle (*Urtica dioica*), curly dock (*Rumex crispus*), jimson weed (*Datura sp.*), mugwort (*Artemisia douglasiana*), black mustard (*Brassica nigra*), and others.

A number of animal species use this habitat for foraging and breeding. Amphibian species potentially breeding in this area during periods of inundation would be the Pacific chorus frog and western toad. Reptile species expected to occur in this habitat include western fence lizard (*Sceloporus occidentalis*), gopher snake, and western rattlesnake (*Crotalus oreganus*), among others. Birds common to this habitat include blue grosbeak (*Passerina caerulea*), savannah sparrow (*Passerculus sandwichensis*), white-crowned sparrow (*Zonotrichia leucophrys*), dark-eyed junco (*Junco hyemalis*), loggerhead shrike (*Lanius ludovicianus*), lesser goldfinch (*Carduelis psaltria*), and western kingbird, to name a few. Mammal species expected within this habitat include Virginia opossum (*Didelphus virginianus*), raccoon, striped skunk, California ground squirrel, Botta's pocket gophers desert cottontail (*Sylvilagus audobonii*), black-tailed hare (*Lepus californicus*), and coyote.

**Agricultural Ponds**

Two agricultural ponds were observed within agricultural lands on the Project site. These included approximately 1.3-acre irrigation holding pond that receives water from nearby wells and an approximately 0.3-acre tail water return pond. Both ponds were inundated during LOA's field surveys. The large irrigation pond was nearly devoid of vegetation with the exception of a thick mat of algae and a relatively small cluster of cattails (*Typha latifolia*). The tail water return pond contained wetland vegetation dominated by false daisy (*Eclipta prostrata*) and spotted ladysthumb (*Persicaria maculosa*). An additional eight irrigation ponds occur within the study

area, but are not described here, as they would not be altered by this Proposed Action/Proposed Project.

Some native wildlife species are expected to make use of these ponds. Amphibian species potentially breeding in this area during periods of inundation would be the Pacific chorus frog and western toad. Reptile species potentially occurring in these areas would likely be limited to common side-blotched lizards and Pacific gopher snakes. Avian species expected near these ponds include the black phoebe (*Sayornis nigricans*) and cliff swallows (*Petrochelidon pyrrhonota*), which would forage for flying insects over the ponds. Wading birds such as the green heron (*Butorides virescens*), snowy egret (*Egretta thula*), and great egret (*Ardea alba*) may use the ponds from time to time. Small mammal species would be expected to occur within surrounding agricultural lands would also be expected to utilize the agricultural ponds. Various species of bat may forage over the ponds for flying insects.

**Special Status Species**

The California Natural Diversity Data Base (CDFW 2015) was queried for special status species and natural communities of special concern occurrences in the nine USGS 7.5-minute quadrangles containing and surrounding the Project site (Sausalito School, Ducor, Richgrove, Delano East, Delano West, Pixley, Tipton, Woodville, and Porterville). Additionally, the same nine quadrangles were queried for Federally listed species and designated critical habitat using the Sacramento USFWS office's Endangered Species List Generator. These species, and their potential to occur on the Project site, are listed in **Table 1: Special Status - Species Lists** on the following pages.

**Table 1: Special Status - Species Lists**

| Common Name | Scientific Name | Status | Occurrence on the Study Area |
|---|---|---|---|
| PLANTS | | | |
| California jewel-flower | *Caulanthus californicus* | FE, CE, CNPS 1B.1 | Absent |
| Kern mallow | *Eremalche kernensis* | FE | Absent |
| Springville Clarika | *Clarkia springvillensis* | FT, CE, CNPS 1B.2 | Absent |
| Striped Adobe Lily | *Fritillaria striata* | CT, CNPS 1B.1 | Absent |
| San Joaquin Adobe Sunburst | *Pseudobahia peirsonii* | FT, CE, CNPS 1B.1 | Absent |
| Earlimart Orache | *Atriplex cordulata* var. *erecticaulis* | CNPS 1B.2 | Absent |
| Lost Hills Crownscale | *Atriplex coronata* var. *vallicola* | CNPS 1B | Absent |
| Brittlescale | *Atriplex depressa* | CNPS 1B.2 | Absent |

| Common Name | Scientific Name | Status | Occurrence on the Study Area |
|---|---|---|---|
| PLANTS | | | |
| Vernal Pool Smallscale | *Atriplex persistens* | CNPS 1B.2 | Absent |
| Subtle Orache | *Atriplex subtilis* | CNPS 1B.2 | Absent |
| Alkali Mariposa-Lily | *Calochortus striatus* | CNPS 1B.2 | Absent |
| Recurved Larkspur | *Delphinium recurvatum* | CNPS 1B.2 | Absent |
| Spiny-Sepaled Button Celery | *Eryngium spinosepalum* | CNPS 1B.2 | Absent |
| ANIMALS | | | |
| Conservancy Fairy Shrimp | *Branchinecta conservatio* | FE | Absent |
| Vernal Pool Fairy Shrimp | *Branchinecta lynchi* | FT | Absent |
| Valley Elderberry Longhorn Beetle | *Desmocerus californicus dimorphus* | FT | Absent |
| Delta Smelt | *Hypomesus transpacificus* | FT | Absent |
| California Red-Legged Frog | *Rana aurora draytonii* | FT | Absent |
| Blunt-Nosed Leopard Lizard | *Gambelia silus* | FE, CE, CFP | Absent |
| Giant Garter Snake | *Thamnophis gigas* | FT | Absent |
| Swainson's Hawk | *Buteo swainsoni* | CT | Possible |
| Tipton Kangaroo Rat | *Dipodomys nitratoides nitratoides* | FE, CT | Absent |
| San Joaquin Kit Fox | *Vulpes macrotis mutica* | FE, CT | Possible |
| Kern Brook Lamprey | *Entosphenus hubbsi* | CSC | Absent |
| Western Spadefoot | *Scaphiopus hammondii* | CSC | Absent |
| Coast Horned Lizard | *Phrynosoma blainvillii* | CSC | Unlikely |
| San Joaquin Coachwhip | *Masticophis flagellum ruddocki* | CSC | Absent |
| Western Pond Turtle | *Actinemys marmorata* | CSC | Unlikely |
| White-tailed Kite – nesting | *Elanus leucurus* | CFP | Possible |

| Common Name | Scientific Name | Status | Occurrence on the Study Area |
|---|---|---|---|
| PLANTS | | | |
| Northern Harrier – nesting | *Circus cyaneus* | CSC | Possible |
| Burrowing Owl | *Athene cunicularia* | CSC | Possible |
| Loggerhead Shrike | *Lanius ludocicianus* | CSC | Possible |
| Tricolored Blackbird | *Agelaius tricolor* | CSC | Possible |
| Pallid Bat | *Antrozous pallidus* | CSC | Possible |
| Townsend's Western Big-Eared Bat | *Corynorhinus townsendii* | CSC | Possible |
| American Badger | *Taxidea taxus* | CSC | Unlikely |

Occurrence Designations:
Present: Species observed on the study area at time of field surveys or during recent past.
Likely: Species not observed on the study area, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the study area, but it could occur there from time to time.
Unlikely: Species not observed on the study area, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the study area, and precluded from occurring there because habitat requirements not met.
Status Codes:
Federal: FE = Federally Endangered, FT = Federally Threatened, FPE = Federally Endangered (Proposed), FC = Federal Candidate,
California: CE = California Endangered, CT = California Threatened, CR = California Rare, CFP = California Fully Protected, CSC = California Species of Special Concern
CNPS: 1A = Plants Presumed Extinct in California, 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere
CNPS Threat Ranks: 0.1 = Seriously Threatened in California, 0.2 = Fairly Threatened in California, 0.3 = Not Yet Threatened in California

### 3.2.2 Environmental Consequences

#### *No Action/No Proposed Project Alternative*

No changes in conditions or habitats would occur under the No Action/No Proposed Project Alternative. Operations and water management practices would not change. Therefore, the No Action/No Proposed Project Alternative would not result in changes to biological resources or habitats.

#### *Proposed Action/Proposed Project*

Any native habitats once present on the Project site have been heavily altered by human enterprise such that the site no longer provides suitable habitat for any locally occurring special status plant species; hence, the Proposed Action/Proposed Project would not impact special status plants. Of the 36 special status animal species potentially occurring in the region, 27 species would be absent or unlikely to occur on the site due to unsuitable habitat condition (see **Table 1: Special Status - Species Lists**). Loss of potential habitat as a result of implementation of

the Project site would not result in a significant adverse effect on these species, because there is little or no likelihood that they are present.

Special status species that may be affected by the Project include the SJKF, Swainson's hawk, migratory birds, burrowing owl, and roosting bats.

According to the CNDDB there have been 45 historical sightings within ten miles of the study area (see Figure 6 of Attachment 1, Appendix C) (CDFW 2014). These sightings occurred north, east, south and west of the study area between 1971 and 2004. Only one of these sightings occurred in the 21st century (2004) and it was 9 miles southwest of the site. An additional five sightings were in the 90's (between 1992 and 1997), with all remaining sightings greater than 25 years old. None of these sightings occurred within the study area itself.

