



Natural Environment Study

(Minimal Impacts)

Shafter-Wasco Irrigation District
Proposed Kimberlina Recharge Facility
Kimberlina Road
Shafter, California



June 2016

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1 - Introduction

The purpose of this Natural Environment Study (Minimal Impact [MI]) is to assess the environmental effects of the proposed project on natural resource and special-status species that have the potential to occur within the Biological Study Area (BSA). The BSA is defined as the Project Impact Area (270 acres), which is the area to be directly affected (the project), plus a 150 foot buffer that includes adjacent areas that may be indirectly affected by the proposed project. The BSA encompasses approximately 440 acres and is that area that was studied by Bighorn Consulting Inc. biologists.

Project Purpose and Need

The purpose and need for the proposed Kimberlina Recharge Facility project ('project') is to increase the Shafter-Wasco Irrigation District's (SWID) ability to capture and store available wet-period water supplies in the groundwater aquifer. The available water supplies include the SWID's existing Friant Division contract supplies, which include recovered account and re-circulated water supplies, USBR Section 215 supplies, Kern River flood flows and other available flood flows in the Friant-Kern Canal. In addition water supplies may become available to the SWID from the Calloway Canal, which is operated by North Kern Water Storage District, or other conveyance facilities or means.

The proposed project is needed to help replenish groundwater supplies during wet periods. The proposed project would also better balance the use of surface water and groundwater to achieve a sustainable supply for the SWID and its landowners. The goal of the proposed project is to help avoid the adverse economic and environmental burdens associated with continuing groundwater level declines.

Project Description

The SWID proposes to construct and operate a 270 acre recharge basin just west of the Calloway Canal, south of Kimberlina Avenue, about 3 miles north west of the town of Shafter, in Kern County, California (Appendix A-Project Location Map).

Construction of the recharge basin will include installation of a new head gate feature on the west bank of the Calloway Canal enabling water from Calloway Canal to flow into a new canal which will be constructed longitudinally east to west along the center of the proposed recharge basin. The new canal will be flanked north and south by a series of approximately 22 "recharge cells" separated by small levees constructed at roughly one-foot declining contours, stepping down from east to west. The most westerly cell will be

sized to retain all water capacity of the up-gradient cells in the event of catastrophic levee failures. The bottom of this cell will be excavated to approximately 6 feet below grade.

The exterior perimeter of the basin will consist of a raised levee roughly 1-1/2 to 2 feet above the surrounding grade.

Construction of the proposed project includes construction of a 'banked water payback component' allowing groundwater to be exchanged or directly returned to the Friant Kern Canal (FKC). This will be accomplished by constructing two (2) new deep groundwater wells within and near the recharge basin and conveying extracted groundwater into a new system of 15 inch and 21 inch pipelines that would inter-tie to the SWID's existing 78-in main pipeline. A third well will be constructed just south of the recharge facility. This well is not an operational feature of the project, but will be built to compensate the farmer's loss of existing wells in the project footprint.

The proposed project would also allow for well water to be reversed in the existing main line which connects to the SWID canal that runs along the north side of Kimberlina Road and extends to the east towards the FKC. A new 50 HP electric motor pump will be installed along the north bank of this SWID canal near the FKC that can draw water into a new 21 inch pipeline which can convey the water back into the FKC. Two metering devices will be installed on this pipeline to assure balance between water coming out of the FKC and water being returned to the FKC. Two older existing wells on the basin site will be converted to monitoring wells for future Sustainable Groundwater Management Act purposes. A third existing well located inside and nearest the westerly edge of the proposed basin site will become part of the project. The project will provide a replacement well for the farmer just outside the proposed basin levee to the south. In addition two agricultural regulating ponds will be abandoned and converted to 'recharge cells'.

Biological Study Area (BSA)

The Biological Study Area (BSA) is defined as the Project Impact Area (PIA) of 270 acres, which is the area to be directly affected (such as during clearing and grubbing, excavating), plus a 150 foot buffer area that includes adjacent areas that may be indirectly affected by the proposed project (such as adjacent orchards) by noise, vibrations, dust or a general increase in human disturbance during the life of the construction. (Appendix B: Map of the BSA). The BSA encompasses approximately 440 acres.

Operation and Maintenance

The SWID is able to recharge water approximately 30 days per year with recharge rates varying from 0.25 to 0.5 acre-feet per acre per day. The recharge basin will be seeded with a Bermuda grass mix, consistent with operational procedures for other basins in the district. The proposed project will allow water to percolate from the new recharge basin into the underlying aquifer where landowners can extract it during dry years, thereby helping to reduce overdraft conditions within the area. Occasional service employees may be on-site for scheduled, preventative maintenance as well as unscheduled service. Site maintenance will include levee maintenance, weed abatement, trash removal, periodic sediment removal and water control structure adjustments and maintenance.

Construction

Construction activity for the proposed project is expected to commence in the fall of 2016, with recharge basin site preparation, grading, recharge basin infrastructure, lift station and pipeline construction. The construction period is expected to last approximately 3 months.

Construction of the proposed project will 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.

2 - Study Methods

This chapter discusses the survey methods used to determine the potential for natural resources to occur within or adjacent to the BSA.

Regulatory Requirements

The following agencies have jurisdiction within the project area:

The U.S. Fish and Wildlife Service (USFWS) is responsible for all federally listed plant and animal species that may occur in the project area under the Federal Endangered Species Act of 1973 (16 U.S. Code 1531-1543). In addition, the USFWS enforces the Migratory Bird Treaty Act (16 U.S. Code 703-711), which is responsible for the protection of migratory birds.

The California Department of Fish and Wildlife (CDFW) is responsible for all state listed plant and animal species that may occur within the project area under the California Endangered Species Act (Fish and Wildlife Code §Sections 2050-2116). The CDFW also acts as a trustee agency under the California Environmental Quality Act (CEQA). In addition, the CDFW is responsible for determining impacts to lakes or streambeds and issuance of Streambed Alteration Agreements (Fish and Game Code §Section 1600).

The U.S. Army Corps of Engineers (US ACOE) is the federal agency that oversees Section 404 of the Clean Water Act, which regulates activities that result in the discharge of dredged or fill material into waters of the United States, including wetlands. In addition, the U.S. Army Corps of Engineers oversees Section 10 of the Rivers and Harbors Act that regulates the building of structures and excavations or fill within navigable or tidal waters.

The Regional Water Quality Control Board (RWQCB) is the designated state agency overseeing Section 401 of the Clean Water Act.

Executive Order 13112 requires not to authorize, fund or carry out any action that can likely cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless all reasonable measures to minimize risk of harm have been analyzed and considered.

The Migratory Bird Treaty Act (MBTA) with Canada, Mexico, and Japan makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or

kill migratory birds. The law applies to the removal of nests (such as swallow nests on bridges) occupied by migratory birds during the breeding season. The California Fish and Game Code (Sec 3500) also prohibits the destruction of any nest, egg, or nestling

Studies Required

The BSA is defined as the project impact area (270 acres)—the area to be directly affected—plus adjacent areas that may be indirectly affected by the proposed project. (Appendix B: Map of the BSA). The BSA encompasses approximately 440 acres. This area was researched for potential occurrences of special-status species within the *Wasco* U.S. Geological Survey 7.5-minute quadrangle the project is located on and the eight surrounding quads of Wasco SW, Wasco NW, Pond, McFarland, Famoso, Rosedale, Rio Bravo, and Buttonwillow using the Sacramento U.S. Fish and Wildlife Service (USFWS, June 2016) Online Species List (now the '*IPaC-Trust Resource Report*') (Appendix C), and the CDFW California Natural Diversity Database (CNDDB) Online Species List (CNDDB, June 2016; Appendix C). A 2-mile radius query map using the CNDDB Rarefind 5 online application map tool is included in Appendix D.

In addition, the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Plants was queried using the above-mentioned nine quadrangles for a list of any sensitive plant occurrences within or adjacent to the BSA (Appendix C). Some plants, which were considered though not formally listed as rare or endangered under the California Endangered Species Act, meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) of the California Fish and Game Code (CFGF) and are eligible for state listing. These plants were given equal consideration during the project assessment.

Based on in-office research and the habitat found within the BSA, as well as discussions with USFWS representative Andrew Raabe on-site on 10 December 2015, it was determined that protocol-level surveys for sensitive plants and animals were not warranted for the proposed project. General biological surveys with a focus on the San Joaquin kit fox (*Vulpes macrotis mutica*), botanical surveys and California burrowing owl (*Athene cunicularia*) surveys were conducted by qualified Bighorn Consulting, Inc. biologists in the project area from 10 December 2015 to January, 2016.

Botanical Surveys

There have been no specific (floristic) surveys conducted on the project site. Common botanical species were identified within the BSA by a Bighorn Consulting, Inc. biologist with botanical survey experience during a reconnaissance-level botanical survey on December 10, December 12 and 13, 2015 and January 5, 2016. The general perimeter of the BSA was driven slowly, using dirt farming roads and the Calloway Canal service road on the top of the bank of Calloway Canal. Areas that showed vegetation or were not observable from the roads were walked in 5 meter transects. All observable species of plants were identified. No habitat for any potential special-status plant species was identified within the BSA.

Wildlife Surveys

No protocol level wildlife surveys have been conducted on the project site. A Bighorn Consulting, Inc biologist with over 20 years of field survey experience in the San Joaquin Valley, including San Joaquin kit fox and California burrowing owl surveys, performed reconnaissance-level surveys on December 10, 12 and 13, 2015, and January 5, 2016.

The perimeter of the BSA was driven slowly and limited walking surveys of areas not clearly visible from the roadways or showing sign of vegetation were performed, walking in 5 meter transects. All wildlife observations, as well as visible signs of wildlife occupancy and use, such as tracks, scat, burrows, and nests, were documented.

Personnel and Survey Dates

Bighorn Consulting, Inc. biologist Trisha Moyer conducted all biological surveys for the project. Miss Moyer is a qualified professional with a biological bachelor's degree from Fresno State University and over 20 years of professional experience in the Central San Joaquin Valley, the Sacramento Delta, the Sierra Nevada, the Eastern Sierra, the Owen's Valley, the Mohave Desert, and the White Mountains. Miss Moyer has over 20 years of experience conducting surveys for special-status wildlife and plant species and performed wetland delineations and determinations in San Joaquin, Merced, Madera, Fresno, Tulare, Kings, Kern, San Bernardino, Inyo and Mono Counties.

Table 1: Personnel and Survey Dates

Survey Description	Date	Personnel
Field Review	10 December 2015	Trisha Moyer
Reconnaissance	12 /13 December 2015 and 5 January 2016	Trisha Moyer
Botanical	12 /13 December 2015 and 5 January 2016	Trisha Moyer
Bird	12/13 December 2015 and 5 January 2016	Trisha Moyer
Burrowing Owl	12/13 December 2015 and 5 January 2016	Trisha Moyer
San Joaquin kit fox	12/13 December 2015 and 5 January 2016	Trisha Moyer

Agency Coordination and Professional Contacts

December 2015: Miss Moyer discussed the San Joaquin kit fox with Mr. Andrew Raabe, USFWS Sacramento Field Office, during an on-site field review on 10 December 2015.

Miss Moyer followed up with a phone call on 14 December 2015 to confirm that protocol level surveys for the San Joaquin kit fox and burrowing owls were not required. Mr. Raabe concurred with this determination.

Limitations That May Influence Results

The Central San Joaquin Valley and the general Bakersfield area have experienced over three years of drought conditions ranging from severe to exceptional (NOAA 2015). Drought conditions may limit abundance and growth of special-status plant species, which in turn may also limit special-status animal species distribution and abundance.

3 - Results: Environmental Setting

This chapter provides a description and an evaluation of the natural environment in which the proposed project occurs.

Description of the Existing Physical Conditions in the BSA

The proposed project is located north of the City of Shafter and south-east of the City of Wasco, in Kern County, California. The proposed new recharge facility is located east of State Route (SR) 43 and west of SR 99, and south of Kimberlina Road which connects both State Routes. The project is bordered to the west by Poplar Avenue and to the east by Calloway Canal and Shafter Avenue.

Land Use

The land use in and around the BSA historically included intense and longstanding agricultural practices. However, the basin and pipeline sites (project impact area), where construction is going to take place, are either completely fallow or consist of highly disturbed and routinely maintained roadside or canal-side shoulders. Stone fruit orchards are located just to the north of the project impact area, north of Kimberlina Road, and east of the project impact area, east of Calloway Canal and Shafter Avenue. Orchards are also located further to the south-east of the project impact area. At the time of surveys the basin site agricultural fields were fallow and will remain fallow until project construction begins in the fall of 2016. Both the agricultural areas and roadside areas are regularly and heavily maintained so much though as to prevent establishment of any significant natural plant communities. Even ruderal and weedy vegetation is absent from the majority of the project impact area, indicating the highly disturbed nature of the BSA.

Climate

The local climate is classified as a Mediterranean climate, signified by hot dry summers and mild wet winters. The mean annual temperature is 65°Fahrenheit (F), but summer temperatures reach 100°F and frequently higher. The average annual precipitation occurring within the project area is approximately 5.48 inches, which occurs mostly in the form of winter and spring rains (WRCC 2015).

Topography

The topography of the BSA is flat, with an elevation of about 374 feet above mean sea level. The project occurs within the *Wasco* U.S. Geological Survey 7.5-minute quadrangle, Township 29 South, Range 27 East, Sections 28 and 29 within the Mount Diablo meridian. Appendix E is a topographic map of the project area.

Soils

Two different soil types are found within the BSA. They include McFarland loam (Map Unit Symbol 192), and Wasco sandy loam (Map Unit Symbol 243). The soil map is located in Appendix F.

Study Area

The Project Impact Area (PIA) is that area in which all related construction and operational activities would occur, such as grading, excavating, trenching, filling, pipe laying, concrete pouring, vehicle and material staging and construction and maintenance vehicle access and turn around areas. The Biological Study Area (BSA), (also known as the action area) is the area that was studied by Bighorn Consulting biologists to determine direct, as well as indirect effects of the proposed action on the biological environment and biological resources. The BSA was determined by adding a buffer area extending 150 feet outward from the PIA. The BSA encompasses approximately 440 acres, which include the 270-acre basin site, and adjacent areas along both sides of Shafter Avenue, Kimberlina Road and Poplar Avenue.

The BSA contains compacted, bare ground in the form of dirt farm roads and the Calloway Canal service road, paved roads, and associated road shoulders (Kimberlina Road, Shafter Avenue and Poplar Avenue), fallow fields, adjacent orchards, Calloway Canal, three wells and two small sumps.

Due to longstanding agricultural use and regular herbicide application there is very little vegetated ground within the BSA. No trees are located within the BSA and only orchard trees are located adjacent to the BSA. Waterways within or adjacent to the BSA include the Calloway Canal that enters the BSA from the north-east and exits the BSA to the south-east. Commercial and residential properties are located adjacent to the BSA. Appendix B shows an aerial map of the BSA, while site photographs can be found in Appendix G.

Biological Conditions in the Biological Study Area Vegetation Community

Ruderal

Disturbed ruderal vegetation typically proliferates in areas where the native vegetation has been heavily modified or completely removed due to human activities such as agricultural uses and repeated herbicide application to control vegetation.

In the BSA, ruderal vegetation is found associated with edges of the paved roadways, edges of dirt roads, canal banks and around recharge basin areas, as well as pump areas. Ruderal plant species identifiable in the BSA in December and January include bermuda grass (*Cynodon dactylon*), saltgrass (*Distichlis spicata*), tumble weed (*Salsola tragus*), pineapple weed (*Matricaria discoidea*), various bromes (*Bromus* sp.) and prickly paddy melon (*Cucumis myriocarpus*). Two small sumps support a variety of ruderal vegetation devoid from the remaining BSA. It includes wild grape (*Vitis vinifera*) and beavertail cactus (*Opuntia basilaris*).

Invasive Species

The BSA was evaluated for the presence of invasive species based on the California Invasive Plant Council List (CIPC 2013), the State of California Department of Food and Agriculture Noxious Weed List (USDA 2004), and the U.S. Department of Agriculture Federal Weed List (USDA 2014).

Bermuda grass (*Cynodon dactylon*) and tumbleweed (*Salsola tragus*) are identified on the California Noxious Weed List. They are rated as a "C-List" noxious weed, which designates state-endorsed holding action and eradication only when found in a nursery. Tumbleweed is also identified on the California Invasive Plant Council with a statewide invasive rating of "limited." Bermuda grass and ripgut brome (*Bromus diandrus*) are identified on the California Invasive Plant Council with a statewide invasive rating of "moderate". Red brome (*Bromus madritensis* ssp. *rubens*) is identified on the California Invasive Plant Council with a statewide invasive rating of "high". No species from the Federal Noxious Weed List were found within the BSA.

Habitat Connectivity

Calloway Canal may serve as a potential dispersal and/or migration corridor for wildlife, specifically for water fowl and other aquatic species. Water fowl was observed on Calloway Canal at the time of surveys. However, it is possible, but most unlikely, that small mammals such as the SJKF could occasionally use Calloway Canal

as a migratory or dispersal corridor in the search of food or mates. The absence of a riparian corridor or any type of ground or canopy cover, as well as the frequent maintenance and daily use of the canal roads, and the presence of domestic dogs make this a very unlikely migration corridor for any other wildlife species besides waterfowl. It is more likely that small mammals seeking migration or dispersal would use the cover provided by orchards adjacent to the BSA for movement.

Regional Species and Habitats and Natural Communities of Concern

Table 2 lists the special-status species and/or habitats that may potentially occur within the BSA and was compiled using the USFWS, CNDDB and CNPS special-status species lists obtained for the 9-Quad Search on 21 and 22 June 2016.