A single large burrow providing marginal suitable denning habitat was observed along the steep embankment of a small, highly maintained irrigation tailwater basin at the project footprint's northwestern corner. Because the basin would be regularly maintained, and would have minimal vegetative cover, it is not anticipated that it would attract or maintain populations of small mammals. No evidence of use by the SJKF was observed. The burrow did not have a dirt berm or matted vegetation near the entrance, or prey remains in the vicinity that would suggest it has been used by SJKF. Given the disturbed habitats of the study area, and resulting limited prey base, the potential for SJKF to wander through the project area on their way to foraging or denning habitat is low. However, given its presence in the region it could conceivably pass through the study area from time to time. The proposed action would be unlikely to adversely affect SJKF because potential effects would be insignificant and discountable.

Two Swainson's hawk nests have been identified between 9-10 miles west of the study area at the Pixley Wildlife Preserve (Rob Hansen, personal communication). Although no suitably sized nests were observed within the Project footprint during the field surveys, trees located within the larger study area and adjacent to the study area provide potential nesting habitat for Swainson's hawks. Project-related activities occurring at or near potential nest trees could result in the abandonment of active Swainson's hawk nests or direct mortality to these birds, should they be nesting in them at the start of construction.

In addition to the Swainson's hawk, other raptor species such as white-tailed kites, red-tailed hawks and American kestrels likely forage over the study area and could potentially nest in large trees within the study area or directly adjacent to the site. Additionally, the site provides nesting habitat for a number of migratory bird species. Even the most disturbed habitats of the study area could be used by loggerhead shrike, killdeer (*Charadrius vociferous*) or other disturbance-tolerant birds protected by the Migratory Bird Treaty Act and related state laws. If birds were to nest on the Project site prior to construction, Project-related activities could result in the abandonment of active nests or direct mortality to these birds.

The study area provides some suitable nesting/denning habitat in the form of a few scattered California ground squirrel burrows, primarily located along the banks of Deer Creek. Foraging habitat is extremely limited. These small raptors are protected under the Migratory Bird Treaty

Act and California Fish and Game Code. Project-related grading activities have the potential to bury owls that may retreat to burrows ahead of heavy equipment.

Trees and bridges within the study area provide potential roosting habitat for several species of bat. Development of the Proposed Action/Proposed Project could result in removal of trees potentially supporting maternal roosting bats. Impacts to maternal roosts have the potential to result in the mortality of juvenile bats.

The biological survey conducted by LOA also determined that potential impacts could occur to riparian habitat or other sensitive habitats. Riparian habitat within the study area is limited to Deer Creek; no other sensitive habitats are present. A few large riparian trees are present within the Project site. Temporary impacts would occur to approximately 1,400 square feet (sf) of Deer Creek from trenching the pipeline crossing, which is proposed to occur west of the modified turn-out structure and east of the Road 160 bridge over Deer Creek. The existing check structure west of the Road 160 bridge would be modified and could permanently impact up to 1,000 sf of the channel. No more than 1,000 sf of the Friant-Kern Canal would be permanently impacted from the construction of a turnout at this location. All three locations appear to lack woody vegetation.

Woody riparian vegetation within the Project footprint is not anticipated to be impacted by construction of the Project, and will be avoided to the extent feasible. However, should impacts to riparian vegetation be necessary during construction, implementation of the applicable mitigation measure as described below would compensate for any such impacts. The Project would not have a substantial adverse effect, either directly or through habitat modifications, on any special status species with implementation of the mitigation measures below:

**BIO -1: San Joaquin kit fox**

- **(*Pre-Construction Surveys*).** A Service-approved biologist will conduct pre-construction surveys no fewer than 14 days and no more than 30 days prior to the onset of any ground disturbing activity. The primary objective is to identify kit fox habitat features (e.g. potential dens and refugia) on the project site and evaluate their use by kit foxes through use of remote monitoring techniques such as motion triggered cameras and tracking medium. If an active kit fox den is detected within or immediately adjacent to the area of work, all construction activities associated with the project will be halted immediately. The project will be place on hold until consultation with the USFWS and CDFW is completed. Sightings of San Joaquin kit fox will also be reported to the CNDDB.

- ***(Avoidance).*** Should an active kit fox den be detected within or immediately adjacent to the area of work, a minimum 50-foot disturbance-free buffer will be established around the den in consultation with the USFWS and CDFW, to be maintained until a qualified biologist has determined that the den is no longer occupied. Known kit fox dens may not be destroyed until they have been vacant for a period of at least three days, as demonstrated by use of motion-triggered cameras or tracking medium, and then only after obtaining take authorization from the USFWS.

- ***(Minimization).*** Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes. Minimization measures will include restriction of project-related vehicle traffic to established roads a daytime speed limit of 15-mph throughout the site in all project areas. Off-road traffic outside of designated Project Areas and construction at night will be prohibited. All food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed on in securely closed containers and removed at least once a week from the project site. No firearms or pets will be permitted on the project site. Covering of structures (e.g., pipes) and installation of escape structures will be implemented to prevent the inadvertent entrapment of kit foxes. Use of rodenticide will not be allowed. Upon completion of the project, all areas subject to temporary ground disturbances, including staging areas, temporary roads, and borrow sites will be re-contoured if necessary and revegetated with native seed to promote restoration of the area to pre-project conditions.

- ***(Employee Education Program).*** Prior to the start of construction, the applicant will retain a Service-approved biologist to conduct one tailgate meeting to train construction staff that will be involved with the project on the San Joaquin kit fox. This training will include a description of the kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of the measures being taken to reduce impacts to the species during project construction. The training will include a hand out with all of the training information included. The project manager will use this handout to train any additional construction staff that were not in attendance at the first meeting, prior to starting work on the project.

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- No pets will be permitted in the Project Area.

- No firearms will be allowed on the project site. Upon completion of the Project, all areas subject to temporary ground disturbances, including staging areas temporary roads, and borrow sites will be recontoured, if necessary, and revegetated, as appropriate, to promote restoration of the area to pre- Project conditions.

- Although not anticipated in the project vicinity, SJKF sightings will be reported to CNNDB.

**BIO-2: Swainson's hawk**

- ***(Avoidance).*** In order to avoid impacts to Swainson's hawks from Project construction, construction will occur between September 1st and January 31st, outside the Swainson's hawk nesting season to the extent feasible.

- ***(Pre-construction Surveys).*** If construction must occur between February 1st and August 31st, a qualified biologist will conduct a pre-construction survey for Swainson's hawk

nests on the Project site and on lands within a half mile from the Project site within 30 days of the onset of these activities.

- ***(Establish Buffers).*** Should any active nests be discovered in or near proposed construction zones, the biologist will establish a half-mile no disturbance buffer, unless a smaller buffer can adequately protect the nest as determined by the biologist, in coordination with the District, Reclamation, the USFWS and CDFW, pending the nature of disturbance and the presence or absence of disturbance barriers between the nest and construction. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.[16]

**BIO -3: Migratory Bird Nests**

- **(*Avoidance*).** In order to avoid impacts to all nesting migratory birds from grading and construction, these activities will occur outside of the typical avian nesting season, between September 1 and January 31, to the extent feasible.

- ***(Pre-construction Surveys).*** If applicable activities must occur during the nesting season (February 1-August 31), a qualified biologist will conduct preconstruction surveys for active raptor and migratory bird nests within 30 days of the onset of these activities. Surveys for raptors will include areas on and within 500 feet, and migratory birds on and within 250 feet of the site, where accessible. If no active nests are found within the survey area, no further mitigation is required.

  ***(Establish Buffers).*** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest in coordination with the District, Reclamation, CDFW and/or the USFWS. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.

- **BIO-4: Burrowing Owl**

  - ***(Take Avoidance Surveys).*** A take avoidance survey for burrowing owls will be conducted by a qualified biologist between 14 and 30 days prior to the start of construction. This take avoidance survey will be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The survey area will include all suitable habitat on and within 200 meters of Project impact areas, where accessible.

  - ***(Avoidance of Active Nests).*** If Project activities are undertaken during the breeding season (February 1-August 31) and active nest burrows are identified within or near Project impact areas, a 200-meter disturbance-free buffer will be established around these burrows, or alternate avoidance measures implemented by the District in consultation with CDFW. The buffers will be enclosed with temporary fencing or flagging to prevent construction equipment and workers from entering the setback area. Buffers will remain

[16] Appendix C of Attachment 1, Live Oak Associates, Inc. Biological Resources Report for the Proposed Pixley Groundwater Bank Proposed Project. March 2015. Page 37-38.

in place for the duration of the breeding season, unless otherwise arranged with CDFW. After the breeding season (i.e. once all young have left the nest), passive relocation of any remaining owls may take place as described below.

- ***(Passive Relocation of Resident Owls).*** During the non-breeding season (September 1-January 31), resident owls occupying burrows in Project impact areas may either be avoided, or passively relocated to alternative habitat. If the Authority chooses to avoid active owl burrows within the impact area during the non-breeding season, a 50-meter disturbance-free buffer will be established around these burrows, or alternate avoidance measures implemented in consultation with CDFW. The buffers will be enclosed with temporary fencing, and will remain in place until a qualified biologist determines that the burrows are no longer active. If the Authority chooses to passively relocate owls during the non-breeding season, this activity will be conducted in accordance with a relocation plan prepared by a qualified biologist. Passive relocation may include one or more of the following elements: 1) establishing a minimum 50-foot buffer around all active burrowing owl burrows, 2) removing all suitable burrows outside the 50-foot buffer and up to 50 meters outside of the impact areas as necessary, 3) installing one-way doors on all potential owl burrows within the 50-foot buffer, 4) leaving one-way doors in place for 48 hours to ensure owls have vacated the burrows, and 5) removing the doors and excavating the remaining burrows within the 50-foot buffer.