Table 2: Special Status Species Potentially Occurring or Known to Occur in the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
Plants					
<i>Atriplex cordulata</i> <i>var. cordulata</i>	heartscale	--1--fl B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland and saline or alkaline areas. Elevation range is 0- 560 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex cordulata</i> <i>var. erecticaulis</i>	Earlimart orache	--/--/1B.2	Valley and foothill grassland. Elevation range is 40-100 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex coronata</i> <i>var. vallicola</i>	Lost Hills crownscale		Chenopod scrub, valley and foothill grassland and vernal pools. Elevation range is 50-635 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex minuscula</i>	Lesser saltscale	--/--/1B.1	Chenopod scrub, playas, valley and foothill grassland and alkaline, sandy areas. Elevation range is 15-200 meters.	A	Suitable habitat is not present within the BSA.
<i>Atriplex subtellis</i>	Subtle orache	--/--/1B.2	Valley and foothill grassland. Elevation range is 40-100 meters.	A	Suitable habitat is not present within the BSA.
<i>Caulanthus californicus</i>	California jewelflower	FE/SE/1B.2	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland and sandy areas. Elevation range is 61- 1000 meters.	A	Suitable habitat is not present within the BSA.
<i>Cirsium crassicaule</i>	Slough thistle	--/--/1B.1	Chenopod scrub, marshes and swamps, sloughs, riparian scrub. Elevation range is 3-100 meters.	A	Suitable habitat is not present within the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Delphinium recurvatum</i>	Recurved larkspur	--1-11B 2	Chenopod scrub, Valley and foothill grassland, cismontane woodland. On alkaline soils; often in Valley saltbush or Valley chenopod scrub. Bloom period is March to June. Elevation range is 3-790 meters.	A	Suitable habitat is not present within the BSA.
<i>Eremakhe kernensis</i>	Kern mallow	FE/--/1 B.1	Chenopod scrub, valley and foothill grassland, prefers dry, open, sandy to clay soils; often at edge of balds. Elevation range is 70-1290 meters.	A	Suitable habitat is not present within the BSA.
<i>Eriastrum hooveri</i>	Hoover's eriastrum	FD/--/4.2	Shadscale scrub and Valley grassland. Bloom period is March to July. Elevation range is 45-944 meter.	A	Suitable habitat is not present within the BSA.
<i>Eryngium spinosepalum</i>	Spiny-sealed button-celery	--1-11B 2	Valley and foothill grassland, vernal pools. Elevation range is from 80-975 meters.	A	Suitable habitat is not present within the BSA.
<i>Layia munzii</i>	Munz's tidy-tips	--1-11B 2	Chenopod scrub, valley and foothill grassland; prefers alkaline clay. Elevation range 150-700 meters.	A	Suitable habitat is not present within the BSA.
<i>Monolopia congdonii</i>	San Joaquin woolly-threads	FE/--/1B.2	Occurs in chenopod scrub and Valley foothill grassland. Alkaline or loamy plains and sandy soils, often with grasses. Bloom period is February to May. Elevation range is 60-800 meters.	A	Suitable habitat is not present within the BSA.
<i>Stylocline masonii</i>	Mason's neststraw	--/--/1B.1	Chenopod scrub, pinyon and juniper woodland; prefers sandy soil. Elevation range is 100-1200 meters.	A	Suitable habitat is not present within the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Fish</i>					
<i>Hypomesus transpacificus</i>	<i>Delta smelt</i>	FT/SE	<i>This euryhaline species inhabits open waters of bays, tidal rivers, channels, and sloughs of the Bay Delta region.</i>	A	<i>Suitable habitat is not present within the BSA.</i>
<i>Amphibians</i>					
<i>Rana draytonii</i>	<i>California red-legged frog</i>	FT	<i>Aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons.</i>	A	<i>Suitable habitat is not present within the BSA.</i>
<i>Spea hammondi</i>	<i>Western spadefoot</i>	SSC	<i>Lowland habitat such as washes, floodplains and rivers, alluvial fans, playas and alkali flats. They also occur in the foothills and mountains. They prefer areas of open vegetation and short grasses where the soil is sandy or gravelly. They are found in the valley and foothill grasslands, open chaparral and pine-oak woodlands.</i>	A	<i>Suitable habitat is not present within the BSA.</i>
<i>Reptiles</i>					
<i>Gambelia silus</i>	Blunt-nosed leopard lizard	FE/SE/FP	Inhabits semiarid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan. It is common where there are abundant rodent burrows and rare or absent in dense vegetation or tall grass.	A	Suitable habitat is not present within the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Phrynosoma blainvillii</i>	Coast horned lizard	SSC	Coast horned lizards occur in scrub habitat, coniferous forests and deciduous forests.	A	Suitable habitat is not present within the BSA.
<i>Thamnophis gigas</i>	Giant garter snake	FT/ST	Freshwater marsh and low gradient streams.	A	Suitable habitat is not present within the BSA.
Birds					
<i>Agelaius tricolor</i>	Tricolored blackbird	SSC	Wintering tricolored blackbirds are associated with open rangeland including dairies; in the spring large flocks are associated with ripening grain fields and migration follows the flooding of rice fields; nesting occurs in cattail marshes, bulrushes, Himalaya berry and agricultural silage.		Suitable habitat is not present within the BSA.
<i>Athene cunicularia</i>	Burrowing owl	SSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	A	Very few California ground squirrel burrows present due to agricultural management practices; no suitable foraging and denning habitat adjacent to BSA.
<i>Buteo swainsoni</i>	Swainson's hawk	ST	Grasslands with scattered trees, juniper sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Suitable nesting sites are usually within or adjacent to riparian areas; adjacent foraging habitat includes grasslands, alfalfa, or grain fields supporting rodent populations.	A	Suitable habitat is not present within the BSA. No alfalfa fields were observed in or adjacent to the BSA during surveys.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Toxostoma lecontei</i>	Le Conte's thrasher	SSC	Le Conte's thrasher inhabit desert scrub, mesquite, tall riparian brush and chaparral.	A	Suitable habitat is not present within the BSA.
Mammals					
<i>Ammospermophilus nelson</i>	Nelson's antelope squirrel	ST	The Nelson's antelope squirrel is primarily in marginal habitat of low foothills and mountains on the western edge of the San Joaquin Valley; near Elks Hills and on portions of the Carrizo and Elkhorn plains; dry, sparsely vegetated loam soils;	A	Suitable habitat is not present within the BSA.
<i>Dipodomys ingens</i>	Giant kangaroo rat	FE/SE	Habitat includes friable, sandy or silty soils in areas with no to moderate shrub cover and scattered herbaceous plants; sparsely vegetated alkali sink communities where soils are generally sandy or silty; Valley grassland, saltbush and sink scrub.	A	Suitable habitat is not present within the BSA.
<i>Dipodomys nitratoideus nitratoideus</i>	Tipton kangaroo rat	FE/SE	Habitat includes friable, sandy or silty soils in areas with no to moderate shrub cover and scattered herbaceous plants; sparsely vegetated alkali sink communities where soils are generally sandy or silty; Valley grassland, saltbush and sink scrub.	A	Suitable habitat is not present within the BSA.
<i>Eumops perotis californicus</i>	Western mastiff bat	SSC	Open, semi-arid to arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	A	Suitable habitat is not present within the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Onychomys torridus tularensis</i>	Tulare grasshopper mouse	SSC	Arid shrubland communities in hot, arid grassland, blue oak woodland, upper Sonoran subshrub scrub, alkali sink and grassland associations on the sloping margins of the San Joaquin Valley and the Carrizo Plain region	A	Suitable habitat is not present within the BSA.
<i>Sorex ornatus relictus</i>	Buena Vista Lake ornate shrew	FE	Occupied marshes on the margins of the historic Buena Vista Lake. May occur in dense vegetation along streams and sloughs and along edges of Tule marshes in the Tulare Basin.	A	Suitable habitat is not present within the BSA.
<i>Taxidea taxus</i>	American badger	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient prey base, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Readily digs its own burrows.	A	Suitable habitat is not present within the BSA.
<i>Vulpes macrurus mutica</i>	San Joaquin kit fox	FT/ST	Habitat includes alkali sink, Valley grassland, and open woodlands, in valleys and adjacent gentle foothills with suitable prey base (primarily rodents). Urban population present in Bakersfield.	A	SJKF or sign of SJKF were not observed within and adjacent to the BSA. The BSA does not provide foraging or denning habitat and it does not provide any shelter. While unlikely, it is possible that Calloway canal or adjacent orchards could be used as a potential movement corridor in search of food, shelter of mates. The closest CNDDB occurrence is 6 miles from the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat P/A*	Rationale
<i>Natural Community</i>					
<i>Valley Saltbrush Scrub</i>	Valley Saltbrush Scrub	--/--/--	Upland soils of old beach or lake deposits; alluvial fans and rolling hills from 75-1500 meter; wetland habitat intermittently flooded and saturated.	A	Valley saltbrush scrub habitat is not present within the BSA.

Status**California Native Plant Society, Inventory of Rare and Endangered Plants (date?):**

- (1A) Presumed extinct in California
 (1 B) Rare, threatened, or endangered in California and elsewhere
 (2) Rare, threatened, or endangered in California but common elsewhere
 (3) More information is needed
 .1 - Seriously endangered in California
 .2 — Fairly endangered in California
 .3 — Not very endangered in California

United States Fish and Wildlife Service (Date?):

- (FE) Federal Endangered
 (FT) Federal Threatened

California Department of Fish and Wildlife CNDDDB (date?):

- (SE) State Endangered
 (ST) State Threatened
 (FP) State Fully Protected
 (SSC) Species of Special Concern in California

***Habitat P/A**

Present [**P**] - habitat is present. Absent [**A**] - no habitat present and no further work needed.

4 – Results: Biological Resources, Discussion and Impacts & Mitigation

Chapter 4 identifies and discusses sensitive biological resources that could potentially be affected by construction of the proposed project. Potential impacts and avoidance, minimization and mitigation measures are discussed in this Chapter.

Habitats and Natural Communities of Special Concern

Habitats and natural communities of special concern do not occur in the BSA.

Special-Status Plant Species

Special-status plant species listed on the queried special-status species lists of the nine-quad search as having potential to occur in the BSA are listed in Table 2.

Survey Results

There are no CNDDDB occurrences within a 2-mile query of the BSA. During botanical surveys of the BSA on 12 and 13 December 2015 and 5 January 2016 no special-status plant species or their habitat were observed in the BSA.

The BSA has been under longstanding agricultural management. Management practices such as herbicide application along road shoulders and management areas, and repeated disking of field areas has resulted in the BSA being almost devoid of any plant species. Only weedy, non-native plant species were observed during surveys of the BSA.

Project Impacts

Due to the results of the field review, and the maintenance practices associated with the BSA, the proposed project does not offer suitable habitat for special-status plant species. A determination has been made that the proposed project will not impact any special-status plant species or their habitat.

Avoidance and Minimization Measures

No additional botanical surveys are required. No avoidance and minimization measures are required regarding special-status plant species.

Special Status Animal Species

This section describes in detail special-status animal species that have the potential to occur within the BSA.

DISCUSSION OF CALIFORNIA BURROWING OWL

The California burrowing owl (*Athene cunicularia*) is a small owl with a round head and no ear tufts. Its eyes and beak are yellow, and it has long, thin legs and a short tail. As its name suggests, the burrowing owl nests underground. However, it rarely digs its own burrow, preferring to make its nest in abandoned burrows of small mammals, such as ground squirrels, American badgers and prairie dogs. Its plumage is a blend of brown and white with beige spotting. Burrowing owls are active during the day, foraging from elevated dirt mounds or fence posts in open habitats. The burrowing owl is listed as a California Species of Concern. She measures approximately 9 inches long (15-inch wingspan) and weighs 5-8 ounces. The burrowing owl has long legs and spends a great deal of time standing on the ground or on a small mound near the burrow entrance, or perched on low perches such as brush and fence posts. It can be quite conspicuous and easy to observe in the wild (Lewis 2013).

The burrowing owl habitat consists of open, dry annual or perennial grasslands, deserts, or open scrublands with low vegetation, soils suitable for digging, and a suitable prey base of burrowing rodents, small reptiles, and insects. Several owl pairs may nest close to one another and form loose colonies, but adult owls will defend their own burrow against other burrowing owls and predators, such as large raptors, badgers, skunks, snakes, and feral or domestic dogs and cats. Rodent control efforts, such as poisoning, reduces the availability of prey and may also contribute to secondary poisoning (Polite 1999).

Survey Results

There are no CNDDB records of a burrowing owl within a 2-mile query of the BSA. Surveys of the BSA focused on burrowing owls, commencing at dawn and paying special attention to any burrows. The BSA was searched for any sign of owl feathers, white wash or scat near burrows. Very few ground squirrel burrows were observed in the BSA and none of them showed typical signs of burrowing owl occupation, such as prey remains, scat, feathers and white wash. There was no evidence of burrow occupancy along the banks of Calloway Canal or the two sump areas in the BSA. There was evidence of active California ground squirrel burrows in the BSA, and these could provide suitable burrows for the owl. Overall, there is limited potential habitat for burrowing owl within and adjacent to the BSA based on the current level of disturbance.

Project Impacts

Due to the maintenance practices associated with the BSA at the time of surveys, the BSA did not support any burrowing owls. Overall, there is limited potential habitat for

burrowing owl within and adjacent to the BSA based on the current level of disturbance. However, there is a small possibility that burrowing owls could attempt to use the BSA prior to project construction. A determination has been made that with the implementation of the below avoidance and minimization measures the proposed project will not impact any burrowing owls.

Avoidance and Minimization Measures

- Pre-construction surveys for burrowing owls will be conducted within the BSA no more than 30 days prior to the start of construction to determine any presence or sign of burrowing owl occupancy.
- If burrowing owls are discovered during pre-construction surveys, the CDFW will be contacted to approve the following avoidance, minimization and possible mitigation measures:
 - Active burrowing owl burrows within the project limits would be protected by a 250foot-radius protection buffer outside of the nesting season (September 1 to January 31).
 - Active burrowing owl burrows within the project limits would be protected by a 650foot-radius protection buffer during the nesting season (February 1 to August 31).
 - If active burrows are located within a construction area the CDFW will be contacted and a 'Burrowing Owl Relocation Plan' provided to the CDFW.
 - The 'Burrowing Owl Relocation Plan' will specify a protection buffer, passive relocation efforts (i.e. installing one-way exclusion doors on burrow entrances, and providing artificial burrows constructed nearby, within 150-300 feet if possible). A minimum of 6.5 acres of contiguous foraging habitat would be available within a 300-foot radius around the new burrow site per owl pair or resident single bird. All passive relocation work would be performed by CDFW-approved, qualified biologists.
 - If burrowing owls are observed during pre-construction surveys, a CDFW-approved biological monitor will be present during all ground disturbances and must perform daytime monitoring of active burrows within the project limits if construction activities must occur within the protective buffer zone.

All burrowing owl avoidance and minimization measures will conform to the *"Staff Report on Burrowing Owl Mitigation"* (CDFG 2012).

Compensatory Mitigation

Compensatory mitigation is not proposed for the burrowing owl because the species was not observed during surveys. If burrowing owl colonizes the BSA prior to construction, SWID will consult with CDFW. Compensatory mitigation measures may be proposed, as appropriate, at that time.

DISCUSSION OF SAN JOAQUIN KIT FOX

The San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF) is the smallest fox in North America with an average body length of 20 inches and a weight of about 5 pounds (the size of a small cat). The SJKF is a federally endangered and state threatened species in California. The fox can be recognized by its long ears and by its long, black-tipped, bushy tail. The SJKF's coat ranges from a buff-tan in the summer to a silver-grey in the winter, with undersides varying from light buff to white (USFWS 1998).

Kit foxes dig their own dens or use those constructed by other animals, or use artificial structures (culverts, abandoned pipelines, or banks in sumps) for protection, temperature regulation, pupping and shelter from weather.

The historic range of the San Joaquin kit fox used to include most of the San Joaquin Valley from southern Kern County northward to San Joaquin County (USFWS 1998). Currently, kit foxes occur in a wide range of habitat, from the remaining native valley and foothill grasslands of the valley floor and surrounding foothills to highly modified and disturbed urban areas, such as oil fields and wind turbine facilities.

Kit foxes are present, but generally less abundant, in other highly modified areas such as agricultural row crops, irrigated pastures, orchards, and vineyards. A SJKF 'urban population' is also known to occur in the City of Bakersfield.

Survey Results

The SJKF is known to occur throughout Kern County, especially to the south of the proposed project in the City of Bakersfield. The closest CNDDDB sighting of the SJKF is approximately 6 miles east of the BSA, east of the intersection of SR 99 and Kimberlina Road. This occurrence (CNDDDB occurrence # 786) was made 'sometime from 1972 to July 1975' according to CNDDDB. The second closest SJKF occurrence is about 7 miles south east of the BSA, south of the City of Shafter (CNDDDB occurrence # 788). This observation was also made 'sometime from 1972 through July 1975' (CNDDDB). SJKF

occurrences become more frequent south of the City of Shafer and even more so south of 7th Standard Road.

The BSA was carefully surveyed for SJKF, SJKF dens or potential dens and for SJKF sign, such as tracks, scat and prey remains. Areas that were not readily visible from the dirt roads were surveyed by walking 5 meter transects. Special attention was paid to areas with topographic changes and less frequent disturbance by vehicles and agricultural activities, such as the Calloway Canal embankments and the embankments of the agricultural recharge basins. No SJKF, active or potential dens, or SJKF sign were observed during surveys of the BSA.