**Bio-5: Roosting Bats**

- ***(Temporal Avoidance).*** If removal of mature orchard or native riparian trees must occur, to avoid potential impacts to maternity bat roosts, removal of mature trees will, to the extent feasible, occur outside of the period between April 1 and September 30, the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse.

- ***(Preconstruction Surveys).*** If removal of trees is to occur between April 1 and September 30 (general maternity bat roost season), a qualified biologist will survey affected trees for the presence of bats within 30 days prior to these activities. The biologist will look for individuals, guano, and staining, and will listen for bat vocalizations. If necessary, the biologist will wait for nighttime emergence of bats from roost sites. If no bats are observed to be roosting or breeding, then no further action would be required, and construction could proceed.

- ***(Minimization).*** If a non-breeding bat colony is detected during preconstruction surveys, the individuals will be humanely evicted via partial dismantlement of trees prior to full removal under the direction of a qualified biologist to ensure that no adverse impact to any bats occurs as a result of construction activities.

- ***(Avoidance of Maternity Roosts).*** If a maternity colony is detected during preconstruction surveys, a disturbance-free buffer will be established around the colony and remain in place until a qualified biologist deems that the nursery is no longer active. The disturbance-free buffer will range from 50 to 100 feet as determined by the biologist.

- ***Mitigation Measure 3.3.5e (Consultation if Maternity Roosts Cannot be Avoided).*** If roosts are determined to be present and must be removed, the bats will be excluded from the roosting site before the tree is removed. A mitigation program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with CDFW before implementation. Exclusion methods may include use of one-way doors at roost entrances or sealing roost entrances when a site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g. during hibernation or while females in maternity colonies are nursing young).

- ***Mitigation Measure 3.3.6 (Compensation for Habitat Loss).*** The loss of each roost will be replaced, in consultation with CDFW, and may include construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site(s). Roost replacement will be implemented before bats are excluded from the original roost site(s). Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost sites, the tree(s) may be removed.

**Bio-6: Riparian and other Sensitive Habitats**

- ***(Revegetation of Disturbed Areas).*** After construction, all disturbed areas within Deer Creek will be restored to the original contours. The small area of Deer Creek to be disturbed is anticipated to re-vegetate naturally.

  ***(Replacement Planting).*** Should avoidance of riparian trees not be possible, the SVWBA will provide compensation. Replacement planting will be implemented at a ratio of 3:1 for trees between 4-24 inches in diameter at breast height (DBH), and at a ratio of 10:1 for trees greater than 24 inches in DBH. Species chosen for the plant pallet will include native riparian trees such as valley oaks, Oregon ash and Fremont's cottonwoods. Seed and cuttings will be gathered from its lands fronting the Deer Creek watershed, if possible. These trees will be planted as container plants and cuttings. All planting material will be installed in the late fall or early winter. All plantings will be monitored annually for a minimum of five years. A revegetation plan acceptable to the CDFW will be completed for the project that will detail the maintenance, monitoring, performance criteria and success rate for trees planted within the project site.

## 3.3 Land Use

### 3.3.1 Affected Environment

The Project is located in unincorporated, rural southern Tulare County. The area consists of 4,189 acres of rural lands zoned agricultural adjacent to the Friant-Kern Canal and is bisected by Deer Creek (**Figure 7:Farmland Mapping and Monitoring Program**). Tulare County lies south of the Sacramento-San Joaquin Delta, and is comprised of 4,840 square miles. The area has historically been used for agricultural cultivation and associated infrastructure, including irrigation related tail water and regulating ponds. The Project is designated Valley Agricultural

within the Rural Valley Lands Plan area, as identified in the Tulare County General Plan[17]. Land uses surrounding the site are predominately agricultural and rural residential.

### 3.3.2 Environmental Consequences

#### *No Action/No Proposed Project Alternative*

Under the No Action/No Proposed Project Alternative, PID would not construct the groundwater basin and related appurtenances. Conditions related to the current use of lands would remain the same, and there would be no impact to land use.

#### *Proposed Action/Proposed Project*

The groundwater banking infrastructure, including a new turnout from the Friant-Kern Canal, pipelines, control facilities, groundwater recovery wells, recharge basins and "in-lieu" banking acreage, support agriculture in the Project area and vicinity and are consistent with the General Plan designations and zoning for Tulare County found within the proposed area. The Project would not conflict with any applicable land use plans, policies, or regulations of an agency with jurisdiction over the Project. The Project would have no impacts to land use.

[17] Tulare County General Plan 2030 Update, Figure 4-1.

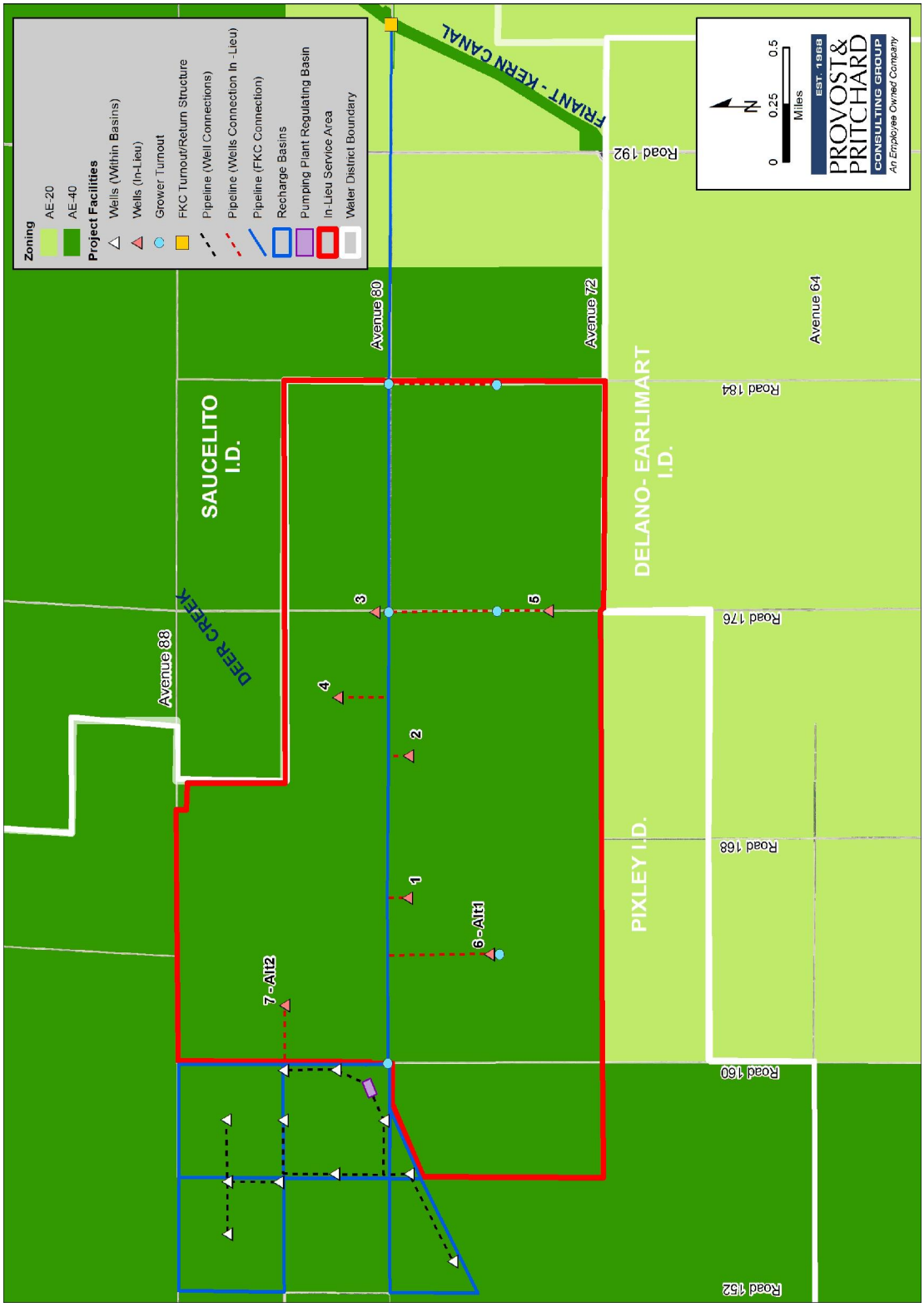


**Figure 6: Tulare County Zoning**

## 3.4 Cultural Resources

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Title 54 USC § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 Code of Federal Regulations (CFR) Part 800, is the primary Federal legislation that outlines the Federal Government's responsibility to historic properties. The CEQA process is the primary State process for considering effects to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on historic properties, which are those cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). CEQA requires the State and local governments to identify Historic Resources, which are those cultural resources that could be eligible for inclusion on the California Register of Historic Resources (CRHR). For Federal Proposed Projects, cultural resource significance can be evaluated in terms of eligibility for listing in the NRHP.

The Section 106 process, as outlined in the Federal regulations at 36 CFR § 800, describes the steps that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Officer (SHPO) to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

Reclamation proposes to award grant funds to the PIXID/DEID for this project under the San Joaquin River Restoration Program ( ). The granting of Federal funds is an undertaking as defined in 36 CFR § 800.16(y) and is a type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a).