The BSA offers only limited SJKF foraging habitat at best, as the prey base is marginal to none. No live ground squirrels or other small mammals were observed during surveys. A few abandoned ground squirrel dens were observed in the agricultural regulating pond areas, but the remaining entire BSA was devoid of ground squirrel burrows or other small mammal burrows. Both the banks of Calloway canal and the BSA itself are heavily maintained by herbicide application, so much so, that over 99% of the 270 acre site is bare ground. Rodenticides are also applied regularly in the BSA explaining the lack of ground squirrels and other small mammals, which are prey base of the SJKF.

In addition the BSA does not offer any cover in the form of trees, riparian corridor or other low vegetation to allow the SJKF cover to move into or through the BSA. SJKF could potentially move along Calloway Canal or adjacent orchards. However, even Calloway Canal does not offer any cover in the form of trees or vegetation and would only be temporarily impacted. Orchards would not be impacted by construction. Due to the lack of cover it is very unlikely that SJKF use Calloway Canal for movement during the day. There will be no night work, when SJKF are most active, so it is very unlikely that any SJKF that may be moving along Calloway Canal (thought unlikely) or through the orchards would be impacted.

Human disturbance of the BSA is constant, prolific and ongoing. Traffic along Kimberlina Road and Shaffer Avenue is heavy. Farm traffic on the agricultural roads throughout the BSA and on the banks of Calloway Canal is frequent. Farming operations are ongoing and the land has not been fallow for any length in time as evidenced by the complete absence of even ruderal vegetation and wildlife species normally adapted to disturbed areas.

Domestic dogs, one of the SJKF's predators, frequent the BSA. Several dogs were observed foraging in the BSA during each day of surveys. Dog prints and scat were also observed within the BSA at many locations further confirming the BSA is heavily frequented by dogs.

While SJKF have been observed during the day they are primarily a nocturnal species, foraging, denning and migrating primarily during the night. No construction activities will occur at night.

Project Impacts

The ruderal and agricultural nature of the BSA results in the BSA currently providing none to very low habitat value for either foraging or denning SJKF. The current land use and level of disturbance preclude the SJKF from becoming established in the BSA and no sign or individual SJKF were observed in the BSA. The conversion of the project area to a recharge basin will likewise continue to preclude the SJKF from establishing in the BSA because, like current conditions, the converted project area will be highly and regularly disturbed and maintained by herbicide and rodenticide application, as well as routinely flooded. The project area will be planted with Bermuda grass which will not provide appropriate denning or foraging habitat for the SJKF. No prey base will be able to establish in the project area due to continued ongoing and regular maintenance activities and flooding.

SJKF could occasionally traverse the project area in search of mates, food or shelter, either during construction or after construction. Due to the complete lack of vegetation in the project area and the regular application of herbicides and rodenticides there is no prey base for the SJKF. Therefore it is highly unlikely that the SJKF would forage in the project area. Migration through the project area during or after construction is also highly unlikely given the complete current and future absence of cover, shelter and prey base in the BSA and its frequent and longstanding disturbance by humans and dogs. SJKF could potentially use Calloway Canal for a movement corridor, but Calloway Canal also does not provide any type of cover due to the complete lack of vegetation. In addition the banks of Calloway Canal are heavily frequented by agricultural traffic and heavily and regularly maintained. SJKF could however use the adjacent orchards as movement corridor. The orchards are located outside of the project area and will not be impacted. The movement through the orchards would not be restricted by project activities. Should the SJKF attempt to move through the project area during construction, it would seem natural for the SJKF to use the adjacent orchards that provide shelter and cover instead of the highly disturbed project area. In addition, construction will not occur at night when

SJKF are most active. Therefore, construction activities and conversion of the project area will not impact the SJKF.

Direct Effects

Disturbances associated with the construction of the proposed project is not expected to affect the San Joaquin kit fox directly, because the SJKF is not expected to occur on the project site.

Avoidance and Minimization Efforts

Because SJKF are a highly mobile species, the below 'Avoidance and Minimization Efforts' will be implemented to preclude any impacts to transient SJKF.

- In addition to the measures listed above, SWID will also implement the following avoidance and minimization efforts: A USFWS-approved biologist will be present on-site during initial ground-disturbing activities and throughout the duration of the project.
- Pre-construction surveys will be conducted within the BSA no more than 30 days prior and again 48 hours prior to the start of construction to determine any presence of SJKF or potential SJKF dens.
- If any SJKF or their sign are observed during pre-construction surveys, a letter report and map of known and potential SJKF dens will be submitted to the USFWS and CDFW prior to the start of ground disturbance and/or construction activities and USFWS and CDFW will be consulted on how to proceed.
- Once construction has been completed the project proponent shall, in co-ordination with the CDFW and the USFWS, complete three years of annual SJKF surveys of the recharge basin. The purpose of these surveys is to ensure that any new vegetation growth has not increased prey base and attracted SJKF to the area.
- An annual SJKF survey report will be submitted to CDFW and USFWS by December 31 of each of the three years following construction and operation of the new facility.
- If potential SJKF dens or sign of SJKF are found during the first three years of operation, operational activities shall cease until consultation with the CDFW and USFWS has occurred.

CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS

SWID will implement measures listed below based on the January 2011 *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (Appendix H).

Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities should be minimized by adhering to the following Measures. Project designs should limit or cluster permanent project features to the smallest area possible while still permitting achievement of project goals. To minimize temporary disturbances, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas should also be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts.

1. Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated project areas should be prohibited.
2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Service and the California Department of Fish and Game (CDFG) shall be contacted as noted under measure 13 referenced below.
3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the Service has been consulted. If necessary, and under the

direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.

5. No firearms shall be allowed on the project site.

6. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.

9. An employee education program should be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: A description of the San Joaquin 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 measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.

10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be re-contoured if necessary, and re-vegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be re-vegetated. Appropriate methods and plant species used to re-vegetate such areas should be determined on a site-specific basis in consultation with the Service, California Department of Fish and Wildlife (CDFW), and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance.

12. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFW immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916)445-0045. They will contact the local warden or Mr. Paul Hoffman, the wildlife biologist, at (530) 934-9309. The Service should be contacted at the numbers below.

13. The Sacramento Fish and Wildlife Office and CDFG shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFG contact is

Mr. Paul Hoffman
1701 Nimbus Road, Suite A
Rancho Cordova,
California 95670
(530) 934-9309

14. New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to

the Service at the address below. Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species

Division

2800 Cottage Way, Suite

W2605

Sacramento, California

95825-1846

(916) 414-6620 or (916)

414-6600

Compensatory Mitigation

With implementation of these avoidance and minimization measures, compensatory mitigation is not proposed for the SJKF.

5 - Conclusions & Regulatory Determinations

Endangered Species Act Consultation Summary

Bighorn Consulting, Inc. discussed the marginal habitat of the BSA with the Sacramento Field office of the USFWS. USFWS representative Andrew Raabe agreed that SJKF protocol level surveys were not required and that standard '2011 *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance*' (Appendix H) would avoid any impacts to the SJKF. Reclamation will complete informal consultation with the Service on the proposed action.

Essential Fish Habitat Consultation Summary

The BSA does not contain Essential Fish Habitat, and therefore consultation is not required with the National Marine Fisheries Service.

California Endangered Species Act Consultation Summary

Based on the results of preconstruction surveys, CDFW will be consulted as required on any impacts to State listed special-status species or their habitat. There has been no consultation with the CDFW regarding state special-status species in the BSA.

Wetlands and Other Waters Coordination Summary

The proposed project will involve work in Calloway Canal, a water of the U.S. and a water of the State. Coordination with the U.S. Army Corps of Engineers and the California Regional Water Quality Control Board will be required. In addition, coordination with the CDFW is required because a Section 1600 Streambed Alteration Agreement may be needed for the project.

An ACOE Wetland Delineation and Determination was not performed. However, no areas indicative of wetlands were observed within the BSA.

Invasive Species

Executive Order 13112 (February 3, 1999) calls for Executive Branch agencies to work to prevent the introduction and control the spread of invasive species and eliminate or minimize those species' associated economic, ecological, and human health impacts.

A total of five invasive plant species were observed in the BSA. These invasive species occur throughout the BSA. As a result of the proposed project, these invasive species will likely be removed from the BSA. However, to prevent the further spread of these species, noxious weed BMP's will be adhered to during construction.

Migratory and Native Nesting Bird Protection

The proposed project will not remove any trees, but construction activities may disturb migratory birds or native nesting birds using adjacent orchards or the ground due to dust, vibration, noise, vehicle operation, and foot traffic.