### 3.4.1 Affected Environment

The Central Valley of California is abundant with cultural resources ranging from small archaeological sites to pre-historic villages, and historic era resources ranging from bridges and buildings to canals and roads. Native Americans broadly used the landscapes south of the San Joaquin River and cultural resources related to that use have been identified and recorded within the region. Historic use of the landscape is also quite prevalent and broadly distributed over the landscape. The contemporary landscape is a heavily altered landscape consisting of agricultural fields of permanent and rotational crops, supporting infrastructure such as water conveyance systems, roads, farm outbuildings, residences, and other components of the built environment. While the potential for archaeological resources exists it is somewhat anticipated, due to the large scale landscape modification, that much of their context is heavily disturbed.

In an effort to identify historic properties/historical resources, the District contracted ASM Affiliates to conduct an investigation to identify cultural resources that are eligible for inclusion or listing on the NRHP or CRHR. Four cultural resources were identified within the APE: two segments of the Harris Ditch and Deer Creek (both are part of PID's water conveyance facilities), the Pixley-1 Bridge on Road 160 over Deer Creek, and Reclamations' FKC.

The PID was organized in 1958 for flood control on Deer Creek and to obtain Central Valley Project (CVP) water from the FKC. One of the primary water conveyance features is Deer Creek, into which CVP water is delivered from the FKC. Deer Creek was originally a natural creek and the portion of Deer Creek in and adjacent to the APE was channelized in the 1970s. The Deer Creek check structure and headworks of the Harris Ditch were constructed in 1981 (Carey et. al. 2015:18). The channelized Deer Creek and the Harris Ditch headworks are less than 50 years old and do not meet the general age criteria for consideration as historic properties pursuant to 36 CFR Part 60.4. Additionally, these facilities do not meet the criteria considerations as they do not possess exceptional significance in their association to events or people that are important in the history of flood control and water conveyance in the Tulare County, nor do they possess exceptional significance for their design and construction as earthen structures. Therefore, the channelized portion of Deer Creek and the Harris Ditch and its headworks are not historic properties/historical resource.

The Pixley-1 Bridge is a 40-foot long, two lane, concrete bridge on Road 160 that spans Deer Creek. The bridge was constructed in 1961 and is identified as bridge number 46C0317 on the Caltrans Local Agency Bridges list. Caltrans has evaluated this bridge and determined it to be not eligible for inclusion on the National Register of Historic Places (National Register) (Carey et. al. 2015). It is therefore also not eligible for inclusion on the CRHR.

The FKC is a component of Reclamation's CVP Friant Division. In 1997, the Federal Highway Administration obtained a consensus determination for the National Register eligibility for the FKC, and Reclamation has treated the FKC as eligible for inclusion in the National Register pursuant to 36 CFR § 60.4 under Criterion A for its contribution to the development of agriculture in California and the San Joaquin Valley, but has not received a consensus determination on its own formal evaluation of the FKC. The FKC is therefore also eligible for inclusion on the CRHR pursuant to Section 15064.5.

Utilizing these identification efforts, Reclamation entered into consultation with the California State Historic Preservation Officer (SHPO) in February 2016, seeking their concurrence on a finding of "no adverse effect to historic properties pursuant to 36 CFR § 800.5(b)." A response from SHPO is pending.

### 3.4.2 Environmental Consequences

#### *No Action/No Proposed Project Alternative*

Under the No Action/No Project Alternative, there would be no impacts to cultural resources since there would be no change in operations and no ground disturbance. Conditions related to cultural resources would remain the same as existing conditions.

### *Proposed Action/Proposed Project*

The Proposed Action/Proposed Project is a type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a). A records search, a cultural resources survey, and Tribal consultation identified historic properties within the APE. The only identified historic property within the APE is the FKC, which is a component of Reclamation's CVP. Reclamation applied the criteria of adverse effect [36 CFR § 800.5(a)] for the current undertaking and found that the proposed activities would result in no significant alterations to the historic characteristics that make the FKC eligible for the NRHP. The proposed actions of installing a new turnout on the FKC for this project will not alter any physical characteristics of the canal or its berm. This turn-out installation is consistent with other similar existing facilities that pump water from the FKC. Since there will be no alterations to the FKC, the CVP will also be unaffected. Therefore, Reclamation determined that there will be no adverse effect to historic properties pursuant to 36 CFR § 800.5(b); therefore, no cultural resources would be affected as a result of implementing the proposed action.

At the time of writing this Draft EA, Reclamation had not yet received a concurrence from the SHPO on its findings. Reclamation anticipates completing the NHPA Section 106 compliance process prior to finalizing this EA and signing a Finding of No Significant Impact. Reclamation shall seek to resolve any concerns or potential objections before issuing a notice to proceed.

Although it was determined that there would be no impact to known cultural resources, the Authority recognizes that there could be an impact to undiscovered resources as a result of the Proposed Action/Proposed Project. As such, the following mitigation will be implemented.

**CUL -1:**

- If, in the course of Project construction or operation, any archaeological, paleontological or historical resources are uncovered, discovered, or otherwise detected or observed, activities within one hundred (100) feet of the find will be ceased and the Authority will be notified immediately. The proponent will retain a qualified archaeologist to assess the significance of the find and make mitigation recommendations, if warranted. The archaeologist will document the resources using DPR 523 forms and file said forms with the California Historical Resources Information System (CHRIS). The resources will be photo-documented and collected by the archaeologist for submittal to the Santa Rosa Rancheria's Cultural and Historical Preservation Department. The archaeologist will be required to submit to the County for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the area of discovery will not be allowed until the preceding steps have been taken.

As a result of Mitigation CUL-1 as well as Reclamation's efforts to consider impacts to cultural resources through the Section 106 process, it is determined that the proposed action would have no impacts to cultural resources.

## 3.5 Indian Trust Assets

### 3.5.1 Affected Environment

Indian Trust Assets (ITA) are legal interests in assets that are held in trust by the United States (U.S.) for Federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the U.S. on behalf of Federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest for which there is a legal remedy, such as compensation or injunction, if there is improper interference. ITAs cannot be sold, leased or otherwise alienated without the approval of the U.S. "Assets" can be real property, physical assets, or intangible property rights, such as a lease, or right to use something; which may include lands, minerals and natural resources in addition to hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITAs may be located off trust land. Reclamation shares the Indian Trust responsibility with all other agencies of the Executive Branch to protect and maintain ITAs.

### 3.5.2 Environmental Consequences

#### *No Action/No Proposed Project Alternative*

Under the No Action Alternative, there would be no impacts to ITA as there would be no ground-disturbing activities and conditions would remain the same as existing conditions.

#### *Proposed Action/Proposed Project*

The closest Indian Trust lands, the Santa Rosa Rancheria, is located 20 miles to the west of the Proposed Project area, with the Tule River Tribal Indian Trust lands located 34 miles to the southwest. The Proposed Action/Proposed Project would not affect any ITA's.

## 3.6 Air Quality

### 3.6.1 Affected Environment

The Project lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in the State. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground.

Despite years of improvements, the SJVAB does not meet some State and Federal health-based air quality standards. To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is required by Federal law to adopt stringent control measures to reduce emissions.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all Federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by a proposed action equal or exceed certain emissions thresholds, thus requiring the Federal agency to make a conformity determination. **Table 2: San Joaquin Valley General Conformity "de minimis" Thresholds** below presents the emissions thresholds and attainment status covering the Project location is overlying air basin.

**Table 2: San Joaquin Valley General Conformity "de minimis" Thresholds**

| Pollutant | Averaging Time | California Standards* | | National Standards* | |
|---|---|---|---|---|---|
| | | Concentration* | Attainment Status | Primary | Attainment Status |
| Ozone (O3) | 1-hour | 0.09ppm | Non-attainment | - | Non-Attainment (Extreme)** |
| | 8-hour | 0.070 ppm | | 0.075 ppm | |
| Particulate Matter (PM10) | AAM | 20 µg/m3 | Non-Attainment | - | Attainment |
| | 24-hour | 50 µg/m3 | | 150 µg/m3 | |
| Fine Particulate Matter (PM2.5) | AAM | 12 µg/m3 | Non-Attainment | 15 µg/m3 | Non-Attainment |
| | 24-hour | No Standard | | 35 µg/m3 | |
| Carbon Monoxide (CO) | 1-hour | 20 ppm | Attainment/ Unclassified | 35 ppm | Attainment/ Maintenance |
| | 8-hour | 9 ppm | | 9 ppm | |
| | 8-hour (Lake Tahoe) | 6 ppm | | - | |
| Nitrogen Dioxide (NO2) | AAM | 0.030 ppm | Attainment | 0.053 ppm | Attainment/ Unclassified |
| | 1-hour | 0.18 ppm | | 0.100 ppb | |
| Sulfur Dioxide (SO2) | AAM | - | Attainment | 0.03 ppm | Attainment/ Unclassified |
| | 24-hour | 0.04 ppm | | 0.14 ppm | |
| | 3-hour | - | | - | |
| | 1-hour | 0.25 | | 75 ppb | |
| Lead | 30-day average | 1.5 µg/m3 | Attainment | - | No Designation/ Classification |
| | Calendar Quarter | - | | 1.5 µg/m3 | |
| | Rolling 3-Month Average | - | | 0.15 µg/m3 | |
| Sulfates | 24-hour | 25 µg/m3 | Attainment | No Federal Standards | |
| Hydrogen Sulfide | 1-hour | 0.03 ppm (42 µg/m3) | Unclassifed | | |
| Vinyl Chloride | 24-hour | 0.01 ppm (26 µg/m3) | Attainment | | |
| Visibility-Reducing Particulate Matter | 8-hour | Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.7-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%. | Unclassified | | |

**For more information on standards visit: http://ww.arb.ca.gov.research/aaqs/aaqs2.pdf*
***No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard May 5, 2010.*
****Secondary Standard*
*Source: ARB 2013; SJVAPCD 2013*

Project operations would not contribute to criteria pollutant emissions, as water banking is largely a passive process; however, emissions would be associated with construction. Construction of the Project would be accomplished with scrapers, excavators, front-end loaders, backhoes, compactors, cranes, water truck for dust control, an earthmover, and miscellaneous equipment. Construction of the Project would occur over an approximately two-year period.