The below standard avoidance and minimization measures will ensure compliance with the Migratory Bird Treaty Act and the USFWS 'Nationwide Standard Conservation Measures' for Migratory Birds (USFWS), the California Fish and Game Code and the San Joaquin River Restoration Program. Avoidance and minimization measures include:

- Pre-construction surveys of any suitable habitat in the BSA by a qualified biologist for migratory and nesting birds within 14 days of construction start and again within 48 hours of construction start for work occurring during the nesting season (1 February-1 September) to identify active nests in the BSA.
- In the event that nesting birds or active nests are observed in the BSA, a protective no-disturbance buffer will be installed under supervision of a qualified biologist in coordination with CDFW and USFWS.
- The qualified biologist will determine the size of the buffer in coordination with CDFW and USFWS and will determine when nesting has been completed and the buffer may be removed.
- No activity shall occur within the buffer area, and worker awareness training and daily biological monitoring will be conducted to ensure that avoidance measures are being implemented and nesting is not disrupted.

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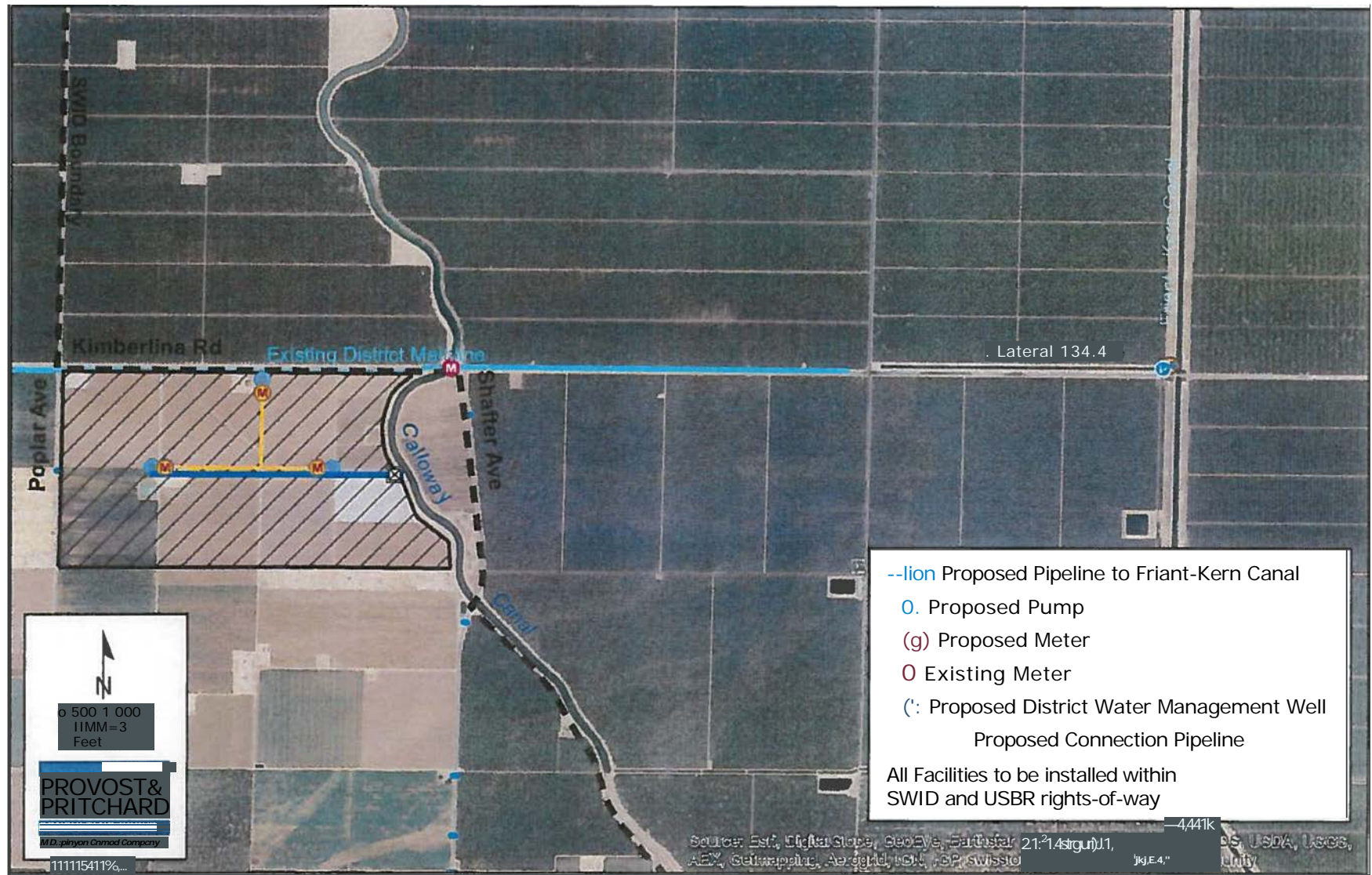
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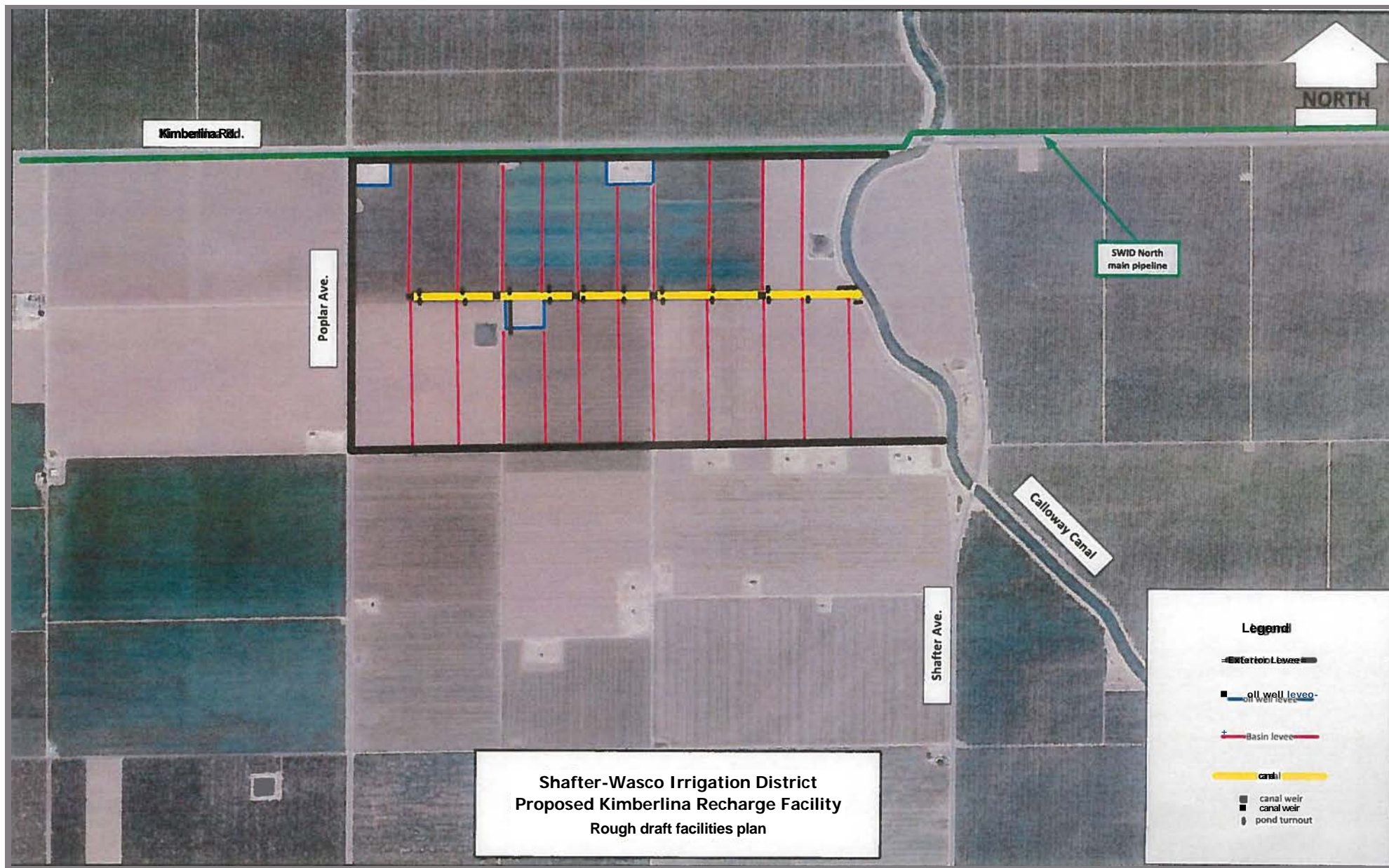
Western Regional Climate Center, 2015. Website:

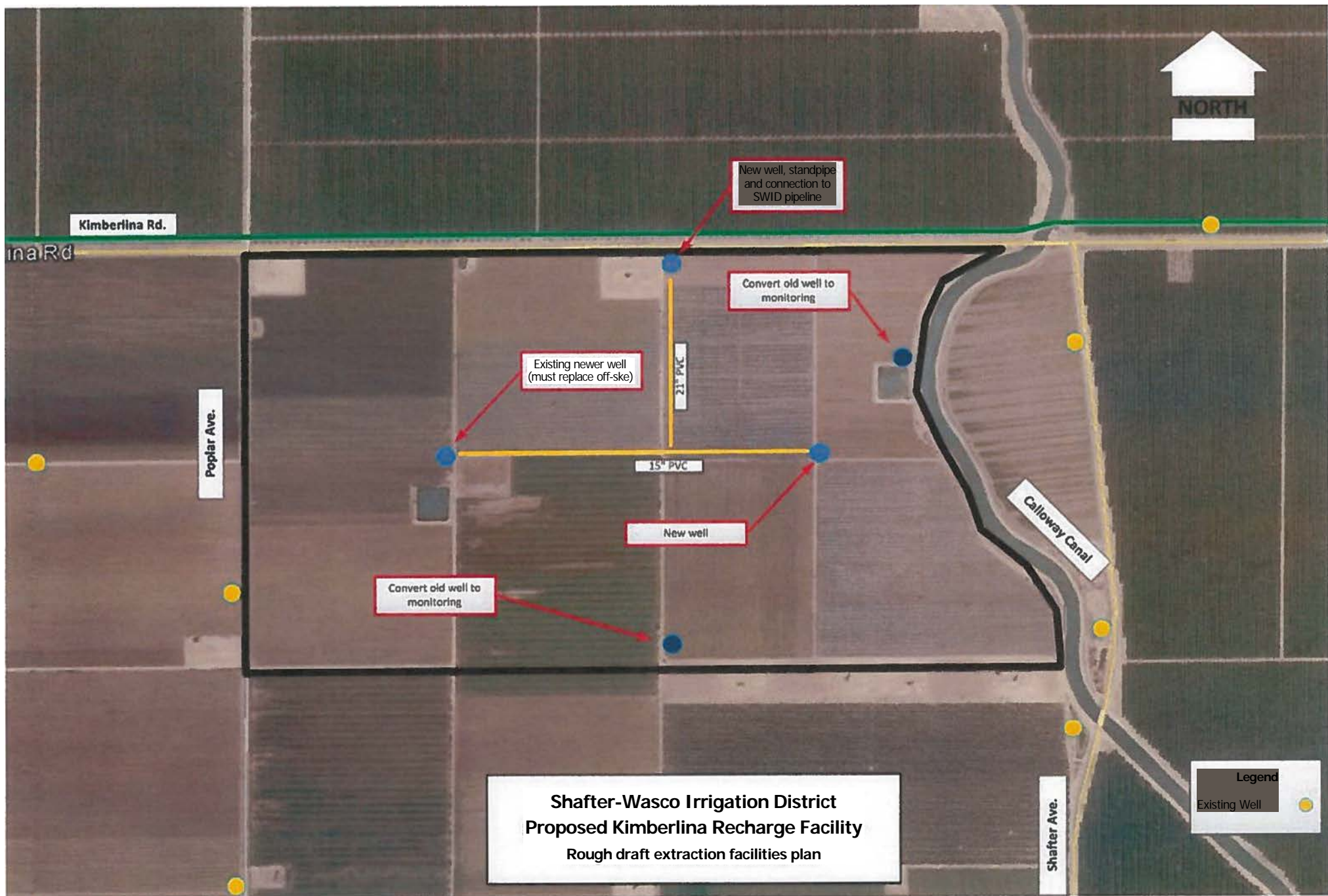
<http://www.wrcc.dri.edu/cgi>

Appendix A

Project Location Maps







Appendix B

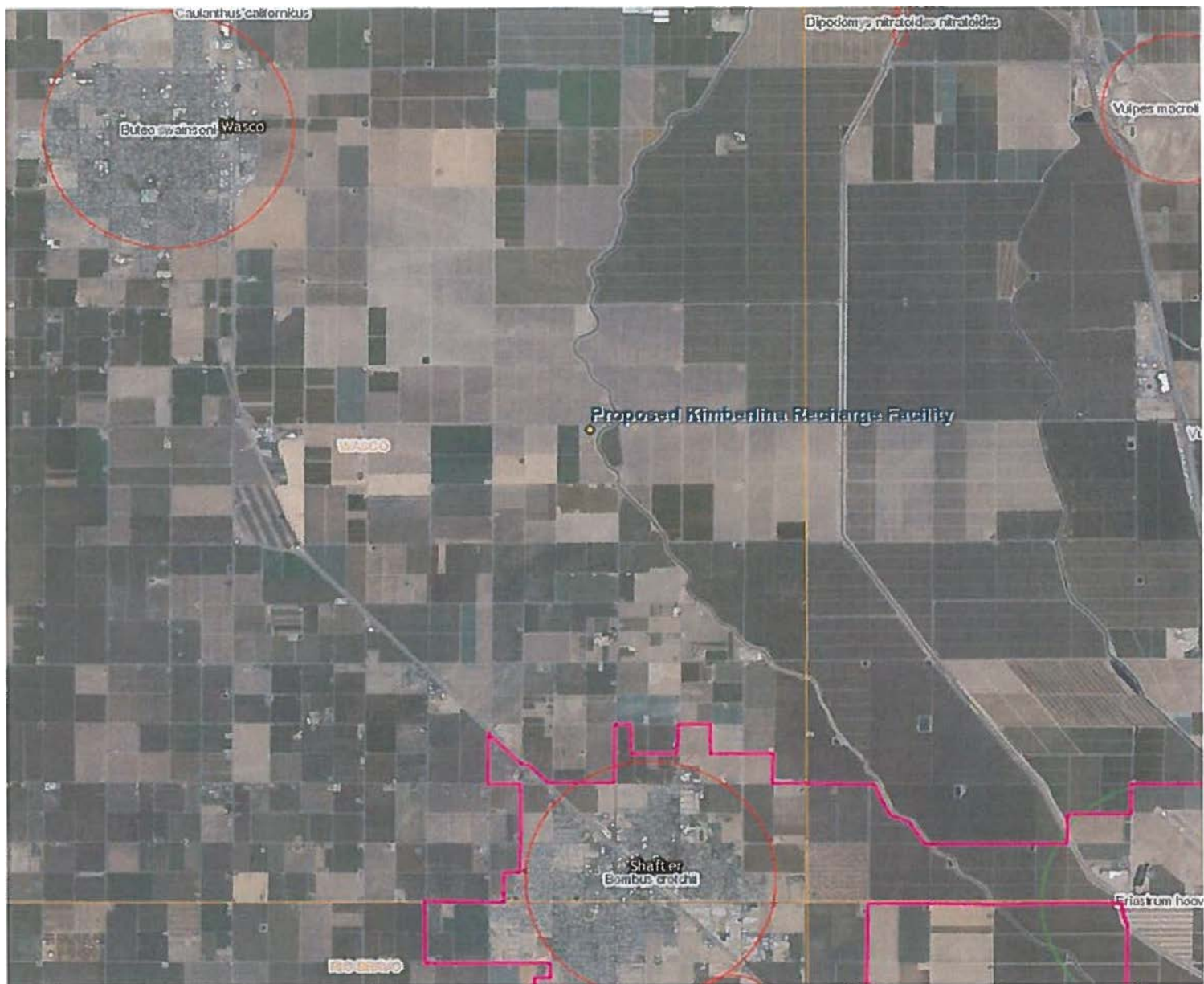
Map of the Biological Study Area

Appendix C

USFWS IPaC Trust Report, CDFW California Natural Diversity Data Base Species List, and CNPS Inventory of Rare and Endangered Plants List