### 3.6.2 Environmental Consequences

#### *No Action/No Proposed Project Alternative*

Under the No Action/No Proposed Project Alternative, there would be no impacts to air quality since no construction would take place.

#### *Proposed Action/Proposed Project*

There are several rural residences located in the general vicinity of the Project site, the closest of which is approximately 93 feet away from the pipeline to the southeast on Road 176. Short-term air quality impacts would be associated with construction, and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including $PM_{10}$ and $PM_{2.5}$. Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including nitrogen dioxide ($NO_2$), CO, carbon dioxide ($CO_2$), ROG, sulfur dioxide, and small amounts of air pollutants. **Table 3: Calculated Project Construction Emissions.** below provides a summary of the estimated emissions during construction of the Project.

**Table 3: Calculated Project Construction Emissions.**

| Construction Activity | Construction Year | Annual Emissions (tons/year)[1] | | | | |
|---|---|---|---|---|---|---|
| | | ROG | $NO_X$ | CO | $PM_{10}$ | $PM_{2.5}$ |
| Recharge Basins Site Preparation | 2015 | 0.03 | 0.32 | 0.25 | 0.11 | 0.07 |
| Recharge Basins Grading | 2015 | 0.77 | 8.95 | 5.12 | 1.67 | 0.51 |
| Recharge Basins Infrastructure | 2016 | 0.06 | 0.70 | 0.41 | 0.03 | 0.03 |
| In-Lieu Banking Construction | 2016 | 0.04 | 0.42 | 0.25 | 0.02 | 0.02 |
| Lift Station Construction | 2016 | 0.05 | 0.51 | 0.30 | 0.04 | 0.02 |
| Pipeline Construction | 2016-2017 | 0.17 | 1.85 | 1.15 | 0.09 | 0.08 |
| **Total Annual Emissions by Construction Year** | | | | | | |
| 2015 | | 0.80 | 9.26 | 5.36 | 1.77 | 0.58 |
| 2016 | | 0.32 | 3.49 | 2.20 | 0.19 | 0.16 |
| 2017 | | 0.08 | 3.49 | 2.20 | 0.19 | 0.16 |
| SJVAPCD Significance Thresholds: | | 10 | 10 | None | 15 | None |
| Exceeds SJVAPCD Thresholds? | | No | No | NA | No | NA |
| *1. Emissions were quantified using CalEEMod, version 2013.2.2. Refer to Appendix B.* | | | | | | |

**General Conformity Applicability Assessment**

As shown in the tables in Appendix B, the total of direct and indirect emissions attributable to the proposed project are less than the corresponding General Conformity de minimis emission levels. Given that the net emissions associated with the proposed Project are less than the General Conformity de minimis emission levels, the proposed Project is not subject to General Conformity determination requirements.

Implementation of the Project would not result in the long-term operation of any major onsite stationary sources of toxic air contaminants (TACs), nor would Project implementation result in an increase in vehicle trips along area roadways, in comparison to existing conditions. However, construction of the Project may result in temporary increases in emissions of diesel-exhaust particulate matter (DPM) associated with the use of off-road diesel equipment. Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. As such, the calculation of cancer risk associated with exposure to TACs are typically calculated based on a long-term (e.g., 70-year) period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Construction activities would occur over an approximate three-year construction period, which would constitute approximately 4 percent of the typical 70-year exposure period. As a result, exposure to construction-generated DPM would not be anticipated to exceed applicable thresholds (i.e., incremental increase in cancer risk of 10 in one million).

Although construction emissions would not be anticipated to result in long-term health impacts that would exceed applicable thresholds, short-term exposure to DPM could still result in potential health effects. The type and severity of health effects depends upon several factors including the dose of the pollutant the individual is exposed to and the duration of exposure. Short-term exposure to DPM may cause irritation to the eyes, nose, throat and lungs, as well as, some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. These potential health effects are of particular concern among the more sensitive members of the population, such as children, the elderly, and individuals suffering from lung ailments (e.g., asthma).

**Mitigation Measures**

**MM AQ-1:** The following measures will be implemented daily in the field, and records maintained to document such implementation, by construction contractor to reduce mobile-source emissions associated with the use of off-road construction equipment:

a. When not in use, construction equipment will be turned off and will not be allowed to idle.

b. All construction equipment will be maintained in proper working condition according to manufacturer's specifications. The equipment will be checked by a certified mechanic and determined to be running in proper condition before it is operated.

c. Low-emission off-road construction equipment will be used. At a minimum, construction equipment, 50 hp and greater, will meet U.S. EPA Tier II emission standards.

Comparison of the estimated Project operational emissions as seen above in **Table 3: Calculated Project Construction Emissions.**, with the thresholds for State and Federal conformity determinations indicates that emissions are estimated to be below these thresholds. Therefore, construction and operations under the Project would not result in adverse impacts to air quality beyond Federal thresholds.

**Table 4: Calculated Project Operational Emissions.**

| Source | Annual Emissions (tons/year)[1] | | | | |
|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $PM_{10}$ | $PM_{2.5}$ |
| Off-Road Maintenance Equipment | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 |
| Maintenance Worker Vehicle Trips | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| *Total Project Emissions:* | *0.00* | *0.04* | *0.03* | *0.00* | *0.00* |
| *Net Change Compared to Existing Conditions:* | *-0.1* | *-0.09* | *-0.63* | *-0.04* | *-0.04* |
| *SJVAPCD Significance Thresholds:* | *10* | *10* | *None* | *15* | *None* |
| *Exceed SJVAPCD Thresholds?* | *No* | *No* | *NA* | *No* | *NA* |
| *1. Emissions were quantified using CalEEMod, version 2013.2.2. Refer to Appendix B of Attachment 1.* | | | | | |

## 3.7 Global Climate Change

Climate change refers to change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) can contribute to climate change (EPA 2009a). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as $CO_2$ occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: $CO_2$, methane ($CH_4$), nitrous oxides, and fluorinated gasses (EPA 2009a). During the past century, humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil, and gasoline to power our cars, factories, utilities, and appliances. The added gases, primarily $CO_2$ and $CH_4$, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2009). More than 20 million Californians rely on regulated delivery of water resources such as the State Water Project and the CVP, as well as established water rights from rivers. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to the State's water resources and Proposed Project operations. While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

### 3.7.1 Affected Environment

In 2002, with the passage of Assembly Bill 1493, the State launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. Assembly Bill

1493 requires the California Air Resources Board to develop and implement regulations to reduce automobile and light truck GHG emissions. The State also adopted Assembly Bill 32, which identified GHG reduction goals and noted the effect of increased GHG emissions as they relate to global climate change. While the emissions of one single Project would not cause global climate change, GHG emissions from multiple Projects throughout the world could result in an adverse impact with respect to global climate change.

### 3.7.2 Environmental Consequences

#### *No Action/No Proposed Project Alternative*

Under the No Action/No Project Alternative, there would be no material change to climate change/global warming effects from the Project. However, if global warming continues on its current trend, the Project site and surroundings could be adversely affected by timing and reduction of snow melt needed for irrigation with surface water. In addition, the No Action/No Project Alternative would foreclose the opportunity and ability to store in the recharge basin additional run-off that could result from global warming, resulting in more productive agricultural lands to be fallowed.

#### *Proposed Action/Proposed Project*

The Project would involve short-term effects consisting of emissions during construction and long-term effects attributable to operations including regular maintenance employee trips to the site (approximately 30 per year). The estimated unmitigated overall GHG emission due to temporary Project construction activities is 1,287.56 metric tons of carbon dioxide equivalents (reference Appendix B of Attachment 1). The estimated unmitigated overall GHG emissions within considering cap-and-trade offsets due to on-going operational activities are 7,683.6 metric tons of carbon dioxide equivalents. Since the combined amount of GHGs emitted from the Project is well below 25,000 metric tons/year threshold, no report is required to be submitted to the U.S. EPA and California Air Resources Board (CARB).

**Table 5: Calculated Project Operational Emissions.**

| Construction Activity | Construction Year | Emissions (MT $CO_2e$)[1] |
|---|---|---|
| Recharge Basins Site Preparation | 2015 | 23.09 |
| Recharge Basins Grading | 2015 | 764.01 |
| Recharge Basins Infrastructure | 2016 | 76.99 |
| In-Lieu Banking Construction | 2016 | 47.94 |
| Lift Station Construction | 2016 | 58.84 |
| Pipeline Construction | 2016-2017 | 213.66 |
| **Total Annual Emissions by Construction Year** | | |
| | 2015 | 787.10 |
| | 2016 | 397.42 |
| | 2017 | 103.04 |
| | Total: | 1,287.56 |
| | Amortized[2]: | 42.92 |

*1. Emissions were quantified using CalEEMod version 2013.2.2. Refer to Appendix B of Attachment 1).*
*2. Amortized emissions were quantified based on approximate 30-year Project life.*

**Table 6: Calculated Project Operational Emissions.**

| Source | Annual Emissions (MT COze)[1] | | |
|---|---|---|---|
| | Project | Existing Agricultural Land Use | |
| | | Year 2014 | BAU-Year 2004 |
| Off-Road Equipment | 3.7 | 12.9 | 14.3 |
| Worker Vehicle Trips | 0.2 | 2.4 | 3.0 |
| Electricity Use[2] | 7,587.2 | 108.3 | 155.7 |
| Natural Gas Use | NA | 157.6 | 157.6 |
| Loss of Carbon Sequestration (Amortized)[3] | 49.6 | NA | NA |
| Construction Emissions (Amortized)[4] | 42.9 | NA | NA |
| Total: | 7,683.6 | 281.2 | 330.6 |
| Emissions Displaced by Cap-and-Trade: | -7,587.2 | -108.3 | - |
| Total (with Cap-and-Trade)[5]: | 96.4 | 172.9 | 330.6 |
| Percent Reduction: | - | 44% | 71% |

*1. Emissions were quantified using CalEEMod, version 2013.2.2.*
*2. Electricity emissions were quantified using intensity factors obtained from the U.S. EPA eGRID database and CalEEMod.*
*3. Loss of carbon sequestration calculated using CalEEMod, version 2013.2.2 for field row crop. The existing orchard is planned to be removed with or without Project implementation and, therefore, is excluded from this calculation. Emissions were amortized assuming an average 30-year Project life.*
*4. Construction-generated emissions were amortized assuming a 30-year Project life.*
*5. Includes emissions associated with electricity use. ARB's Cap & Trade regulation came into effect on January 1, 2013. The Cap & Trade regulation is an adopted statewide plan for reducing/mitigating GHG emissions from targeted industries, including electricity generation. Fuel use will be subject to cap and trade beginning in 2015. To be conservative, emissions associated with fuel use were not included in the displaced emissions. Refer to Appendix B for modeling assumptions and results.*
*6. Based on a comparison of Project emissions and existing agricultural us emissions. Includes emissions associated with implementation of Cap-and-Trade regulation.*

Accordingly, construction and operation under the Project would result in below *de minimis* impacts to the global climate. Project recharge operations would be beneficial in increasing groundwater storage capability of increased snow melt that would result from continued global warming.

# 3.8 Socioeconomic Resources

## 3.8.1 Affected Environment

The agricultural industry in Tulare County contributes to the overall economic stability of the San Joaquin Valley. In addition, other industries include dairy and food processing. The market for seasonal workers on local farms draws thousands of migrant workers.

## 3.8.2 Environmental Consequences

### *No Action/No Project Alternative*

Under the No Action/No Project Alternative, Reclamation would not help fund construction of the groundwater banking infrastructure, and the District would not construct the project.

Groundwater levels underlying the area would not be able to benefit from the additional recharge and the Districts would not be able to further regulate their surface water supplies to control seepage losses. Surface water supplies would continue historical use patterns.

Local farmers relying on irrigation water from PID and DEID could be impacted during years when surface water supplies are insufficient.

#### *Proposed Action/Proposed Project*

The Project would increase the water reliability for the region. As a result, the viability of farming practices would also benefit from a more reliable irrigation water supply, and would help to protect agriculture related jobs within the Districts. There would be slight potential for a beneficial impact to socioeconomics from the increased water supply reliability facilitated by the Project.

## 3.9 Environmental Justice

Environmental justice refers to the fair treatment of peoples of all races, income levels, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative impacts resulting from the execution of Federal programs. Executive Order 12898, dated February 11, 1994, establishes the achievement of environmental justice as a Federal agency priority. The memorandum accompanying the order directs heads of departments and agencies to analyze the environmental effects of Federal actions, including human health, economic, and social effects, and to address significant and adverse effects on minority and low-income communities.

### 3.9.1 Affected Environment

Tulare County employs seasonal workers on local farms that include migrant workers, commonly of Hispanic origin. Approximately 62.3 percent of the population within Tulare County is of Hispanic origin[18], and the communities in which they reside depend on the City of Tulare for municipal and industrial water.

### 3.9.2 Environmental Consequences

#### *No Action/No Project Alternative*

Under the No Action/No Project Alternative, Reclamation would not help fund construction of the groundwater banking infrastructure and the District would not construct the project. Groundwater levels underlying the region would not be able to benefit from the additional recharge and the Districts would not be able to further regulate their surface water supplies to control seepage losses. The Districts would continue to use their surface water supplies as has historically occurred. All of the surrounding communities rely upon groundwater for municipal and industrial use and local farms depend on surface water delivered by the Districts for

[18] US Census Bureau, 2010. Site Accessed May 2015. http://quickfacts.census.gov/qfd/states/06/06107.html

irrigation purposes; therefore, the No Action/No Project Alternative could result in slight adverse impacts to minority or low-income populations near the Project location.

***Proposed Action/Proposed Project***

To the extent that water supply reliability is improved in Tulare County under the Project, it would serve to support the continued viability of available agricultural water to the surrounding local farms, as wells as improving the reliability of groundwater supplies relied upon by surrounding homes and other users down gradient of the basin. As a result, there would be slight beneficial impacts to minority and/or disadvantaged populations from implementation of the Project and not any adverse impact to minority groups. In addition, the Project would not disproportionately affect one community over another.

## 3.10 Agriculture Resources

Agriculture is the dominant land use within the region surrounding the area. It is identified as the largest private employer in the region accounting for a quarter of the jobs in the area. Please reference **Error! Reference source not found.**.

### 3.11.1 Affected Environment

A review of the "Important Farmlands" mapping by the California Department of Conservation's (CDC's) Farmland Mapping and Monitoring Program (FMMP) (**Figure 7:Farmland Mapping and Monitoring Program**) shows that the Project site is designated as Prime Farmland, Farmland of State Importance and Unique Farmland. Prime Farmland constitutes over 70% of the site, Farmland of Statewide Importance constitutes less than 20%, Unique Farmland constitutes 2%, and Semi-Ag constitutes less than 1% of the site. The FMMP provides statistics on conversion of farmland to nonagricultural uses for Tulare County, where the Project site is located. Of the total land area that was inventoried (1,585,867 acres), in 2008, Tulare County had approximately 864,437 acres of Important Farmlands (including Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance) and an additional 439,851 acres of grazing land. The remaining 281,579 acres of land were Urban and Built-up Land, Other Land, and Water Area. In the period between 2006 and 2008, Important Farmlands had shown a net decrease of 13,730 acres (1.5 percent) within the County[19].

Historically, land use at the Project site has included orchards and row crops. No forest or timber land is present at the Project site or in the Project vicinity. According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey western Tulare County area, the survey area contains the following soil types (in order of greatest percentage of occurrence within the Project boundaries to least): Colpien loam, Flamen loam, Hanford sandy loam, Akers-Akers saline-sodic complex, Biggriz-Biggriz saline-Sodic complex, Crosscreek-Kai association, Centerville clay, Exeter loam, Calgro-Calgro saline-Sodic

[19] California Department of Conservation. FMMP – Report and Statistics. http://www.conservation.ca.gov/dlrp/fmmp/products/Pages/ReportsStatistics.aspx. Site accessed April 2012.

complex, and Riverwash (Deer Creek). [20] As discussed in the NCRS soil survey, all soil types found in the Project area originate from alluvial fans with a parent material of granite rock sources. These soil types range from well-drained to somewhat poorly-drained; have wide-ranging water holding capacity and encounter rare to very rare flooding.[21]

### 3.11.2 Environmental Consequences

#### *No Action/No Project Alternative*

Under the No Action/No Project Alternative, all lands within the Project would continue to be used agriculturally and the recharge basins area would remain in agricultural production and would not convert to basin use. If surface or groundwater supplies continue to diminish or otherwise not be available due to adverse effects of climate change or other reductions in Federal or State water allocations, agricultural lands within the Project in-lieu and recharge basins areas, and lands in surrounding areas could become fallow.

#### *Proposed Action/Proposed Project*

The Project serves to meet both State of California water conservation goals in response to a 4+ year-long drought conditions and worsening groundwater overdraft by providing a recharge basin to facilitate replenishment of the groundwater aquifer as well as requirements of the SJRRP water management goal by avoiding and minimizing the water supply impacts of implementing the Settlement on Friant Contractors as described in more detail in Chapter 1.

[20] U.S. Department of Agriculture, Natural Resource Conservation Service. Custom Soil Resource Report of Tulare County, Western Part, California. Produced March 11, 2015.

[21] U.S. Department of Agriculture, Natural Resource Conservation Service. Custom Soil Resource Report of Tulare County, Western Part, California. Produced March 11, 2015.

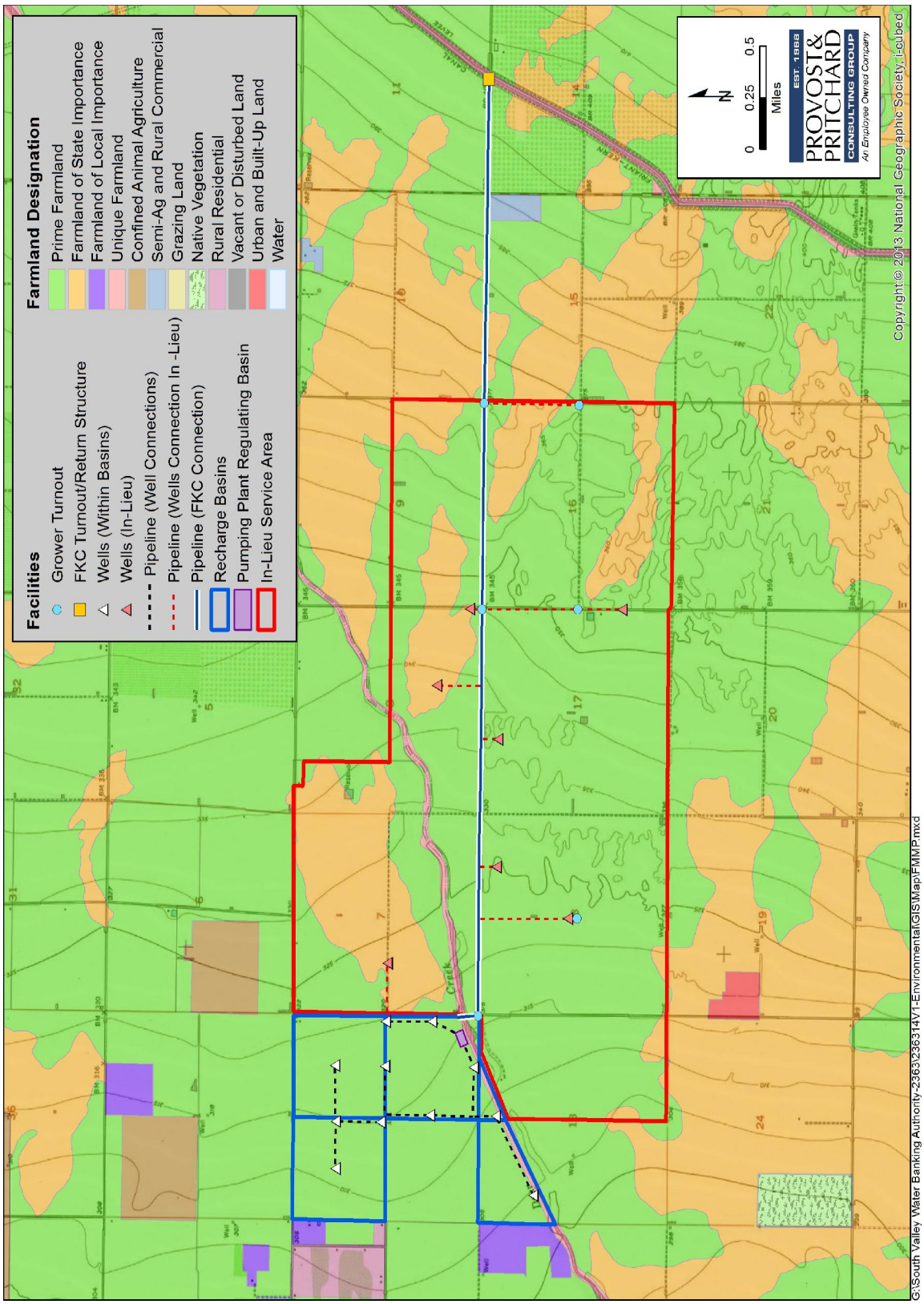


**Figure 7:Farmland Mapping and Monitoring Program**

While the project would remove 532 acres of agricultural lands from production, the adverse effect of this is offset by the beneficial effect of increasing ability for groundwater storage, and ability to make beneficial use of excess surface water flows for SJRRP purposes and irrigation during wet periods that might otherwise leave the basin area. The purpose and function of the recharge basins is to provide a "greater good" to existing agricultural operations by conserving excess surface water as groundwater recharge for banking purposes. This concept is consistent with the purpose of the awarded grant for this Action/Proposed Project, as well as Drought and Water Conservation Declarations and Executive Orders issues in recent years by the Governor, and with the more contemporary California Water and Water Action Plans and legislative directives to conserve water state-wide.

## 3.11 Geology and Soils

### 3.12.1 Affected Environment

Tulare County is divided into two major physiographic and geologic provinces: the Sierra Nevada Mountains and the Central Valley. The Sierra Nevada Physiographic Province, in the eastern portion of the county, is underlain by metamorphic and igneous rock. It consists mainly of homogeneous granitic rocks, with several islands of older metamorphic rock. The central and western parts of the county are part of the Central Valley Province, underlain by marine and non-marine sedimentary rocks. It is basically a flat, alluvial plain, with soil consisting of material deposited by the uplifting of the mountains.[22]

***Faulting and Seismicity***

The Project site is not located within an Alquist-Priolo Earthquake Fault Zone and no known faults cut through the local soil at the site. There are several faults located within a 70 mile radius of the Project site. An unnamed fault is approximately 7 miles south/southeast, Poso Creek Fault is 26.5 miles southwest, and the San Andreas Fault is approximately 64 miles south/southwest of the Project site. Ground shaking is the primary seismic hazard in Tulare County because of the county's seismic setting and its record of historical activity. The San Joaquin Valley portion of the Tulare County is located on alluvial deposits, which tend to experience greater ground shaking intensities than areas located on hard rock[23]. In 1973, five counties within the Southern San Joaquin Valley undertook the preparation of the Five County Seismic Safety Element to assess seismic hazards which projected that with the maximum probable earthquake of a magnitude 8 to 8.5 centered along the San Andreas Fault, "relatively low levels of shaking should be expected in the eastern and central parts of the San Joaquin Valley[24]."

[22] County of Tulare. 2010. General Plan Background Report. Page 8-4
[23] County of Tulare. 2010. General Plan Background Report. Page 8-7
[24] Ibid. Page 8-6 and 7

### *Soils*

According to the United States Department of Agriculture Natural Resources Conservation Service, there are nine soil types within the Project area. Colpien loam covers 1,535 acres, Flamen loam covers 514 acres, Hanford sandy loam covers 485 acres, Akers-Akers complex covers 431 acres, Biggriz-Biggriz complex covers 390 acres, Crosscreek-Kai association covers 371 acres, Centerville clay covers 166.4 acres, Exeter loam covers 107 acres, and the Calgro-Calgro saline-Sodic complex covers 97 acres (Appendix F of Attachment 1). The soil types range from well drained to somewhat poorly drained, and all are very limited in terms of building due to flooding.

## 3.12.2 Environmental Consequences

### *No Action/No Project Alternative*

Under the no Action/No Project Alternative, Reclamation would not provide funding for construction related activities, and the District would not construct the project. Current geology and soils conditions would prevail including the on-going adverse potential for ground subsidence.

### *Proposed Action/Proposed Project Alternative*

Construction of the recharge basins would require minor grading and compaction of soils on the relatively flat ground surface. Surface erosion and loss of topsoil can follow disturbances caused by grading, which could loosen soil and activate or hasten the loss of soils. Erosion and sediment control measures, including a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the Clean Water Act, would reduce erosion rates during and after construction. Proper implementation of the required SWPPP would assure no adverse effects of soil erosion would occur.

By implementing the requirements of a SWPPP, substantial soil erosion or the loss of topsoil is considered less than significant.

*Mitigation Measures:*

MM GEO-1: The District shall complete a Storm Water Pollution Prevention Plan (SWPPP) prior to any ground moving activities. As part of the SWPPP, the Authority would be required to incorporate any or all of the following Best Management Practices (BMPs), as deemed appropriate for the Project by the SWRCB, to further protect the topsoil:

- *Grading and Preservation of Existing Vegetation:* Existing vegetation shall be preserved to the maximum extent practicable. Clearing and grubbing shall only be performed in areas where new foundations, utilities, or internal access drives are planned.
- *Soil Compaction:* All soil compaction and subgrade preparation specifications will be per the site-specific recommendations of a California-licensed Geotechnical Engineer, and will be based on his field exploration prior to construction. Typically, trench backfill and

subgrade compaction consists of either hand-held vibratory, rolled-drum equipment, or tracked equipment. Compaction would be 90 percent of maximum density as calculated by ASTM D1557 Modified Proctor.

- *Hydroseeding:* Disturbed areas will be seeded upon completion of construction in order to protect exposed soils from erosion by wind and water. Upon completion of an earth disturbance activity, disturbed areas shall be covered with a minimum uniform 70 percent perennial vegetative cover, with a density capable of resisting accelerated erosion and sedimentation. The vegetative cover will also be chosen to be appropriate for the proposed sheep grazing activities in the event the continued farming concept is chosen.

- *Straw Mulch:* Straw mulch will be used to temporarily stabilize disturbed areas until soil can be prepared for revegetation. Straw mulch will be anchored immediately after application to prevent being windblown. Straw or hay will be "crimped" into the soils by running tracked machinery across the surface.

- *Non-Vegetative Stabilization:* A non-combustible surface will surround the project site to function as a fire break as well as provide a stabilized surface for post-construction access. Non-vegetative stabilization methods, such as gravel mulch, will be used to provide a stabilized 12-foot wide access.

- *Stabilized Construction Entrance/Exit:* A stabilized construction entrance/exit will be maintained at each construction site entrance/exit to reduce tracking of sediment as a result of construction traffic. The entrance/exit will be constructed per the detail included with the Erosion and Sediment Control Drawings (ESCDs).

- *Stabilized Construction Roadway:* The construction access route into the site will also be maintained to prevent erosion and to control tracking of mud and soil material onto adjacent roads. The ESCDs will specify the construction access locations. A regular maintenance program will be conducted to replace sediment-clogged stabilization material with new stabilization material as required.

- *Entrance/Outlet Tire Wash:* Tire wash racks will be installed if soil and/or traffic conditions on-site require washing the construction vehicle wheels prior to exiting the site to avoid excessive tracking of mud onto the roadway.

- *Street Sweeping and Vacuuming:* Road sweeping and vacuuming will occur as necessary during construction to keep street surfaces clear of soil and debris. Washing sediment onto streets will not occur.

- *Dust Control:* During windy conditions (forecast or actual wind conditions of approximately 25 mph or greater), dust control will be applied to disturbed areas, including construction access roads, to adequately control wind erosion. Water will be applied to disturbed soil areas of the project site using water trucks as required by

weather conditions to control dust. Water application rates will be minimized as necessary to prevent runoff and pooling from excess water.

No substantial faults are known to exist in the Project area according to the Alquist-Priolo Earthquake Fault Zoning Map. The relatively seismically stable setting of the area, the depth to groundwater of approximately 300 feet, the relatively flat ground surface, and the moderately well-drained characteristics of the soil create an environment where ground failure is unlikely to occur; thus there would be no impact regarding the danger associated with geologic instability. According to the United States Department of Agriculture Natural Resources Conservation Service, the site contains nine soil mapping units. Colpien loam, 0 to 2 percent slopes; Flamen loam, 0 to 2 percent slopes; Hanford sandy loam, 0 to 2 percent slopes; Akers-Akers complex, 0-2% slopes; Biggriz-Biggriz complex, 0-2% slopes; Crosscreek-Kai association, 0-2% slopes; Centerville clay, 0-2% slopes; Exeter loam, 0-2% slopes; and Calgro-Calgro complex, 0-2% slopes.

No habitable structures would be constructed on the site nor would substantial grading change the topography to the point where the Project would expose people or structures to potential substantial adverse affects. No septic tanks or alternative waste water disposal systems are proposed as part of the Proposed Action/Proposed Project. Potential adverse effects of subsidence would be minimized by the ability to increase groundwater storage.

## 3.12 Noise

### 3.12.1 Affected Environment

The Project site is designated Valley Agricultural within the Rural Valley Lands Plan policy of the Tulare County General Plan and consists of 4,189 acres of rural agricultural land and Deer Creek. The area has historically been used for agricultural cultivation including vineyards, orchards and other crops and associated infrastructure including wells, pumps, and tail-water and regulating ponds. The site is surrounded by rural agricultural land.

Noise levels generated by farm related equipment ranged from 69 to 100 dB at a distance of 50 feet from the equipment according to noise measurements conducted by Tulare County[25]. Due to the seasonal nature of the agricultural industry, there are often extended periods of time when no noise is generated at the Project site, followed by short-term periods of intensive mechanical equipment usage and corresponding noise generation.

According to Table 3.5-1 Land Use Compatibility for Community Noise Environment in the Tulare County General Plan Re-circulated Draft EIR, normally acceptable noise exposure for agricultural zoned property is between 50 and 75 Ldn.

### 3.12.2 Environmental Consequences

#### *No Action/No Project Alternative*

[25] Tulare County General Plan Background Report, Pages 8-71 through 8-73

If the No Action/No Project Alternative is selected, there would be no changes to the current setting. The current noise levels would persist related to agricultural activities and operation and maintenance of the existing settling basin. There would be no additional impacts to noise if the No Action/No Project Alternative is selected.

***Proposed Action/Proposed Project Alternative***

The noise and vibration associated with construction activities under the Project would depend on the equipment used and distance from the source to the receptor.

Typical construction equipment would include scrapers, backhoes, drill rigs and miscellaneous equipment (i.e. pneumatic tools, generators, and portable air compressors). Typical noise levels generated by this type of construction equipment at various distances from the noise source are listed below:

**Table 7: Noise Levels**

| Construction Equipment Noise Source | dBA at 50 ft | dBA at 100 ft | dBA at 1.0 mile |
|---|---|---|---|
| Pneumatic tools | 85 | 79 | 45 |
| Truck (e.g. dump, water) | 88 | 82 | 48 |
| Concrete mixer (truck) | 85 | 79 | 45 |
| Scraper | 88 | 82 | 48 |
| Bulldozer | 87 | 81 | 47 |
| Backhoe | 85 | 79 | 45 |
| Generator | 76 | 70 | 36 |
| Portable air compressor | 81 | 75 | 41 |

Source: Borba Farms Dairy EIR, BASELINE Consulting, 1999, Cunniff 1977

Noise levels generated by the equipment would range from 76 to 88 dBA at a distance of 50 feet from the noise source; at 100 feet, the noise levels would range from 70 to 82 dBA. There are several rural residences located within the vicinity of the Project site, the closest of which is approximately 93 feet away. Noise from construction activities would exceed the Tulare County General Plan Noise Element (2012) "normally acceptable" noise standards of 75 dBA at the exterior of nearby residences. However, noise from construction activities is considered temporary and construction activities would be limited to the hours of 7 am to 7 pm, Monday through Friday and best practices guidelines would be implemented as appropriate and feasible in accordance with Tulare County General Plan policies. The Project would not result in adverse effects to the ambient noise quality of the site and surrounding area.

## 3.13 Cumulative Impacts

According to the Council on Environmental Quality regulations for implementing the procedural provisions of National Environmental Policy Act, a cumulative impact is defined as *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or*

*non-Federal) or person undertakes such other actions*. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

The Project does not involve land that is listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control.

Biological and Air Quality resources would continue to be affected by other types of activities that are ongoing but unrelated to the Project. Impacts to biological and air quality resources from the implementation of the Project would occur only during construction activities. The Project would not have a substantial adverse effect, either directly or through habitat modifications, on any special status species with implementation of mitigation as identified above in Section 3.2.2 based upon the biological evaluation contained in Appendix C of Attachment 1, page 35 through 46. Additionally the Air Quality mitigation measure MM AQ-1 identified above in Section 3.7.2 based upon the air quality evaluation contained in Appendix B of Attachment 1, page 16, would ensure that there would be no adverse impacts from air emissions during construction.

Therefore, the Project, when added to other similar past, existing, and future actions would not contribute to cumulative adverse impacts to wildlife and air quality resources since construction activities are short-term.

The Project would result in an increase in the area's surface water supply reliability and improve groundwater conditions. As a result of improved water resource conditions, the Project could contribute to minor beneficial cumulative impacts in regards to socioeconomic resources resulting from increased local water supply reliability.

# Section 4 Consultation and Coordination

Several Federal Laws, permits, licenses, and policy requirements are applicable to the Project.

## 4.1 National Environmental Policy Act

This draft EA/IS has been prepared pursuant to NEPA, which was signed into law in 1969 (42 USC Section 4321 et seq.). In addition, it was prepared in accordance with CEQ regulations for implementing NEPA, 40 CFR Parts 1500- 1508, and General Services Administration (GSA) Order ADM 1095.1F. This draft EA/IS analyzes and discloses the potential impacts to the human environment from implementation of the Proposed Action/Proposed Project action. This draft EA/IS is being circulated for public review and comment for 30 days.

## 4.2 Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. Reclamation is requesting informal consultation with the U.S. Fish and Wildlife Service regarding potential effects of the proposed action on San Joaquin kit fox.

## 4.3 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation coordinate with fish and wildlife agencies (Federal and state) on all water development projects that could affect biological resources. U.S. Fish and Wildlife Service is preparing a FWCA report regarding the proposed action.

## 4.4 Title 54 U.S.C. § 306108, Commonly Known as Section 106 of the National Historic Preservation Act

Title 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (formerly 16 U.S.C. 470 et seq.), requires Federal agencies to consider the effects of their undertakings on historic properties, properties determined eligible for inclusion in the National Register, and to afford the Advisory Council on Historic Preservation an opportunity to comment. Compliance with Section 106 follows a series of steps, identified in its implementing regulations found at 36 CFR Part 800, that include identifying consulting and interested parties, identifying historic properties within the area of potential effect, and assessing effects on any identified historic properties, through consultations with the SHPO, Indian tribes and other consulting parties. Reclamation initiated Section 106 consultation with the California SHPO, and made a finding of “no adverse effect to historic properties,” pursuant to 36 CFR §800.5(b), for the proposed undertaking.

## 4.5 Migratory Bird Treaty Act

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received, any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg would be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns. As described in Section 3.2.1, mitigation measures would be implemented to avoid any impacts to MBTA protected species.

## 4.6 Executive Order 12898 – Environmental Justice in Minority and Low-Income Populations

Executive Order 12898 requires Federal agencies to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies, and activities on minority and low-income populations. The Project would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations. Further discussion is included in section 3.10.

## 4.7 Clean Water Act

Based on the findings presented in the Gibson & Skordal Jurisdictional Delineation Report (see Attachment 1, Appendix D), the only potential water of the U.S. identified on the site is the Friant-Kern Canal (Gibson & Skordal 2015). However, the final jurisdictional status of water features is determined by the USACE upon review and verification of a wetland delineation prepared for the study area. If USACE determines/verifies the FKC or other water features in the Project area to be waters of the U.S. regardless of the size of the impact then the Project will be subject to the permit requirements of Sections 401 and 404 of the Clean Water Act. The placement of fill within any wetlands or other jurisdictional requires 1) a Clean Water Act permit from the USACE, and 2) a Water Quality Certification from the RWQCB. The Project will prepare a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Section 402 of the CWA

# Section 5 List of Preparers and Reviewers

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# Attachment 1

# CEQA – Initial Study Checklist