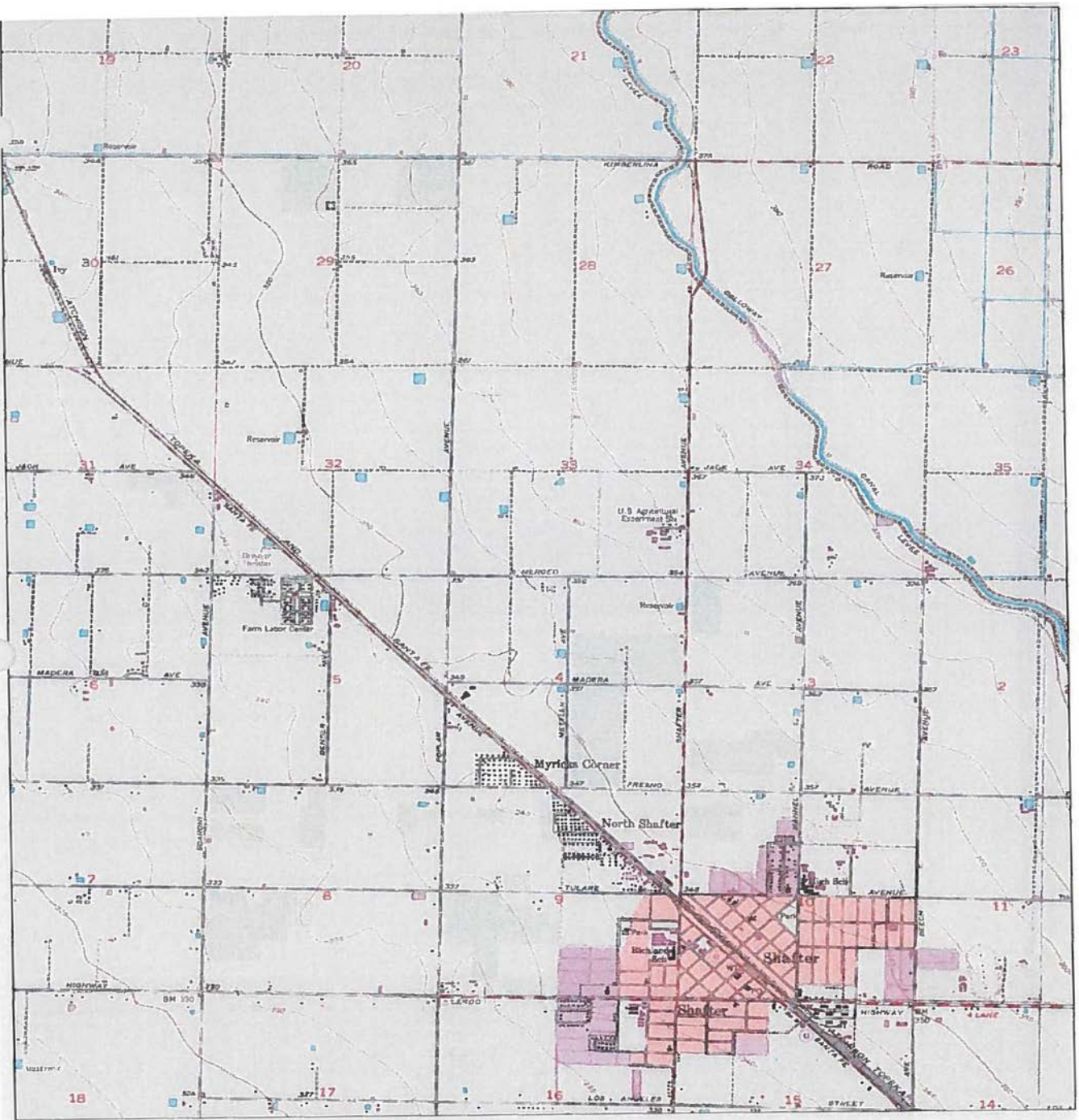
Appendix D

CNDDDB Rarefind Map



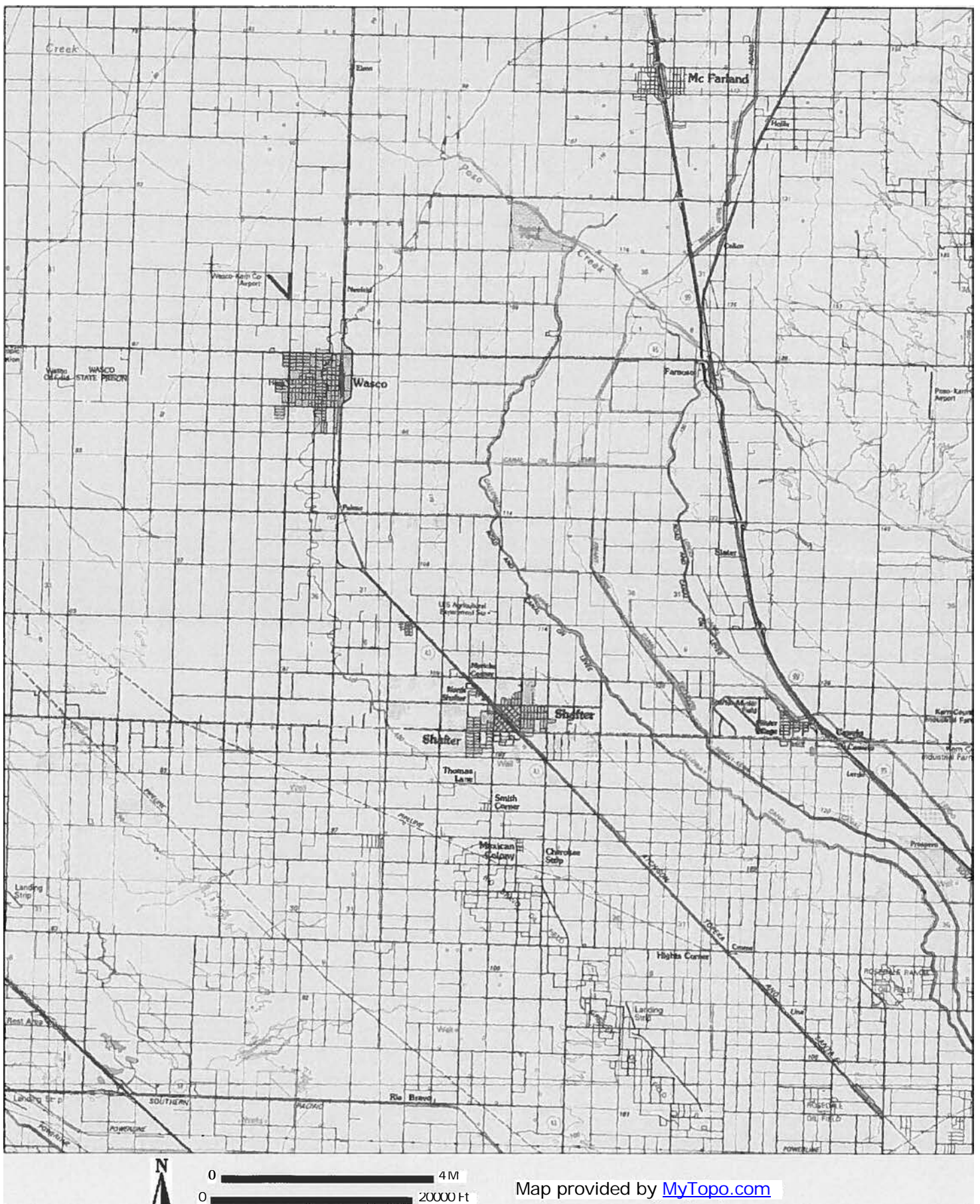
Appendix E

Topographic Map of the Biological Study Area



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0 5000 Ft

Map provided by MyTopo.com



Appendix F

Soil Map of the Biological Study Area



Appendix G

Site Photographs



Looking north-west at Kimberlina Road and adjacent orchard to the north



Looking east at north-east corner of BSA from Calloway Canal Road



Looking north at Kimberlina Road from Calloway Canal Maintenance Road



Looking south at the BSA, Calloway Canal and Shafter Avenue



Looking north at BSA and Kimberlina Road from sump area

Looking west at sump area from Calloway Canal Maintenance Road



Wild grapes and beavertail cactus at sump area



Beavertail cactus in sump area



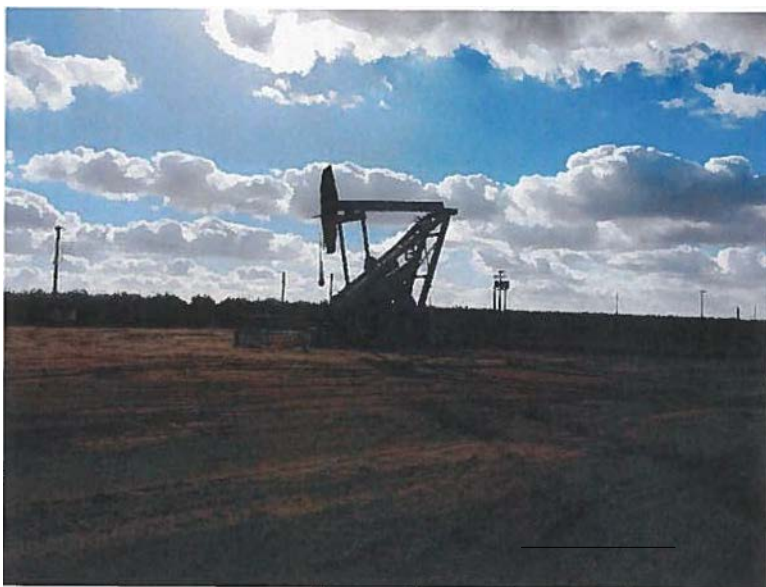
Looking east at farming residence and Calloway Canal ¹



Water fowl on Calloway Canal



Looking south at southern end of BSA from Calloway Canal Maintenance Road



Oil wells at southern end of BSA



Agricultural roads and utilities at southern end of BSA, looking west



Looking north-west at southern end of BSA



Looking north at Kimberlina Road from agricultural dirt road



Second sump area at eastern boundary of the BSA

Appendix H

‘2011 USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance’