- 1 APPENDIX F
- 2 Friant-Kern Canal Middle Reach Capacity Correction Project
- **Biological Resources Assessment**







## Friant-Kern Canal Middle Reach Capacity Correction Project

Biological Resources Assessment

March 27, 2020

Prepared for:

Friant Water Authority 854 N. Harvard Ave. Lindsay, CA 93247

Prepared by:

Stantec Consulting Services Inc. 2595 Ceanothus Avenue, Suite 182 Chico, CA 95973

March 27, 2020

## **Executive Summary**

On behalf of Friant Water Authority, Stantec Consulting Services Inc. (Stantec) prepared this biological resources assessment report to do the following: (1) document special-status species and other sensitive biological resources that may occur in or near the Friant-Kern Canal (FKC) Middle Reach Capacity Correction Project (Project) area; (2) provide an assessment of the potential for the Project to adversely impact sensitive biological resources; and (3) identify mitigation measures (MMs) to avoid or reduce the potential for Project-related impacts. The biological resources assessment is based on information gathered from a review of desktop resources, including published literature, data, and maps, and from biological field surveys conducted by Stantec biologists.

The study area for the biological resources assessment includes the section of the FKC beginning at Avenue 208 just north of the community of Strathmore in Tulare County, stretching approximately 33 miles south-southwest to Lake Woollomes, approximately 0.5 mile north of Pond Road to the southeast of the city of Delano in Kern County. The study area includes all project components and potential staging areas and areas of ground disturbance for both the Canal Enlargement Alternative (CE Alternative) and Canal Enlargement and Realignment Alternative (CER Alternative).

The natural habitat communities present within the study area include non-native annual grassland, California buckwheat scrub, allscale saltbush scrub, Fremont cottonwood forest, mulefat thickets, red willow thickets, shining willow groves, smartweed-cocklebur patches, and valley oak woodland. Managed plant crops within the study area include irrigated row crops, vineyards, orchards, and herbaceous field crops. Other land designations in the study area include urban, ruderal, and barren.

Valley oak woodland, red willow thickets, shining willow groves, and Fremont cottonwood forest are considered sensitive natural communities. Other natural communities of concern in the study area include wetlands and other aquatic habitats. Aquatic habitats in the study area include Friant-Kern Canal, intermittent stream (Porter Slough, Tule River, Deer Creek, White River), pond, fresh emergent wetland, riparian wetland, seasonal wetland, irrigation canal, irrigation ditches, and groundwater recharge basins.

Based on the desktop review and biological field surveys, the study area does not provide suitable habitat for any federal- or state-listed plants, but does provide suitable habitat for 10 other special-status plant species. These species include Earlimart orache (*Atriplex cordulata* var. *erecticaulis*), Lost Hills crownscale (*Atriplex coronata* var. *vallicola*), brittlescale (*Atriplex depressa*), lesser saltscale (*Atriplex minuscula*), subtle orache (*Atriplex subtilis*), recurved larkspur (*Delphinium recurvatum*), Hoover's eriastrum (*Eriastrum hooveri*), spiny-sepaled button-celery (*Eryngium spinosepalum*), Munz's tidy-tips (*Layia munzii*), and California alkali grass (*Puccinellia simplex*).

The study area provides suitable habitat for 18 special-status animal species, including federal- and state-listed species. The species include: Kern brook lamprey (*Entosphenus hubbsi*), San Joaquin roach (*Lavinia symmetricus*), western spadefoot (*Spea hammondii*), northern California legless lizard (*Anniella pulchra*), California glossy snake (*Arizona occidentalis*), San Joaquin coachwhip (*Masticopus flagellum ruddocki*), coast horned lizard (*Phrynosoma blainvillii*), golden eagle (*Aquila chrysaetos*), burrowing owl

March 27, 2020

(Athene cunicularia), Swainson's hawk (Buteo swainsoni), northern harrier (Circus cyaneus), white-tailed kite (Elanus leucurus), pallid bat (Antrozous pallidus), Townsend's big-eared bat (Corynorhinus townsendii), western mastiff bat (Eumops perotis californicus), Buena Vista Lake shrew (Sorex ornatus relictus), American badger (Taxidea taxus), and San Joaquin kit fox (Vulpes macrotis mutica).

Construction of both the CE Alternative and the CER Alternative has a potential to result in impacts on special-status species, sensitive natural communities, aquatic habitats, and other sensitive biological resources. Operational impacts from implementation of both the CE Alternative and CER Alternative would generally be equivalent to existing conditions because both Project alternatives would result in ongoing operations and maintenance of the FKC comparable to existing conditions. A discussion of potential impacts and recommended MMs is provided in this biological resources assessment.

March 27, 2020

## **Table of Contents**

EXE	CUTIVE SUMMARY	I
ACR	RONYMS AND ABBREVIATIONS	I
1.0	INTRODUCTION	1
2.0	PROJECT ALTERNATIVES	
	ERROR! BOOKMARK NOT	
2.1	CANAL ENLARGEMENT ALTERNATIVE	
2.2	CANAL ENLARGEMENT AND REALIGNMENT ALTERNATIVE	
2.3	ELEMENTS COMMON TO BOTH PROJECT ALTERNATIVES	4
2.4	CONSTRUCTION SCHEDULE	4
3.0	METHODS	7
3.1	DEFINITIONS	7
	3.1.1 Special-Status Species	
	3.1.2 Potential to Occur	
3.2	LITERATURE AND DATABASE REVIEW	7
3.3	FIELD VISITS AND BIOLOGICAL STUDIES CONDUCTED	8
4.0	ENVIRONMENTAL SETTING	10
4.1	SITE CONDITIONS AND LAND USE	10
	4.1.1 Local Setting and Existing Land Use	10
	4.1.2 Physical Conditions	10
4.2	BIOLOGICAL CONDITIONS	
	4.2.1 Habitat Communities	13
	4.2.2 Habitat Connectivity	
	4.2.3 Invasive Species	
	4.2.4 Rare Natural Communities and Aquatic Resources	
	4.2.5 Special-Status Plant Species	
	4.2.6 Special-Status Animal Species	24
5.0	RESULTS: DISCUSSION OF BIOLOGICAL RESOURCES	
5.1	SENSITIVE NATURAL COMMUNITIES AND AQUATIC RESOURCES	
	5.1.1 Sensitive Natural Communities	
	5.1.2 Aquatic Resources Results	
5.2	SPECIAL-STATUS PLANT SPECIES	
	5.2.1 Special-Status Plant Species Results	
5.3	SPECIAL-STATUS ANIMAL SPECIES	
	5.3.1 Special-Status Animal Species Results	41
6.0	DISCUSSION OF IMPACTS AND MITIGATION	47
6.1	HABITATS, SENSITIVE NATURAL COMMUNITIES, AND AQUATIC	
	RESOURCES	47
	6.1.1 Terrestrial Habitats and Agricultural Lands	47

i

## March 27, 2020

	6.1.2	Riparian Habitats and Sensitive Natural Communities	48
	6.1.3	Aquatic Resources	
6.2	SPECIAL	-STATUS PLANT SPECIES	
6.3	SPECIAL	-STATUS ANIMAL SPECIES	54
	6.3.1	Kern Brook Lamprey, San Joaquin Roach, and Game Fish	
	6.3.2	Western Spadefoot	
	6.3.3	Northern California Legless Lizard, California Glossy Snake, San Joaquin Coachwhip, and Coast Horned Lizard	
	6.3.4	Migratory Birds and Raptors	
	6.3.5	Golden Éagle, Swainson's Hawk, Northern Harrier, and White-tailed Kite	61
	6.3.6	Burrowing Owl	
	6.3.7	Pallid Bat, Townsend's Big-Eared Bat, Western Mastiff Bat, and Other Roosting Bats	
	6.3.8	Buena Vista Lake Shrew	
	6.3.9	American Badger	
	6.3.10	San Joaquin Kit Fox	
7.0	REFERE	NCES	73
LIST (	OF TABLE	SS S	
Table	1. Project	Ranges, Townships, and Sections	1
		p Units in the Study Area	
		of Regionally Occurring Special-Status Plant Species	
Table	4. Review	of Regionally Occurring Special-Status Animal Species	24
		ed Terrestrial Habitat Impacts	
Table	6. Estimat	ted Aquatic Resources Impacts	50
Table	7. Estimat	ted Swainson's Hawk Foraging Habitat Impacts	61

March 27, 2020

## LIST OF FIGURES (PROVIDED UNDER SEPARATE COVER)

Figure 1. Project Location
Figure 2. Project Components
Figure 3. Habitats Within The Project Area
Figure 4. CNDDB Occurrences Within A 5-Mile Radius
Figure 5. Impacts By Habitat Type- CER Alternative
Figure 6. Impacts By Habitat Type- CE Alternative

#### LIST OF ATTACHMENTS

ATTACHMENT A USFWS SPECIES LIST
ATTACHMENT B CNDDB AND CNPS RECORDS
ATTACHMENT C DELINEATION OF WATERS OF THE UNITED STATES REPORT
ATTACHMENT D BOTANTICAL SURVEY REPORT
ATTACHMENT E PLANT LIST

March 27, 2020

## **Acronyms and Abbreviations**

°F degrees Fahrenheit

BRMMP Biological Resources Management and Monitoring Plan

BVLS Buena Vista Lake shrew

Cal-IPC California Invasive Plant Council

CDFW California Department of Fish and Wildlife

CE Alternative Canal Enlargement Alternative

CER Alternative Canal Enlargement and Realignment Alternative

CESA California Endangered Species Act
CMM Compensatory Mitigation Measure
CNDDB California Natural Diversity Database

CNPS California Native Plant Society
CRPR California Rare Plant Rank
ESA Endangered Species Act

ESAs environmentally sensitive areas

FKC Friant-Kern Canal
FWA Friant Water Authority
MMs mitigation measures

MP mile post

OHWM ordinary high water mark

Project Friant-Kern Canal Middle Reach Capacity Correction Project

Reclamation Bureau of Reclamation

Regional Water Board Regional Water Quality Control Board

SJKF San Joaquin kit fox

Stantec Stantec Consulting Services Inc.
USACE U.S. Army Corps of Engineers
USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

WEAT worker environmental awareness training

1.0 Introduction March 27, 2020

## 1.0 INTRODUCTION

This biological resources assessment report has been prepared to do the following: (1) document special-status species and other sensitive biological resources that may occur in or near the Friant-Kern Canal (FKC) Middle Reach Capacity Correction Project (Project) area; (2) provide an assessment of the potential for the Project to adversely impact sensitive biological resources; and (3) identify mitigation measures (MMs) to avoid or reduce the potential for Project-related impacts.

The study area for the biological resources assessment includes the section of the FKC beginning at Avenue 208 just north of the community of Strathmore in Tulare County, stretching approximately 33 miles south-southwest to Lake Woollomes, approximately 0.5 mile north of Pond Road to the southeast of the city of Delano in Kern County. The study area is located within the following sections, townships, and ranges (Table 1) of the Mount Diablo Base and Meridian in the *Lindsay, Porterville, Ducor, Sausalito School, Delano East*, and *McFarland* California, U.S. Geological Survey (USGS) 7.5-minute series topographic quadrangles (Figure 1). (Figures are located at the back of this report.)

Table 1. Project Ranges, Townships, and Sections

Range	Township	Sections
27 East	20 South	28, 33
	21 South	3, 4, 9, 16, 20, 21, 29, 30, 31
	22 South	6, 7, 18, 19, 30, 31
	23 South	6
26 East	23 South	1, 11, 12, 14, 15, 22, 23, 26, 27, 34
	24 South	3, 9, 10, 15, 16, 21, 22, 28, 33
	25 South	4, 9, 16, 21, 28

This biological resources assessment is based on information gathered from a review of desktop resources including published literature, data, and maps, and from biological field surveys of the study area by Stantec Consulting Services Inc. (Stantec) biologists. The study area includes all project components and potential staging areas and areas of ground disturbance for both the Canal Enlargement Alternative (CE Alternative) and Canal Enlargement and Realignment Alternative (CER Alternative) (Figure 2).

The purposes of this biological resources assessment are to do the following:

- characterize the habitats and vegetation communities present;
- evaluate the potential for special-status plant and animal species to occur;
- identify the locations and approximate boundaries of other sensitive biological resources (e.g., streams, wetlands, and riparian areas);

1.0 Introduction March 27, 2020

- provide an analysis of the potential for each Project alternative to result in impacts on special-status species and other sensitive biological resources; and
- identify MMs to avoid or reduce the potential for Project-related impacts.

2.0 Project Alternatives March 27, 2020

## 2.0 PROJECT ALTERNATIVES

#### 2.1 CANAL ENLARGEMENT ALTERNATIVE

The CE Alternative would restore the capacity of the 33-mile Middle Reach using two methods: (1) raising portions of the embankments in the existing FKC; and (2) raising and widening the canal embankments and adding concrete lining. Raising the embankments would be accomplished by increasing the height of the earthen canal banks and extending the lining by adding a 1- to 4-foot-high concrete lining at a 1.5 to 1 slope above the existing lining. The canal would be raised in Segment 1 from mile post (MP) 88.2 (at Avenue 208) to MP 95.7 (immediately south of Tule River) and in Segment 4 from MP 119 (south of State Highway 155) to MP 121.5 (at the Lake Woollomes check).

Raising and widening the embankments would be accomplished by removing the uppermost extent of the existing concrete lining and excavating a horizontal bench at the level of the demolished lining (approximately 14 feet wide on each embankment or a total of 28 feet wide) into the existing grade and constructing new (i.e., wider) upper embankments, which would receive new concrete linings. This alternative would require up to four miles of new bypass canal segments around existing turnouts and changes to or replacement of existing turnouts, road crossings, check structures, utilities, and other facilities adjacent to the canal such as irrigation systems, private wells, and control buildings. Approximately 170 acres of new right-of-way would be required to accommodate this alternative.

#### 2.2 CANAL ENLARGEMENT AND REALIGNMENT ALTERNATIVE

The CER Alternative would restore the capacity of the 33-mile Middle Reach using two methods: (1) raising portions of the embankments in the existing FKC (similar to what is described for the CE Alternative); and (2) constructing a realigned canal east of the existing FKC. The canal would be raised in Segment 1 from MP 88.2 (at Avenue 208) to MP 95.7 (immediately south of Tule River) and in Segment 4 from MP 116 (at Avenue 8) to MP 121.5 (at the Lake Woollomes check).

The realigned canal would be constructed immediately east of the FKC beginning on the south side of the Tule River at MP 95.7 and extending approximately 20 miles to MP 116, which encompasses all of Segments 2, 3, and a portion of Segment 4.

The CER Alternative would ultimately result in abandoning about 19 miles of the 33-mile Middle Reach of the FKC. In the abandoned segments, the concrete lining from the embankments would be demolished and could be reused as roadway base material as needed. The remainder would be abandoned in place along with the concrete lining on the bottom of the canal. Abandonment of the FKC would allow the bank material to be used to construct the realigned canal. The centerline distance between the abandoned segment and the realigned canal varies but would average 127 feet.

The FKC parallels County Road 192 near MP 115.3 for approximately 1.7 miles. There is insufficient room for the realigned canal between the existing FKC and County Road 192, so the realigned canal would be located approximately 120 feet east of the road (from centerline of the road to centerline of the

2.0 Project Alternatives March 27, 2020

canal). A similar situation occurs adjacent to County Road 184, beginning south of Avenue 40 at approximately MP 111.5 and continuing south for approximately 2 miles to Avenue 24. To accommodate water deliveries in the area of the realigned canal, new turnouts consisting of new cast-in-place concrete structures and delivery piping would be constructed as needed. Additionally, small segments of the FKC would be left in place to accommodate existing turnouts and maintain water deliveries to existing distribution systems. Maintaining existing turnouts and deliveries within the realigned canal would be accomplished by creating delivery pools within approximately 100 to 200 feet of the FKC upstream of existing pump stations. This would allow water to be delivered from the realigned canal to a controlled water level in the delivery pool without affecting existing pumps and distribution systems. Approximately 510 acres of new right-of-way would be required to accommodate this alternative.

#### 2.3 ELEMENTS COMMON TO BOTH PROJECT ALTERNATIVES

For both Project alternatives, replacement of the existing check structures, wasteways, and siphons would be required at Deer Creek and White River. Control buildings and associated electrical, mechanical, and control equipment at these facilities would also be replaced as required. Up to 25 bridges would be removed and replaced with new, inverted siphons. Up to 10 miles of existing utility crossings would be removed, modified, or replaced to accommodate the alternatives. Both alternatives would also require modification, relocation, abandonment, or removal of existing facilities on lands adjacent to the FKC and realigned canal. Affected facilities could include but are not limited to wells, irrigation systems, farm roads, miscellaneous structures (such as small control buildings), and power lines.

A cement batch plant would be built onsite and would be primarily used for preparation of the lining material. The batch plant would be located within a 30-acre parcel on Avenue 56 near the FKC in Tulare County. The property would also be used for contractor staging, offices, and equipment and material storage. New 24-foot-wide operations and maintenance roads would be developed on the realigned canal segment. One side of the new canal operations and maintenance roads would have an all-weather finish (i.e., gravel with chip-seal). The other side would be a drivable dirt road (i.e., no gravel). The side of the new canal road with an all-weather versus drivable dirt finish may alternate along the canal reach. Aggregate for the new all-weather road finishes would be obtained from regional commercial sources.

#### 2.4 CONSTRUCTION SCHEDULE

Construction is anticipated to begin in 2021 but would depend on the timeline for completing environmental review and obtaining required authorizations and funding. Construction of the CER Alternative would be ongoing for approximately 3 years and would be staged to minimize or eliminate the potential for disruption in delivery of water to Central Valley Project long-term water contractors. Construction of the CE Alternative would be ongoing for more than 10 years and would require intermittent shutdown periods (up to 3 months at a time during the non-irrigation season [December to February]) of the FKC to accommodate construction.

Construction would begin with relocation of existing facilities adjacent to the FKC (e.g., utilities, wells) and mass-excavation associated with replacement check structures, siphons, and the realigned canal (CER

2.0 Project Alternatives March 27, 2020

Alternative only). Construction activities would not be continuous at any individual location throughout the entire construction period. It is expected that the maximum duration of construction for any one project element would be 7 months.

Approximate durations for construction of major facilities are expected as follows:

- Existing utility relocation and well abandonment: four months
- Deer Creek and White River check structures: seven months each (14 months total)
- Siphons: four siphons constructed concurrently over approximately three-month periods (19 months total for all 25 siphons)
- Realigned Canal: 16 months
- Canal raising: 16 months
- Canal raising and widening: 24-month total duration in three-month increments during the nonirrigation season

Construction would generally occur between 7 a.m. and 7 p.m. Monday through Friday. Occasional evening and weekend work could occur, as needed; however, work would be conducted to minimize disturbance to neighboring properties (e.g., lighting would be pointed away from residences) and would occur in coordination with Tulare County, Kern County, and the City of Porterville, as appropriate. Work crews would consist of up to nine construction teams with 15 to 30 people per team. Depending on project construction requirements, up to 150 workers could be onsite during peak construction periods.

2.0 Project Alternatives March 27, 2020

This page intentionally left blank.

3.0 Methods March 27, 2020

## 3.0 METHODS

The information provided in this assessment was obtained from a desktop-level review of biological resources and from biological field surveys conducted by Stantec biologists and Stantec's subconsultant H.T. Harvey & Associates. A discussion of special-status species and the approach to the desktop-level and field investigations is provided below.

### 3.1 DEFINITIONS

### 3.1.1 Special-Status Species

For the purpose of this assessment, special-status plant species include plants that are: (1) listed as threatened or endangered under the California Endangered Species Act (CESA) or the federal Endangered Species Act (ESA); (2) proposed for federal listing as threatened or endangered; (3) state or federal candidate species; (4) designated as rare by the California Department of Fish and Wildlife (CDFW); and (5) California Rare Plant Rank (CRPR) 1A, 1B, 2A 2B, or 4 species. Special-status animal species include species that are: (1) listed as threatened or endangered under the CESA or ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidate species; and (4) identified by the CDFW as species of special concern or fully protected species.

#### 3.1.2 Potential to Occur

The potential for special-status species to occur within the study area was assigned to one of four categories as described below. Special-status species with a potential to occur in the study area are evaluated in Section 6 of this assessment.

- **High:** The species has been recently (i.e., within the last 5 years) documented in the study area, and potential habitat for the species is present.
- **Moderate:** The Project is located within the range of the species, or there are nearby documented occurrences, and potential habitat for the species exists in the study area.
- **Low:** The Project is located within the range of the species, and low-quality habitat is present in the study area.
- **None:** The study area is located outside of the species range, or potential habitat to support the species is not present in the study area.

#### 3.2 LITERATURE AND DATABASE REVIEW

Special-status plant and animal species and sensitive habitats that may occur in the study area were determined, in part, by reviewing natural resource agency databases, relevant literature, and other relevant sources. The following information sources were reviewed:

3.0 Methods March 27, 2020

- USGS Lindsay, Porterville, Ducor, Sausalito School, Delano East, and McFarland California 7.5-minute topographic quadrangles;
- Aerial photographs of the study area and vicinity;
- U.S. Fish and Wildlife Service (USFWS) list of endangered and threatened species that may occur in the vicinity of the Project (USFWS 2019a) (Attachment A);
- The CDFW California Natural Diversity Database (CNDDB) plant and animal records for the Lindsay, Porterville, Ducor, Sausalito School, Delano East, and McFarland California and surrounding 7.5minute quadrangles (CDFW 2020) (Attachment B);
- The California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants (California Native Plant Society 2020) records for the *Lindsay, Porterville, Ducor, Sausalito School, Delano East*, and *McFarland California* and surrounding quadrangles (Attachment B);
- California Wildlife Habitat Relationships System (CDFW 2014); and
- Other pertinent databases and literature, including the online Inventory of Rare and Endangered
   Vascular Plants of California (California Native Plant Society 2019) and The Jepson manual: vascular
   plants of California, Second Edition (Baldwin et. al. 2012).

A preliminary list of special-status species that could occur or are known to occur in the study area and vicinity was developed based on background research. The list was further refined based on the biological field surveys.

## 3.3 FIELD VISITS AND BIOLOGICAL STUDIES CONDUCTED

On April 23, 2019, representatives from the Bureau of Reclamation (Reclamation), Friant Water Authority (FWA), USFWS, CDFW, and Stantec attended a tour of the study area to view the habitats present and discuss potential special-status species and other biological resources of concern.

On October 30, 2019, Reclamation, FWA, USFWS, and Stantec attended an additional tour of the study area to discuss federally listed species and compliance with Section 7 of the ESA.

From September 30 to October 3, 2019, Stantec biologists Brendan Cohen, Chariss Femino, Jacqueline Phipps, Yura Shimko, Cristian Singer, and Gabe Youngblood conducted biological field surveys of the study area including a detailed mapping of habitats. From December 10 to 11, 2019, Stantec biologists Chariss Femino and Gabe Youngblood conducted additional biological field surveys for private parcels that were not subject to prior surveys. Surveys were completed by walking meandering transects on both sides of the FKC, and all adjacent agricultural and other lands were viewed to the degree necessary to characterize habitat types present.

Stantec conducted a delineation of potential waters of the United States within the study area from September 30 to October 3, 2019 and from December 10 to 11, 2019 (Stantec 2019a). The waters of the United States delineation report is included as Attachment C.

3.0 Methods March 27, 2020

From November 8, 2019, to December 17, 2019, Stantec's subconsultant, H.T. Harvey & Associates, conducted San Joaquin kit fox (SKJF) (*Vulpes macrotis mutica*) surveys along each side of the FKC within the study area using ecological scent-detection dogs trained to recognize the specific scent of SJKF scat and alert their handler to the location of the scat (H.T. Harvey & Associates 2020).

From December 2, 2019, to December 9, 2019, Stantec deployed two arrays of remotely operated cameras enhanced with scent attractants (e.g., cans of cat food or tuna with small punctures to promote long-lasting scent dispersal) to detect the presence of SJKF in two locations within the study area: the first (northern) array included 10 cameras beginning adjacent to the Tulare County Mid-Valley Disposal site Teapot Dome at Avenue 128 south along the eastern embankment of the FKC from approximately 2.76 miles to about 0.5 mile south of Avenue 112. The second (southern) array included eight cameras beginning near the Kern County/Tulare County border and extending 2.5 miles south to the north end of Lake Woollomes. In both arrays, cameras were placed at 0.25- to 0.5-mile intervals facing east of and down the outboard embankment of the canal with scent attractants in view of the camera. Arrays were left in operation for seven nights of continuous monitoring, resulting in 126 camera-nights (Stantec 2019b).

From December 2, 2019, to December 9, 2019, Stantec conducted remote camera trap surveys in and near the Deer Creek portion of the study area to detect the presence of Buena Vista Lake shrew (*Sorex ornatus relictus*). Four close-focus automated Reconyx camera stations, baited with live and dried mealworms, were deployed per the methodology described in the *Conservation of Endangered Buena Vista Lake shrews (Sorex ornatus relictus) through Investigation of Taxonomic Status, Distribution, and Use of Non-Invasive Survey Methods (Cypher et al. 2017) for a total of 28 trap nights (Stantec 2019c).* 

From March 16, 2020 to March 19, 2020, Stantec botanists conducted botanical surveys for the early blooming special-status plant species that have a potential to occur within the study area. (Stantec 2020) Potentially occurring special-status plants that typically bloom early in the season (e.g., March and April) include recurved larkspur (*Delphinium recurvatum*), Hoover's eriastrum (*Eriastrum hooveri*), spiny-sepaled button-celery (*Eryngium spinosepalum*), Munz's tidy-tips (*Layia munzii*), and California alkali grass (*Puccinellia simplex*). Surveys were conducted by walking transects through all suitable habitat for these species.

4.0 Environmental Setting March 27, 2020

## 4.0 ENVIRONMENTAL SETTING

#### 4.1 SITE CONDITIONS AND LAND USE

### 4.1.1 Local Setting and Existing Land Use

The study area encompasses approximately 33 linear miles (2,696 acres for the CER Alternative and 2,317 acres for the CE Alternative) and includes all areas proposed for construction, staging, and borrow activities for both the CE Alternative and CER Alternative. The study area primarily consists of the FKC and adjacent Reclamation right-of-way. Land uses surrounding the immediate vicinity primarily consist of agriculture. The dominant crops include grapes, citrus, kiwis, almonds, and pistachios. There are isolated areas adjacent to the FKC that are zoned for light manufacturing, residential, and rural residential.

### 4.1.2 Physical Conditions

The FKC runs along the eastern edge of the southern Central Valley in nearly level terrain. Elevations in the study area range from approximately 400 to 422 feet above mean sea level.

Regionally, the study area has a Mediterranean climate characterized by hot, dry summers and moderate winters with average annual temperatures ranging from 31 to 98 degrees Fahrenheit (°F) (Western Regional Climate Center 2019). Historical data used to describe the climate were collected at the Delano station, approximately 4.5 miles west of the southern extent of the study area (Western Regional Climate Center 2019). Precipitation in the study area primarily occurs as rain, with rare snowfall. Average annual rainfall is 7.23 inches and primarily occurs from November to April.

Twenty-six soil map units occur in the study area and are described in the soil survey of Kern County, California, and the soil survey of Tulare County, California (Natural Resources Conservation Service 2019). The soil map units that occur in the study area are summarized in Table 2 below.

Table 2. Soil Map Units in the Study Area

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Akers-Akers, saline- Sodic, complex, 0 to 2 percent slopes Calcic Haploxerepts	101	Well drained	More than 80 inches	No, except depressions
Calgro-Calgro, saline- Sodic, complex, 0 to 2 percent slopes Typic Durixerepts	105	Moderately well drained	20 to 40 inches to duripan	No, except depressions
Centerville clay, 0 to 2 percent slopes Aridic Calcixererts	106	Well drained	48 to 60 inches to densic material	No, except depressions
Colpien loam, 0 to 2 percent slopes Calcic Pachic Haploxerolls	108	Moderately well drained	More than 80 inches	No
Dumps	112	N/A	N/A	N/A
Exeter loam, 0 to 2 percent slopes Typic Durixeralfs	114	Moderately well drained	20 to 40 inches to duripan	No, except depressions
Flamen loam, 0 to 2 percent slopes Calcic Pachic Haploxerolls	116	Moderately well drained	40 to 60 inches to duripan	No, except depressions
Hanford sandy loam, 0 to 2 percent slopes Typic Xerorthents	124	Well drained	More than 80 inches	
Nord fine sandy loam, 0 to 2 percent slopes Cumulic Haploxerolls	130	Well drained	Abrupt textural changes at around 38 and 50 inches	No, except flood plains, alluvial fans
Pits	131	N/A	N/A	No
Riverwash	134	N/A	N/A	Yes
San Joaquin loam, 0 to 2 percent slopes Typic Durixeralfs	135	Moderately well drained	About 15 inches to abrupt textural change; 20 to 40 inches to duripan	No

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils	
Tagus loam, 0 to 2 percent slopes Calcic Haploxerolls	137	Well drained	More than 80 inches	No	
Tujunga loamy sand, 0 to 2 percent slopes Typic Xeropsamments	138	Somewhat excessively drained	More than 80 inches	No, except flood plains, alluvial fans	
Yettem sandy loam, 0 to 2 percent slopes Entic Haploxerolls	143	Well drained	More than 80 inches	No, except flood plains, alluvial fans	
Water-perennial	145	N/A	N/A	N/A	
Tulare County, California	, Central Part (CA6	60)			
Exeter loam, 0 to 2 percent slopes Typic Durixeralfs	124	Well drained	20 to 40 inches to duripan	No, except depressions	
San Joaquin loam, 0 to 2 percent slopes Abruptic Durixeralfs	154	Moderately well drained	About 20 inches to abrupt textural change; 20 to 40 inches to duripan	No, except depressions	
San Joaquin loam, 2 to 9 percent slopes Abruptic Durixeralfs	155	Moderately well drained	About 20 inches to abrupt textural change; 20 to 40 inches to duripan	No, except depressions	
Wyman loam, 0 to 2 percent slopes Typic Haploxeralfs	172	Well drained	More than 80 inches	No	
Water	178	N/A	N/A	N/A	
Kern County, California, I	Kern County, California, Northwestern Part (CA666)				
Nord fine sandy loam, 0 to 2 percent slopes Cumulic Haploxerolls	130tw	Well drained	Abrupt textural changes at around 38 and 50 inches	No, except flood plains, alluvial fans	
Exeter sandy loam, 0 to 2 percent slopes Typic Durixeralfs	154	Well drained	20 to 40 inches to duripan	No, except depressions	
McFarland loam Typic Torriorthents	192	Well drained	More than 80 inches	No	

## 4.0 Environmental Setting March 27, 2020

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Wasco sandy loam Typic Torriorthents	243	Well drained	More than 80 inches	No
Water	257	N/A	N/A	N/A

Key: N/A = not applicable

## 4.2 BIOLOGICAL CONDITIONS

#### 4.2.1 Habitat Communities

Habitat types in the study area were classified based on descriptions provided in A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988), as well as the California Natural Community List (CDFW 2019a), which is adapted from the technical approach and vegetation alliance classification system described in A Manual of California Vegetation (Sawyer et al. 2009). The natural habitat communities present within the study area include non-native annual grassland, California buckwheat scrub, allscale saltbush scrub, Fremont cottonwood forest, mulefat thickets, red willow thickets, shining willow groves, smartweed-cocklebur patches, and valley oak woodland. Agricultural production processes in the form of managed plant crops constitute the majority of land management practices within the study area. Managed plant crops within the study area include irrigated row crops, vineyards, orchards, and herbaceous field crops (alfalfa). Portions of the study area under agricultural management were not active at the time of the vegetation mapping efforts and were mapped as fallow lands (unsown). Additional designations utilized for the vegetation mapping effort reflect the interface of the study area with differing adjacent land uses and the fact that the study area is actively managed in order to facilitate the transportation and delivery of large volumes of water. These additional designations include the following: urban (residential housing), ruderal (recently and/or regularly disturbed areas), barren (unvegetated or nearly unvegetated areas including levee roads), and open water. Habitat maps of the study area are provided as Figure 3. Descriptions of each habitat are provided below.

#### Non-Native Annual Grassland

Non-native annual grassland occurs throughout the study area, the majority of which occurs on the landside slopes of the FKC embankment. Non-native annual grassland is an herbaceous vegetation community primarily consisting of introduced annual plant species, predominantly grasses. Commonly observed plant species identified within the non-native annual grassland in the study area include slender oat (*Avena barbata*), foxtail chess (*Bromus madritensis*), ripgut grass (*Bromus diandrus*), Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), and cheeseweed (*Malva parviflora*). The foliar cover within this vegetation community ranges from approximately 15 to 35 percent, varying greatly with fluctuations in seasonal precipitation and temperatures and when microtopographic shifts and natural variations in plant species composition occur. A total of 230 acres of non-native annual grassland has been mapped within the study area.

4.0 Environmental Setting March 27, 2020

#### California Buckwheat Scrub

California buckwheat (*Eriogonum fasciculatum*) scrub occurs within the study area in limited and discrete portions of the landside slopes of the FKC embankment (Figures 3S, 3AC, 3AO, and 3AP. California buckwheat, a perennial woody native plant species, is the dominant plant species occurring within this vegetation community. The foliar cover within this vegetation community ranges from approximately 50 to 60 percent. The understory of this vegetation community is composed of non-native annual grassland. A total of nine acres of California buckwheat scrub has been mapped within the study area.

#### Allscale Saltbush Scrub

Allscale saltbush (*Atriplex polycarpa*) scrub occurs within the study area in limited and discrete portions of the landside slopes of the FKC embankment (Figure 3T). Allscale saltbush, a perennial woody native plant species, is the dominant plant species occurring within this vegetation community. The foliar cover within this vegetation community ranges from approximately 50 to 60 percent. The understory of this vegetation community is composed of non-native annual grassland. A total of 1.4 acres of allscale saltbush scrub has been mapped within the study area.

#### Fremont Cottonwood Forest

Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) forest occurs within the study area along the north and south banks of Deer Creek, located just west of the FKC, and north of Deer Creek, adjacent to a groundwater recharge basin east of and alongside the FKC (Figure 3X and 3AB). Fremont cottonwood, a perennial woody native plant species, is the dominant plant species occurring within this vegetation community. The cottonwood trees are large, mature trees measuring more than 60 feet tall. The understory of this vegetation community varies, and willow (*Salix* spp.) species commonly occur. The foliar cover within this vegetation community ranges from approximately 20 to 25 percent cover in the stand west of the FKC, and less than 10 percent cover in the stand east of the FKC. A total of 1.8 acres of Fremont cottonwood forest has been mapped within the study area.

#### **Mulefat Thickets**

Mulefat (*Baccharis salicifolia* ssp. *salicifolia*) thickets occur within the channel of Deer Creek in the northern portion of the study area (Figure 3AB). Mulefat, a perennial woody native plant species, is the dominant plant species occurring within this vegetation community. The sparse to very sparse understory of this vegetation community is largely composed of various annual and perennial herbaceous plant species. The foliar cover within this vegetation community ranges from approximately 5 to 10 percent, shrubs are generally well-spaced, and the canopy is discontinuous. A total of 1.5 acres of mulefat thicket has been mapped within the study area.

#### **Red Willow Thickets**

Red willow (*Salix laevigata*) thickets occur within the northern portion of the study area associated with Porter Slough, located just east of the FKC (Figure 3K). Red willow, a perennial woody native plant

4.0 Environmental Setting March 27, 2020

species, is the dominant plant species occurring within this vegetation community. The foliar cover within this vegetation community is approximately 20 percent. The understory of this vegetation type is variable; other willow (*Salix* spp.) species are commonly associated with this vegetation community. A total of 0.13 acre of red willow thickets has been mapped within the study area.

### **Shining Willow Groves**

Shining willow (*Salix lasiandra*) groves occur within a portion of the study area associated with the Tule River, which bisects the FKC in the northern portion of the study area (Figure 3M). Shining willow, a perennial woody native plant species, is the dominant plant species within this vegetation community. The understory of this vegetation type is variable, bur marigold (*Bidens laevis*), cattail (*Typha* sp.), and cocklebur (*Xanthium strumarium*) are common associate plant species. The foliar cover within this vegetation community ranges from approximately 25 to 30 percent. A total of 0.57 acre of shining willow groves has been mapped within the study area.

#### **Smartweed-Cocklebur Patches**

A single smartweed (*Persicaria* sp.)-cocklebur (*Xanthium strumarium*) patch occurs within a groundwater recharge basin along the east side of the FKC, located in the northern portion of the study area (Figures 3X and 3AB). Cocklebur, an annual native herbaceous plant species, is the dominant plant species within this vegetation community. There was no understory within this vegetation community at the time of the vegetation mapping efforts; the groundwater recharge basin was inundated during that time (October 1 to 3, 2019). The foliar cover within this vegetation type is approximately 50 percent. Foliar cover within this vegetation type varies greatly depending on seasonal fluctuations in precipitation and temperature, and the timing during which surveys are conducted as related to the annual growth cycle of this plant species. A total of 5 acres of smartweed-cocklebur patches has been mapped within the study area.

#### Valley Oak Woodland

Valley oak (*Quercus lobata*) woodland occurs as a single stand associated within Porter Slough, located in the northern portion of the study area just west of and adjacent to the FKC (Figure 3K). Valley oak, a perennial woody native plant species, is the dominant plant species within this vegetation community. The understory of this vegetation community consists of non-native annual grassland. The foliar cover within this vegetation community is approximately 35 percent. A total of 1 acre of valley oak woodland has been mapped within the study area.

#### Barren/Ruderal

Barren areas are areas in which vegetation is either absent or so infrequent as to reasonably apply that designation (less than three percent foliar cover). Barren areas are present on the dirt and paved roads and associated road shoulders. The ruderal habitat type was primarily used to designate those portions within the study area that have been recently disturbed or are regularly disturbed in the course of maintaining and operating the FKC system. Vegetation in these areas consists primarily of non-native

4.0 Environmental Setting March 27, 2020

annual forbs and grasses similar to those described in the annual non-native grasslands land cover type. A total of 830 acres of barren/ruderal land has been mapped within the study area.

#### Agriculture - Vineyard

Vineyards occur throughout the study area. The vineyards consist of grape (*Vitis vinifera*) and kiwi (*Actinidia deliciosa*) vines planted in rows and supported by wood and wire trellises. The vines are intertwined in the rows, and open areas are present between the rows. The understory of the vineyards is open, and the ground is generally barren. A total of 257 acres of vineyard has been mapped within the study area.

#### Agriculture - Orchard

Both evergreen and deciduous orchards occur throughout the study area and represent the most dominant type of agricultural acreage within the study area. Each orchard consists of a single plant species planted in rows, most commonly almond (*Prunus dulcis*), pistachio (*Pistacia vera*), and citrus (*Citrus* sp.). Some orchards within the study area have sparse herbaceous vegetation growing in the understory, while others are barren. A total of 455 acres of agriculture-orchard has been mapped within the study area.

#### Agriculture - Field Crop

Agriculture-field crop is a designation applied to herbaceous plant crops, generally planted on an annual basis and harvested within a single growing season. As with orchards, herbaceous field crops consist of a single plant species planted in rows. Herbaceous field crops are often managed over a multiple year process of crop rotation. As a result, plant crop composition can vary from year to year. The most commonly cultivated herbaceous field crop observed within the study area was alfalfa (*Medicago sativa*) at approximately 125 acres. A total of 188 acres of agriculture-field crop has been mapped within the study area.

#### Agriculture – Fallow

Agriculture – fallow is a designation applied to those areas within the study area not currently managed for active agricultural production processes (but were used for this purpose in the recent past), or areas within which annual agricultural production process have ceased for the current growing year. These areas are currently unvegetated or are vegetated with annual plant species capable of colonizing recently and regularly disturbed land. A total of 341 acres of agriculture-fallow land has been mapped within the study area.

#### Urban

The urban designation was used to map developed areas within the study area that are devoid or nearly devoid of vegetation, including the many bridges that cross over the FKC. A total of 61 acres of urban land has been mapped within the study area.

4.0 Environmental Setting March 27, 2020

#### Water

This designation was used for areas of standing or flowing water within the study area. Open water occurs in the FKC and associated water conveyance and storage structures such as human-made ponds and secondary irrigation canals. A total of 314 acres of water has been mapped within the study area.

## 4.2.2 Habitat Connectivity

Habitat corridors are segments of land that provide linkages between separated habitats while also providing cover. On a broader level, corridors also function as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and scarce populations can be replenished from other areas. Habitat corridors often consist of riparian areas along streams, rivers, or other natural features. Within the study area, Porter Slough, Tule River, Deer Creek, White River, and the FKC may provide dispersal and migration corridors for regionally occurring plant and animal species.

#### 4.2.3 Invasive Species

Invasive plants (i.e., noxious weeds) are undesirable, non-native plants that commonly invade disturbed sites. Most species have been introduced from Europe or Asia and are known to degrade native wildlife habitat and plant communities. When disturbance results in the creation of habitat openings or in the loss of intact native vegetation, invasive plants may colonize the site and spread, often out-competing native species. Once established, they are very difficult to eradicate and could pose a threat to native species.

All non-native plant species identified within the study area were reviewed to determine their status as invasive plants according to the ratings in the California Invasive Plant Inventory produced by California Invasive Plant Council (Cal-IPC) and updated in February of 2017 (Cal-IPC 2017). Cal-IPC categorizes non-native invasive plants into three categories of overall negative ecological impact in California: High, Moderate, and Limited. Two invasive species with a Cal-IPC rating of High were observed in the study area: giant reed (*Arundo donax*) and tamarisk (*Tamarix chinensis*).

#### 4.2.4 Rare Natural Communities and Aquatic Resources

In addition to inventorying reported occurrences of special-status species, the CNDDB serves to inventory locations of rare natural communities. Rare natural communities are those communities that are of highly limited distribution, and may or may not contain rare, threatened, or endangered species. The CNDDB ranks natural communities according to their rarity and endangerment in California. Habitats are considered "sensitive" if they are identified on the CDFW List of Vegetation Alliances and Associations as being highly imperiled or classified by CDFW in the CNDDB as natural communities of special concern – Ranks S1 to S3 (S1 being the rarest ranking). Four sensitive natural communities are present in the study area and include: valley oak woodland (S3); red willow thickets (S3), shining willow groves (S3), and Fremont cottonwood forest (S3).

4.0 Environmental Setting March 27, 2020

Other natural communities of concern include wetlands and other aquatic habitats. Aquatic habitats in the study area include intermittent stream (White River, Deer Creek, Porter Slough, and Tule River), pond, fresh emergent wetland, riparian wetland, seasonal wetland, irrigation canal, irrigation ditches, and groundwater recharge basins.

## 4.2.5 Special-Status Plant Species

Regionally occurring special-status plant species were identified based on a review of pertinent literature, the USFWS species list, CNDDB and CNPS database records, and the field survey results. CNNDB special-status plant species occurrences within 5 miles of the study area are detailed in Table 3 and Figure 4. The status of each special-status plant species was verified using the *State and Federally Listed Endangered, Threatened and Rare Plants of California* (CDFW 2019b) and the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2019c). For each species, habitat requirements were assessed and compared to the habitats in the study area and immediate vicinity to determine if potential habitat occurs in the study area. Based on the habitat assessment, the study area does not provide suitable habitat for any federal- or state-listed plants, but does provide suitable habitat for 10 other special-status plant species. These species are further discussed in Section 6.

Table 3. Review of Regionally Occurring Special-Status Plant Species

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	Habitat Requirements	Potential for Occurrence
Earlimart orache Atriplex cordulata var. erecticaulis	—/—/1B.2	Found in valley and foothill grasslands. Blooms: Aug–Sep Elevation: 235 to 330 feet	Low. The study area is within the known range of this species, and there is a reported CNDDB occurrence within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Lost Hills crownscale Atriplex coronata var. vallicola	—/—/1B.2	Found in chenopod scrub, valley and foothill grassland, and vernal pools. Prefers alkaline soils.  Blooms: Apr–Sep Elevation: 160–2,080 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	Habitat Requirements	Potential for Occurrence
Brittlescale Atriplex depressa	—/—/1B.2	Found in chenopod scrub, meadows, seeps, playas, and valley and foothill grasslands. Found in alkaline and clay soils.  Blooms: Apr–Oct Elevation: 1–1,050 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Lesser saltscale Atriplex minuscula	—/—/1B.1	Found in chenopod scrub, playas, and valley and foothill grasslands, as well as alkaline or sandy soils.  Blooms: May–Oct Elevation: 50–656 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Vernal pool smallscale Atriplex persistens	—/—/1B.2	Found in alkaline vernal pools.  Blooms: Jun–Oct  Elevation: 33–370 feet	None. The study area lacks suitable habitat. There are no vernal pools within the study area, and there are no reported CNDDB occurrences within 5 miles of the study area.
Subtle orache Atriplex subtilis	—/—/1B.2	Found in alkaline soils in valley and foothill grasslands.  Blooms: Jun–Oct  Elevation: 130–325 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Kaweah brodiaea Brodiaea insignis	—/E/1B.2	Found in openings in foothill woodland and in granitic or clay soils.  Blooms: Apr–Jun Elevation: 490–4,600 feet	None. The study area is outside of the ecological range of this species, and the study area lacks suitable habitat. This species has not been documented to occur on the floor of the San Joaquin Valley. It is known only from the Kaweah and Tule River drainages. There are no reported CNDDB occurrences within 5 miles of the study area.
Alkali mariposa- lily Calochortus striatus	—/—/1B.2	Found in chenopod scrub, chaparral, Mojavean desert scrub, and alkali meadows and seeps.  Blooms: Apr–Jun Elevation: 230–5,233 feet	None. The study area is within the known geographic range of this species, but the study area lacks suitable habitat. there are no reported CNDDB occurrences within 5 miles of the study area.

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	Habitat Requirements	Potential for Occurrence
California jewelflower Caulanthus californicus	E/E/1B.1	Found in flat, gentle slopes generally in non–alkaline grassland. Also found in open juniper woodland. Blooms: Feb–May Elevation: 200–328 feet	None. As of 1996, all of the natural occurrences of this species have been extirpated within the San Joaquin Valley. There are historic CNDDB occurrences within 5 miles of the study area dating from the 1930s.
Springville clarkia Clarkia springvillensis	T/E/1B.2	Found on granitic substrates in chaparral, cismontane woodlands, and valley and foothill grasslands.  Blooms: Mar–Jul  Elevation: 800–4,000 feet	None. The study area is outside of the ecological range of this species, and the study area lacks suitable habitat. This species has never been documented to occur on the floor of the San Joaquin Valley. There is one CNDDB reported occurrence within 5 miles of the study area in the foothills east of the northern portion of the study area.
Recurved larkspur Delphinium recurvatum	—/—/1B.2	Found in chenopod scrub, valley and foothill grassland, and cismontane woodland. Alkaline soils.  Blooms: Mar–Jun Elevation:10–2,600 feet	Low. The study area is within the known range of this species, and there is a reported CNDDB occurrence within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality. Species was not observed during the March 2020 botanical survey.
Calico monkeyflower Diplacus pictus	—/—/1B.2	Found in broadleaved upland forests and cismontane woodlands. Often found in granitic soils and disturbed areas.  Blooms: Mar–May  Elevation: 330–4,700 feet	None. The study area lacks suitable habitat. This species occurs on granitic substrates at higher elevations. There are two reported CNDDB occurrences within 5 miles of the study area.
Kern mallow Eremalche parryi ssp. Kernensis	E/—/1B.2	Found in southern San Joaquin Valley and adjacent areas growing on eroded hillsides and alkali flats. Typically found in these habitats growing under and around saltbush (Atriplex spinifera or A. polycarpa) or desert tea (Ephedra californica) where shrub cover is less than 25 percent (USFWS 2013).  Blooms: Mar–May Elevation: 230–4,230 feet	None. The study area is within the known range of this species. However, based on the Sept. 30–Oct. 3 field surveys, no suitable habitat is present within the study area. In addition, there are no reported CNDDB occurrences within 5 miles of the study area.

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	Habitat Requirements	Potential for Occurrence
Hoover's eriastrum <i>Eriastrum hooveri</i>	—/—/4.2	Found in chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland.  Blooms: Mar–Jul  Elevation: 165 to 3,000 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality. Species was not observed during the March 2020 botanical survey.
Spiny-sepaled button-celery <i>Eryngium</i> <i>spinosepalum</i>	—/—/1B.2	Found in vernal pools, swales, and roadside ditches in valley and foothill grasslands.  Blooms: Apr–Jun  Elevation: 260–3,200 feet	Low. Suitable habitat occurs in the study area in the form of roadside ditches. However, the ditches have a high cover of upland species and there is a low potential for occurrence. There is one reported CNDDB occurrences within 5 miles of the study area. Species was not observed during the March 2020 botanical survey.
Striped adobe-lily Fritillaria striata	—/T/1B.1	Found in cismontane woodland and valley and foothill grasslands. Usually found on clay soils.  Blooms: Feb–Apr Elevation:440–4,800 feet	None. The study area occurs outside of the contemporarily recognized ecological range of this species, and the study area lacks suitable habitat; there are no adobe clay soils within the study area. Although there are two historic collections of this plant species from the San Joaquin Valley floor dating from the 1920s, these occurrences have been extirpated via agricultural land conversion. There are no reported CNDDB occurrences within 5 miles of the study area.
Coulter's goldfields Lasthenia glabrata ssp. Coulteri	—/—/1B.1	Found in coastal salt marshes and swamps, playas, and vernal pools.  Blooms: Feb–Jun  Elevation: 1–4,000 feet	None. The study area does not support habitat typically associated with this species. The study area does not contain vernal pools, salt marshes, swamps, or playas.

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	Habitat Requirements	Potential for Occurrence
Munz's tidy-tips Layia munzii	—/—/1B.2	Found in chenopod scrub and valley and foothill grasslands. Usually found on alkaline clay soils. Blooms: Mar–Apr Elevation:490–2,300 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality. Species was not observed during the March 2020 botanical survey.
Madera leptosiphon Leptosiphon serrulatus	—/—/1B.2	Found in cismontane woodlands and lower montane coniferous forest.  Blooms: April–May  Elevation: 980–4,250 feet	None. The study area lacks suitable habitat for this species. There are no reported CNDDB occurrences within 5 miles of the study area. Geographic locations of historical collections on the San Joaquin Valley floor are dubious.
San Joaquin woollythreads <i>Monolopia</i> congdonii	E/—/1B.2	Found in valley and foothill grassland and chenopod scrub. Sandy soils.  Blooms: Feb–May Elevation: 200–2,600 feet	None. The study area is not within the current known range of this species. USFWS considers the species extirpated from Tulare County, and the extant populations in Kern County are over 20 miles south of the study area (USFWS 2010). There are reported CNDDB occurrences within 5 miles of the study area. However, those records are considered extirpated.
Shining navarretia Navarretia nigelliformis ssp. Radians	—/—/1B.2	Found in cismontane woodlands, vernal pools, and valley and foothill grasslands. Sometimes found in clay soils.  Blooms: Mar–Jul Elevation: 210–3,280 feet	None. The study area lacks suitable habitat for this species. There are no reported CNDDB occurrences within 5 miles of the study area. An analysis of all known collections in the Consortium of California Herbaria database indicate that this species does not occur on the floor of the San Joaquin Valley (Calflora 2019).

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	Habitat Requirements	Potential for Occurrence
Bakersfield cactus <i>Opuntia basilaris</i> var. <i>treleasei</i>	E/E/1B.1	Found in chenopod scrub, cismontane woodland, and valley and foothill grasslands. Found in sandy or gravelly soils.  Blooms: Apr–May  Elevation: 390–4,760 feet	None. The study area is outside of the recognized range of this species. There are no reported CNDDB occurrences within 5 miles of the study area. The closest CNDDB reported occurrences are greater than 20 air miles south of the southernmost portion of the study area. In addition, a survey was conducted in October 2019 with negative results.
San Joaquin adobe sunburst Pseudobahia peirsonii	T/E/1B.1	Found in cismontane woodland and valley and foothill grasslands. Found in adobe clay soils. Blooms: Feb–Apr Elevation: 295–2,625 feet	None. The study area is within the known range of this species, and there are reported CNDDB occurrences within 5 miles of the study area. However, there is no suitable habitat (i.e., adobe clay soils) within the study area.
California alkali grass Puccinellia simplex	—/—/1B.2	Found in chenopod scrub, meadows and seeps, vernal pools, and valley and foothill grassland. Also found in alkaline soils, vernally mesic soils, sinks, flats, and lake margins.  Blooms: Mar–May Elevation: 7–3,050 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality. Species was not observed during the March 2020 botanical survey.
Chaparral ragwort Senecio aphanactis	—/—/2B.2	Found in chaparral, cismontane woodlands, and coastal scrub. Sometimes found in alkaline soils.  Blooms: Jan–May Elevation: 50–2,625 feet	None. The study area is outside of the recognized range of this species, and the study area lacks suitable habitat. There are no reported CNDDB occurrences within 5 miles of the study area.
Keck's checkerbloom Sidalcea keckii	E/—/1B.1	Found in cismontane woodland, valley and foothill grassland, vernal pools. Serpentine and clay soils.  Blooms: Apr—May  Elevation: 250–2,100 feet	None. The study area is outside of the recognized range of this species, and the study area lacks suitable habitat. There are no reported CNDDB occurrences within 5 miles of the study area.

<sup>&</sup>lt;sup>1</sup> <u>Federal and State Status Codes</u>: E = Endangered, T = Threatened; <u>CRPR Codes</u>: List 1B – Plants rare, threatened, or endangered in California and elsewhere. List 2B – Rare or endangered in California, common elsewhere; List 4 – Limited distribution in California.

Extensions: x.1 – Seriously endangered in California, x.2 – Fairly endangered in California.

4.0 Environmental Setting March 27, 2020

### 4.2.6 Special-Status Animal Species

Regionally occurring special-status animal species were identified based on a review of pertinent literature, the USFWS species list, CNDDB database records, a query of the California Wildlife Habitats Relationship system, and the field survey results. CNNDB special-status animal species occurrences within five miles of the study area are illustrated in Figure 4. The status for each special-status animal species was verified using the *Special Animals List* (CDFW 2019d) and the *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2019e). For each species, habitat requirements were assessed and compared to the habitats in the study area and immediate vicinity to determine the species' potential to occur in or near the study area. Based on the habitat assessment, 18 special-status animal species have the potential to occur. These special-status animal species are further discussed in Section 6. For the purposes of this review, all regionally occurring wildlife species listed under the ESA or CESA or designated by CDFW as fully protected are included in Table 4, regardless of whether the study area provides potential habitat.

Table 4. Review of Regionally Occurring Special-Status Animal Species

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence
Invertebrates			
Crotch bumble bee Bombus crotchii	-/CE	Endemic to the California Central Valley. Found in open grassland and scrub habitats. Utilizes abandoned rodent burrows and cavities for nesting and overwintering.	None. The study area is within the historic range of the species. (CDFW 2019f). There is one CNDDB-reported occurrence within five miles of the study area from 1963. However, the annual grassland habitat within the study area is highly fragmented, does not contain abundant wildflowers, and is immediately surrounded by agriculture. Due to the use of harmful agricultural pesticides and competitor non-native bees for agricultural pollination, the crotch bumble bee is not likely to be present in the study area.
Vernal pool fairy shrimp Branchinecta lynchi	T/ <b>–</b>	Grass or mud-bottomed swales, earth slump or basalt-flow depression pools in grasslands. Claypan and duripan in alluvial fans and terraces. Winds transport cysts during dry season potentially spreading the species to nearby areas.	<b>None.</b> No suitable vernal pool habitat is present within the study area.
Valley elderberry longhorn beetle Desmocerus californicus dimorphus	T/-	Elderberry shrubs having stems with a basal diameter equal to or greater than 1 inch. Typically associated with riparian habitat.	<b>None.</b> The study area is outside the species' known range (USFWS 2019b).

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence	
Fish				
Kern brook lamprey Entosphenus hubbsi	-/SSC	Silty backwaters of large rivers. In summer, found in shallow pools along stream edges with minimal flow. Needs gravel-bottomed areas for spawning and muddy-bottomed areas where ammocoetes (larval stage) can burrow and feed. Has been documented in the FKC.	High. Species was first discovered in siphons of the FKC. Non-typical habitat is present within the FKC. However, given the general absence of spawning habitat, species is not likely to reproduce in the FKC. There is one CNDDB occurrence recorded in 1972 located within the FKC.	
Delta smelt Hypomesus transpacificus	T/E	Inhabits the Sacramento-San Joaquin Delta estuary in open, shallow, low-salinity (<10 %) waters. Spawns in middle and upper reaches of Delta from late- winter to spring.	<b>None.</b> The study area is outside of the species' known range.	
San Joaquin roach <i>Lavinia</i> <i>symmetricus</i>	—/SSC	Found in a variety of streams; well adapted to small, intermittent streams.	Low. Potential habitat is present in the streams in the study area. The species is known from the upper portions of the Kings, Kaweah, and Tule River watersheds and is typically limited to foothill and higher elevations, though occasionally can be found lower. No CNDDB occurrences are recorded within 15 miles of the study area.	
Amphibians				
Foothill yellow- legged frog Rana boylii	—/CT, SSC	Requires perennial, partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg laying.	<b>None.</b> No perennial streams are present in the study area.	
California red- legged frog Rana draytonii	T/SSC	Requires perennial or near- perennial aquatic habitats, especially for breeding; streams, freshwater pools and ponds over 1-foot deep with overhanging vegetation.	None. The study area is outside of the species' known range.	

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence	
Western spadefoot Spea hammondii	—/SSC	Requires shallow, temporary pools or streams during the breeding season and adjacent upland habitat (primarily in grasslands) for burrowing during the non–breeding season.	High. Potential breeding habitat may be present in small pools and streams throughout the study area. Flood irrigation of adjacent croplands and detention/recharge basins may also provide suitable habitat for the species. There are two CNDDB-reported occurrences located adjacent to the FKC (reported in 2005).	
Reptiles				
Bakersfield legless lizard Anniella grinnelli	—/SSC	Occurs in sparsely vegetated areas of dunes, chaparral, pine—oak woodlands, desert scrub, sandy washes, and stream terraces.	None. The study area is not within the current known range of the species. No CNDDB occurrences have been documented within 5 miles of the study area.	
Northern California legless lizard Anniella pulchra	—/ssc	Occurs in sparsely vegetated areas of dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces.	Low. Suitable habitat may be present within or adjacent to the four stream crossings. No CNDDB occurrences have been documented within five miles of the study area.	
California glossy snake Arizona occidentalis	—/ssc	Inhabits open areas within arid scrub, rocky washes, grasslands, and chaparral habitats.	Low. Marginally suitable habitat is present within the study area. Suitable habitat within the project is limited to marginal arid scrub habitat and four stream crossings. These habitats are isolated with ruderal influences. The nearest reported CNDDB occurrence is located nine miles south of the study area.	
Western pond turtle <i>Emys marmorata</i>	—/SSC	Slow water aquatic habitat with available basking sites. Hatchlings require shallow water with dense submergent or short emergent vegetation. Requires an upland oviposition site near the aquatic site.	None. Streams within the study area are typically seasonal. Detention and recharge basins within the study area are subject to frequent disturbance, variable flows, and are not likely suitable habitats. Little suitable habitat is present within the study area. The nearest CNDDB occurrence is recorded in 1988 about 15 miles east of the FKC.	

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence
Blunt-nosed leopard lizard <i>Gambelia sila</i>	E/E	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief.	None. Habitats within the study area are generally not suitable for the blunt-nosed leopard lizard. The small area of potentially suitable habitat within the study area is subject to ruderal influences and is generally of poor quality or fragmented. It is unlikely to support this animal within the relatively narrow suitable habitat areas, particularly without connectivity to larger, more contiguous blocks of suitable habitat. The majority of the study area is located to the northeast of the species current known range, with approximately nine miles of the southern portion extending into the range. There is one CNDDB occurrence recorded in 1946 approximately nine miles southeast of the FKC. All other CNDDB occurrences are recorded either west of State Route 99 or east of State Route 65.
San Joaquin coachwhip <i>Masticopus</i> <i>flagellum ruddocki</i>	—/SSC	Chaparral, cismontane woodland, coastal bluff scrub, coastal scrub, desert wash, pinon and juniper woodlands, riparian scrub, riparian woodland, valley and foothill grassland; Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	Low. Marginally suitable habitat is present within the study area. The species typically inhabits open arid lands. While suitable habitat types exist within the study area, these are limited in size and quality, and are isolated from adjacent suitable habitat areas. Two CNDDB occurrences were recorded in 1992 about nine miles west of the FKC.
Coast horned lizard Phrynosoma blainvillii	—/SSC	Chaparral, grasslands, woodland clearings, and riparian areas. Prefers open areas with sandy soil and low growing vegetation.	Low. Little suitable habitat is present within the study area. Arid scrub and other suitable habitats are limited in size, lack connectivity with other suitable habitats, and are subject to ruderal influences. No CNDDB occurrences have been documented within five miles of the study area.
Giant garter snake Thamnophis gigas	Т/Т	Freshwater marshes and low gradient streams with emergent vegetation; adapted to drainage canals and irrigation ditches with mud substrate. Requires upland habitat with small mammal burrows or crevices immediately adjacent to (within 200 feet) aquatic habitat.	None. The study area is not within the current known range of the species.

Common Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence	
Birds				
Tricolored blackbird Agelaius tricolor	—/CE, SSC	Breeds near fresh water in dense emergent vegetation. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	<b>None.</b> Suitable dense emergent vegetation is absent from the study area and surrounding vicinity. This species may be observed as a migrant.	
Golden eagle Aquila chrysaetos	—/FP	Breeds and winters in rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Typically nests in large trees in open areas and cliffs of all heights.	Low. The study area is within the year-round range of the species. However, no golden eagles or potential eagle-size nests have been observed during any of the field surveys.	
Burrowing owl Athene cunicularia	—/SSC	Grasslands and ruderal habitats. Uses mammal burrows or other suitable underground cavities.	Moderate. Small mammal burrows present along the canal banks provide potential nesting habitat for the species. The species is known to use canal banks and other ruderal/impacted habitats as nesting and foraging grounds. The nearest CNDDB occurrence is 5.5 miles west of canal and 1.9 miles southwest of the city of Delano (reported in 1982) more recent occurrences documented in the Allensworth Ecological Reserve approximately 7.5 miles west of the study area.	
Swainson's hawk Buteo swainsoni	—/T	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah; forages in adjacent livestock pasture, grassland, or grain.	High. Agricultural land with tree crops may provide nesting habitat. Adjacent areas may provide suitable foraging and nesting habitats. Species may also be seen as a migrant. One CNDDB record (reported in 2017) was recorded near the canal, west of Porterville.	
Northern harrier Circus cyaneus	—/SSC	Breeds and forages in a wide variety of open habitats. Nests on the ground in and near wet habitats such as freshwater marsh, wet meadows, weedy borders of lakes, rivers and streams, grasslands, lightly grazed pastures, and some croplands (e.g., alfalfa, tomatoes, melons).	Moderate. Wetlands, grasslands, and cropland habitat present within and adjacent to the study area may provide potential nesting and foraging habitat for the species.	

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence
Yellow-billed cuckoo Coccyzus americanus	T/E	Breeds along forest edges, grassland with scattered trees, bushes, shrubs, and thickets.	None. The study area is not within the current known range of the species.
White-tailed kite Elanus leucurus	—/FP	Nests in tall shrubs and trees, forages in grasslands, agricultural fields and marshes.	Moderate. Trees and annual grassland habitat present in the study area provide potential nesting and foraging habitat for the species. Adjacent flood irrigated crops, groundwater recharge basins, and fallow agricultural fields may provide suitable foraging habitat.
California condor Gymnogyps californianus	E/E, FP	Open savannah, grasslands with semi-arid, rugged mountain ranges containing cliffs. Forages between 985 feet and 8,860 feet. Foraging is typically preferred along major ridgelines that proceed from one mountain top to another Breeding occurs from 2,000 to 6500 feet on ledges or cavities of cliffs.	None. Canal and surrounding area may provide low quality foraging habitat from carrion or dead cattle. However, the species is not typically observed over the valley floor, particularly in areas of intense agricultural such as those found in the immediate vicinity of the study area. Canal located 28 miles southwest from condor sanctuary and 15.5 miles from typical minimum elevational requirements. Nearest CNDDB reported occurrence is located 6.7 miles from canal and was recorded in 1976.
Bald eagle Haliaeetus Ieucocephalus	—/E, FP	Breeds and winters in riparian woodland with large trees, often old growth or open canopy. Typically nests near large bodies of permanent water or perennially flowing rivers with abundant fish.	None. The study area is within the wintering range of the species (CDFW 2014). Riparian habitat present is sparse and limited in nature.
Yellow-breasted chat Icteria virens	—/SSC	Breeds in riparian habitats having dense understory vegetation, such as willow and blackberry.	None. Riparian habitat within the study area lacks well-developed dense understory and is subject to ruderal influences from adjacent agricultural and infrastructure land uses.
Yellow warbler Setophaga petechia	—/SSC	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods with a dense brush understory.	None. Riparian habitats within the study area are limited to scattered cottonwood–willow riparian along stream banks. These are limited in size and quality, with typically ruderal understories and poorly developed canopies.

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State)	Habitat Requirements	Potential for Occurrence	
Mammals				
Pallid bat Antrozous pallidus	—/ssc	Forages over many habitats; roosts in buildings, large oaks or redwoods, rocky outcrops and rocky crevices in mines and caves. The species roosts in the open during night but prefers crevices or buildings during daytime and hibernation periods. Hibernation sites are typically near day and night roosting locations.	Moderate. Trees, annual grassland, and large culverts that pass under the FKC within the study area may provide potential roosting and foraging habitat for the species. Bridges and other project related infrastructure may support roosting sites. A single CNDDB occurrence was recorded in 1946 about 11 miles east of the FKC.	
Townsend's big- eared bat Corynorhinus townsendii	—/SSC	Hibernation roosts are typically in abandoned mines or caves that have low and stable temperature. While roosting, large open areas are preferred over crevices and cracks.	FKC may provide roosting habitat. Two CNDDB occurrences are recorded in 1988	
Tipton kangaroo rat Dipodomys nitratoides	E/E	Inhabits annual grasslands on the western side of the San Joaquin Valley; marginal habitat in alkali scrub. Digs burrows in elevated soil mounds at bases of shrubs.	None. Habitat within the study area is not typically associated with the species. Alkali playas and well-developed salt scrub habitats within the study area are limited in size and quality, and lack connectivity with larger parcels of suitable valley salt-sink habitats. The nearest CNDDB occurrences were recorded in 1943 approximately 12 miles northwest of Porterville and in 1985 within the city limits of Earlimart, adjacent to State Route 99. All other CNDDB occurrences are recorded west of State Route 99.	
Western mastiff bat Eumops perotis californicus	—/SSC	Open, arid habitats, woodlands, grasslands, chaparral, desert scrub. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	<b>Moderate.</b> Suitable roosting habitat may be present within bridges and other project-related infrastructure.	
Buena Vista Lake shrew Sorex ornatus relictus	E/SSC	Typically found close to water and prefers moist soils. Riparian and wetland vegetation with leaf litter and dense herbaceous cover (USFWS 2011a).	Low. Suitable habitat may be present around the mulefat thickets and other wet areas north of Deer Creek.	

Common Name Scientific Name	Listing Status¹ (Fed/State) Habitat Requirements		Potential for Occurrence
American badger Taxidea taxus	—/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Several hundred undisturbed acres are required for home range.	Low. The study area does not provide adequate undisturbed land as is required by this species. The annual grassland present is a limited corridor and is surrounding by intensively disturbed agricultural lands. There is one CNDDB occurrence reported within five miles of the study area from 1986.
San Joaquin kit fox Vulpes macrotis mutica	E/T	Inhabits dens with openings ranging from 4 to 12 inches in diameter within grassland and scrubland habitats. May use several dens, especially during the summer months. Also utilizes atypical dens such as culverts, pipes, and holes under concrete slabs. Agricultural lands such as orchards, vineyards, and irrigated pastures are also used for foraging.	Low. Burrows (4–12 inches in diameter) and other features (e.g., pipes, culverts) on the FKC embankments provide potential denning habitat. The study area provides suitable habitat, and there are CNDDB reported occurrences within 10 miles of the study area. Stantec has performed extensive surveys and camera monitoring for San Joaquin kit fox, all with negative results (Section 7.3.10, Survey Results).

<sup>&</sup>lt;sup>1</sup>Federal and State Status Codes: E = Endangered; T = Threatened; CT= Candidate Threatened; CE= Candidate Endangered; FP = Fully Protected; SSC= Species of Special Concern.

4.0 Environmental Setting March 27, 2020

This page intentionally left blank.

5.0 Results: Discussion of Biological Resources

March 27, 2020

## 5.0 RESULTS: DISCUSSION OF BIOLOGICAL RESOURCES

## 5.1 SENSITIVE NATURAL COMMUNITIES AND AQUATIC RESOURCES

## **5.1.1 Sensitive Natural Communities**

Four sensitive natural communities are present within the study area. They include valley oak woodland, red willow thickets, shining willow groves, and Fremont cottonwood forest. These habitat types are described in Section 5.2.1.

## 5.1.2 Aquatic Resources Results

Based on the results of the 2019 delineation of potential waters of the United States (Stantec 2019a), aquatic resources that are present in the study area include groundwater recharge basins (20.5 acres), intermittent streams (2 acres, 2,294 linear feet), irrigation canals (other than the FKC) (4.7 acres, 12,229 linear feet), non-vegetated ditches (0.6 acre, 4,816 linear feet), ponds (6 acres), riparian/fresh emergent wetland complexes (0.01 acre), riparian wetland (1.9 acres), and seasonal wetland (0.4 acre). None of these aquatic resources are anticipated to qualify as waters of the United States because they are not tributaries to a Traditional Navigable Water and do not appear to have an interstate or foreign commerce connection; or they are human-made features constructed in uplands (Attachment C, Delineation Report). However, this determination is considered preliminary until the U.S. Army Corps of Engineers (USACE) provides a written determination of its jurisdiction.

Although not included in the 2019 delineation report, the FKC is the most prominent aquatic feature within the study area and occupies a total of approximately 298 acres (33 linear miles) of the study area. Two intermittent streams that were not included in the 2019 delineation report, but that occur in the study area are Porter Slough (0.9 acre, 1,115 linear feet) and Tule River (4.7 acres, 1,081 linear feet). Porter Slough supports adjacent riparian wetlands (0.3 acre) and Tule River supports adjacent riparian wetlands (2 acres) and an adjacent fresh emergent wetland (0.1 acre).

#### Friant-Kern Canal

The FKC, constructed by Reclamation between 1949 and 1951, is owned by Reclamation and is operated and maintained by the FWA. The FKC supplies San Joaquin River water stored at Millerton Lake to more than 30 irrigation districts and cities, and to 15,000 family farms. Within the study area, the FKC is concrete lined and approximately 65 feet wide, and there is no vegetation present within the canal. The FKC is known to support game fish such as crappie (*Pomoxis* sp.) and catfish (Siluriformes), as well as other fish species.

## Fresh Emergent Wetland

One fresh emergent wetland occurs in Tule River downstream from where water is released from the FKC. The aquatic resource is situated below the ordinary high water mark (OHWM) extending from the

5.0 Results: Discussion of Biological Resources March 27, 2020

bank to near the middle of the channel on river right. Dominant vegetation is common tule (*Schoenoplectus acutus*).

## **Groundwater Recharge Basins**

Groundwater recharge basins occur as depressions or diked areas used to recharge groundwater. They are generally larger than ponds and are seasonally or only occasionally inundated. They may support hydrophytic vegetation, non-hydrophytic vegetation, or be barren. Groundwater recharge basins were delineated based on the presence of an OHWM indicated by presence of biotic crust, changes in vegetation, changes in sediment texture, and breaks in slope.

#### **Isolated Intermittent Streams**

Four intermittent streams flow westerly through the study area: Porter Slough, Tule River, Deer Creek, and White River. They are characterized as bed and bank features with an OHWM, which predominately occur along fortified/channelized banks. Sand is the dominant substrate in the active low flow channel, while silt dominates the floodplain. The low flow channels are barren or sparsely vegetated by opportunistic herbaceous species including cocklebur, horseweed (*Erigeron canadensis*), Johnson grass (*Sorghum halepense*), and common sunflower (*Helianthus annuus*). The floodplains support moderate to dense non-hydrophytic vegetation including Harding grass (*Phalaris aquatica*), wall barley (*Hordeum murinum*), and short podded mustard (*Hirschfeldia incana*), or they support riparian wetlands (described below).

#### Non-Vegetated Ditches and Irrigation Canals

Several non-vegetated ditches and irrigation canals other than the FKC occur in the study area. Non-vegetated ditches and irrigation canals are used to deliver irrigation water to agricultural lands. They range from 2 to 71 feet wide, seasonally carry flow, are generally unlined, and may support vegetation along their edges. Some of the irrigation canals receive deliveries from the FKC while others pass under the FKC in siphons.

#### **Ponds**

Ponds occur in human-made depressions scattered throughout the study area. Ponds may have persistent surface water or dry out seasonally. Some ponds support hydrophytic vegetation around the edge or throughout the pond. Many of the ponds are associated with irrigation of adjacent fields, orchards, or vineyards. Other ponds are associated with deep excavations for siphons under the FKC to convey flood waters under the canal or to contain leaks from the canal. No outflow channels were observed from any of the ponds.

#### **Riparian Wetlands**

The intermittent streams in the study area support riparian wetlands along their banks and at some higher elevations within the Tule River channel. Dominant species include bur marigold, rice cutgrass (*Leersia oryzoides*), willow weed (*Persicaria lapathifolia*), jungle-rice (*Echinochloa colona*), white-stem hedge-

5.0 Results: Discussion of Biological Resources March 27, 2020

nettle (*Stachys albens*), stinging nettle (*Urtica dioica*), willows, and Fremont cottonwood. One riparian/fresh emergent wetland complex was mapped in Deer Creek. Dominant vegetation included broad-leaved cattail (*Typha latifolia*) and willows.

#### **Seasonal Wetland**

One seasonal wetland was mapped in a depression adjacent to the FKC, which may have been formed incidental to the construction of the canal. Dominant plant species include common spikerush (*Eleocharis macrostachya*), cocklebur, and curly dock (*Rumex crispus*). The feature appears to collect water from a series of roadside ditches, and water is either pumped into the FKC or passes under the canal in a siphon to a pond with no defined outflow channel.

## 5.2 SPECIAL-STATUS PLANT SPECIES

As discussed in Section 4, the study area provides suitable habitat for 10 special-status plant species that have a potential to occur in the study area. These species include the following:

- Earlimart orache (Atriplex cordulata var. erecticaulis), CRPR 1B.2;
- Lost Hills crownscale (Atriplex coronata var. vallicola), CRPR 1B.2;
- Brittlescale (Atriplex depressa), CRPR 1B.2;
- Lesser saltscale (Atriplex minuscula), CRPR 1B.1;
- Subtle orache (Atriplex subtilis), CRPR 1B.2;
- Recurved larkspur (*Delphinium recurvatum*), CRPR 1B.2;
- Hoover's eriastrum (*Eriastrum hooveri*), CRPR 4.2;
- Spiny-sepaled button-celery (*Eryngium spinosepalum*), CRPR 1B.2;
- Munz's tidy-tips (Layia munzii), CRPR 1B.2; and
- California alkali grass (*Puccinellia simplex*), CRPR 1B.2.

## 5.2.1 Special-Status Plant Species Results

#### **Earlimart Orache**

Specimens of Earlimart orache were collected multiple times between the 1920s and 1970s. However, each of these earlier collections was incorrectly labelled as a previously described, closely related plant species. Further field work as well as additional collections made in the 1980s and 1990s became a catalyst for a re-examination of preserved plant specimens housed at various herbaria. As a result of that analysis and an examination of newly collected plant specimens, it was determined that the description of a distinct and heretofore undescribed plant taxon was warranted at species rank. The outcome of those efforts resulted in the description of Earlimart orache, first published in 1997 (Stutz et. al. 1997: 89).

Earlimart orache is an annual, erect, herbaceous plant species, generally 10 to 50 centimeters tall, with one to many stems emerging from the base. The ascending to erect, abundantly branched stems are gray-scaly with soft wooly tips. The leaf blades are relatively small (6 to 20 millimeters), ovate, and gray-scaly. Earlimart orache is distinguished from related plant taxa that it closely resembles based on characteristic leaf base shapes and the size and shape attributes of the fruit. As a result, positive determinations regarding the identification of this plant species should be made well within the overall

5.0 Results: Discussion of Biological Resources March 27, 2020

bloom period of April through October, when mature fruit are available for examination under magnification. Stutz et al. report that most flowering of Earlimart orache occurs between August and September (Stutz et al. 1997: 89).

Earlimart orache is found in valley and foothill grassland habitat at elevations between approximately 235 to 330 feet above mean sea level. It is known from approximately 20 extant occurrences in Kern, Kings, and Tulare counties. There is one CNDDB occurrence within five miles of the study area. The study area is within the known range of this plant species, and the grassland habitat throughout the study area provides potential habitat for this plant species. This habitat is isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this plant species to occur.

#### Lost Hills Crownscale

Lost Hills crownscale was first described and published in 1938 (Hoover 1938) and is known from approximately 100 extant occurrences in Fresno, Kings, Kern, Merced, San Benito, San Luis Obispo, and Tulare counties.

Lost Hills crownscale is an annual, erect, herbaceous plant species, generally 10 to 30 centimeters tall, with one to few stems emerging from the base. The decumbent to erect, stiff, generally gray-scaly branches become glabrous and straw-colored with age. The leaf blades are relatively small (8 to 20 millimeters) and elliptic to ovate shaped. Lost Hills crownscale is distinguished from related plant taxa that it closely resembles based on characteristic leaf margin patterns and size and shape attributes of the fruit. As a result, positive determinations regarding the identification of this plant species should be made well within the overall bloom period of April through August, when mature fruit are available for examination under magnification.

Lost Hills crownscale is found in chenopod scrub, valley and foothill grassland, drying ponds, and vernal pools at elevations between approximately 160 and 2,080 feet above mean sea level. The study area is within the known range of this plant species, but there are no CNDDB occurrences within five miles of the study area. The grassland habitat throughout the study area provides potential suitable habitat for this plant species. This habitat is isolated, limited, and of marginal ecological quality. Therefore, there is low potential for this plant species to occur.

#### **Brittlescale**

Brittlescale was first described and published in 1892 (Jepson 1892), albeit under a different name, and has been variously treated by previous taxonomic authorities, at times as a synonym of a previously described plant species and at others as a distinct variety of a plant species. It is currently treated and accepted at species rank and is known from about 60 extant occurrences in Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Solano, Stanislaus, Tulare, and Yolo counties.

Brittlescale is an annual, prostrate-decumbent to ascending herbaceous plant species, generally less than 30 centimeters tall, with few to many stems emerging from the base. Stems are brittle, reddish in color, and peel with age. The generally oppositely arranged leaves are small (2.5 to 10 millimeters), generally densely white-scaly, and ovate to cordate shaped. Brittlescale is distinguished from related

5.0 Results: Discussion of Biological Resources March 27, 2020

plant taxa that it closely resembles based on its many-branched prostrate form, position of leaf attachment, and characteristic textural attributes of the fruit surface. As a result, positive determinations regarding the identification of this plant species should be made well within the overall bloom period of April through October, when mature fruit are available for examination under magnification.

Brittlescale is found in habitats such as chenopod scrub, meadows and seeps, playas, and valley and foothill grassland at elevations between approximately 1 and 1,050 feet above mean sea level. This plant species is found on alkaline soils and clay soils. The study area is within the known range of this plant species, but there are no CNDDB occurrences within five miles of the study area. The grassland and saltbush scrub habitats throughout the study area provide potential habitat for this plant species. These habitat types are isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this plant species to occur.

#### Lesser Saltscale

Lesser saltscale was first described and published in 1916 (Standley 1916), albeit under a different name, and has been variously treated by previous taxonomic authorities, at times as a synonym of a previously described plant species and at others as a distinct variety of a plant species. It is currently treated and accepted at species rank and is known from approximately 50 extant occurrences in Alameda, Butte, Fresno, Kings, Kern, Madera, Merced, and Tulare counties.

Lesser saltscale is an annual, ascending to erect herbaceous plant species generally less than 40 centimeters tall, with many stems emerging from the base. The spreading branches are brittle, reddish in color, and peel with age. The generally alternately arranged leaves are small (4 to 10 millimeters), generally white-scaly, and ovate to cordate shaped. Lesser saltscale is distinguished from related plant taxa that it closely resembles based on its many-branched ascending to erect form, position of leaf attachment, and characteristic textural attributes of the fruit surface. As a result, positive determinations regarding the identification of this plant species should be made well within the overall bloom period of April through October, when mature fruit are available for examination under magnification.

Lesser saltscale is found in habitats such as chenopod scrub, playas, and valley and foothill grassland at elevations between approximately 50 and 656 feet above mean sea level. This plant species is found on alkaline soils or sandy soils. The study area is within the known range of this plant species, but there are no CNDDB occurrences within five miles of the study area. The grassland and saltbush scrub habitats throughout the study area provide potential habitat for the species. This habitat is isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this plant species to occur.

#### **Subtle Orache**

Specimens of subtle orache were collected many times between the 1880s and 1970s. However, each of these earlier collections was incorrectly labelled as a closely related plant species. Further field work as well as additional collections made in the 1980s and 1990s became a catalyst for a re-examination of preserved plant specimens housed at various herbaria. As a result of that analysis and an examination of newly collected plant specimens, it was determined that the description of a distinct and heretofore

5.0 Results: Discussion of Biological Resources March 27, 2020

undescribed plant taxon at species rank was warranted. The outcome of those efforts resulted in the description of subtle orache, first published in 1997 (Stutz and Chu 1997).

Subtle orache is an annual erect herbaceous plant species, generally less than 30 centimeters tall, with many slender stems emerging from the base. The many slender, spreading branches are reddish in color, and peel with age. The generally oppositely arranged leaves are very small (2 to 4 millimeters), generally white-scaly, and ovate-triangular to cordate shaped. Subtle orache is distinguished from related plant taxa that it resembles based on its many-slender, widely spreading stems position of leaf attachment and characteristic textural attributes of the fruit surface. As a result, positive determinations regarding the identification of this plant species should be made well within the overall bloom period of June through September (October), when mature fruit are available for examination under magnification.

Subtle orache is found in valley and foothill grassland habitat with saline or alkaline soils between approximately 130 to 325 feet above mean sea level. It is known from approximately 20 extant occurrences in Butte, Fresno, Kings, Kern, Madera, Merced, Stanislaus, and Tulare counties. The study area is within the known range of this plant species, but there are no CNDDB occurrences within five miles of the study area. The grassland and saltbush scrub habitats throughout the study area provide potential habitat for the species. This habitat is isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this plant species to occur.

## **Recurved Larkspur**

Recurved larkspur was first described and published in 1889 (Greene 1889). Subsequent plant taxonomists of the early 1900s proposed treating it as a variety within a previously described taxon. However, those proposals were not recognized by later plant taxonomists, and it remains treated within and accepted at species rank. It is known from approximately 85 extant occurrences in Alameda, Contra Costa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solano, Sutter, and Tulare counties.

Recurved larkspur is a perennial erect herbaceous plant species, usually between 18 and 60 centimeters tall, with one generally unbranched stem arising from the base. Basal leaves are generally much larger than cauline leaves, with few to many lobes. The sepals are generally light blue and reflexed; the lower petals are white. Recurved larkspur is distinguished from related plant taxa that it resembles based on the presence or absence of many factors including but not limited to the chromatics of the inner and outer perianth, seed anatomy, shape and length of leaf petiole hairs; overall height of plant stem; presence or absence and location of striae on the stem; and edaphic characteristics such as the texture and chemical composition of the soil in which it occurs. As a result, positive determinations regarding the identification of this plant species should be made within the peak of the overall bloom period of March through June, during which time a suite of diagnostic taxonomic characteristics should be observable. Additional taxonomic challenges can occur; recurved larkspur may hybridize with four other species of larkspur.

Recurved larkspur is found in habitats such as chenopod scrub, cismontane woodland, and valley and foothill grassland at elevations between approximately 10 and 2,600 feet above mean sea level. This plant species tends to prefer moist, fine-textured alkaline soils. The study area is within the known range

5.0 Results: Discussion of Biological Resources March 27, 2020

of this plant species and there are several CNDDB occurrences within five miles of the study area. The grassland and saltbush scrub habitats throughout the study area provide potential habitat for this plant species. This habitat is isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this species to occur. This species was not observed during the March 2020 botanical survey and is determined to not occur in the study area.

#### Hoover's Eriastrum

Hoover's eriastrum was first described in 1945 (Mason 1945). It is known from approximately 35 extant occurrences in Fresno, Kings, Kern, Los Angeles, Santa Barbara, San Benito, and San Luis Obispo counties.

Hoover's eriastrum is an annual erect herbaceous plant species, usually between 3 to 15 centimeters tall. The linear, small (5 to 25 millimeters) leaves are entire or three lobed at the base. The corolla is white and salverform in shape. Hoover's eriastrum is distinguished from related plant taxa that it resembles based on the presence or absence of many factors including but not limited to its annual life cycle, the chromatics of the outer perianth, and the location of the anthers as compared to the corolla sinus. As a result, positive determinations regarding the identification of this plant species should be made within the early portions of the overall bloom period of March through July, during which time the aforementioned diagnostic taxonomic characteristics should be observable.

Hoover's eriastrum is found in habitats such as chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland at elevations between approximately 165 and 3,000 feet above mean sea level. This plant species tends to thrive in disturbed and marginal habitats. The grassland and saltbush scrub habitats throughout the study area provide potential habitat for the species. The study area is within the known range of this plant species, but there are no CNDDB occurrences within five miles of the study area. However, given the opportunistic nature of this plant species, there is a low potential for this species to occur. This species was not observed during the March 2020 botanical survey and is determined to not occur in the study area.

#### Spiny-Sepaled Button-Celery

Spiny-sepaled button-celery was first described and published in 1936 (Mathias 1936), albeit under a different name, and has been variously treated by previous taxonomic authorities; it is currently treated and accepted at species rank and is known from approximately 100 extant occurrences in Contra Costa, Fresno, Kern, Madera, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties.

Spiny-sepaled button-celery is an annual or perennial, erect, herbaceous plant species usually between 30 and 75 centimeters tall. The single stem arises from the base and is generally branched between 2 and 5 centimeters above the base. Spiny-sepaled button-celery is distinguished from related plant taxa that it resembles based on the leaf length in comparison to the petiole and the characteristics of floral and fruit bracts. As a result, positive determinations regarding the identification of this plant species should be made within the bloom period of April to July, during which time some of the aforementioned diagnostic taxonomic characteristics should be observable.

5.0 Results: Discussion of Biological Resources March 27, 2020

Spiny-sepaled button-celery is found in temporary, wet depressions such as vernal pools, swales, and roadside ditches within valley and foothill grassland, as well as freshwater wetlands and wetland-riparian habitats between approximately 260 and 3,200 feet above mean sea level. The roadside ditches provide potential habitat for this plant species. The study area is within the known range of this plant species, and there are several CNDDB occurrences within five miles of the study area. The ditches in the study area have a high cover of upland species and are unlikely to support spiny-sepaled button-celery. Therefore, there is a low potential for this plant species to occur. This species was not observed during the March 2020 botanical survey and is determined to not occur in the study area.

## **Munz's Tidy Tips**

Munz's tidy tips was first described and published in 1935 (Keck 1935) and is known from 57 occurrences in Fresno, Kern, San Benito, San Luis Obispo counties.

Munz's tidy tips is an annual herbaceous plant species, generally between 6 and 50 centimeters tall. It is glandular and decumbent to erect in form, and the ray flowers are white distally. Munz's tidy tips is distinguished from related plant taxa that it resembles based on the presence of disk pappus, the presence and number of ray flowers, and fruit characteristics. As a result, positive determinations regarding the identification of this plant species should be made within the bloom period of March to April, during which time some of the aforementioned diagnostic taxonomic characteristics should be observable.

Munz's tidy tips is found on alkaline and clay soils within chenopod scrub and foothill grassland between approximately 490 and 2,300 feet above mean sea level. The study area is within the known range of this plant species, but there are no CNDDB occurrences within five miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this plant species to occur. This species was not observed during the March 2020 botanical survey and is determined to not occur in the study area.

#### California Alkali Grass

California alkali grass was first described by Scribner (1899) and is known from approximately 65 extant occurrences in Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo counties.

California alkali grass is an annual grass. It is usually erect, not mat forming, and generally between 2 and 25 centimeters tall. It is distinguished from related plant taxa that it resembles based on its annual life cycle and the length and shape of inflorescence bracts (lemmas). As a result, positive determinations regarding the identification of this plant species should be made within the bloom period of March to May, during which time some of the aforementioned diagnostic taxonomic characteristics should be observable. California alkali grass is found in alkaline soils within chenopod scrub, meadows and seeps, vernal pools, lake margins, saline flats and mineral springs and sinks at elevations between 7 and 3,050 feet above mean sea level. The study area is within the known range of this species, but there are no

5.0 Results: Discussion of Biological Resources

March 27, 2020

known occurrences within five miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality. Therefore, there is a low potential for this plant species to occur. This species was not observed during the March 2020 botanical survey and is determined to not occur in the study area.

## 5.3 SPECIAL-STATUS ANIMAL SPECIES

The study area provides potential habitat for 18 special-status animal species which have a potential to occur in the study area. These species include the following:

- Kern brook lamprey (Entosphenus hubbsi), CDFW species of special concern;
- San Joaquin roach (Lavinia symmetricus), CDFW species of special concern;
- Western spadefoot (Spea hammondii), CDFW species of special concern;
- Northern California legless lizard (Anniella pulchra), CDFW species of special concern;
- California glossy snake (Arizona occidentalis), CDFW species of special concern;
- San Joaquin coachwhip (Masticopus flagellum ruddocki), CDFW species of special concern;
- Coast horned lizard (Phrynosoma blainvillii), CDFW species of special concern;
- Golden eagle (Aquila chrysaetos), CDFW fully protected;
- Burrowing owl (Athene cunicularia), CDFW species of special concern;
- Swainson's hawk (Buteo swainsoni), state threatened;
- Northern harrier (Circus cyaneus), CDFW species of special concern;
- White-tailed kite (Elanus leucurus), CDFW fully protected;
- Pallid bat (Antrozous pallidus), CDFW species of special concern;
- Townsend's big-eared bat (Corynorhinus townsendii), CDFW species of special concern;
- Western mastiff bat (Eumops perotis californicus), CDFW species of special concern;
- Buena Vista Lake shrew (*Sorex ornatus relictus*), federal endangered and CDFW species of special concern;
- American badger (Taxidea taxus), CDFW species of special concern; and
- San Joaquin kit fox (Vulpes macrotis mutica), federal endangered and state threatened.

## 5.3.1 Special-Status Animal Species Results

#### Kern Brook Lamprey

Kern brook lamprey inhabits the silty backwaters of large rivers. In the summer, they are found in shallow pools along stream edges with minimal flow. They require gravel-bottomed areas for spawning and muddy-bottomed areas where the ammocoetes (larval stage) can burrow and feed. The species was first discovered in the siphons of the FKC, and there is one documented CNDDB occurrence from 1972. Given that spawning habitat is generally absent in the canal, the species is not likely to reproduce within the canal. However, with the documented occurrence within the canal, there is a high potential for the species to be present within the canal.

#### San Joaquin Roach

The San Joaquin roach is a subspecies that is typically found in the San Joaquin Valley in a variety of streams that are tributaries of the San Joaquin River. The fish is well adapted to small intermittent

5.0 Results: Discussion of Biological Resources March 27, 2020

streams with warm temperatures. Individuals are often found in isolated pools as intermittent streams dry up. Potential habitat in the study area is present in the intermittent streams. No CNDDB occurrences are recorded within 15 miles of the study area. However, given the potential habitat within the range of the species, there is a low potential for this fish to occur.

## **Western Spadefoot**

Western spadefoot requires shallow, temporary pools or streams during the breeding season and adjacent upland habitat for burrowing during the non-breeding season. Western spadefoot is typically found in grasslands, with occasional populations found in valley-foothill hardwood woodlands. Some populations are able to persist in orchard or vineyard habitats that are seasonally flooded. The study area is within the current known range of the species. There are two CNDDB occurrences from 2005 located adjacent to the FKC embankment. The seasonal wetlands and ponds within the study area provide breeding and adjacent upland habitat for the species. Therefore, given the breeding and upland habitat present in the study area and the distance from other documented occurrences, there is high potential for this species to occur.

## Northern California Legless Lizard

Northern California legless lizard occurs in sparsely vegetated areas of dunes, chaparral, pine—oak woodlands, desert scrub, sandy washes, and stream terraces. Potential habitat may be available adjacent to the four stream crossings. The study area is at the eastern boundary of the current known range of the species. There are no CNDDB records within five miles of the study area. Given the potential habitat present in the study area along the boundary of the species' range, there is a low potential for the species to occur.

#### California Glossy Snake

California glossy snake occurs in arid scrub, rocky washes, grasslands, and chaparral habitats. The species prefers open areas with loose soil for burrowing. The study area extends into the northern boundary of the species current known range in southern Tulare and Kern counties. Within the species range, the study area contains marginally suitable arid scrub habitat. The nearest CNDDB occurrence is located approximately nine miles south of the study area. Given the marginal habitat along the boundary of the species' range, there is a low potential for the species to occur.

#### San Joaquin Coachwhip

The San Joaquin coachwhip occurs in open, dry, treeless areas with little or no cover in a variety of habitats. The species tends to avoid dense vegetation which prevents quick movement. It takes refuge in existing rodent burrows, under-shaded vegetation, and other surface objects. The San Joaquin coachwhip subspecies is endemic to California and ranges in the Sacramento and San Joaquin valleys from Arbuckle in Colusa County south to the Grapevine in Kern County. There are two CNDDB occurrences from 1992 approximately nine miles west of the FKC. Given that the study area is within the

5.0 Results: Discussion of Biological Resources March 27, 2020

current known range of the species and marginal habitat exists within the valley foothill grassland and saltbush scrub, there is a low potential for the species to occur.

#### **Coast Horned Lizard**

Coast horned lizard occurs in chaparral, grasslands, woodland clearings, and riparian areas. The species prefers open areas with sandy soil and low growing vegetation, is often found along sandy washes with scattered shrubs and along dirt roads, and is also frequently found near ant hills, which is a preferred food source. Within the study area, the species could be found in arid scrub, grassland, and riparian areas. Suitable habitats are limited in size, lack connectivity with other suitable habitats, and are subject to ruderal influences. No CNDDB occurrences have been documented within five miles of the study area to date. Given that the study area is within the current known range of the species and marginal habitat exists, there is a low potential for the species to occur.

## Golden Eagle

Golden eagles are typically found in rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliff and rock outcrops. They build large nests in large trees in open areas and on cliffs of all heights. The study area occurs within the range of golden eagle. There are no CNDDB-recorded occurrences within five miles of the study area. The cottonwoods, valley oaks, and other tall trees within and immediately adjacent to the study area may provide suitable nest trees for this species. The annual grassland, fallow agriculture, and ruderal habitat within the study area provides potential foraging habitat for the species. Given the potential nesting and foraging habitat present in the study area, no documented occurrences within five miles of the study area, and no eagles or eagle size nests observed during the 2019 field surveys, there is low potential for this species to occur.

#### **Burrowing Owl**

Burrowing owls nest in open, dry grassland, desert, and ruderal habitats. They often nest on the banks of canals and levees. They inhabit small mammal burrows or other suitable underground cavities for nesting. The study area occurs within the range of burrowing owl. The nearest CNDDB occurrence for the species is 5.5 miles west of the study area and 1.9 miles southwest of the city of Delano. The existing canal embankments, grassland, and ruderal habitats provide suitable habitat for the species; therefore, there is a moderate potential for this species to occur.

#### Swainson's Hawk

Swainson's hawks nest in stands with few trees in juniper-sage flats, riparian areas, oak savannah, and open agricultural habitats. They require adjacent open fields for foraging including livestock pastures, grasslands, alfalfa, or grain fields. According to a study performed by Estep (2009) regarding the suitability of vegetation structure on Swainson's hawk foraging habitat, different habitats offer either high, moderate, or low suitability for Swainson's hawk foraging. Their preferred prey items are voles (*Microtus* sp.), pocket gophers (*Thomomys bottae*), birds, and insects such as grasshoppers (*Caelifera* sp.) (Estep 1989). Swainson's hawks are migratory and typically begin arriving in their breeding territory in the

5.0 Results: Discussion of Biological Resources March 27, 2020

Central Valley in early March to April and immediately begin reconstructing previously used nests or constructing new ones (Estep 2009). They typically begin their southerly migration in early August to mid-September (Estep 2009). The study area occurs outside and east of the current range (updated in 2011) of Swainson's hawk; however, the nearest CNDDB occurrence is an active nest from 2017 located approximately 100 feet west of the study area, just west of Porterville. The cottonwoods, valley oaks, and other tall trees within and immediately adjacent to the study area may provide suitable nest trees for this species. The annual grassland, agriculture, and ruderal habitat within the study area provides potential foraging habitat for the species. Given the potential nesting and foraging habitat present in the study area and the distance from other documented occurrences, there is high potential for this species to occur.

#### **Northern Harrier**

Northern harriers nest on the ground and forage in and near wet habitats such as freshwater marsh, wet meadows, grasslands, lightly grazed pastures, some croplands, and weedy borders of lakes, rivers, and streams. The study area occurs within the range of northern harrier, but there are no CNDDB occurrences for the species within the nine-quadrangle search area. The fallow agriculture and annual grassland habitats provide potential nesting habitats for this species. The annual grassland habitat within the study area also provides potential foraging habitat. Given that the study area is within the northern harrier's current range and potential nesting and foraging habitat for the species is present in the study area, there is moderate potential for this species to occur.

#### White-Tailed Kite

White-tailed kites nest in dense stands of tall shrubs and trees located adjacent to foraging habitat (i.e., undisturbed open grasslands, meadows, farmlands, and emergent wetlands), and are seldom observed more than 0.5 mile from an active nest during the breeding season (Zeiner et al. 1990). The study area occurs within the range of white-tailed kite, but there are no CNDDB occurrences for the species within the nine-quadrangle search area. The tall trees within and immediately adjacent to the study area may provide suitable nest trees for this species. The annual grassland habitat within the study area also provides potential foraging habitat. Given the study area is within the white-tailed kite's current range and potential nesting and foraging habitat for the species is present in the study area, there is moderate potential for this species to occur.

## Pallid Bat, Townsend's Big-Eared Bat, and Western Mastiff Bat

Pallid bat, Townsend's big-eared bat, and western mastiff bat may roost individually or in small groups in the study area. Pallid bats typically roost in tree cavities, rock crevices, caves, exfoliating bark, or in human-made structures (e.g., bridges). Townsend's big-eared bats typically roost in abandoned mines and caves. Western mastiff bats typically roost in on vertical faces such as rock outcroppings, cliff faces, tunnels, and tall buildings. The study area occurs within the range of all three bat species. The study area contains mature cottonwood and oak trees that may contain suitable roosting habitat (e.g., cavities, exfoliating bark) for these species. The study area also contains large culverts that pass under the FKC that may provide suitable roosting habitat. There is one CNDDB occurrences of Townsend's big-eared bat within five miles of the study area (CDFW 2019a). Based on the past documented occurrence and the

5.0 Results: Discussion of Biological Resources March 27, 2020

potential nesting and foraging habitat in the study area, there is moderate potential for these species to occur.

#### **Buena Vista Lake Shrew**

Buena Vista Lake shrew inhabits riparian and wetland habitat in the San Joaquin Valley (USFWS 1998). Habitats that are relatively close to permanent water with an abundance of leaf litter, dense herbaceous cover, and moist soil are preferred (USFWS 2011a). Due to their extremely high metabolism, they are constantly searching for food when awake to avoid starvation. As a result, they are active both day and night.

The study area is within the current known range of the species. Deer Creek flows into Pixley National Wildlife Refuge (approximately 14 miles to the west) where Buena Vista Lake shrew was detected in December 2016 (Cyper et al. 2017). Within the study area, there is potential habitat for Buena Vista Lake shrew in Deer Creek, the mulefat thickets to the north, and adjacent Fremont cottonwood forest. Based on the connectivity to recent documented occurrences, the potential habitat in the study area, and negative results for this species during Stantec's 2019 surveys (Stantec 2019c), there is a low potential for the species to occur.

## **American Badger**

American badgers inhabit dry, open stages of shrub, forest, and herbaceous habitats. The species requires friable soils for digging burrows. Badgers typically require vast expanses of open, undisturbed land for their territory. Although the study area has potential habitat for American badger in the grassland habitat, the habitat is found in narrow strips surrounded by intensively disturbed agriculture. There is one CNDDB-reported occurrence approximately two miles to the east of the study area from 1986. Given the distance to the recorded occurrence and the presence of low-quality habitat for the species, there is a low potential for the species to occur.

#### San Joaquin Kit Fox

SJKF is typically nocturnal but is commonly observed during the day during late spring and summer months. The species inhabits dens with openings ranging from 4 to 12 inches diameter within grassland and scrubland habitats. One SJKF may occupy several dens, especially during the summer months. Natal and pupping dens may be changed one to two times per month. Pups are usually born between February and late March. The pups emerge from the den for the first time at about one month old, with dispersal from the den taking place after four to five months, usually in August or September (USFWS 2011b).

Because much of their habitat has been altered, SJKF may utilize atypical dens such as culverts, pipes, and holes under concrete slabs. Agricultural lands such as orchards, vineyards, and irrigated pastures are also utilized by the SJKF (CSU, Stanislaus undated).

The Project is in the southeastern portion of the current range of the SJKF, which extends from the Los Padres National Forest south of Bakersfield north to Concord, California (USFWS ECOS 2019). There

5.0 Results: Discussion of Biological Resources March 27, 2020

are numerous CNDDB records of the species within five miles of the study area. Most of the CNDDB records date back to 1975, with the most recent observation (CNDDB Occurrence Number 376) of a known den recorded in 2005, located less than one mile west of the Friant-Kern Canal MP 120.35. Another occurrence (CNDDB Occurrence Number 148) from 1993 was recorded along the Friant-Kern Canal at MP 129.07 (CDFW 2020). Based on the numerous past documented occurrences and the potential habitat in the study area, there is low potential for this species to occur.

6.0 Discussion of Impacts and Mitigation March 27, 2020

## 6.0 DISCUSSION OF IMPACTS AND MITIGATION

The implementation of both the CE Alternative and CER Alternative would have construction and operation-related impacts. Construction impacts would be both temporary and permanent and would result from either enlarging the existing FKC or enlarging portions of the FKC and constructing a new canal parallel to the existing canal. Operational impacts from implementation of both the CE Alternative and CER Alternative would generally be equivalent to existing conditions because both Project alternatives would result in ongoing operations and maintenance of the FKC comparable to existing conditions. As such, it is anticipated that both the CE Alternative and CER Alternative would not result in new substantial operational impacts. Therefore, the impact discussion below focuses on construction-related impacts only.

# 6.1 HABITATS, SENSITIVE NATURAL COMMUNITIES, AND AQUATIC RESOURCES

## 6.1.1 Terrestrial Habitats and Agricultural Lands

## **Survey Results**

Terrestrial habitats and agricultural lands are described in detail in Section 5.2.1 Habitat Communities.

#### **Potential Impacts**

Estimated temporary and permanent impacts on terrestrial habitats that are not considered sensitive natural communities are presented in Table 5. Habitat types that are considered sensitive natural communities are addressed separately in the report.

6.0 Discussion of Impacts and Mitigation March 27, 2020

**Table 5. Estimated Terrestrial Habitat Impacts** 

Terrestrial Habitat	CE Alternative CE Temporary (acres)	CE Alternative CE Permanent (acres)	CER Alternative CER Temporary (acres)	CER Alternative CER Permanent (acres)
Agriculture: Fallow	308	15	301	40
Agriculture: Field Crop	166	20	158	28
Agriculture: Orchard	145	124	181	247
Agriculture: Vineyard	23	51	42	113
Allscale Scrub	0	1	0	1
Barren/Ruderal	489	0ª	506	0ª
California Buckwheat Scrub	0.3	7	5	4
Mulefat Thickets	0.5	1	0.5	1
Non-Native Annual Grassland	226	O <sup>a</sup>	222	O <sup>a</sup>
Urban	28	7	31	7

<sup>&</sup>lt;sup>a</sup> The Project alternatives will likely result in a net increase of barren/ruderal and grassland habitat due to conversion of agricultural lands to canal embankments and access roads.

## Mitigation Measures

The habitat types and vegetation communities listed above are common habitats and managed agricultural lands; therefore, these are not considered sensitive biological resources. As such, no MMs are recommended. Potential impacts on special-status species that may use these habitats and vegetation communities are discussed separately in this document.

## **Compensatory Mitigation**

None recommended.

## 6.1.2 Riparian Habitats and Sensitive Natural Communities

#### **Survey Results**

Four sensitive natural communities were mapped in the study area as shining willow groves, red willow thickets, Fremont cottonwood forest, and valley oak woodland. (Figure 3). All four of these riparian habitats occur adjacent to intermittent streams and are considered riparian habitats.

## **Potential Impacts**

Both the CE Alternative and CER Alternative would have similar impacts on riparian habitat. Implementation of the CE Alternative is anticipated to result in temporary impacts on approximately 0.9 acre and permanent impacts on approximately 0.9 acre of Fremont cottonwood forest. Implementation of the CER Alternative is anticipated to result in temporary impacts on approximately 0.9 acre and

6.0 Discussion of Impacts and Mitigation March 27, 2020

permanent impacts on approximately one acre of Fremont cottonwood forest (Figure 5). Temporary impacts would result from removing trees and other vegetation to allow for construction equipment access, constructing siphons, and recontouring the streambank at Deer Creek. Permanent impacts would result from tree removal for the footprint of the expanded or realigned canal. No impacts on riparian habitat would occur at White River, and no temporary or permanent impacts on shining willow groves, red willow thickets, or valley oak woodland would result from implementation of either the CER Alternative or CE Alternative (Figures 5 and 6).

## **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse impacts on riparian habitat and other sensitive natural communities:

- Temporary and permanent impacts on the Fremont cottonwood forest habitat at Deer Creek shall be minimized to the greatest extent practicable. Trees and other vegetation shall not be removed if it can otherwise be reasonably avoided. In determining areas where vegetation must be removed to provide adequate access for construction or staging, consideration shall be given to selecting areas which require the least amount of removal of mature trees and canopy cover, in coordination with a qualified biologist.
- Prior to initiation of construction, exclusionary fencing shall be installed along the boundaries of all environmentally sensitive areas (ESAs), which include sensitive natural communities and aquatic resources adjacent to the areas of project-related impacts, to be avoided so that impacts on ESAs outside of the construction area are minimized. Locations of ESAs and exclusionary fencing shall be identified on construction plans. The exclusionary fencing shall be inspected and maintained on a regular basis throughout Project construction in the areas where the fencing is needed to avoid unintended disturbance.
- MM 3 A Post-Construction Revegetation and Monitoring Plan shall be developed and implemented to provide for the restoration of temporarily impacted riparian habitats to pre-existing conditions. The plan shall include provisions for the planting of native woody vegetation and native seed mix, or otherwise providing for the reestablishment of self-sustaining native riparian vegetation similar to the existing native riparian vegetation community. The plan shall also identify success criteria and provide for annual or other regular monitoring to evaluate whether the revegetation effort has met the success criteria. The plan shall include measures for remedial actions (e.g., additional plantings, supplemental irrigation, increased monitoring) in the event that monitoring efforts indicate that success criteria are not being met.

#### **Compensatory Mitigation**

None recommended.

6.0 Discussion of Impacts and Mitigation March 27, 2020

## 6.1.3 Aquatic Resources

#### **Survey Results**

Terrestrial habitats and agricultural lands are described in detail in Section 6.1.2 Aquatic Resources Results.

## **Potential Impacts**

Based on existing project detail, implementation of both the CE Alternative and CER Alternative would result in temporary and permanent impacts on aquatic resources (Table 6, Figures 5 and 6). The FKC and aquatic features that have been mapped as groundwater recharge basin, non-vegetated ditch, irrigation canal, and pond have all been constructed in uplands and are maintained and operated regularly for routine and ongoing agricultural purposes. As such, they are not considered sensitive biological resources; and no MMs are recommended. Potential impacts on special-status species that may utilize these features are discussed separately in this report.

The fresh emergent wetland and riparian wetlands present at Tule River and the riparian wetlands present at Porter Slough are considered sensitive biological resources, but would not be impacted by either of the Project alternatives. The riparian/fresh emergent wetland at Deer Creek would not be permanently impacted by either of the Project alternatives, but would be temporarily impacted under both Project alternatives. Both Project alternatives would result in temporary impacts on the riparian wetlands present at Deer Creek and White River, permanent impacts on the riparian wetlands at Deer Creek, and in temporary impacts on the intermittent stream channels at Deer Creek and White River. The temporary impacts would occur as a result of construction equipment access, decommissioning/constructing siphons, and recontouring the streambanks. The permanent impacts on the riparian wetlands at Deer Creek would result from the footprint of the canal realignment. The new siphons would be buried under the intermittent streams at Project completion and the streambeds would be restored. As such, the new siphons are not considered a permanent impact on the intermittent streams.

Table 6 provides a summary of estimated temporary and permanent impacts on aquatic resources by each Project alternative.

Table 6. Estimated Aquatic Resources Impacts

Aquatic Resource	CE Alternative CE Temporary	CE Alternative CE Permanent	CER Alternative CER Temporary	CER Alternative CER Permanent
Intermittent Stream: White River	0.5 acre, 397 linear feet	0	0.5 acre, 397 linear feet	0
Intermittent Stream: Deer Creek	0.5 acre, 490 linear feet	0	0.5 acre, 490 linear feet	0
Groundwater Recharge Basin	0.8 acre	0.4 acre	6.5 acres	13.2 acres
Fresh Emergent Wetland	0	0	0	0

## 6.0 Discussion of Impacts and Mitigation March 27, 2020

Irrigation Canal	0.9 acre, 1,729 linear feet	2.4 acres, 5,915 linear feet	0.8 acre, 1,678 linear feet	0.3 acre, 681 linear feet
Non-Vegetated Ditch	0	0.06 acre, 983 linear feet	0	0.1 acre, 526 linear feet
Pond	0.02 acre	2 acres	0.02 acre	1.5 acres
Riparian/Fresh Emergent Wetland	0.01 acre	0	0.01 acre	0
Riparian Wetland	1.01 acre	0.7 acre	0.9 acre	0.9 acre
Seasonal Wetland	0	0	0	0

## **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse impacts on sensitive aquatic resources:

- All work within the active channel of Deer Creek and White River shall be limited to the dry season when the channels are dry. If this is not practicable, stream flow shall be diverted around the work area in the channel using a clear water diversion that maintains downstream water quality and minimizes stream impacts at the inlet and outlet locations of the diversion.
- Prior to any temporary or permanent impacts on aquatic resources, any required permits/authorizations from the Regional Water Quality Control Board (Regional Water Board) or the USACE shall be obtained. All terms and conditions of the required permits/authorizations shall be implemented.

Prior to any activities that would obstruct the flow of, or alter the bed, channel, or bank of Deer Creek, White River, or any other streams, notification of streambed alteration shall be submitted to the CDFW. If required, a streambed alteration agreement shall be obtained from CDFW and all conditions of the agreement shall be implemented.

Within 3 days of completion of siphon construction at Deer Creek and White River, the contours of the stream channels shall be restored as close as practicable to their original contour and conditions.

All temporary impacts on riparian wetlands and other sensitive aquatic resources shall be restored to pre-existing conditions in accordance with MM 2 (Post-Construction Revegetation and Monitoring Plan).

6.0 Discussion of Impacts and Mitigation March 27, 2020

## **Compensatory Mitigation**

The riparian wetlands that would be permanently impacted by the Project are considered sensitive biological resources that function to provide valuable resources for wildlife, and also provide for water quality benefits. The CE Alternative is estimated to result in a permanent loss of 0.7 acre of riparian wetland and the CER Alternative is estimated to result in the permanent loss of 0.9 acre of riparian wetland. This loss of wetland habitat is considerable and the following compensatory mitigation measure (CMM) is recommended.

CMM 1

The permanent loss of riparian wetlands shall be mitigated at a minimum of a 1:1 ratio. Mitigation shall consist of the purchase of mitigation credits from an agency-approved wetland mitigation bank (i.e., CDFW, Regional Water Board, USACE) or payment into an agency-approved in-lieu fee fund. The purchase of mitigation credits or in-lieu fee payment shall be completed prior to initiation of any permanent wetland impacts.

On- or offsite creation or restoration of wetland habitats may also be used to satisfy the compensatory mitigation requirement with written agency approval.

## 6.2 SPECIAL-STATUS PLANT SPECIES

## **Survey Results**

There is potential habitat for ten special-status plants within the study area. General surveys of the study area were conducted from September 30 to October 3, 2019 to characterize habitat types. Botanical surveys timed to coincide with the early blooming period (March 2020) for potentially occurring special-status plant species have been conducted within the study area and resulted in no special-status plants observed within the study area (Attachment D, Stantec 2020). Botanical surveys timed to coincide with the late blooming period (e.g., August and September) for potentially occurring special-status plant species have not been conducted within the study area. As such, the presence or absence of late-blooming special-status plant species within the study area has not been determined. A list of all plants observed in the study area during all biological and botanical surveys is provided as Attachment E.

#### **Project Impacts**

Ground-disturbing activities for the both the CE Alternative and CER Alternative and the staging of equipment and materials is anticipated to temporarily and permanently impact annual grassland habitat. Spiny-sepaled button-celery and recurved larkspur, which both have moderate potential to occur in the study area, generally occur in wet depressions and alkaline areas respectively, within grassland habitats. Although the other potentially occurring special-status plants are relatively unlikely to occur in the study area given the generally poor habitat conditions, they are also associated with annual grassland habitat and their presence or absence cannot be confirmed until botanical surveys have been completed.

The CE Alternative is estimated to result in temporary impacts on approximately 226 acres of annual grassland. The CER Alternative is estimated to result in temporary impacts on approximately 222 acres of

6.0 Discussion of Impacts and Mitigation March 27, 2020

annual grassland. These impacts on annual grassland could adversely affect special-status plants if occurrences are present in the annual grassland habitats.

## **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse effects on specialstatus plants.

**MM 7** 

One botanical survey (late season) shall be conducted prior to construction activities to determine the presence or absence of special-status plant species including Earlimart orache, Lost Hills crownscale, brittlescale, lesser saltscale, and subtle orache in the project area. The surveys should be conducted in general accordance with the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFW 2018) and shall be timed to appropriately coincide with the late blooming period (e.g., August to September) in all suitable habitat (e.g., annual grasslands) located within the project disturbance areas.

**8 MM** 

If more than five years lapse after the March 2020 botanical survey before ground disturbance takes place, two botanical surveys (early and late season) shall be conducted in all suitable habitat located within the Project disturbance areas to determine the presence or absence of special-status plants. Special-status plants with a potential to be within the Project area that typically bloom early in the season (e.g., March and April) include recurved larkspur, Hoover's eriastrum, spiny-sepaled button-celery, Munz's tidy-tips, and California alkali grass. Special-status plants with a potential to be within the Project area that typically bloom late in the season (e.g., August and September) include Earlimart orache, Lost Hills crownscale, brittlescale, lesser saltscale, and subtle orache.

**MM 9** 

In the event that special-status plant species are found during the botanical surveys, the locations of the special-status plants should be marked as avoidance areas both in the field, using flagging, staking, fencing, or similar devices, and on construction plans.

**MM 10** 

If special-status plants are identified during pre-construction surveys, complete avoidance is not practicable, and the project would directly or indirectly affect more than 25 percent of a local occurrence by either number of plants or extent of occupied habitat, a qualified biologist will determine if implementation of a conservation plan is recommended. The conservation plan may consist of but is not limited to purchase of mitigation credits at a regional conservation bank; plant salvage and relocation; collection and subsequent planting of seed, or incorporating seed from native nursery into seed mix used for revegetation efforts; stockpiling, storing, and replacing topsoil containing the local seed bank; or other measures determined practicable based on the species and site conditions. If onsite conservation measures are implemented, the objective is to restore the impacted special-status plant species community to pre-existing conditions by providing for the restoration of a self-sustaining population of special-status plants in the general area where the impact occurred at a minimum of a 1:1 ratio (e.g., number of

6.0 Discussion of Impacts and Mitigation March 27, 2020

plants, square footage occupied). For onsite conservation measures, the conservation plan will identify success criteria and provide for annual or other regular monitoring to evaluate whether the conservation effort has met the success criteria. The conservation plan will also include measures for remedial actions (e.g., additional plantings, supplemental irrigation, increased monitoring) in the event that monitoring efforts indicate that success criteria are not being met.

For some species and site conditions, the biologist may determine that a conservation plan is not recommended. Some of these circumstances may include but are not limited to the following: (1) there are other nearby populations that will not be disturbed; (2) plant relocation, seeding, or revegetation would not have a reasonable probability of success; (3) implementation of measures could result in detrimental effects on existing special-status plant populations; or (4) incompatibility with required operations and maintenance activities. If the biologist determines that a conservation plan is not warranted, no additional measures are required.

## **Compensatory Mitigation**

The proposed Project would result in a negligible impact on special-status plant species; therefore, compensatory mitigation is not proposed.

## 6.3 SPECIAL-STATUS ANIMAL SPECIES

The following general MMs are recommended to minimize the potential for adverse effects on specialstatus animal species:

- A Biological Resources Management and Monitoring Plan (BRMMP) shall be developed and implemented for the project. The BRMMP shall provide for the following:
  - Overall implementation and monitoring of the MMs and CMMs for biological resources and the terms and conditions of any agency permits/authorizations throughout the duration of project construction and restoration/revegetation efforts of riparian habitat per MM 3.
  - 2) Designation of an overall Project Biologist and the roles and responsibilities of the Project Biologist and other monitoring biologists; and the roles of Reclamation, FWA, and construction personnel in the coordination and implementation of the BRMMP.
  - 3) Adaptive management in scheduling worker environmental awareness training (WEAT) and conducting pre-construction surveys for special-status species. In some cases, additional biological surveys beyond those identified in the MMs may be warranted to proactively avoid biological constraints or conflicts with protective measures identified in the MMs. For example, early monitoring for nesting birds or occupied mammal burrows may be needed to preserve opportunities for vegetation

6.0 Discussion of Impacts and Mitigation March 27, 2020

removal, removal of nesting starts before egg laying, and burrow monitoring and closure prior to the initiation of breeding or nesting activities.

4) The procedure and authorizations required to modify the MMs if needed to resolve conflicts with constructability requirements or other measures required by agency permits/authorizations, or to equivalently provide for avoidance/minimization of adverse effects on sensitive biological resources under changing conditions over the life of project construction.

For example, nesting birds or other special-status species may initiate nesting or denning activities in proximity to construction areas while active construction activities are ongoing, including within the "no-disturbance buffers" identified in the MMs. In these cases, it may be that the animals are acclimated to the level of construction disturbance, and continuance of construction activities would not be expected to adversely affect the animals or their nesting/breeding activities (assuming that increased levels of disturbance or closer proximity of construction activities is not planned). The BRMMP shall include provisions for how these and similar circumstances will be addressed and how determinations regarding additional biological monitoring or agency coordination will be addressed.

- 5) The procedure to record and document implementation of the MMs and other measures including any pre-construction survey reports, WEAT sign-in forms, routine biological monitoring forms, photographs, and other materials related to implementation of the BRMMP.
- 6) The procedure to comply with the terms and conditions, and notification and reporting requirements of any agency permits/authorizations required for the Project; and the procedure for coordination/consultation with resource or permitting agencies as necessary.
- 7) The procedure to inform, document, and monitor restoration and revegetation activities associated with restoring temporary impacts on terrestrial and aquatic habitats and vegetation communities. This includes any post-construction monitoring/reporting and remedial measures that may be required.
- Prior to initiation of ground-breaking, a qualified biologist(s) shall conduct a WEAT for all construction personnel. Training sessions shall be repeated for all new personnel before they access the Project site. Sign-in sheets identifying attendees and the contractor/company they represent shall be prepared for each training session, and records of attendance will be maintained by the Project. At a minimum, the WEAT shall include a description of the protected species and biological resources that may occur in the Project area and their physical description, habitats, and natural history, as well as the measures that are being implemented to avoid or minimize Project-related impacts, penalties for non-compliance, and the boundaries of the work area. So that employees

6.0 Discussion of Impacts and Mitigation March 27, 2020

and contractors understand their roles and responsibilities, training shall be conducted in languages other than English, as appropriate. A written summary of the training will be provided to all attendees, and an electronic copy provided so that the project can make and distribute future copies. The WEAT shall be conducted annually, at a minimum, for all construction personnel.

- A litter control program shall be instituted at each Project site. All workers shall place their food scraps, paper wrappers, food containers, cans, bottles, and other trash in covered or closed trash containers. The trash containers should be removed from the Project area at the end of each working day.
- No firearms (except as possessed by federal, state, or local law enforcement officers) or pets shall be permitted on construction sites.
- MM 15

  To prevent inadvertent entrapment of wildlife during construction, all excavated steepwalled holes or trenches greater than two feet deep (excluding excavation work on either the FKC itself or the realigned canal) should be covered or filled at the end of each working day or provided with one or more escape ramps no greater than 200 feet apart. Before such trenches or holes are filled, they must be thoroughly inspected for trapped animals. If protected species are found in any of the holes or trenches, work shall cease until an escape ramp is provided and the animal leaves on its own volition, or until the animal has been relocated by a USFWS-approved biologist, and/or in coordination with the USFWS as appropriate.
- All construction activity would be confined within the Project site, which may include temporary access roads, haul roads, and staging areas specifically designated and marked for these purposes.
- MM 17 Tightly woven fiber netting or similar material (no monofilament material) should be used for erosion control or other purposes at the project site to ensure that animals do not become trapped.

## 6.3.1 Kern Brook Lamprey, San Joaquin Roach, and Game Fish

#### **Survey Results**

There is potential aquatic habitat for Kern brook lamprey and game fish (e.g., catfish, bass) in the FKC and San Joaquin roach in the intermittent streams.

### **Project Impacts**

The proposed Project could result in temporary loss of habitat due to project activities affecting potential aquatic habitat. Direct disturbance from construction activities, such as dewatering for rebuilding canal segments or siphon decommissioning, could result in stress, injury, or mortality to individuals. Both

6.0 Discussion of Impacts and Mitigation March 27, 2020

Project alternatives include the construction of new siphons and other activities that require dewatering of canal segments and would both result in similar potential impacts on special-status and game fish.

## Mitigation Measure

In addition to sediment and erosion control measures, the following MM is recommended to avoid or minimize the potential for adverse effects on Kern brook lamprey, San Joaquin roach, and game fish:

#### **MM 18**

Work within Deer Creek and White River (e.g., siphon construction) shall take place when the streams are dry. If this is not practicable, appropriate stream diversions that protect water quality will be constructed. Where there is a potential for fish entrapment (e.g., dewatering of streams or canal), a beach seine with a minimum of three passes or other appropriate method will be implemented in areas where fish could be trapped (e.g., remaining ponded areas). If appropriate, block nets could be placed upstream and downstream of the Project area to prevent fish from entering the area and further reduce the potential for entrapment. Implementation of measures to avoid fish entrapment and any translocation/removal of fish will be conducted with the oversight of qualified fisheries biologists. Coordination with CDFW shall be conducted prior to initiation of any fish salvage/relocation activities to confirm that all required authorizations are in place.

## **Compensatory Mitigation**

The proposed Project would result in a negligible impact on habitat for Kern brook lamprey, San Joaquin roach, and game fish as the impacts on aquatic habitat would be temporary and the habitat restored once the new canal is operational. Therefore, compensatory mitigation is not recommended.

## 6.3.2 Western Spadefoot

#### **Survey Results**

There is potential aquatic (breeding) habitat for western spadefoot throughout the study area in aquatic habitats such as fresh emergent wetland, riparian/fresh emergent wetland, riparian wetlands, seasonal wetlands, and ponds. Potential upland habitat occurs adjacent to the aquatic habitat.

#### **Project Impacts**

The proposed Project could result in temporary loss of habitat and displacement due to Project activities affecting potential aquatic breeding and upland burrow sites. Direct disturbance from construction activities, such as operation of vehicles, heavy equipment operation, and earth moving operations around burrows could result in stress, injury, or mortality to individuals or destruction of their burrows.

#### **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse effects on western spadefoot:

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### MM 19

If western spadefoot is encountered during construction activities, it will be allowed to move out of harm's way of its own volition, or a qualified biologist will relocate it to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

#### **MM 20**

Prior to moving equipment or materials each day, construction personnel shall inspect underneath and around equipment and other project materials (e.g., stored pipes greater than 2 inches in diameter) where located within 200 feet of aquatic habitat, for western spadefoot. If western spadefoots are found, they will be allowed to move out of the construction area under their own volition, or a qualified biologist will relocate the organism(s) to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

## **Compensatory Mitigation**

The proposed Project would result in a negligible impact on habitat for western spadefoot because construction-related impacts would be temporary. Therefore, compensatory mitigation is not recommended.

# 6.3.3 Northern California Legless Lizard, California Glossy Snake, San Joaquin Coachwhip, and Coast Horned Lizard

## **Survey Results**

There is potential habitat for northern California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard throughout the study area in sandy washes, scrub, and grassland habitats.

#### **Project Impacts**

The proposed Project could result in temporary loss of habitat and displacement due to Project activities affecting potential habitat. Direct disturbance from construction activities, such as operation of vehicles, heavy equipment operation, and earth moving operations around burrows could result in stress, injury, or mortality to individuals or destruction of their burrows.

## Mitigation Measure

The following MM is recommended to avoid or minimize the potential for adverse effects on Northern California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard:

#### MM 21

Prior to moving equipment or materials each day, construction personnel shall inspect underneath and around equipment for northern California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard. If these species are encountered during construction activities, they will be allowed to move out of harm's way of their own volition or a qualified biologist will relocate the organism(s) the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

6.0 Discussion of Impacts and Mitigation March 27, 2020

## **Compensatory Mitigation**

The proposed Project would result in a negligible impact on habitat for northern California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard because construction-related impacts would be temporary. Therefore, compensatory mitigation is not recommended.

## 6.3.4 Migratory Birds and Raptors

#### **Survey Results**

There is potential nesting and foraging habitat for non-special-status migratory birds and raptors, such as common songbirds, red-tailed hawk, and red-shouldered hawk, within the study area. During the 2019 field surveys, abundant remnant cliff swallow nests were observed on all bridges crossing the FKC.

#### **Project Impacts**

Construction activities (e.g., vegetation removal, bridge removal, earth-moving, equipment noise) may be scheduled during the avian (bird) breeding season (generally February 1 to August 31, depending on the species) and could disturb nesting birds in or adjacent to the study area. Impacts on nesting birds would be generally equivalent in the level of disturbance under both alternatives. However, impacts on groundnesting birds would be greater with the CER Alternative as it could potentially disturb more habitat that is not immediately adjacent to the existing canal. Construction-related disturbance could result in the incidental loss of fertile eggs or nestlings or nest abandonment, which could affect local or regional populations of affected birds. Impacts on nesting birds could result from the following:

- Tree and shrub removal, which would be necessary to accommodate the construction of siphons and adjacent canal
- Ground-disturbing activities (e.g., grubbing and grading) in annual grasslands that could affect ground-nesting birds (e.g., killdeer [Charadrius vociferous] and western meadowlark [Sturnella neglecta])
- Noise from construction activities
- Removal of bridges and other construction activities near the existing bridges that could disturb or remove active cliff swallow nests if they are present

#### **Mitigation Measures**

The following MMs are recommended to minimize the potential for adverse effects on nesting migratory birds:

MM 22 To the extent practicable, vegetation removal shall be scheduled to avoid the breeding season for nesting raptors and other special-status birds (generally February 1 to August

6.0 Discussion of Impacts and Mitigation March 27, 2020

31, depending on the species). Removal of vegetation outside of the nesting season is intended to minimize the potential for delays in vegetation removal due to active nests.

MM 23

Regardless of when vegetation removal is scheduled, a qualified biologist shall conduct a minimum of one pre-construction survey for nesting migratory birds and raptors within the project area and a 250-foot buffer around the project area (where accessible) for all construction-related activities that will occur during the nesting season. The pre-construction survey shall be conducted no more than 15 days prior to the initiation of construction in a given area and will be phased based on construction schedule. Due to the ongoing, phased approach to construction, multiple pre-construction surveys per year may be required. If an active nest is found, appropriate conservation measures (as determined by a qualified biologist) shall be implemented. These measures may include but are not limited consultation with CDFW in order to establish a construction-free buffer zone around the active nest site, daily biological monitoring of the active nest site, and delaying construction activities in the vicinity of the active nest site until the young have fledged.

**MM 24** 

If removal of bridges or other bridge work is scheduled to occur during the nesting season, exclusionary devices (e.g., netting) shall be installed around the bridges prior to the initiation of the avian breeding season (before February 15) during the same year as the bridges are scheduled for removal; and after a qualified biologist has determined no active nests (i.e., nests with eggs or young) are present. The exclusionary devices will remain in place until August 15 or until the bridge removal or other bridge work is completed. The exclusionary devices shall be anchored such that swallows cannot attach their nests to the structure through gaps. Exclusionary devices shall be regularly inspected as necessary to confirm that they are adequately preventing initiation of nest building. In the event that swallows have breached the exclusionary devices and began building nests on the structure, nesting material (i.e., partially built nests) can be removed only if a qualified biologist has determined that eggs or young are not present. No removal of nests with eggs or young can be conducted without written authorization from the CDFW and USFWS, or until a qualified biologist has determined that the nest is no longer active (e.g., nest has failed, young have fledged and are no longer dependent on the nest).

#### **Compensatory Mitigation**

The proposed Project would result in a negligible impact on breeding habitat for non-special-status migratory birds and raptors; therefore, compensatory mitigation is not proposed.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### 6.3.5 Golden Eagle, Swainson's Hawk, Northern Harrier, and White-tailed Kite

#### **Survey Results**

There is potential nesting and foraging habitat for golden eagle, Swainson's hawk, northern harrier, and white-tailed kite within the study area. Field surveys were conducted from September 30 to October 3, 2019, and December 2019, which is outside of the breeding season. However, there is a 2017 recorded CNDDB occurrence of Swainson's hawk near the FKC west of Porterville. White-tailed kites were observed foraging in the study area during the 2019 field surveys. No golden eagles or northern harriers were observed during the 2019 field surveys.

Swainson's hawks forage over a variety of agriculture crops, grassland, and pasture, using alfalfa more than any other crop (CDFW 2016). Within the study area, high-quality Swainson's hawk foraging habitat consists of alfalfa; moderate-quality Swainson's hawk foraging habitat consists of other field crops, fallow agriculture, and annual grassland. The barren and ruderal habitats and orchards and vineyards in the study area provide very low-quality to no foraging habitat for Swainson's hawk.

#### **Project Impacts**

The proposed Project could result in temporary and permanent loss of foraging habitat and displacement due to project activities affecting potential nesting sites. Direct disturbance from construction activities, such as operation of vehicles, heavy equipment operation, and earth-moving operations around active nests could result in stress, injury, or mortality to individuals. Impacts on nesting golden eagle, Swainson's hawk, northern harrier, and white-tailed kite would be fairly similar in the level of disturbance with both Project alternatives. Both Project alternatives would have temporary impacts on foraging habitat through the staging of equipment, temporary construction access, and other construction activities. Permanent impacts would result from new canal embankment footprint and using large areas of land to borrow soil to build up the new embankments. The estimated acreage impacts on Swainson's hawk foraging habitat with moderate to high suitability by Project alternative are presented in Table 7.

Table 7. Estimated Swainson's Hawk Foraging Habitat Impacts

Swainson's Hawk Foraging Habitat	CE Alternative CE Temporary (acres)	CE Alternative CE Permanent (acres)	CER Alternative CER Temporary (acres)	CER Alternative CER Permanent (acres)
Alfalfa	111	12	112	13
Other field crops	55	8	47	15
Fallow agriculture	308	15	301	40
Annual grassland	226	0	222	0

#### **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for significant impacts on golden eagle, Swainson's hawk, northern harrier, and white-tailed kite.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### MM 25

For construction activities that occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for golden eagle, Swainson's hawk, northern harrier, and white-tailed kite. The pre-construction surveys will include the project footprint and a 0.25-mile radius (where access is permitted) around the construction area in suitable nesting habitat (i.e., large trees). The pre-construction surveys will be conducted no more than 15 days before ground disturbance in a given area and will be phased based on construction schedule.

If nesting golden eagles, Swainson's hawks, northern harriers, or white-tailed kites are detected, an appropriate no-disturbance buffer (minimum of 500 feet) shall be established and monitored daily by a qualified biologist. Buffers will be maintained until a qualified biologist has determined that the young have fledged and are no longer reliant on the nest or parental care for survival.

#### **MM 26**

If a minimum 500-foot no-disturbance buffer around an active golden eagle, Swainson's hawk, northern harrier, or white-tailed kite nest is not practicable, CDFW will be consulted to determine alternative measures to minimize the potential for Project-related disturbance to the nest site that could result in nest abandonment or other forms of take. Measures may include but are not limited to continuous biological monitoring by a qualified biologist until it has been determined that the young have fledged and are no longer reliant on the nest or parental care for survival or the construction is complete. If the nesting pair shows signs of distress (i.e., adults leaving the nest when eggs or young chicks are present) as a result of Project-related activities, the monitoring biologist shall have authority to stop work until it is determined that the adults have returned and are no longer showing signs of distress.

If trees suitable for nesting by Swainson's hawk are scheduled to be removed during the non-nesting season, a qualified biologist will conduct a pre-construction survey during the nesting season prior to tree removal to determine if Swainson's hawks are using the trees for nesting. If the trees proposed for removal are being used for nesting by Swainson's hawk, consultation with CDFW will take place per MM 27 prior to tree removal.

#### **MM 27**

If consultation with CDFW results in a determination that take of an active Swainson's hawk nest cannot be avoided, then an Incidental Take Permit pursuant to CESA will be obtained from CDFW prior to initiation of any activities that are likely to result in such take.

If an active golden eagle or white-tailed kite nest may not be avoidable, then all activities that are likely to result in take will be delayed until a qualified biologist has determined that the young have fledged and are no longer reliant on the nest or parental care for survival.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### **Compensatory Mitigation**

Alfalfa fields are considered to be very high-quality foraging habitat for Swainson's hawk (CDFW 2016). Swainson's hawk is listed as threatened under the CESA, and have been observed foraging in the study area. The CE Alternative is estimated to result in a permanent loss of 12 acres of alfalfa fields and the CER Alternative is estimated to result in the permanent loss of 13 acres of alfalfa fields. This loss of very high-quality Swainson's hawk foraging habitat is considerable, and compensatory mitigation is recommended.

#### CMM 2

The project-related permanent loss of alfalfa fields (high-quality foraging habitat for Swainson's hawk) will be mitigated at a minimum of a 1:1 ratio. Mitigation will occur in coordination with CDFW and may consist of but is not limited to purchase of mitigation credits from a CDFW-approved mitigation bank, obtaining conservation easements with appropriate provisions to maintain the land as suitable foraging habitat in perpetuity, establishing new alfalfa fields, or other habitat conservation measures as approved by CDFW.

#### 6.3.6 Burrowing Owl

#### Survey Results

There is potential nesting and foraging habitat for burrowing owl along the canal embankments, barren/ruderal and grassland habitats. No burrowing owls were observed during any of the field visits or biological surveys. However, given the abundant small mammal burrows present in the study area, there is a potential for burrowing owls to be present.

#### **Project Impacts**

If burrowing owls are present during construction activities, the proposed Project could result in temporary loss of habitat and displacement due to Project activities affecting potential burrow sites. Direct disturbance from construction activities, such as operation of vehicles, heavy equipment operation, and earth-moving operations around burrows could result in stress, injury, or mortality to individuals or destruction of their burrows. The greatest concentration of small mammal burrows in the study area is along the embankments of the FKC. As both of the Project alternatives would modify the existing FKC throughout the entire reach of the study area, both Project alternatives have a generally equivalent potential to result in impacts on burrowing owl. Potential impacts are considered to be temporary because small mammal burrows are expected to become reestablished along the enlarged canal or realigned canal after they are constructed. Under the CER Alternative, approximately 19 miles of the existing FKC would be abandoned due to the realignment. As such, this alternative could result in a future benefit to burrowing owls if they were to colonize portions of the abandoned alignment.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### **Mitigation Measures**

The following MMs shall be implemented to avoid or minimize the potential for significant impacts on burrowing owls.

**MM 28** 

A minimum of one pre-construction survey for burrowing owls within 300 feet of the Project area (where accessible) will be conducted by a qualified biologist within 15 days prior to the initiation of construction activities in a given area, regardless of the timing of construction. Pre-construction surveys each year of construction during the non-breeding season (September 1 to January 31) shall take place in order to determine the presence of burrowing owls prior to breeding activities begin.

**MM 29** 

If any occupied burrows are identified, appropriate conservation measures (as determined by a qualified biologist) will be implemented. No disturbance will occur within 150 feet of occupied burrows during the non-breeding season (September 1 to January 31) or within 250 feet during the breeding season (February 1 to August 31). These measures may also include establishing a construction-free buffer zone around the active nest site in coordination with the CDFW, biological monitoring of the active nest site, and delaying construction activities in the vicinity of the active nest site until the young have fledged.

**MM 30** 

If burrowing owls are detected within the Project area during the non-breeding season and maintaining a 150-foot no-disturbance buffer is not practicable, a qualified biologist shall submit an exclusion plan to CDFW. The exclusion plan will generally follow the guidelines outlined in Appendix E of the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). The exclusion plan will consist of installing one-way doors in potential burrows, daily monitoring, and collapsing burrows once it is determined that the burrows are unoccupied. Exclusion may only take place during the non- breeding season (September 1 to January 31) and may be an ongoing effort during this time period. This will allow the owls to exit burrows if they are present, but not return.

MM 31

If occupied burrows are detected during the breeding season and maintaining a 250-foot no-disturbance buffer is not practicable, CDFW will be consulted to determine alternative measures to minimize the potential for disturbance to occupied burrows and nesting activities. Measures may include but are not limited to continuous biological monitoring by a qualified biologist until it has been determined that the young have fledged and are no longer reliant on the nest for parental care or survival, or the construction is complete. No direct disturbance of burrows with eggs or young can be conducted without written authorization from the CDFW and USFWS.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### **Compensatory Mitigation**

The proposed Project would result in a negligible impact on breeding and foraging habitat for burrowing owl as the disturbance is temporary and habitat will become reestablished after construction is completed. Therefore, compensatory mitigation is not recommended.

## 6.3.7 Pallid Bat, Townsend's Big-Eared Bat, Western Mastiff Bat, and Other Roosting Bats

#### **Survey Results**

There is potential roosting and foraging habitat for special-status bats, such as pallid bat, Townsend's bigeared bat, and western mastiff bat, within the study area. Also, common bat species could roost in the Project area. No roosting bats or evidence of roosting bats were detected within the study area during the surveys. However, potential roosting habitat is present in large trees and concrete culvert structures underneath the FKC.

#### **Project Impacts**

Due to the ability of individual bats to move away from disturbance, direct impacts on bats are not expected when the bats are not using the roost site for a maternity colony (i.e., a breeding roost to bear and rear young). Bats may form maternity colonies in tree cavities and large culverts in the study area. If a tree or structure is removed that contains a bat maternity colony, the disturbance could result in bat mortality or injury. Indirect impacts may occur from construction disturbances if a maternity colony is present in or adjacent to the Project area. Significant noise disturbance could result in adults temporarily or permanently leaving the maternity colony. The majority of tree removal for both alignments would be the Fremont cottonwood trees located just north of Deer Creek. Various concrete culverts are located throughout the Project alignment and would either be demolished or expanded depending on the Project alternative implemented. Impacts onto special-status bats would generally be similar in the level of disturbance with both Project alternatives.

#### **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse effects on bat species.

- To the extent practicable, removal of large trees with cavities or destruction of large culverts shall occur before maternity colonies form (i.e., prior to March 1) or after young are volant (able to fly) (i.e., after August 15).
- MM 33 If construction (including the removal of large trees and/or destruction or expansion of large culverts) occurs during the non-volant season (March 1 to August 15), a qualified biologist shall conduct a pre-construction survey of the study area for maternity colonies. The pre-construction survey will be performed no more than 14 days prior to the implementation of construction activities (including staging and equipment access). If a

6.0 Discussion of Impacts and Mitigation March 27, 2020

lapse in construction activities for 14 days or longer occurs between those dates, another pre-construction survey will be performed. If any maternity colonies are detected, appropriate conservation measures (as determined by a qualified biologist) shall be implemented. These measures may include but are not limited to establishing a construction-free buffer zone around the maternity colony site, biological monitoring of the maternity colony, and delaying construction activities in the vicinity of the maternity site.

#### **Compensatory Mitigation**

The proposed Project would result in a negligible impact on habitat for special-status bats and other bat species given that impacts on potential roosting habitat would be temporary; therefore, compensatory mitigation is not recommended.

#### 6.3.8 Buena Vista Lake Shrew

#### Survey Results

There is potential habitat for Buena Vista Lake shrew (BVLS) along Deer Creek and the adjacent wet areas (i.e., mulefat thickets, Fremont cottonwood forest). Camera arrays were set up in these areas and monitored for seven consecutive nights in December 2019. No BVLS were observed during this survey (Stantec 2019a).

#### **Project Impacts**

Implementation of both Project alternatives would result in similar impacts on potential BVLS habitat. The CE Alternative would result in temporary impacts on 0.9 acre of Fremont cottonwood forest and 0.5 acre of mulefat thickets, and the CER Alternative would result in temporary impacts on 0.9 acre of Fremont cottonwood forest and 0.5 acre of mulefat thickets. The CE Alternative would result in permanent impacts on 0.90 acre of Fremont cottonwood forest and one acre of mulefat thickets, while the CER Alternative would result in permanent impacts on one acre of Fremont cottonwood forest and one acre of mulefat thickets. Temporary disturbance to and permanent removal of this vegetation would reduce the amount of available foraging habitat and vegetative cover, which may increase the risk of Buena Vista Lake shrew mortality from starvation and/or exposure to the elements if any shrews are present in or near the Project area. Reclamation is currently conducting ESA section 7 consultation with the USFWS for Project-related effects on BVLS.

#### **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse effects on BVLS. The measures below may be revised based on the results of the ESA section 7 consultation.

MM 34 In areas of suitable habitat for Buena Vista Lake shrew (BVLS) (*Sorex ornatus relictus*) within the Project area (i.e., the Deer Creek crossing and adjacent areas), all aboveground herbaceous vegetation within the construction footprint will be cleared using hand

6.0 Discussion of Impacts and Mitigation March 27, 2020

tools (i.e., non-gasoline or electrically powered tools, including weed whackers and/or mowers, unless approved by the USFWS) under the supervision of a USFWS-approved BVLS biologist or biological monitor. All leaf litter will be removed using rakes or similar hand tools. All woody vegetation will be cut as closely to the ground as possible using hand tools (which can include chainsaws). Vegetation will be removed immediately and stored away from areas of suitable BVLS habitat. Such vegetation hand-removal efforts will be implemented in the areas that require vegetation removal to clearly detect BVLS and will continue in each area of suitable habitat until it is reasonably certain that BVLS can be detected within the cleared areas, if present.

- **MM 35**
- After vegetation has been cleared from areas of suitable BVLS habitat, non-disturbance exclusion fencing will be installed along the edges of the Project area where vegetation was cleared from areas of suitable habitat; fencing will be buried to a minimum depth of 6 inches. Fencing will be placed between areas of active construction and adjacent to nearby suitable habitat to preclude BVLS from running through the Project area. In areas where installation of fencing is not practicable, the USFWS will be contacted and will provide direction on a case-by-case basis. The exclusionary fencing will be installed under the supervision of the USFWS-approved BVLS biological monitor, and fence placement/configuration will be determined by a USFWS-approved BVLS biologist, with input from the USFWS as required. Fencing may consist of a combination of both Environmentally Sensitive Area fencing and Wildlife Exclusion fencing with one-way exit/escape points.
- **MM 36**
- If BVLS is found within the fenced-in Project area, work in the Project area will cease immediately, and a section of fence will be removed so the BVLS may leave the fenced area on their own volition. The USFWS-approved BVLS biologist or biological monitor will monitor the BVLS to ensure that any BVLS has moved and remains outside of the fenced-in work area. If the BVLS does not leave of its own volition it will be relocated following an approved BVLS Relocation Plan.
- MM 37
- Prior to the vegetation removal described in MM 34 above, areas of potentially suitable habitat would be surveyed for BVLS using close-focus automated Reconyx camera stations, baited with live and dried mealworms, per the methodology described in the Conservation of Endangered Buena Vista Lake shrews (Sorex ornatus relictus) through Investigation of Taxonomic Status, Distribution, and Use of Non-Invasive Survey Methods (Cypher et al. 2017).

#### **Compensatory Mitigation**

The proposed Project would result in a negligible impact on habitat for BVLS given that there is a low potential for them to be present based on the results of the 2019 camera-trap surveys. Therefore, compensatory mitigation is not recommended.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### 6.3.9 American Badger

#### **Survey Results**

There is a low potential for American badger to occur in the low-quality grassland habitat throughout the study area.

#### **Project Impacts**

Construction may result in reproductive failure by disrupting foraging activities and precluding the formation of natal dens within and adjacent to the Project area. In general, both Project alternatives are equally likely to temporarily impact American badger during construction. While the loss of potential dens would negatively affect American badger if any are present within or adjacent to the Project area, with the implementation of the proposed MM, no direct mortality of American badgers is expected to occur.

#### Mitigation Measure

The following MM is recommended to avoid or minimize the potential for adverse effects on American badger:

#### **MM 38**

Any American badger detected within the project area during Project-related activities shall be allowed to move out of the work area of its own volition. If American badger is denning on or within 50 feet of the Project work areas, the den shall be avoided by maintaining a minimum 50-foot, no-disturbance buffer. If maintaining the buffer is not practicable, CDFW will be consulted to determine alternative measures to minimize the potential for disturbance of the burrow, or (if necessary) to develop and implement procedures to monitor and close the burrow to prevent use by badger during construction activities.

#### **Compensatory Mitigation**

The proposed Project would result in a negligible impact on habitat for American badger given that there is a low potential for them to be present. Therefore, compensatory mitigation is not recommended.

#### 6.3.10 San Joaquin Kit Fox

#### **Survey Results**

Stantec has conducted extensive surveys and monitoring for SJKF within the study area. A summary of surveys completed to date is provided below.

In December of 2018, surveys for potential SJKF dens were conducted in the Project area between MP 103.66 and MP 107.34 prior to activities related to the immediate repair of approximately 3.5 miles of the canal, during which time 58 potential SJKF dens were identified. The 58 potential dens were each

6.0 Discussion of Impacts and Mitigation March 27, 2020

monitored for three consecutive nights using remote cameras and tracking media between January and March 2019, and no SJKFs were detected.

Between October 15, 2019 and November 20, 2019, pre-construction surveys and monitoring of potential SJKF dens were conducted prior to geotechnical borings. Approximately 140 potential SJKF dens were identified during the surveys, of which 41 were monitored for four consecutive nights using remote cameras and tracking medium (i.e. diatomaceous earth); no SJKF were detected during the surveys or monitoring.

From November 8, 2019, to December 17, 2019, Stantec's subconsultant, H.T. Harvey & Associates, conducted surveys along the entire FKC within the project area using ecological scent-detection dogs trained to recognize the specific scent of SJKF scat and to alert their handler to the location of the scat. No SJKF, SJKF scat, or alerts by scent dogs were detected during the surveys (H.T. Harvey & Associates 2020).

From December 2, 2019, to December 9, 2019, Stantec deployed two arrays of remotely operated cameras enhanced with scent attractants (e.g., cans of cat food or tuna with small punctures to promote long-lasting scent dispersal) in two locations within the study area: the first (northern) array included ten cameras beginning adjacent to the Tulare County Mid-Valley Disposal site Teapot Dome at Avenue 128 south along the eastern embankment of the FKC approximately 2.76 miles to about 0.5 mile south of Avenue 112. The second (southern) array included eight cameras beginning near the Kern County/Tulare County border and extending 2.5 miles south to the north end of Lake Woollomes. In both arrays, cameras were placed at 0.25- to 0.5-mile intervals facing east of and down the outboard embankment of the canal with scent attractants in view of the camera. In seven nights of continuous monitoring, resulting in 126 camera-nights, no SJKF were detected (Stantec 2019b). Several other mammalian species were recorded by the 18 cameras deployed in the two arrays, including striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), opossum (*Didelphis marsupialis*), deer mouse (*Peromyscus maniculatus*), desert cottontail (*Sylvilagus audubonii*), domestic dog (*Canis lupus familiaris*), and domestic cat (*Felis catus*).

Although no SJKF were detected during the surveys, there is a potential for SJKF to be present (either in dens or using the project area as a movement corridor) prior to the start of construction.

#### Project Impacts

Destruction of potential SJKF dens during construction may displace SJKF and make them more susceptible to predation. Construction may also result in reproductive failure by disrupting foraging activities, increasing human disturbance, and precluding the formation of natal dens in the project area. in general, both Project alternatives are equally likely to temporarily impact SJKF during construction. While the loss of potential dens would negatively affect SJKF if any are present in the Project area, with the implementation of the proposed MMs, no direct mortality of SJKF from den removal is expected to occur. Reclamation is currently conducting ESA section 7 consultation with the USFWS for Project-related effects on SJKF.

6.0 Discussion of Impacts and Mitigation March 27, 2020

#### **Mitigation Measures**

The following MMs are recommended to avoid or minimize the potential for adverse effects on SJKF. The following MMs would be limited to those areas where SJKF presence has been detected via scent attractant enhanced remote camera arrays and trained ecological scent dogs, and in areas otherwise determined to be sensitive for SJKF based on coordination with the USFWS. The measures below may be revised based on the results of the ESA section 7 consultation.

#### **MM 39** Determine the presence of San Joaquin Kit Fox (SJKF) dens:

- a) Pedestrian inventories of potential and occupied dens will be completed to determine the need for pre-construction monitoring. Pedestrian inventories of potential and occupied dens shall be conducted within 90 calendar days prior to the start of construction (i.e., before any activity that covers or disrupts surface soils [e.g., clearing and grubbing, grading, excavation, soil or equipment stockpiling, equipment or vehicle storage or parking]). To the extent practicable, these surveys would be conducted nearer in time to the start of construction.
- b) Pre-construction monitoring will be performed to confirm and document kit fox presence or absence at potential and occupied dens identified during the inventory.
- c) Areas within which pedestrian den inventories or pre-construction monitoring have been completed more than 30 days prior to construction will be re-inventoried not more than 30 days prior to construction. Preconstruction monitoring will be performed on potential and occupied dens discovered during re-inventory that have not been previously monitored.
- d) Pedestrian inventories and pre-construction monitoring for dens shall be conducted by qualified biologists familiar with SJKF biology, natural history, and potential dens.
- e) Pipes and culverts shall be searched for kit foxes immediately prior to being moved or sealed to ensure that an animal has not been trapped. If a kit fox is observed, it will be gently encouraged to leave the area by a USFWS-approved biologist (i.e., without using loud noise, physical force, or physical movement of the pipe or culvert such that the animal could be injured or startled while it is leaving the area).
- MM 40 Identify and document locations of potential or occupied dens (natal or non-natal) and their status (occupied or unoccupied). Definitions:
  - a) Known den: any existing natural den or human-made structure for which conclusive evidence or circumstantial evidence can show that the den is used or has been used at any time in the past by SJKF.
  - b) Potential den: any natural den or burrow within the range of the species that has entrances of appropriate dimensions (4 to 12 inches in diameter) to accommodate

6.0 Discussion of Impacts and Mitigation March 27, 2020

- SJKF. A qualified biologist will survey and investigate using remote cameras and track plates to determine species use. If no information is collected that would indicate use by other species, the den will be treated as a potential SJKF den.
- c) Natal/Pupping den: any known SJKF den (as defined) used by SJKF to whelp and/or rear pups.
- d) Atypical den: any known SJKF den that has been established in or in association with a human-made structure.
- MM 41 Identify and execute appropriate action(s) regarding notification, buffers, excavation and fill or seal-off:
  - a) Occupied natal den: if an occupied natal den is visible or encountered within the Project limits or on publicly accessible land sufficiently close to the Project construction area such that it would be disturbed (based on a qualified biologist's opinion and monitoring), the USFWS shall be contacted immediately, before any Project action occurs, to determine permissible actions to permit resumption of work.
  - b) Unless determined necessary for safety or constructability by Reclamation, FWA, or the Project contractor, the Project site shall not be lighted between sunset and sunrise.
  - c) Pipes or culverts with a diameter greater than four inches shall be capped or taped closed when it is ascertained that no SJKF are present. Any SJKF found in a pipe or culvert shall be allowed to escape unimpeded.
- MM 42 If a natural den is determined to meet size criteria (i.e., greater than four inches in diameter) and cannot be avoided and must be destroyed, the following guidelines shall be followed:
  - a) Prior to den destruction, the den shall be evaluated by a qualified biologist. If subjectively deemed suitable, the den would be monitored for at least three consecutive days to determine its status. Activity at the den shall be monitored by placing tracking medium at the entrance and by remote cameras. If no SJKF activity is observed during this period, the den shall be deemed unoccupied and destroyed immediately under the supervision of a USFWS-approved biologist to preclude subsequent use. If SJKF activity is observed at the den during this period, the den shall be monitored for at least five consecutive days from the time of observation to allow any resident animal to move to another den during its normal activities. Use of the den can be discouraged during this period by partially plugging the entrance(s) with soil in such a manner that any resident animal can escape easily. Destruction of the den may begin when, in the judgment of a USFWS-approved biologist, the animal has moved to a different den. The biologist shall be trained and familiar with SJKF biology. If the animal is still present after five or more consecutive days of plugging

6.0 Discussion of Impacts and Mitigation March 27, 2020

and monitoring, the den may be excavated when, in the judgment of a USFWS-approved biologist, it is temporarily vacant, for example during the animal's normal foraging activities. All den destruction shall be conducted under the supervision of a USFWS-approved biologist.

- b) If it is determined to be unnecessary or logistically impractical to monitor all dens using remote cameras and tracking medium (or to hand excavate to confirm vacancy), alternative methods of assessing presence or absence of SJKF activity can be used provided that the alternative methods are approved by the USFWS. Alternative methods of assessing SJKF activity could include but are not limited to spotlighting, ecological scent-detection dogs, and digital video inspection cameras (videoscope).
- c) All dens requiring excavation shall be excavated under the supervision of a USFWS-approved biologist. In no event will an excavation that meets the definition of a confined space (i.e., a space large enough and so configured that a person can bodily enter but has limited or restricted means for entry or exit) be initiated. In this circumstance, discouragement (as in MM 39a above) would be used.
- d) The den shall be fully excavated and then filled with dirt and compacted so that SJKF cannot reenter or use the den during the construction period. If, at any point during excavation SJKF is discovered inside the den, the excavation activity shall cease immediately, and monitoring of the den shall be resumed. Destruction of the den may be resumed when, in the judgment of a USFWS-approved biologist, the animal has escaped from the partially destroyed den.

#### **Compensatory Mitigation**

Construction of the proposed Project would result in only temporary impacts on potential habitat for SJKF. With implementation of the CER Alternative, there would be an increase in potential habitat resulting from abandonment of the existing canal and habitat associated with the realigned canal. With the implementation of the CE Alternative, the new embankment would also provide potential habitat. Therefore, compensatory mitigation is not recommended.

7.0 References March 27, 2020

#### 7.0 REFERENCES

- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, eds. 2012. The Jepson Manual: Vascular Plants of California. Second edition. University of California Press. Berkeley, California.
- Calflora. 2019. Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals including the Consortium of California Herbaria. 2019. Berkeley, California: The Calflora Database [a non-profit organization]. Available: https://www.calflora.org/(Accessed: Oct 28, 29, 30, 2019).

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation.



7.0 References March 27, 2020

 2019f. Report to the Fish and Game Commission. Evaluation of the Petition from the Xerces
Society, Defenders of Wildlife, and the Center for Food Safety to list four species of bumble bees
as Endangered under the California Endangered Species Act.

. 2020. Rarefind 5. California natural diversity database (CNDDB). Accessed March 19, 2020.

- California Invasive Plant Council (Cal-IPC). 2017. Invasive Plant Inventory. Available at: https://www.cal-ipc.org/plants/inventory/. Accessed November 27, 2019.
- California Native Plant Society. 2020. Inventory of rare and endangered plants (online edition, v8-03 0.39). Sacramento, CA. Available at: <a href="http://www.rareplants.cnps.org">http://www.rareplants.cnps.org</a>. Accessed March 19, 2020.
- California State University Stanislaus (CSU, Stanislaus). Undated. Endangered Species Recovery Program. Species Profile for the San Joaquin kit fox (*Vulpes macrotis mutica*). Available: http://esrp.csustan.edu/speciesprofiles/profile.php?sp=vuma. Accessed September 2019.
- Cyper, Brian; Erin Tennant; Jesus Maldonado; Lawrence Saslaw; Tory Westall; Jacklyn Mohay; Erica Kelly; and Christine Val Horn Job. 2017. Conservation of Endangered Buena Vista Lake Shrews (*Sorex ornatus relictus*) through Investigation of Taxonomic Status, Distribution, and Use of Non-Invasive Survey Methods. California State University-Stanislaus, Endangered Species Recovery Program. California Department of Fish and Wildlife, Region 4. Smithsonian Conservation Biology Institute, National Zoological Park.
- Estep, James A. 1989. Biology, *Movements and Habitat Relationships of the Swainson's Hawk in the Central Valley of California, 1986-1987*. California Department of Fish and Game, Wildlife Management Division, Nongame Bird and Mammal Section. 52pp.
- Estep, Jim, 2009. The influence of vegetation structure on Swainson's hawk (*Buteo swainsoni*) foraging habitat suitability in Yolo County, California. Prepared for the Yolo Natural Heritage Program. Woodland, CA.
- Greene, Edward L. 1889. Delphinium recurvatum (RANUNCULACEAE), Pittonia, 1: p 285.
- Hoover, Robert F. 1938. New Californian Plants. Leaflets of Western Botany: 2(8) pp 130-131.
- H.T. Harvey & Associates. 2020. San Joaquin kit fox surveys for the Friant-Kern Canal subsistence correction project. Prepared for Stantec Consulting Services Inc.
- Jepson, Willis L. 1892. Atriplex depressa (CHENOPODIACEAE). Pittonia, 2: p 304.
- Keck, David D. 1935. Layia munzii (ASTERACEAE). Madroño, 3: 16.
- Mason, Herbert L. 1945. Eriastrum hooveri (POLEMONIACEAE). Madroño, 8: p 89.

7.0 References March 27, 2020

- Mathias, Mildred E. 1936. Eryngium spinosepalum (APIACEAE). Brittonia, 2: p 245.
- Mayer, K.E., and W.F. Laudenslayer, Jr., eds. 1988. A guide to wildlife habitats of California. Sacramento: California Department of Forestry and Fire Protection.
- Natural Resources Conservation Service. 2019. Web Soil Survey. National Cooperative Soil Survey for Kern and Tulare Counties, California. United States Department of Agriculture. Available at https://websoilsurvey.sc.egov.usda.gov/. Accessed September 2019.
- Sawyer, J. O., T. Keeler-Wolf, and J. M. Evans. 2009. A Manual of California Vegetation, 2nd edition. California Native Plant Society, Sacramento, CA.
- Scribner, Frank L. 1899. Puccinellia simplex (POACEAE). Circular, USDA, Division of Agrostology 16:1.
- Standley, Paul C. 1916. Atriplex minuscula (CHENOPODIACEAE). North American Flora 21(1): 51.
- Stantec. 2019a. Friant-Kern Canal Middle Reach Capacity Correction Project Delineation of Waters of the United States.
- Stantec. 2019b. San Joaquin kit fox scent attractant-enhanced camera array surveys for the Friant-Kern Canal Middle Reach Capacity Correction Project memo.
- Stantec. 2019c. Buena Vista Lake shrew camera surveys for the Friant-Kern Middle Reach Capacity Correction Project memo.
- Stantec. 2020. Friant-Kern Canal Middle Reach Capacity Correction Project Botanical Survey Report.
- Stutz, Howard C., Ge-Lin Chu. 1997. *Atriplex subtilis* (CHENOPODIACEAE): A New Species from South-Central California. Madroño: 44(2) pp 184-88.
- Stutz, Howard C., Ge-Lin Chu, and Stewart C. Sanderson. 1997. *Atriplex erecticaulis* (CHENOPODIACEAE): A New Species from South-Central California. Madroño: 44(1) pp 89-94.
- U.S. Army Corps of Engineers (USACE). 2008. Regional Supplement to the Corps of Engineers wetland delineation manual: arid west region (version 2.0): U.S. Army Engineer Research and Development Center.
- U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.
  . 2010. Monolopia (=Lembertia) congdonii (San Joaquin woolly-threads) 5-Year Review:
- \_\_\_\_. 2011a. Buena Vista Lake Ornate Shrew (Sorex ornatus relictus) 5-Year Review: Summary and Evaluation. Sacramento, CA.

Summary and Evaluation. Sacramento, CA.

and Game. Sacramento, California.

7.0 References
March 27, 2020

\_\_\_\_\_\_\_. 2011b. Standard Recommendations for Protection of the Endangered San Joaquin Kit Fox
Prior to or During Ground Disturbance. Sacramento, CA.

\_\_\_\_\_\_. 2013. Eremalche kernensis (Kern mallow) 5-Year Review: Summary and Evaluation.
Sacramento, CA.

\_\_\_\_\_\_. 2019a. IPaC Trust Resources Report. https://ecos.fws.gov/ipac/ cited September 10, 2019.

\_\_\_\_\_. 2019b. Revised Recovery Plan for Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus). Sacramento, CA.
USFWS ECOS (U.S. Fish and Wildlife Services Environmental Conservation Online System). 2019.
Available:
 https://ecos.fws.gov/ecp0/profile/speciesProfile;jsessionid=2D40115E0E96612C9EC72E9209EF EA9B?spcode=A006#rangeInfo. Accessed September 2019.
Western Regional Climate Center. 2019. Delano Station, California (042346), Period of Record: 03/01/1906 to 06/09/2016. Accessed, November 27, 2019.

Zeiner, D.C., W.F. Laudenslayer, K.E. Mayer, and M. White, eds. 1990. California's Wildlife. Volume II:

Birds. California Statewide Wildlife Habitat Relationships System. California Department of Fish

## Figures (provided under separate cover)

## ATTACHMENT A USFWS SPECIES LIST



## United States Department of the Interior

#### FISH AND WILDLIFE SERVICE

Sacramento Fish And Wildlife Office Federal Building 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846 Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To: September 10, 2019

Consultation Code: 08ESMF00-2019-SLI-2982

Event Code: 08ESMF00-2019-E-09544

Project Name: Friant-Kern Canal Middle Reach Capacity Correction Project

Subject: List of threatened and endangered species that may occur in your proposed project

location, and/or may be affected by your proposed project

#### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected\_species\_list/species\_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle\_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

## **Official Species List**

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office Federal Building 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846 (916) 414-6600

### **Project Summary**

Consultation Code: 08ESMF00-2019-SLI-2982

Event Code: 08ESMF00-2019-E-09544

Project Name: Friant-Kern Canal Middle Reach Capacity Correction Project

Project Type: WATER SUPPLY / DELIVERY

Project Description: The project would restore the capacity of the approximately 33-mile long

segment of the Friant-Kern Canal (FKC) by enlarging and realigning portions of the existing canal corridor to restore conveyance capacity of up to 4,500 cubic feet per second (cfs). Enlargements to approximately 10 miles of the existing canal would occur at the northernmost and southernmost portions of the project area consisting of raising or widening and raising the banks of the existing canal. Raising the canal would consists of an up to a 4-foot-high concrete lining raise. The raise would be accomplished by placing new concrete lining on top of the existing lining and extending the height of the earthen canal banks. Widening and raising would consist of removing a portion of the existing liner and cutting in a bench into the existing grade to accommodate the widening of the canal. Once completed, a liner would be extended on the bench and the raised embankment. Existing delivery turnouts would be

maintained, with some modifications.

The project also consists of an approximate 23-mile new realigned canal that would be constructed east of and adjacent to the existing canal. The new parallel canal would accommodate a conveyance capacity of between 3,500 and 4,000 cfs. Once the new canal is constructed, the majority of the existing canal would be abandoned, demolished, and the area would be restored to grade. New turnouts consisting of new cast-in-place concrete structures and delivery piping would be constructed as needed along the new parallel canal. Small portions of the existing canal would be left in place to accommodate existing turnouts to maintain water deliveries to existing distribution systems within the project area. This would be accomplished by creating a pool within small portions of the existing FKC, upstream of existing pump stations, which would allow water to be delivered from the new realigned canal to a controlled water level in the delivery pool without impacting existing pumps and distribution systems. New right-of-way (ROW) would be required to accommodate the project features.

The Project/Action would require removal of the existing check structures, wasteways and siphons at Deer Creek and White River and replacement with new similar facilities. Control buildings and associated electrical, mechanical, and controls equipment at these facilities would be replaced with new equipment, as required. Up to 27 existing bridges would be removed and replaced with new road crossing structures. Existing utility crossings would be removed, modified, and/or replaced to accommodate the needs of the utilities and the new canal system. The Project would also require modification, relocation, abandonment, or removal of existing facilities on lands adjacent to the canal and within the project alignment. Impacted facilities could include, but are not limited to, wells, irrigation systems, farm roads, miscellaneous structures (such as small control buildings), and power lines.

Construction of the project would be ongoing continuous for an approximate 3-year period. Construction would occur between the hours of 7 a.m. to 7 p.m. Monday through Friday. Work crews would consist of up to eight construction teams consisting of 15—30 people per team, for a maximum work force of up to 240 workers.

#### **Project Location:**

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/35.946026692209585N119.11660440973944W



Counties: Kern, CA | Tulare, CA

### **Endangered Species Act Species**

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an
office of the National Oceanic and Atmospheric Administration within the Department of
Commerce.

#### **Mammals**

NAME

San Joaquin Kit Fox Vulpes macrotis mutica

Endangered

No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873

Tipton Kangaroo Rat *Dipodomys nitratoides nitratoides* 

Endangered

No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7247">https://ecos.fws.gov/ecp/species/7247</a>

Species survey guidelines:

https://ecos.fws.gov/ipac/guideline/survey/population/40/office/11420.pdf

#### **Birds**

NAME STATUS

Yellow-billed Cuckoo Coccyzus americanus

Threatened

Population: Western U.S. DPS

There is **proposed** critical habitat for this species. Your location is outside the critical habitat.

Species profile: <a href="https://ecos.fws.gov/ecp/species/3911">https://ecos.fws.gov/ecp/species/3911</a>

Endangered

Threatened

Threatened

Threatened

Event Code: 08ESMF00-2019-E-09544

#### **Reptiles**

NAME STATUS

Blunt-nosed Leopard Lizard Gambelia silus

No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625

Giant Garter Snake *Thamnophis gigas* 

No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4482">https://ecos.fws.gov/ecp/species/4482</a>

**Amphibians** 

NAME STATUS

California R:d-legged Frog Rana draytonii

There is fi al critical habitat for this species. Your location is outside the critical habitat.

Species pr file: <a href="https://ecos.fws.gov/ecp/species/2891">https://ecos.fws.gov/ecp/species/2891</a>

Species su vey guidelines:

https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf

California Tiger Salamander Ambystoma californiense

Population: U.S.A. (Central CA DPS)

There is **fi** al critical habitat for this species. Your location is outside the critical habitat.

Species profile: <a href="https://ecos.fws.gov/ecp/species/2076">https://ecos.fws.gov/ecp/species/2076</a>

**Fishes** 

NAME STATUS

Delta Smelt Hypomesus transpacificus

There is **final** critical habitat for this species. Your location is outside the critical habitat.

Species profile: <a href="https://ecos.fws.gov/ecp/species/321">https://ecos.fws.gov/ecp/species/321</a>

**Crustaceans** 

NAME STATUS

Vernal Pool Fairy Shrimp Branchinecta lynchi

There is **final** critical habitat for this species. Your location is outside the critical habitat.

Species profile: https://ecos.fws.gov/ecp/species/498

Threatened

Threatened

Endangered

### **Flowering Plants**

NAME STATUS

California Jewelflower Caulanthus californicus

No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4599">https://ecos.fws.gov/ecp/species/4599</a>

San Joaquin Adobe Sunburst *Pseudobahia peirsonii* Threatened

No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2931">https://ecos.fws.gov/ecp/species/2931</a>

Springville Clarkia *Clarkia springvillensis*Threatened

No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8309">https://ecos.fws.gov/ecp/species/8309</a>

#### **Critical habitats**

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

## ATTACHMENT B CNDDB AND CNPS RECORDS

SciName	ComName	TaxonGroup	ElmCode T	otalOccs FedList	CalList	GPank	SRank RPlantRank	OthrStatus	Habitats	GenHab	MicroHab ReturnOcc
Schwarne	Commanie	TaxonGroup	Ellificode 10	otaloccs Feurist	Callist	GNailk	Shalik helalithalik	BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	nabitats	Highly colonial species, most numerous in	Requires open water, protected nesting
								IUCN EN-Endangered   NABCI RWL-Red Watch List	Freshwater marsh   Marsh & swamp   Swamp	I	substrate, and foraging area with insect prey
Agalaius tricalar	tricalared blackbird	Dirds	ABPBXB0020	OFF None	Throatonad	G2G3	C1C2			California.	
Agelaius tricolor	tricolored blackbird	Birds	ABPBABUUZU	955 None	Threatened	G2G3	S1S2	USFWS_BCC-Birds of Conservation Concern	Wetland	California.	within a few km of the colony.
										Southern Can Jacquin Valley Known from two	Microhabitat of this species is poorly known.
	Dakarefield lealess									Southern San Joaquin Valley. Known from two disjunct areas: the east side of the Carrizo Plain	Other legless lizard species occur in sparsely
Annialla suinnalli	Bakersfield legless	Dantilaa	A D A C C O 1 O F O	20 No	Nama	6262	6262	CDEW CCC Coordinate Co		, ·	vegetated areas with moist, loose soil. Often
Anniella grinnelli	lizard	Reptiles	ARACC01050	20 None	None	G2G3	S2S3	CDFW_SSC-Species of Special Concern		and portions of the city limits of Bakersfield.	found underneath leaf litter, rocks, and logs.
1	northern California										Soil moisture is essential. They prefer soils with
Anniella pulchra	legless lizard	Reptiles	ARACC01020	375 None	None	G3	53	CDFW_SSC-Species of Special Concern   USFS_S-Sensitive	Chaparral   Coastal dunes   Coastal scrub	vegetation.	a high moisture content.
								DIM C County of CDEN CCC County of County County	Chaparral   Coastal scrub   Desert wash	Barrella a considerada alta blanda a conflictada	Parata and a saturat hada for a bilah
								BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	Great Basin grassland   Great Basin scrub	Deserts, grasslands, shrublands, woodlands	Roosts must protect bats from high
A street and High a	112 4 16					0.5		IUCN_LC-Least Concern   USFS_S-Sensitive   WBWG_H-High		and forests. Most common in open, dry	temperatures. Very sensitive to disturbance of
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420 None	None	G5	S3	Priority	Sonoran desert scrub   Upper montane	habitats with rocky areas for roosting.	roosting sites.
										Patchily distributed from the eastern portion of	Conoralist reported from a range of carrib and
A ====================================										1	Generalist reported from a range of scrub and
Arizona elegans	California alassocarales	D	A D A D D O A O A 7	260 No	Nin	CETA	62	CDEW CCC Coordinate Co		1	grassland habitats, often with loose or sandy
occidentalis	California glossy snake	Reptiles	ARADB01017	260 None	None	G5T2	52	CDFW_SSC-Species of Special Concern	Constal and de la Constal and half Constal Region		soils.
								BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	Coastal prairie   Coastal scrub   Great Basin	Open, dry annual or perennial grasslands,	Subterranean nester, dependent upon
Athono cunicularia	hurrousing cool	Diada	A DNICD40040	1000 N	Name	64	62	IUCN_LC-Least Concern   USFWS_BCC-Birds of Conservation		deserts, and scrublands characterized by low-	burrowing mammals, most notably, the
Athene cunicularia	burrowing owl	Birds	ABNSB10010	1989 None	None	G4	53	Concern	desert scrub   Sonoran desert scrub   Valley &		California ground squirrel.
Atriplex cordulata var.	Earlimart orache	Dicots	PDCHE042V0	21 None	None	G3T1	S1 1B.2	BLM_S-Sensitive	Valley & foothill grassland	Valley and foothill grassland.	60-115 m. 1
									Character b L Walle O Coath III a coate at L	Character to all a said facility and and	In powdery, alkaline soils that are vernally
Atriplex coronata var.	Last Hills	Disati	DDCU504371	74	Name	C 4T2	62 42 2	DIAA C Constitue I CD CDDC Contrada I CO C	Chenopod scrub   Valley & foothill grassland	Chenopod scrub, valley and foothill grassland,	moist with Frankenia, Atriplex spp. and
vallicola	Lost Hills crownscale	Dicots	PDCHE04371	74 None	None	G4T2	S2 1B.2	BLM_S-Sensitive   SB_SBBG-Santa Barbara Botanic Garden	Vernal pool	vernal pools.	Distichlis. 45-885 m.
									All all also a light control of the second		the all to all all and do a all to the
									Alkali playa   Chenopod scrub   Meadow &		Usually in alkali scalds or alk. clay in meadows
		a	DD 011504010						seep   Valley & foothill grassland   Vernal pool	1	or annual grassInd; rarely associated with
Atriplex depressa	brittlescale	Dicots	PDCHE042L0	60 None	None	G2	S2 1B.2		Wetland	valley and foothill grassland, vernal pools.	riparian, marshes, or vernal pools. 1-325 m.
							l l		Alkali playa   Chenopod scrub   Valley &	Chenopod scrub, playas, valley and foothill	In alkali sink and grassland in sandy, alkaline
Atriplex minuscula	lesser saltscale	Dicots	PDCHE042M0	52 None	None	G2	S2 1B.1		foothill grassland	grassland.	soils. 0-225 m.
Atriplex persistens	vernal pool smallscale	Dicots	PDCHE042P0	41 None	None		S2 1B.2	DIAA C Cooper	Vernal pool   Wetland	Vernal pools.	Alkaline vernal pools. 3-115 m.
Atriplex subtilis	subtle orache	Dicots	PDCHE042T0	24 None	None	G1	S1 1B.2	BLM_S-Sensitive	Valley & foothill grassland	Valley and foothill grassland.	Alkaline soils. 20-100 m.
											Food plant genera include Antirrhinum,
			l							Coastal California east to the Sierra-Cascade	Phacelia, Clarkia, Dendromecon, Eschscholzia,
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	234 None	Candidate Endangered	G3G4	S1S2			crest and south into Mexico.	and Eriogonum.
									Weller O Conticil and a lateral and lateral	Endemic to the grasslands of the Central	Inhabit small, clear-water sandstone-
									Valley & foothill grassland   Vernal pool	Valley, Central Coast mountains, and South	depression pools and grassed swale, earth
Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	ICBRA03030	770 Threatened	None	G3	S3	IUCN_VU-Vulnerable	Wetland	Coast mountains, in astatic rain-filled pools.	slump, or basalt-flow depression pools.
									Consider the state of the state	Ciamanda and an	Granite or clay soils on S-SW facing slopes;
December of the stands	War and have Barre		DN 41 11 0 CO CO	27 No. 1	F. d d	64	64 45 2	DIAA C Coordina Lucro o Coordina	Cismontane woodland   Meadow & seep	Cismontane woodland, meadows and seeps,	usually in grassland surrounded by foothill
Brodiaea insignis	Kaweah brodiaea	Monocots	PMLILOCO60	27 None	Endangered	G1	S1 1B.2	BLM_S-Sensitive   USFS_S-Sensitive	Valley & foothill grassland	valley and foothill grassland.	woodland. 170-1405 m.
									Const Basis a made at 1 Bis at 5 at 5 and 1	Breeds in grasslands with scattered trees,	Dec. Second Second of Making Committee and the
								DIAM C Constitute   HICKN   C   Local Constitute   DCC	Great Basin grassland   Riparian forest	I	Requires adjacent suitable foraging areas such
B 1	C. dan dahar I	D' de	A DAUGGGGGG	2540 No	Th	C.F.	62	BLM_S-Sensitive   IUCN_LC-Least Concern   USFWS_BCC-	Riparian woodland   Valley & foothill	agricultural or ranch lands with groves or lines	as grasslands, or alfalfa or grain fields
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2518 None	Threatened	G5	S3	Birds of Conservation Concern	grassland	of trees.	supporting rodent populations.
Calaahautus stuistus	alliali manimana lili.		D141110D400	442 No. 1	Nicol	622	6262 45.2	BLM_S-Sensitive   SB_RSABG-Rancho Santa Ana Botanic	Chaparral   Chenopod scrub   Meadow & seep		Alkaline meadows and ephemeral washes. 70-
Calochortus striatus	alkali mariposa-lily	Monocots	PMLIL0D190	113 None	None	G3?	S2S3 1B.2	Garden   USFS_S-Sensitive  SB_RSABG-Rancho Santa Ana Botanic Garden   SB_SBBG-	Mojavean desert scrub   Wetland	scrub, meadows and seeps.	1600m.
								Santa Barbara Botanic Garden   SB_UCBG-UC Botanical	Change of scrub   Pings & junior woodlands	Changnod scrub, valley and footbill grassland	
Caulanthus californicus	California jewelflower	Disats	DDDDA34040	67 [pd	Endangero -	C1	10.1	Garden at Berkeley	Chenopod scrub   Pinon & juniper woodlands   Valley & foothill grassland	Chenopod scrub, valley and foothill grassland, pinyon and juniper woodland.	Sandy soils. 65-1860 m.
Cicindela tranquebarica	camornia jewelliower	Dicots	PDBRA31010	67 Endangered	Lilualigereu	G1	S1 1B.1	Ourdell at Deliceley	T variey & rootinii grassianu	philyon and jumper woodiand.	Janay 30113. 03-1000 111.
cicinacia tranquebanca	San Joaquin tiger beetle	Insects	IICOL0220E	2 None	None	G5T1	S1			Known only from Tulare and Kings counties.	
σομ.	Jan Joaquin tiger beetle	111355513	IICULUZZUE	ZINOHE	None	9311	S1			Miles.	
									Chaparral   Cismontane woodland   Valley &	Chaparral, cismontane woodland, valley and	Cutbanks and openings in blue oak woodland.
Clarkia springvillensis	Springville clarkia	Dicots	PDONA05120	28 Threatened	Endangered	G2	S2 1B.2		foothill grassland	foothill grassland.	Decomposed granite loam. 210-2255 m.
Coastal and Valley	Coastal and Valley	טונטנא	I DOINAUSIZU	Zo mileatenea	Litualigereu	02	JZ ID.Z		Tootiiii Brassiana	rootiiii grassaria.	Secomposed Branne Joans, 210-2255 III.
Freshwater Marsh	Freshwater Marsh	Marsh	CTT52410CA	60 None	None	G3	S2.1		Marsh & swamp   Wetland		
Tresitwater Warsh	TTC3TIWatCT Wat311	iviaisii	C1132410CA	00 None	None	03	32.1		Wettand		
									Broadleaved upland forest   Chaparral		
									Chenopod scrub   Great Basin grassland		
		1							Great Basin scrub   Joshua tree woodland		
									Lower montane coniferous forest   Meadow &		
		]							seep   Mojavean desert scrub   Riparian forest		
								BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	Riparian woodland   Sonoran desert scrub		Roosts in the open, hanging from walls and
	Townsend's big-eared	]						IUCN_LC-Least Concern   USFS_S-Sensitive   WBWG_H-High			ceilings. Roosting sites limiting. Extremely
Corynorhinus townsendii	_	Mammals	AMACC08010	635 None	None	G3G4	S2	Priority	coniferous forest   Valley & foothill grassland	habitats. Most common in mesic sites.	sensitive to human disturbance.
corynorimius townsenum		iviaiiiiidiS	MAINCCOOLIO	033 None	ivone	0304	32	·······································	Chenopod scrub   Cismontane woodland		On alkaline soils; often in valley saltbush or
i de la companya de	1	1		120 None	N	G2?	S2? 1B.2	BLM S-Sensitive   SB SBBG-Santa Barbara Botanic Garden	Valley & foothill grassland	cismontane woodland.	valley chenopod scrub. 3-790 m. 1
Delphinium recurvatum	recurved larksnur	Dicots	PDRAN0B1J0		None						

SciName	ComName	TaxonGroup	ElmCode -	TotalOccs FedList	CalList	GPank	SRank RPlantRank	OtherStatus	Habitats	GenHab	MicroHab ReturnOccs
Schame	Comname	raxondroup	Eimcode	Totaloccs FedList	Cairist	GRAIIK	Skalik Kriantkalik	Othistatus	nabitats	Occurs only in the Central Valley of California,	Prefers to lay eggs in elderberries 2-8 inches in
Desmocerus californicus	valley elderberry									in association with blue elderberry (Sambucus	diameter; some preference shown for
dimorphus	longhorn beetle	Insects	IICOL48011	271 Threatened	None	G3T2	S2		Riparian scrub	mexicana).	"stressed" elderberries. 5
								BLM_S-Sensitive   SB_RSABG-Rancho Santa Ana Botanic	Broadleaved upland forest   Cismontane	Broadleafed upland forest, cismontane	In bare ground around gooseberry bushes or
Diplacus pictus	calico monkeyflower	Dicots	PDSCR1B240	73 None	None	G2	S2 1B.2	Garden	woodland	woodland.	around granite rock outcrops. 180-1280 m. 3
										Saltbrush scrub and sink scrub communities in	Needs soft friable soils which escape seasonal
Dipodomys nitratoides	Tinton language and		AAAA ED034 E3	70 5	E. d d	C2T4T2	6463	HICN MILWIS analys	Characa di savula	the Tulare Lake Basin of the southern San	flooding. Digs burrows in elevated soil mounds
nitratoides	Tipton kangaroo rat	Mammals	AMAFD03152	79 Endangered	Endangered	G3T1T2	5152	IUCN_VU-Vulnerable	Chenopod scrub	Joaquin Valley.	at bases of shrubs. 12
									Aquatic   Artificial flowing waters		
									Klamath/North coast flowing waters		
									Klamath/North coast standing waters   Marsh		
									& swamp   Sacramento/San Joaquin flowing	A thoroughly aquatic turtle of ponds, marshes,	
									waters   Sacramento/San Joaquin standing	rivers, streams and irrigation ditches, usually	Needs basking sites and suitable (sandy banks
								BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	waters   South coast flowing waters   South		or grassy open fields) upland habitat up to 0.5
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1385 None	None	G3G4	S3	IUCN_VU-Vulnerable   USFS_S-Sensitive	coast standing waters   Wetland		km from water for egg-laying.
								ASS THE Three transfer of LODGIN SSS Secretary SS control Secretary	A service I Conserve to IConserve to III and the		Gravel-bottomed areas for spawning and
Fatasahaana hubba:	Kana hasalalanana.	F:-b	AFBAA02040	2 None	Name	6163	C1C2	AFS_TH-Threatened   CDFW_SSC-Species of Special Concern			muddy-bottomed areas where ammocoetes
Entosphenus hubbsi	Kern brook lamprey	Fish	AFBAAU2U4U	2 None	None	G1G2	S1S2	IUCN_NT-Near Threatened   USFS_S-Sensitive	waters	San Joaquin River system and Kern River.	can burrow and feed. 1 On dry, open, sandy to clay soils; usually within
Eremalche parryi ssp.								SB_RSABG-Rancho Santa Ana Botanic Garden   SB_SBBG-	Chenopod scrub   Pinon & juniper woodlands	Chenopod scrub, valley and foothill grassland,	valley saltbush scrub; often at edge of balds. 60-
kernensis	Kern mallow	Dicots	PDMAL0C031	184 Endangered	None	G3G4T3	S3 1B.2	Santa Barbara Botanic Garden	Valley & foothill grassland	pinyon and juniper woodlands.	1295 m. 4
			1			322.70			, , , , , , , , , , , , , , , , , , , ,	, , , , , , , , , , , , , , , , , , , ,	On sparsely vegetated alkaline alluvial fans;
									Chenopod scrub   Pinon & juniper woodlands	Chenopod scrub, valley and foothill grassland,	also in the Temblor Range on sandy soils. 50-
Eriastrum hooveri	Hoover's eriastrum	Dicots	PDPLM03070	47 Delisted	None	G3	S3 4.2	SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	pinyon and juniper woodland.	915 m. 1
	spiny-sepaled button-								Valley & foothill grassland   Vernal pool		Some sites on clay soil of granitic origin; vernal
Eryngium spinosepalum	celery	Dicots	PDAPI0Z0Y0	108 None	None	G2	S2 1B.2		Wetland		pools, within grassland. 15-1270 m. 10
										Many open, semi-arid to arid habitats,	
Eumops perotis			AAAA CD03011	20C Name	Name	CET4	6364	BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	Chaparral   Cismontane woodland   Coastal	including conifer & deciduous woodlands,	Roosts in crevices in cliff faces, high buildings,
californicus	western mastiff bat	Mammals	AMACD02011	296 None	None	G5T4	S3S4	WBWG_H-High Priority  BLM S-Sensitive   SB RSABG-Rancho Santa Ana Botanic	scrub   Valley & foothill grassland	coastal scrub, grasslands, chaparral, etc.	trees and tunnels. 2
								Garden   SB_USDA-US Dept of Agriculture   USFS_S-	Cismontane woodland   Valley & foothill	Cismontane woodland, valley and foothill	Heavy clay adobe soils in oak grassland. 135-
Fritillaria striata	striped adobe-lily	Monocots	PMLILOVOKO	23 None	Threatened	G1	S1 1B.1	Sensitive	grassland	grassland.	1460 m. 7
	, ,									Resident of sparsely vegetated alkali and	Seeks cover in mammal burrows, under shrubs
	blunt-nosed leopard									desert scrub habitats, in areas of low	or structures such as fence posts; they do not
Gambelia sila	lizard	Reptiles	ARACF07010	380 Endangered	Endangered	G1	S1	CDFW_FP-Fully Protected   IUCN_EN-Endangered	Chenopod scrub	topographic relief.	excavate their own burrows. 27
Great Valley Valley Oak	Great Valley Valley Oak										
Riparian Forest	Riparian Forest	Riparian	CTT61430CA	33 None	None	G1	S1.1		Riparian forest	D	1
								CDF_S-Sensitive   CDFW_FP-Fully Protected   IUCN_CR-		Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain	Deep canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100
Gymnogyps californianus	California condor	Birds	ABNKA03010	13 Endangered	Endangered	G1	S1	Critically Endangered   NABCI RWL-Red Watch List	Chaparral   Valley & foothill grassland	ranges of moderate altitude.	miles from roost/nest.
Cymrogyps camermanas	Camerina conaci	birus	7151416 163616	13 Endungered	Endungered	01	31	ordinary Endangered   10/1501_1001 fed trater Elst	Broadleaved upland forest   Cismontane	Prefers open habitats or habitat mosaics, with	Roosts in dense foliage of medium to large
									woodland   Lower montane coniferous forest	access to trees for cover and open areas or	trees. Feeds primarily on moths. Requires
Lasiurus cinereus	hoary bat	Mammals	AMACC05030	238 None	None	G5	S4	IUCN_LC-Least Concern   WBWG_M-Medium Priority	North coast coniferous forest	habitat edges for feeding.	water. 1
Lasthenia glabrata ssp.								BLM_S-Sensitive   SB_RSABG-Rancho Santa Ana Botanic	Alkali playa   Marsh & swamp   Salt marsh		Usually found on alkaline soils in playas, sinks,
coulteri	Coulter's goldfields	Dicots	PDAST5L0A1	111 None	None	G4T2	S2 1B.1	Garden   SB_SBBG-Santa Barbara Botanic Garden	Vernal pool   Wetland	Coastal salt marshes, playas, vernal pools.	and grasslands. 1-1375 m. 1
											Hillsides, in white-grey alkaline clay soils,
Lavia munzii	Munz's tidy tips	Disats	DDACTENIODO	60 No	None	C2	C2 4D 2	RIM S-Sancitiva	Chenopod scrub   Valley & foothill grassland		w/grasses and chenopod scrub associates. 45- 765 m. 1
Layia munzii	Munz's tidy-tips	Dicots	PDAST5N0B0	68 None	None	G2	S2 1B.2	BLM_S-Sensitive	Cismontane woodland   Lower montane	Cismontane woodland, lower montane	Dry slopes; often on decomposed granite in
Leptosiphon serrulatus	Madera leptosiphon	Dicots	PDPLM09130	27 None	None	G3	S3 1B.2	USFS S-Sensitive	coniferous forest	coniferous forest.	woodland. 80-1645 m. 1
	TTTT TOP COSTPITOTI	2.000	2. 2.003130	27 140110	1,0.10	33	15.2			Inhabits the foothills at the southern end of	1
Lytta hoppingi	Hopping's blister beetle	Insects	IICOL4C010	5 None	None	G1G2	S1S2			the Central Valley.	2
										Inhabits the Central Valley of California, from	
Lytta molesta		Insects	IICOL4C030	17 None	None	G2	S2		Vernal pool   Wetland	Contra Costa to Kern and Tulare counties.	2
l	Morrison's blister			40.11						Inhabitant of the southern Central Valley of	
Lytta morrisoni	beetle	Insects	IICOL4C040	10 None	None	G1G2	S1S2		Valley & foothill grassland	California.	3
Masticophis flagellum										Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in	Needs mammal hurrows for refuge and
	San Joaquin coachwhip	Rentiles	ARADB21021	96 None	None	G5T2T3	52?	CDFW SSC-Species of Special Concern	Chenopod scrub   Valley & foothill grassland		oviposition sites. 2
Taddocki	San Joaquin Coachwillp	першез	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	JUNUILE	140IIC	031213	52:	SST W_SSC Species of Special Concern	Chemopou serub   valiey & roothiii grassianu	ane san souquin valley.	2
	San Joaquin										Alkaline or loamy plains; sandy soils, often with
Monolopia congdonii	woollythreads	Dicots	PDASTA8010	111 Endangered	None	G2	S2 1B.2	SB_UCBG-UC Botanical Garden at Berkeley	Chenopod scrub   Valley & foothill grassland	Chenopod scrub, valley and foothill grassland.	grasses and within chenopod scrub. 55-840 m.
		+	1 +		1			•		i i i i i i i i i i i i i i i i i i i	
Navarretia nigelliformis									Cismontane woodland   Valley & foothill	Cismontane woodland, valley and foothill	Apparently in grassland, and not necessarily in
ssp. radians	shining navarretia	Dicots	PDPLM0C0J2	102 None	None	G4T2	S2 1B.2	BLM_S-Sensitive	grassland   Vernal pool   Wetland		vernal pools. 60-975 m. 1
-			PDPLM0C0J2 CTT44120CA	102 None 21 None	None		S2 1B.2 S1.1	BLM_S-Sensitive			

SciName	ComName	TaxonGroup	ElmCode	TotalOccs FedList	CalList	GRank	SRank RPlantRank	OthrStatus	Habitats	GenHab	MicroHab ReturnOccs
											Coarse or cobbly well-drained granitic sand on
Opuntia basilaris var.									Chenopod scrub   Cismontane woodland	Chenopod scrub, valley and foothill grassland,	bluffs, low hills, and flats, within grassland. 85-
treleasei	Bakersfield cactus	Dicots	PDCAC0D055	62 Endangered	Endangered	G5T1	S1 1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	cismontane woodland.	550 m. 1
										Grassland, oak savanna and arid scrubland in	
										the southern Sacramento Valley, Salinas Valley,	
	San Joaquin Pocket								Cismontane woodland   Mojavean desert	San Joaquin Valley and adjacent foothills,	Associated with fine-textured, sandy, friable
Perognathus inornatus	Mouse	Mammals	AMAFD01060	127 None	None	G2G3	S2S3	BLM_S-Sensitive   IUCN_LC-Least Concern	scrub   Valley & foothill grassland	south to the Mojave Desert.	soils.
									Chaparral   Cismontane woodland   Coastal		
									bluff scrub   Coastal scrub   Desert wash		
									Pinon & juniper woodlands   Riparian scrub	Frequents a wide variety of habitats, most	Open areas for sunning, bushes for cover,
								BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	Riparian woodland   Valley & foothill	common in lowlands along sandy washes with	patches of loose soil for burial, and abundant
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	784 None	None	G3G4	S3S4	IUCN_LC-Least Concern	grassland	scattered low bushes.	supply of ants and other insects. 6
	San Joaquin adobe								Cismontane woodland   Valley & foothill	Valley and foothill grassland, cismontane	Grassy valley floors and rolling foothills in
Pseudobahia peirsonii	sunburst	Dicots	PDAST7P030	51 Threatened	Endangered	G1	S1 1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	grassland	woodland.	heavy clay soil. 115-795 m. 23
									Chenopod scrub   Meadow & seep   Valley &		Alkaline, vernally mesic. Sinks, flats, and lake
Puccinellia simplex	California alkali grass	Monocots	PMPOA53110	80 None	None	G3	S2 1B.2		foothill grassland   Vernal pool	and foothill grasslands, vernal pools.	margins. 1-915 m. 1
									Aquatic   Chaparral   Cismontane woodland		
									Coastal scrub   Klamath/North coast flowing		
									waters   Lower montane coniferous forest		[
	6								Meadow & seep   Riparian forest   Riparian		Needs at least some cobble-sized substrate for
Dana havdii	foothill yellow-legged	A 1	A A BUIGGOSS	2450	Constitution #1	62	63	BLM_S-Sensitive   CDFW_SSC-Species of Special Concern			egg-laying. Needs at least 15 weeks to attain
Rana boylii	frog	Amphibians	AAABH01050	2468 None	Candidate Threatened	G3	S3	IUCN_NT-Near Threatened   USFS_S-Sensitive	waters	a rocky substrate in a variety of habitats.	metamorphosis. 2
		a							Chaparral   Cismontane woodland   Coastal	Chaparral, cismontane woodland, coastal	
Senecio aphanactis	chaparral ragwort	Dicots	PDAST8H060	98 None	None	G3	S2 2B.2	SB_RSABG-Rancho Santa Ana Botanic Garden	scrub	scrub.	Drying alkaline flats. 20-1020 m. 1
									C'anada a a alla di Lultua de Calavalla d		Grassy slopes in blue oak woodland. On
Cidalana kankii	Ma alda ah a alda dhila a da	D:	DD1441440D0	50 5 4	N	63	62 45 4	CD DCADC Danaha Canta Ana Datania Candan	Cismontane woodland   Ultramafic   Valley &		serpentine-derived, clay soils, at least
Sidalcea keckii	Keck's checkerbloom	Dicots	PDMAL110D0	50 Endangered	None	G2	S2 1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	foothill grassland	grassland.	sometimes. 85-505 m. 2
								DIAA C Canaitina   CDEW CCC Canaina of Canain Connect	Ciana ante a consendend de Canatal annota l'Africa	Occurs primarily in grassland habitats, but can	Vernel mede are considered for broading and and
Cara hammadii		A	* * * DE02020	4275 No. 1	N	63	62	BLM_S-Sensitive   CDFW_SSC-Species of Special Concern	Cismontane woodland   Coastal scrub   Valley	-	Vernal pools are essential for breeding and egg-
Spea hammondii	western spadefoot	Amphibians	AAABF02020	1275 None	None	G3	53	IUCN_NT-Near Threatened	& foothill grassland   Vernal pool   Wetland	woodlands.	laying. 17
Sycamore Alluvial	Sycamore Alluvial	Dimenian	CTTC2100C4	17 None	Nana	C1	C1 1		Disaster was allowed		
Woodland	Woodland Moody's gnaphosid	Riparian	CTT62100CA	17 None	None	G1	S1.1		Riparian woodland		
Talanites moodyae	spider	Arachnids	ILARA98020	6 None	None	G1G2	S1S2		Ultramafic	Serpentine endemic.	
Talalites Illoodyae	spidei	Araciiilus	ILAKA98020	o None	None	GIGZ	3132		Ottialilatic	Serpentine endemic.	2
									Alkali marsh   Alkali playa   Alpine   Alpine		
									dwarf scrub   Bog & fen   Brackish marsh		
									Broadleaved upland forest   Chaparral		
									Chenopod scrub   Cismontane woodland		
									Closed-cone coniferous forest   Coastal bluff		
									scrub   Coastal dunes   Coastal prairie		
									Coastal scrub   Desert dunes   Desert wash		
									Freshwater marsh   Great Basin grassland		
									Great Basin scrub   Interior dunes   Ione		
									formation   Joshua tree woodland   Limestone		
									Lower montane coniferous forest   Marsh &		
									swamp   Meadow & seep   Mojavean desert		
									scrub   Montane dwarf scrub   North coast		
									coniferous forest   Oldgrowth   Pavement		
									plain   Redwood   Riparian forest   Riparian		
									scrub   Riparian woodland   Salt marsh		
									Sonoran desert scrub   Sonoran thorn		
									woodland   Ultramafic   Upper montane	Most abundant in drier open stages of most	Needs sufficient food, friable soils and open,
								CDFW_SSC-Species of Special Concern   IUCN_LC-Least	coniferous forest   Upper Sonoran scrub	shrub, forest, and herbaceous habitats, with	uncultivated ground. Preys on burrowing
Taxidea taxus	American badger	Mammals	AMAJF04010	592 None	None	G5	S3	Concern	Valley & foothill grassland	friable soils.	rodents. Digs burrows. 6
	Valley Sacaton										
Valley Sacaton Grassland		Herbaceous	CTT42120CA	9 None	None	G1	S1.1		Valley & foothill grassland		1
Valley Saltbush Scrub	Valley Saltbush Scrub	Scrub	CTT36220CA	19 None	None	G2	S2.1		Chenopod scrub		2
Valley Sink Scrub	Valley Sink Scrub	Scrub	CTT36210CA	29 None	None	G1	S1.1		Chenopod scrub		3
										Annual grasslands or grassy open stages with	Need loose-textured sandy soils for burrowing,
Vulpes macrotis mutica	San Joaquin kit fox	Mammals	AMAJA03041	1018 Endangered	Threatened	G4T2	S2		Chenopod scrub   Valley & foothill grassland	scattered shrubby vegetation.	and suitable prey base. 97
	·	·		·	<u></u>		·				·

#### **CNPS Plant List**

Scientific Name	Common Name	Family	Lifeform	CRPR	Global Rank	State Rank
Allium howellii var. howellii	Howell's onion	Alliaceae	perennial bulbiferous herb	4.3	G3G4T3	S3
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	1B.2	G3T2	S2
Atriplex cordulata var. erecticaulis	Earlimart orache	Chenopodiaceae	annual herb	1B.2	G3T1	S1
Atriplex coronata var. vallicola	Lost Hills crownscale	Chenopodiaceae	annual herb	1B.2	G4T2	S2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	1B.2	G2	S2
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	1B.1	G2	S2
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	1B.2	G2	S2
Atriplex subtilis	subtle orache	Chenopodiaceae	annual herb	1B.2	G1	S1
Azolla microphylla	Mexican mosquito fern	Azollaceae	annual / perennial herb	4.2	G5	S4
Brodiaea insignis	Kaweah brodiaea	Themidaceae	perennial bulbiferous herb	1B.2	G1	S1
Calochortus striatus	alkali mariposa lily	Liliaceae	perennial bulbiferous herb	1B.2	G3?	S2S3
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	1B.1	G1	S1
Clarkia exilis	slender clarkia	Onagraceae	annual herb	4.3	G3	S3
Clarkia springvillensis	Springville clarkia	Onagraceae	annual herb	1B.2	G2	S2
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	4.2	G4	S4
Delphinium hansenii ssp. ewanianum	Ewan's larkspur	Ranunculaceae	perennial herb	4.2	G4T3	S3
Delphinium inopinum	unexpected larkspur	Ranunculaceae	perennial herb	4.3	G3	S3
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	1B.2	G2?	S2?
Diplacus pictus	calico monkeyflower	Phrymaceae	annual herb	1B.2	G2	S2
Eremalche parryi ssp. kernensis	Kern mallow	Malvaceae	annual herb	1B.2	G3G4T3	S3
Eriogonum twisselmannii	Twisselmann's buckwheat	Polygonaceae	perennial herb	1B.2	G2	S2
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual / perennial herb	1B.2	G2	S2
Fritillaria striata	striped adobe-lily	Liliaceae	perennial bulbiferous herb	1B.1	G1	S1
Hordeum intercedens	vernal barley	Poaceae	annual herb	3.2	G3G4	S3S4
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	annual herb	1B.1	G4T2	S2
Layia munzii	Munz's tidy-tips	Asteraceae	annual herb	1B.2	G2	S2
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	1B.2	G3	S3
Monolopia congdonii	San Joaquin woollythreads	Asteraceae	annual herb	1B.2	G2	S2
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	3.1	G5T2Q	S2
Navarretia nigelliformis ssp. nigelliformis	adobe navarretia	Polemoniaceae	annual herb	4.2	G4T3	S3
Navarretia nigelliformis ssp. radians	shining navarretia	Polemoniaceae	annual herb	1B.2	G4T2	S2
Opuntia basilaris var. treleasei	Bakersfield cactus	Cactaceae	perennial stem succulent	1B.1	G5T1	S1
Oreonana purpurascens	purple mountain-parsley	Apiaceae	perennial herb	1B.2	G3	S3
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	1B.1	G1	S1
Puccinellia simplex	California alkali grass	Poaceae	annual herb	1B.2	G3	S2
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	2B.2	G3	S2
Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	1B.1	G2	S2

# ATTACHMENT C DELINEATION OF WATERS OF THE UNITED STATES REPORT



### Friant-Kern Canal Middle Reach Capacity Correction Project

Delineation of Waters of the United States

January 29, 2020

Prepared for:

Friant Water Authority 854 N. Harvard Ave Lindsay, CA 93247

Bureau of Reclamation South-Central California Area Office 1243 N Street Fresno, CA 93721

Prepared by:

Stantec Consulting Services Inc. 5000 Bechelli Lane Suite 203 Redding, California 96002

JANUARY 29, 2020

### **Table of Contents**

EXEC	UTIVE SU	MMARY	•••
ABBR	EVIATION	IS	I
1.0	PROJEC	T LOCATION	1
2.0	_	NMENTAL SETTING	
2.1	CURREN	T/RECENT LAND USE	1
2.2	SITE TOP	POGRAPHY AND ELEVATION	2
2.3			
2.4	HYDROL	OGY/HYDROLOGIC FEATURES	2
2.5		P UNITS	
2.6	VEGETA <sup>*</sup>	TION COMMUNITES	6
3.0	METHOD	S	8
	DE0111 T		_
4.0		S AND DISCUSSION	
4.1	4.1.1	ED FEATURES Overview of Excluded Features	
	4.1.1 4.1.2	Characterization of Excluded Features	
	4.1.2	Characterization of Excluded Features	
5.0	CONCLU	SION	.14
6.0	REFERE	NCES	.15
LIST (	OF TABLE	S	
Table	1. Study A	rea Location	1
		p Units in the Study Area	
		ry of Excluded Features in the Study Area	
LIST (	OF APPEN	DICES	
Appen	ıdix A	Figures	
Appen		Routine Wetland Determination Data Forms	
 Appen		Ordinary High Water Mark Data Forms	
Appen		Plant List	
Appen		Representative Photographs	
Appen	ıdix F	Approved Jurisdictional Determination Forms	

**JANUARY 29, 2020** 

### **Executive Summary**

On behalf of Friant Water Authority (Friant) and Bureau of Reclamation (Reclamation), Stantec Consulting Services Inc. (Stantec) conducted a delineation of waters of the United States occurring in the 2,249.49-acre Friant-Kern Canal Middle Reach Capacity Correction Project study area (study area) in Tulare and Kern counties, California. The delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (U.S. Army Corps of Engineers 2008a). The field delineation was conducted on September 30, October 1–3, and December 10 and 11, 2019. No potential waters of the United States were mapped within the study area. Excluded aquatic features occupy a total of 35.864 acres (19,339 linear feet) and include groundwater recharge basins (20.460 acres), intermittent stream (2.114 acres, 2,294 linear feet), irrigation canal (other than the Friant-Kern Canal) (4.650 acres, 12,229 linear feet), non-vegetated ditch (0.601 acre, 4,816 linear feet), pond (5.799 acres), riparian/fresh emergent wetland complex (0.011 acre), riparian wetland (1.874 acres), and seasonal wetland (0.355 acre).

The purpose of this delineation is to document and describe aquatic resources in the study area and provide an opinion as to whether any aquatic resources qualify as waters of the United States. To request U. S. Army Corps of Engineers (USACE) verification that no aquatic resources within the study area are considered waters of the United States, this delineation can be submitted to the USACE with a request for an Approved Jurisdictional Determination. Stantec advises all parties to treat the information contained herein as preliminary until the USACE provides a written determination of its jurisdiction.

If the USACE wishes to conduct a field verification, Friant and Reclamation request that the USACE contact both Douglas DeFlitch (Friant Chief Operating Officer) and Rain Emerson (Reclamation Environmental Compliance Branch Chief) to schedule a date and time to access the study area. Contact information for Mr. DeFlitch and Ms. Emerson is provided below:

Douglas DeFlitch. Telephone: (559) 562-6305 ext. 4000. Email: ddeflitch@friantwater.org.

Rain Emerson. Telephone: (559) 262-0335. Email: remerson@usbr.gov.

JANUARY 29, 2020

### **Abbreviations**

°F degrees Fahrenheit

EPA United States Environmental Protection Agency

Friant Water Authority

GPS Global Positioning System

NWI National Wetlands Inventory

OHWM Ordinary High Water Mark

RGLs Regulatory Guidance Letters

Stantec Stantec Consulting Services Inc.

study area Friant-Kern Canal Middle Reach Capacity Correction Project study area

TNW Traditional Navigable Water

USACE United States Army Corps of Engineers

USGS United States Geological Survey

**JANUARY 29, 2020** 

### 1.0 PROJECT LOCATION

The study area encompasses 2,249.49 acres and consists of a linear alignment along the banks of the Friant-Kern Canal beginning at Avenue 208, just north of the community of Strathmore in Tulare County, stretching approximately 33 miles south-southwest to Lake Woollomes, approximately 0.5 mile north of Pond Road, to the southeast of the city of Delano in Kern County. It is shown on the *Delano East, Ducor, Lindsay, McFarland, Porterville, and Sausalito School, California* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles. Public Land Survey location descriptions are provided in Table 1. The approximate center of the study area is located at latitude 35.949836°, longitude -119.121187° (North American Datum 83). The study area location is shown in Figure 1 (Appendix A).

Table 1. Study Area Location

Range	Township	Sections
27 East	20 South	21, 28, 33
	21 South	3, 4, 9, 16, 20, 21, 29, 30, 31
	22 South	6, 7, 18, 19, 30, 31, 32
	23 South	6
26 East	23 South	1, 11,12, 14, 15, 22, 23, 26, 27, 34
	24 South	3, 9, 10, 15, 16, 20, 21, 22, 28, 33
	25 South	4, 9, 16, 21, 28

To access the north end of the study area, from Highway 65, travel 1.3 miles east on Avenue 208 to the study area. To access the southern end of the study area, from Highway 99, travel 3.0 miles east on Pond Road to the Friant-Kern Canal then turn north on the road on top of the canal embankment and travel 0.5 mile to the study area.

### 2.0 ENVIRONMENTAL SETTING

### 2.1 CURRENT/RECENT LAND USE

The primary land use in the region is agriculture. The Friant-Kern Canal, vineyards, orchards, and agricultural fields are the dominant land uses in the study area. Other adjacent land uses include a landfill, groundwater recharge basins, agricultural related industrial facilities, and rural and urban housing in the northern portion of the study area near the communities of Strathmore and Porterville.

**JANUARY 29, 2020** 

#### 2.2 SITE TOPOGRAPHY AND ELEVATION

The topography in the study area is predominantly nearly level, ranging in elevation from a high of approximately 420 feet at the northern end to a low of 380 feet at the southern end. The embankments of the Friant-Kern Canal and the banks of two major drainages (Deer Creek, and White River), which the canal crosses under using siphons, provide the most topographic relief in the study area.

### 2.3 CLIMATE

Historical data used to describe the climate are collected at National Weather Service Cooperative Observer Program station # 047077 in Porterville, California (Western Regional Climate Center 2019). The Porterville Cooperative Observer Program station is located approximately 3.5 miles southeast of the study area.

*Type:* The climate of the area is characterized as Mediterranean with moderate winters and hot, dry summers.

**Precipitation:** Precipitation in the study area primarily occurs as rain. The average annual rainfall is approximately 10.9 inches.

**Air Temperature:** Air temperatures in the study area range between an average January high of 57 degrees Fahrenheit (°F), and an average July high of 99°F. The annual average high is approximately 78°F.

**Growing Season:** The growing season (i.e., 50% probability of air temperature 28 °F or higher) in the study area is approximately 346 days and occurs between mid-January and mid-December.

### 2.4 HYDROLOGY/HYDROLOGIC FEATURES

The main hydrologic features in the study area are two intermittent streams: Deer Creek, and White River. The study area is situated in the Tulare Basin, which is essentially a closed basin and historically only connected to the San Joaquin River in years of extreme rainfall (Regional Water Quality Control Board 2018). Deer Creek, and White River are tributaries to the Tulare Basin. Deer Creek and White River flow west and historically only reached Tulare Lake, a historical isolated inland lake, during high flow events (ECORP 2007). Currently Deer Creek terminates at the east bank of Homeland Canal approximately 20 miles west of the study area. The canal bank is breached during high runoff years to allow Deer Creek to flow into Homeland Canal (Gibson & Skordal 2015). White River appears to spread out across the valley floor or be diverted into canals 9.25 miles west of the study area. Several other manmade hydrological features occur in the study area including irrigation ditches and canals, excavated ponds, and groundwater recharge basins. Hydrology for aquatic resources in the study area is provided by pumped groundwater, sheet flow, snow melt from the Sierra Nevada, and diversion from the Friant-Kern Canal.

JANUARY 29, 2020

### 2.5 SOIL MAP UNITS

Twenty-six soil map units occur in the study area. They are described in the *Soil Survey of Kern County, California, Northwestern Part*; *Tulare County, California, Central Part*; and *Tulare County, Western Part, California* (Natural Resources Conservation Service 2019). These map units are summarized in Table 1 and shown in Figure 2 (Appendix A).

Table 2. Soil Map Units in the Study Area

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils		
Tulare County, Western Part, California (CA659)						
Akers-Akers, saline-Sodic, complex, 0 to 2 percent slopes Calcic Haploxerepts	101	Well drained	More than 80 inches	No, except depressions		
Calgro-Calgro, saline-Sodic, complex, 0 to 2 percent slopes Typic Durixerepts	105	Moderately well drained	20 to 40 inches to duripan	No, except depressions		
Centerville clay, 0 to 2 percent slopes Aridic Calcixererts	106	Well drained	48 to 60 inches to densic material	No, except depressions		
Colpien loam, 0 to 2 percent slopes Calcic Pachic Haploxerolls	108	Moderately well drained	More than 80 inches	No		
Dumps	112	N/A	N/A	N/A		
Exeter loam, 0 to 2 percent slopes Typic Durixeralfs	114	Moderately well drained	20 to 40 inches to duripan	No, except depressions		
Flamen loam, 0 to 2 percent slopes Calcic Pachic Haploxerolls	116	Moderately well drained	40 to 60 inches to duripan	No, except depressions		

JANUARY 29, 2020

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Hanford sandy loam, 0 to 2 percent slopes Typic Xerorthents	124	Well drained	More than 80 inches	No
Nord fine sandy loam, 0 to 2 percent slopes Cumulic Haploxerolls	130	Well drained	Abrupt textural changes at around 38 and 50 inches.	No, except flood plains, alluvial fans
Pits	131	N/A	N/A	No
Riverwash	134	N/A	N/A	Yes
San Joaquin loam, 0 to 2 percent slopes Typic Durixeralfs	135	Moderately well drained	About 15 inches to abrupt textural change; 20 to 40 inches to duripan	No
Tagus loam, 0 to 2 percent slopes Calcic Haploxerolls	137	Well drained	More than 80 inches	No
Tujunga loamy sand, 0 to 2 percent slopes Typic Xeropsamments	138	Somewhat excessively drained	More than 80 inches	No, except flood plains, alluvial fans
Yettem sandy loam, 0 to 2 percent slopes Entic Haploxerolls	143	Well drained	More than 80 inches	No, except flood plains, alluvial fans
Water-perennial	145	N/A	N/A	N/A

JANUARY 29, 2020

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils		
Tulare County, California, Central Part (CA660)						
Exeter loam, 0 to 2 percent slopes Typic Durixeralfs	124	Well drained	20 to 40 inches to duripan	No, except depressions		
San Joaquin loam, 0 to 2 percent slopes Abruptic Durixeralfs	154	Moderately well drained	About 20 inches to abrupt textural change; 20 to 40 inches to duripan	No, except depressions		
San Joaquin loam, 2 to 9 percent slopes Abruptic Durixeralfs	155	Moderately well drained	About 20 inches to abrupt textural change; 20 to 40 inches to duripan	No, except depressions		
Wyman loam, 0 to 2 percent slopes Typic Haploxeralfs	172	Well drained	More than 80 inches	No		
Water	178	N/A	N/A	N/A		
Kern County, California, Northwestern Part (CA666)						
Nord fine sandy loam, 0 to 2 percent slopes Cumulic Haploxerolls	130tw	Well drained	Abrupt textural changes at around 38 and 50 inches.	No, except flood plains, alluvial fans		
Exeter sandy loam, 0 to 2 percent slopes Typic Durixeralfs	154	Well drained	20 to 40 inches to duripan	No, except depressions		

**JANUARY 29, 2020** 

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils
McFarland loam Typic Torriorthents	192	Well drained	More than 80 inches	No
Wasco sandy loam Typic Torriorthents	243	Well drained	More than 80 inches	No
Water	257	N/A	N/A	N/A

#### 2.6 VEGETATION COMMUNITES

Vegetation communities in the study area were classified based on descriptions provided in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988), as well as *A Manual of California Vegetation* (Sawyer et al. 2009). Undeveloped vegetation communities present within the study area include annual grassland, allscale saltbush scrub, California buckwheat scrub, Fremont cottonwood forest, mulefat thickets, and smartweed-cocklebur patches. Developed vegetation communities include agricultural types: fallow, field crops, orchards, and vineyards. Other developed vegetation communities include barren/ruderal and urban. Additionally, two aquatic vegetation communities were observed: including open water and riverine. Descriptions of each vegetation community are provided below.

**Annual Grassland**. Annual grassland occurs throughout the study area, primarily on the landside slopes of the Friant-Kern Canal. Annual grassland is an herbaceous vegetation community consisting primarily of introduced annual plant species, predominantly grasses. Commonly observed plant species include slender oat (*Avena barbata*), foxtail chess (*Bromus madritensis*), ripgut grass (*Bromus diandrus*), Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), and cheeseweed (*Malva parviflora*).

**Allscale Saltbush Scrub**. Allscale saltbush scrub occurs within the study area in limited portions of the landside slopes of the Friant-Kern Canal. Allscale saltbush (*Atriplex polycarpa*), a shrub, is the dominant plant species occurring within this vegetation community. The understory of this vegetation community is composed of annual grassland species.

**California Buckwheat Scrub**. California buckwheat scrub occurs within the study area in limited portions of the landside slopes of the Friant-Kern Canal. California buckwheat (*Eriogonum fasciculatum*), a shrub, is the dominant plant occurring within this vegetation community. The understory of this vegetation community is composed of annual grassland species.

**Fremont Cottonwood Forest**. Fremont cottonwood forest occurs within the study area along the north and south banks of Deer Creek, located just west of the Friant-Kern Canal, and north of Deer Creek, adjacent to a groundwater recharge basin east of and alongside the Friant-Kern Canal. Fremont

**JANUARY 29, 2020** 

cottonwood (*Populus fremontii*) is the dominant plant species occurring within this vegetation community. The understory of this vegetation community varies; willow (*Salix* spp.) species commonly occur.

**Mulefat Thickets**. Mulefat thickets occur within a presumed old borrow site adjacent to Deer Creek, in the northern portion of the study area. Mulefat (*Baccharis salicifolia*), a shrub, is the dominant plant species occurring within this vegetation community. The sparse to very sparse understory of this vegetation community is largely composed of various annual and perennial herbaceous plant species.

**Smartweed-Cocklebur Patches**. A single smartweed-cocklebur patch occurs within a groundwater recharge basin along the east side of the Friant-Kern Canal, located in the northern portion of the study area. Cocklebur (*Xanthium strumarium*) is the dominant plant species within this vegetation community. There was no understory within this vegetation community as the groundwater recharge basin was inundated during the field survey.

**Agriculture-Fallow**. Agriculture-fallow was used to describe unplanted fields that were not currently in production but were utilized for agriculture in the recent past, or where annual agricultural production had ceased for the current growing year. These areas are currently unvegetated or are vegetated with annual plant species capable of colonizing recently and regularly disturbed land.

**Agriculture-Field Crop**. Agriculture-field crop applied to herbaceous plant crops. The most commonly cultivated herbaceous field crop observed within the study area was alfalfa (*Medicago sativa*).

**Agriculture-Orchard**. Both evergreen and deciduous orchards occur throughout the study area and represent the dominant type of agricultural within the study area. The most common species include almond (*Prunus dulcis*), pistachio (*Pistacia vera*), and citrus (*Citrus* sp.). Some orchards within the study area have sparse herbaceous vegetation growing in the understory while others are barren.

**Agriculture-Vineyard**. Vineyards occur throughout the study area. The vineyards consist of grape vines (*Vitis vinifera*) planted in rows and supported by wood and wire trellises. The understory is open, and the ground is generally devoid of vegetation.

**Barren/Ruderal**. Barren areas occur where vegetation is absent provides sparse cover (less than three percent). Barren areas are present on the dirt and paved roads and associated road shoulders. Vegetation is generally not present. The ruderal vegetation community includes areas that are regularly disturbed in the course of maintaining and operating the Friant-Kern Canal. Plant species composition in these areas is similar to that of annual grassland.

**Urban**. Urban describes developed areas within the study associated with homes, businesses, paved roads, and the many bridges that cross over the Friant-Kern Canal. These areas are devoid or nearly devoid of vegetation, or are dominated by non-native and ornamental species.

**Open Water**. Open water environments occur throughout the study area in manmade ponds and groundwater recharge basins. Some of the depressions or leveed areas hold water seasonally while other are permanently inundated. The substrate is typically soil and vegetation may be present but is often removed as a part of regular maintenance.

**JANUARY 29, 2020** 

**Riverine**. Riverine occurs in canals, and two streams: Deer Creek and White River. The dominate substrate in canals is concrete or soil while sand is the dominate substrate in the streams. Vegetation is typically sparse and either limited to the channel margins or consisting of ruderal species growing in the channels when they are dry.

### 3.0 METHODS

Stantec conducted an on-site routine delineation of wetlands and "other waters" of the United States based on field observations of positive indicators for wetland vegetation, hydrology, and soils; and indicators of an ordinary high water mark (OHWM). The routine delineation includes standard 3-parameter data points to document wetland features, other waters, and uplands. This methodology is consistent with the approach outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (U.S. Army Corps of Engineers 2008a). Plant taxonomy follows *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012), including applicable errata and supplements (Jepson Flora Project 2019). Wetland indicator status for plant species was confirmed using *The National Wetland Plant List* (Lichvar et al. 2016), and the "50/20 Rule" or "Prevalence Index" was applied to determine plant dominance (U.S. Army Corps of Engineers 2008a). Presence of primary and secondary wetland hydrology indicators were documented for each wetland feature. The OHWM was determined using the approach outlined in *A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States* (U.S. Army Corps of Engineers 2008b).

Soil pits were dug in representative wetland features to a depth sufficient to document the presence or confirm the absence of hydric soil or wetland hydrology indicators. Soils were examined to assess field indicators of hydric soils. Positive indicators of hydric soils were observed in the field following the criteria outlined in *Field Indicators of Hydric Soils in the United States* (Vasilas et al. 2018). Soil colors were determined using a Munsell® soil color chart. The hydric status of each soil map unit occurring in the study area was reviewed using the *Web Soil Survey* (Natural Resources Conservation Service 2019). At least one set of data points was selected to best represent the wetland feature type and the adjacent upland or other waters. Data points were also placed in suspect areas to confirm wetland or upland status.

Other waters are defined as traditional navigable waters and their tributaries (33 CFR 329). Delineation of other waters was based on presence of an OHWM as defined in USACE regulations (33 CFR 328.3 and 33 CFR 328.4) and whether the feature qualified as tributary to waters of the United States. Physical characteristics of an OHWM include, but are not limited to the following conditions: a natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, presence of litter and debris, leaf litter disturbed or washed away, scour, deposition, presence of bed and bank, and water staining. At least one data point was selected to best represent the OHWM of other waters for each other waters type and OHWM data forms were completed at select transects.

**JANUARY 29, 2020** 

Prior to conducting the on-site routine delineation, the U.S. Fish and Wildlife Service's, National Wetlands Inventory (NWI) Wetlands Mapper (U.S. Fish and Wildlife Service 2019) was reviewed to determine if any surface water and wetland features were previously mapped in the study area and general vicinity. Surface water and wetland features within NWI are described by the Cowardin et al. (1979) system, as amended by subsequent updates (Federal Geographic Data Committee 2013). Non-riparian features delineated during the on-site routine delineation were classified using the Cowardin et al. (1979) system based on existing NWI mapping or assigned a Cowardin type if not previously mapped. Stantec used the U.S. Fish and Wildlife Service's *A System for Mapping Riparian Areas in the Western United States* to classify riparian features (United States Fish and Wildlife Service 2009). The USACE Aquatic Resources Excel spreadsheet, which includes specific information about the wetland and other waters features delineated, including their Cowardin or riparian type, was completed and submitted as a separate deliverable with this report.

Twenty-four 3-parameter data points were used to characterize and document each wetland type and the adjacent upland or other waters, and suspect areas. Five OHWM data forms were used to document other waters. Field observations were conducted on September 30, October 1–3, and December 10 and 11, 2019.

The boundaries of delineated features and the associated data points were mapped using an Eos Positioning Systems®, Inc., Arrow 100 submeter Global Positioning System (GPS) receiver, paired to an Apple® iPhone® or iPad® using Esri® Collector for ArcGIS app. Where the use of the GPS was not practicable (e.g., dense vegetation precluded access) the features were delineated by hand using the Esri® Collector for ArcGIS app. The GPS and digitized location data were overlaid onto an aerial photograph of the study area to develop the delineation map.

### 4.0 RESULTS AND DISCUSSION

No potential waters of the United States were observed in the study area (Figure 3, Appendix A). All delineated features were considered excluded features (i.e., did not meet definition of waters of the United States). Routine wetland determination data forms are presented in Appendix B and OHWM data forms are presented in Appendix C. A plant list is provided in Appendix D. Representative photographs of the excluded features and data point locations are presented in Appendix E.

#### 4.1 EXCLUDED FEATURES

#### 4.1.1 Overview of Excluded Features

This delineation report was prepared to support an Approved Jurisdictional Determination from the USACE. As such, aquatic resources in the study area that meet wetland criteria or exhibit an OHWM—but do not meet the definition of waters of the United States—were classified and mapped as excluded features (Table 3).

**JANUARY 29, 2020** 

Excluded features include those aquatic resources that are excluded from the definition of waters of the United States based on:

- 1. The preamble to the Regulatory Programs of the Corps of Engineers; Final Rule published in the Federal Register on November 13, 1986;
- 2. The United States Environmental Protection Agency (EPA) and USACE Joint Memorandum clarifying guidance regarding the Supreme Court's decision in Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers published in the Federal Register on January 15, 2003;
- 3. The EPA and USACE Joint Memorandum titled Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States dated December 2, 2008; and
- 4. Other applicable USACE guidance provided in the 2011 *Draft Guidance on Identifying Waters*Protected by the Clean Water Act and applicable Regulatory Guidance Letters (RGLs) and regulatory branch memoranda.

Examples of excluded features identified in the above sources include, but are not limited to:

- 1. Non-tidal drainage and irrigation ditches excavated on dry land;
- 2. Artificially irrigated areas that would revert to upland if the irrigation ceased;
- 3. Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
- 4. Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;
- 5. Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States:
- 6. Isolated, intrastate, non-navigable waters where the sole basis available for asserting Clean Water Act jurisdiction rests on any of the factors listed in the "Migratory Bird Rule";
- 7. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water; or
- 8. Waters that lack a "significant nexus" where one is required for a water to be protected by the Clean Water Act (e.g., intermittent streams that do not drain to traditionally navigable waters of the U.S).

**JANUARY 29, 2020** 

Table 3. Summary of Excluded Features in the Study Area

Excluded Features	Total Acres	Total Linear Feet	Cowardin Type <sup>1</sup>
Groundwater Recharge Basin	20.460	N/A	L2US, PUB, RP2EM
Intermittent Stream	2.114	2,294	R4SB
Irrigation Canal (other than the Friant-Kern Canal)	4.650	12,229	R4SB
Non-Vegetated Ditch	0.601	4,816	R4SB
Pond	5.799	N/A	PUB, PEM
Riparian/Fresh Emergent Wetland	0.011	N/A	RP1SS
Riparian Wetland	1.874	N/A	RP1EM, RP1SS, RP1FO, RP2SS
Seasonal Wetland	0.355	N/A	PEM
Total Excluded Features	35.864	19,339	

<sup>1.</sup> Cowardin et al. 1979 and U.S. Fish and Wildlife Service 2009

#### 4.1.2 Characterization of Excluded Features

### 4.1.2.1 Groundwater Recharge Basins

Groundwater recharge basins occur as depressions or diked areas used to recharge groundwater. They are generally larger than ponds and are seasonally or only occasionally inundated. They may support hydrophytic vegetation, non-hydrophytic vegetation, or be barren. Groundwater recharge basins were delineated based on the presence of an OHWM indicated by presence of biotic crust, changes in vegetation, changes in sediment texture, and breaks in slope.

We considered groundwater recharge basins excluded features as they have no outflow channels and they are artificial bodies of water constructed in dry land.

#### 4.1.2.2 Isolated Intermittent Streams

Two isolated intermittent streams occur in the study area, Deer Creek and White River. They are characterized as bed and bank features with an OHWM, which predominately occurs along fortified/channelized banks. Sand is the dominate substrate. The low flow channels are barren or sparsely vegetated by opportunistic herbaceous species including cocklebur, horseweed (*Erigeron canadensis*),

**JANUARY 29, 2020** 

Johnson grass (*Sorghum halepense*), and common sunflower (*Helianthus annuus*). The floodplains support moderate to dense non-hydrophytic vegetation including short podded mustard (*Hirschfeldia incana*) or they support riparian wetlands (described below).

Deer Creek and White River historically dissipated into the ground in the San Joaquin Valley and only reached Tulare Lake during high flow events (ECORP 2007). Deer Creek terminates at Homeland Canal approximately 20 miles west of the study area. During years of high rainfall/snow melt, the embankment of the canal is breached and Deer Creek flows into Homeland Canal (Gibson & Skordal 2015). Homeland Canal flows to the south and west from its juncture with Deer Creek and terminates at Gates—Jones Canal (Gibson & Skordal 2015). White River has been channelized and appears to spread out as sheet flow or is diverted into canals approximately 9.25 miles west of the study area. Water from the Friant-Kern Canal can be released into both streams for agricultural use and groundwater recharge.

We considered Deer Creek and White River excluded features based on the USACE approved jurisdictional determination for the Pixley Groundwater Bank (SPK-2015-00265, Appendix E) where the agency determined Deer Creek was an isolated intrastate water with no connection to interstate or foreign commerce. Additionally the USACE has determined that Poso Creek, which crosses the Friant-Kern Canal approximately 8 miles south of the study area and flows to Goose Lake Canal, did not qualify as a waters of the United States as it lacked a hydrologic connection to a Traditional Navigable Water (TNW) and did not have a nexus to interstate or foreign commerce (SPK-2003-00265, Appendix E). White River is similar to Deer Creek and Poso Creek (i.e., does not flow into the ocean or a TNW and evaporates or dissipates into the ground within the Tulare Basin). Therefore, we have considered it as an excluded feature.

#### 4.1.2.3 Irrigation Canals and Non-vegetated Ditches

Several private/non-federal irrigation canals and non-vegetated ditches occur in the study area. Irrigation canals and non-vegetated ditches are used to deliver irrigation water to farms. They range in size from 2 to 71 feet wide, seasonally carry flow, are usually unlined, and may support vegetation along their edges. Some of the irrigation canals receive deliveries from the Friant-Kern Canal while others pass under the Friant-Kern Canal in siphons.

We consider the irrigation canals and non-vegetated ditches in the study area to be excluded features as they were excavated on dry land and lack a significant nexus to downstream waters.

#### 4.1.2.4 Ponds

Ponds occur in man-made depressions scattered throughout the study area. Ponds may have persistent surface water or dry out seasonally. Some ponds supported hydrophytic vegetation around the edge or throughout the pond. However, as the ponds were excavated in dry land and would likely revert to upland vegetation if not artificially inundated, we mapped all these features as ponds regardless of whether they supported hydrophytic vegetation. All ponds were delineated based on the presence of an OHWM indicated by changes in vegetation, break in slope, sediments deposits, and drift deposits.

**JANUARY 29, 2020** 

Many of the ponds are associated with irrigation of adjacent fields, orchards, or vineyards (e.g., Pond 4, Figure 3). Other ponds were associated with deep excavations for siphons under the Friant Kern Canal to convey flood waters under the canal (e.g. Pond 2, Figure 3), or to contain leaks from the canal (i.e., Pond 1 and 11, Figure 3). No outflow channels were observed from any of the ponds suggesting they do not overflow and connect to other hydrologic features on a regular basis.

We consider all ponds in the study area excluded features based on their apparent isolation from other features as evidenced by the lack of an outflow channel. Further, the preamble to the Regulatory Programs of the Corps of Engineers states that the USACE generally does not consider ponds created by excavating or diking dry land that are used for irrigation to be waters of the United States.

#### 4.1.2.5 Riparian Wetlands

Deer Creek and White River support riparian wetlands along their banks and a presumed old borrow site adjacent to Deer Creek also supports riparian wetlands. Dominant species include white-stem hedgenettle (*Stachys albens*), common spikerush (*Eleocharis macrostachya*), stinging nettle (*Urtica dioica*), willows, and Fremont cottonwood. Hydric soil indicators observed include depleted matrix, depleted below dark surface, and sandy redox. Some hydric soils were problematic in that these features occur on sandbars within and adjacent to the streams. Indicators of hydric soils are often absent within stream channels due to deposition of new soil material, low iron and manganese levels, and lack of organic content. Indicators of wetland hydrology included surface water, high water table, saturation, biotic crust, water stained leaves, drift deposits, drainage patterns, and FAC-Neutral test.

One fresh emergent/riparian wetland complex was mapped in Deer Creek. Dominant vegetation included broad-leaved cattail (*Typha latifolia*) and willows; hydric soils were problematic as they consisted of sand within the stream channel, hydrology was provided by surface water. We consider these wetlands to be excluded features as they are associated with streams that lack a hydrologic connection to a TNW and a nexus to interstate or foreign commerce.

#### 4.1.2.6 Seasonal Wetland

One seasonal wetland was mapped in a depression adjacent to the Friant-Kern Canal, which may have been formed incidental to construction of the canal. Common spikerush (*Eleocharis macrostachya*) was the dominant plant at the data point with cocklebur and curly dock (*Rumex crispus*). Hydric soils were considered problematic as seasonally ponded soils and hydrology was indicated by the presence of a biotic crust. The feature appears to collect water from a series of roadside ditches and water is either pumped into the Friant-Kern Canal or passes under the canal in a siphon to a pond with no defined outflow channel.

We consider the seasonal wetland an excluded feature because it lacks a significant nexus to downstream waters.

**JANUARY 29, 2020** 

### 5.0 CONCLUSION

No waters of the United Sates were mapped in the study area. Excluded features occupy a total of 35.864 acre (19,339 linear feet) and include groundwater recharge basin, intermittent stream, irrigation canal, non-vegetated ditch, pond, riparian/fresh emergent wetland complex, riparian wetland, and seasonal wetland.

Determinations of waters of the United States, including wetlands, are based on current conditions, (i.e., normal circumstances) and made in accordance with relevant EPA and USACE guidance. Determinations are subject to verification by the USACE. Stantec advises all interested parties to treat the information contained herein as preliminary pending written verification by the USACE.

**JANUARY 29, 2020** 

### 6.0 REFERENCES

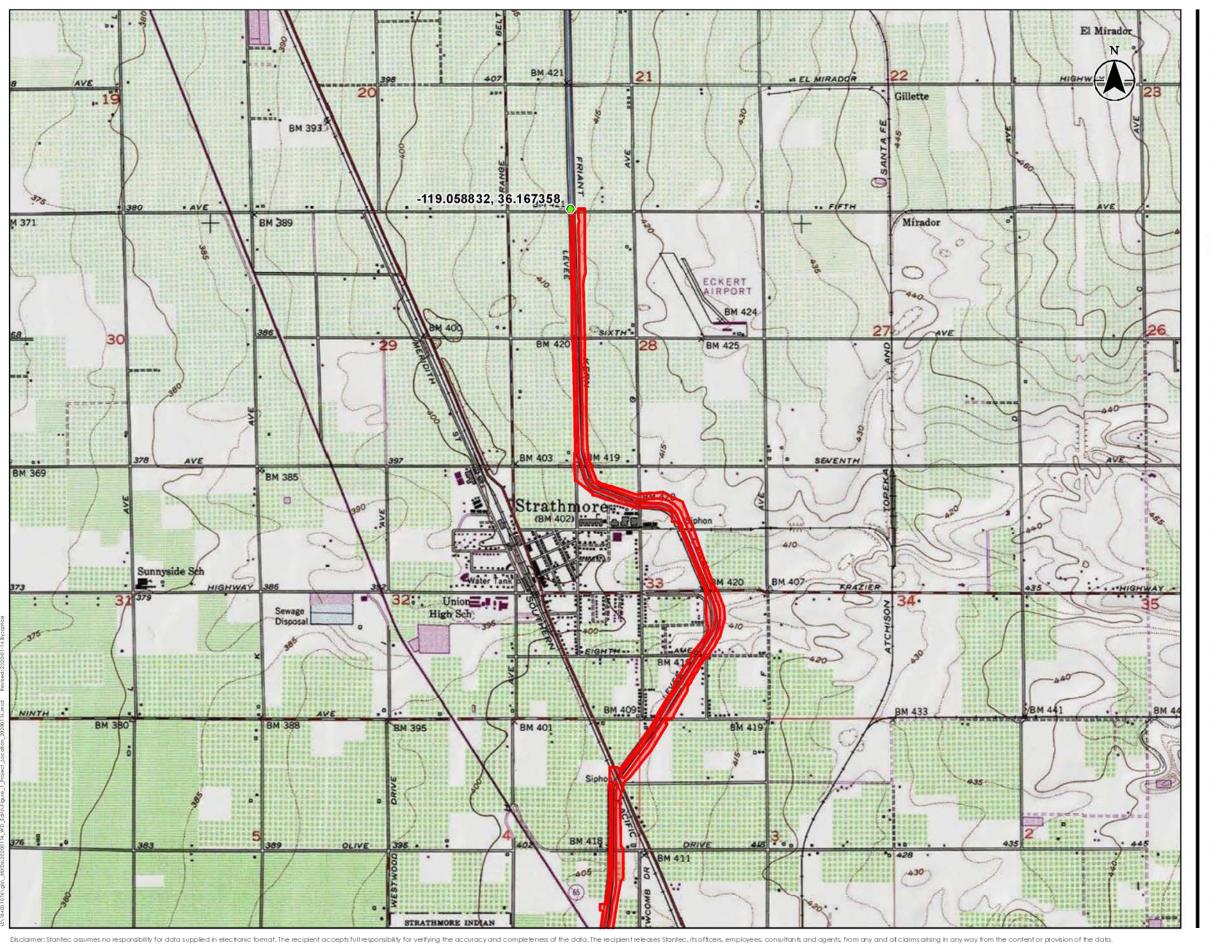
- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley, California.
- Cowardin, L. M., V. Carter, F. Golet, E. LaRoe 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior. Fish and Wildlife Service.
- FloodSAFE California. 2013. California's flood future: recommendations for managing the state's flood risk. Attachment C: history of flood management in California. November 2013. California Department of Water Resources and U.S. Army Corps of Engineers.
- Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. U.S. Army Engineer Waterways Experiment Station. Report No. Y-87-1.
- ECORP Consulting Incorporated. 2007. Tulare Lake Basin hydrology and hydrography: a summary of the movement of water and aquatic species. Document Number 909R07002. Prepared for U.S. Environmental Protection Agency.
- Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
- Gibson & Skordal, LLC. 2015. Pixley Groundwater Bank Jurisdictional Delineation Report. March 2015. Prepared for South Valley Water Banking Authority.
- Jepson Flora Project (eds.) 2019. Jepson eFlora. Available at: http://ucjeps.berkeley.edu/eflora/ (accessed October 2019).
- Lichvar, R. W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The national wetland plant list: 2016 wetland ratings. *Phytoneuron* 2016-30: 1-17.
- Mayer, K. E., and W. F. Laudenslayer, Jr., eds. 1988. A guide to wildlife habitats of California. Sacramento: California Department of Forestry and Fire Protection.
- Natural Resources Conservation Service. 2019. Web soil survey. Soil survey of Kern County, California, northwestern part; Tulare County, California, central part; and Tulare County, California, western part. http://websoilsurvey.nrcs.usda.gov/app/ (accessed October 2019).
- Regional Water Quality Control Board. 2018. Water quality control plan for the Tulare Lake Basin third edition. May 2018. California Regional Water Quality Control Board Central Valley Region.
- U.S. Army Corps of Engineers. 2008a. Regional supplement to the Corps of Engineers wetland delineation manual: arid west region (version 2.0): U.S. Army Engineer Research and Development Center.

**JANUARY 29, 2020** 

- U.S. Army Corps of Engineers. 2008b. A field guide to the Identification of the ordinary high water mark (OHWM) in the arid west region of the western United States. U.S. Army Engineer Research and Development Center.
- U.S. Fish and Wildlife Service. 2009. A system for mapping riparian areas in the western United States.

  Division of Habitat and Resource Conservation Branch of Resource and Mapping Support.
- U.S. Fish and Wildlife Service. 2019. National wetlands inventory. Last updated October 8, 2019. Available at: -www.fws.gov/wetlands/Data/Mapper.html (accessed October 2019).
- Vasilas, L. M., G. W. Hurt, and J. F. Berkowitz, eds. 2018. Field indicators of hydric soils in the United States. A guide for identifying and delineating hydric soils. Version 8.2. USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.
- Western Regional Climate Center. 2019. Porterville, California (047077) monthly climate summary, period of record: 06/01/1902 to 06/30/2004. Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7077 (accessed October 2019).

# Appendix A FIGURES



\_1a

#### Project Location

Client/Project

Friant Water Authority

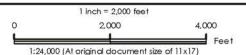
Friant-Kern Canal Middle Reach Capacity

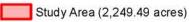
Correction Project

Project Location

Tulare and Kern Counties, California

184031016 Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Map Reference Point

#### Public Land Survey

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

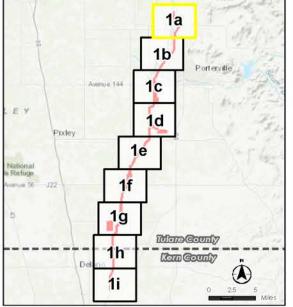
T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969)

Porterville, California (1971)

Sausalito School, California (1971)

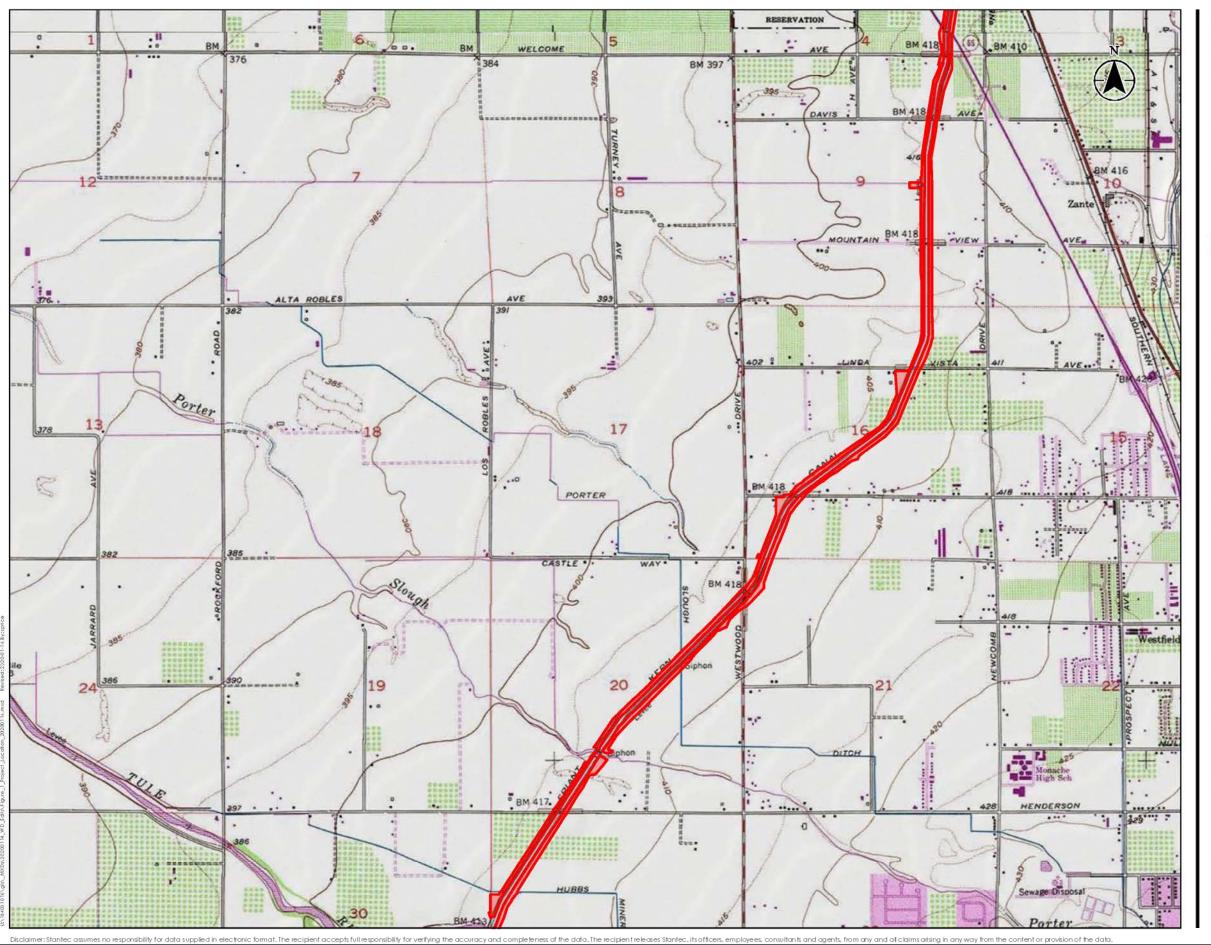


#### Note

Coordinate System: NAD 1983 StatePlane California IV FIPS 0404 Feet
 ESRI USA Topo Maps, 2019







1b

#### **Project Location**

Client/Project

Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

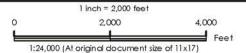
Correction Project

Project Location

184031016

Tulare and Kern Counties, California

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Study Area (2,249.49 acres)

Map Reference Point

### Public Land Survey

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

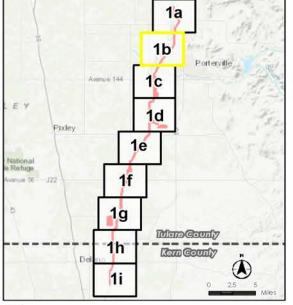
T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971)

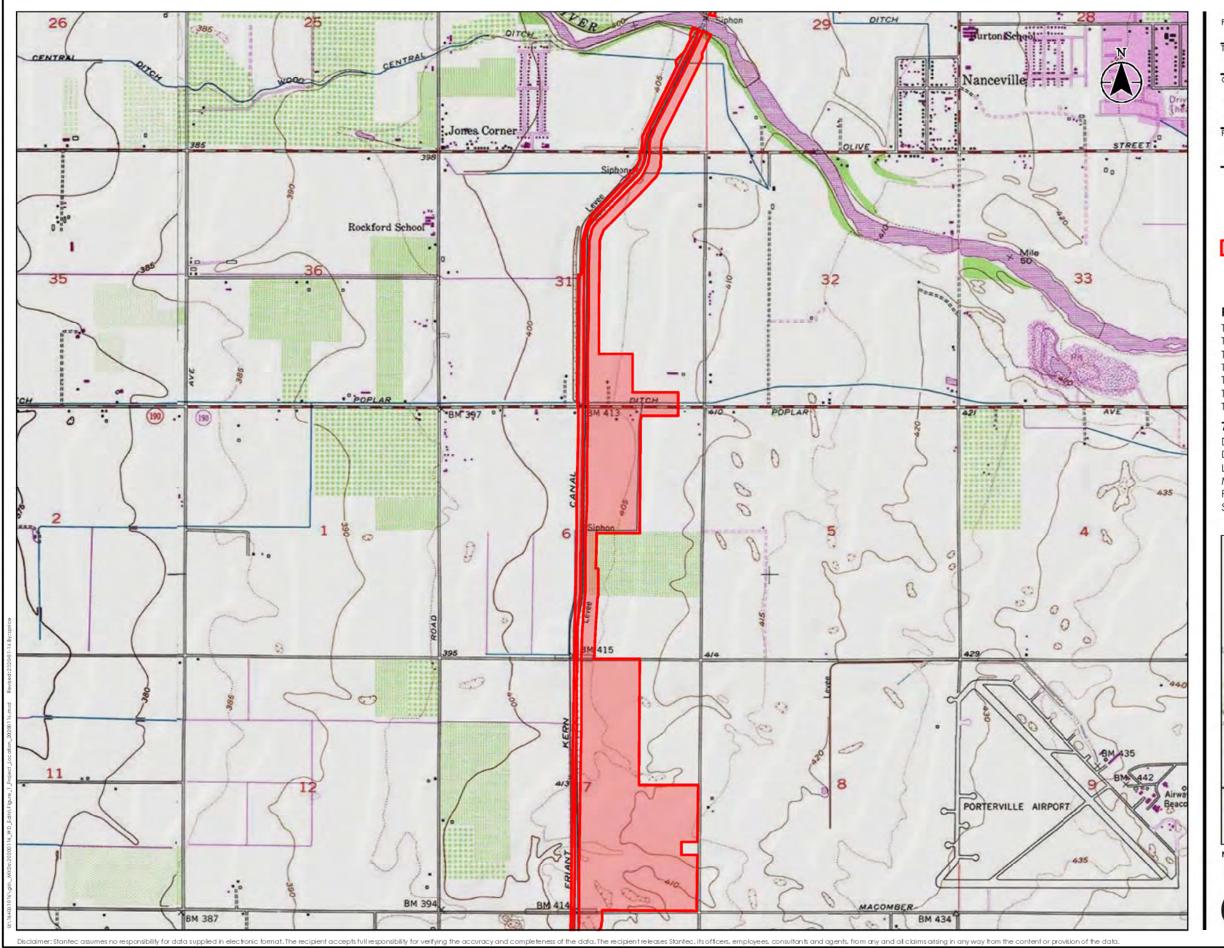
Sausalito School, California (1971)



Coordinate System: NA D 1983 State Plane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps, 2019







1c

#### **Project Location**

Client/Project

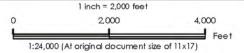
Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Correction Project

Project Location

184031016

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16 Tulare and Kern Counties, California



Study Area (2,249.49 acres)

Map Reference Point

#### **Public Land Survey**

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

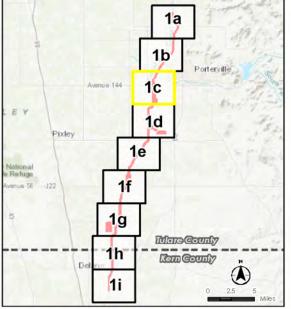
T23S, R27E, Sec.06

T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

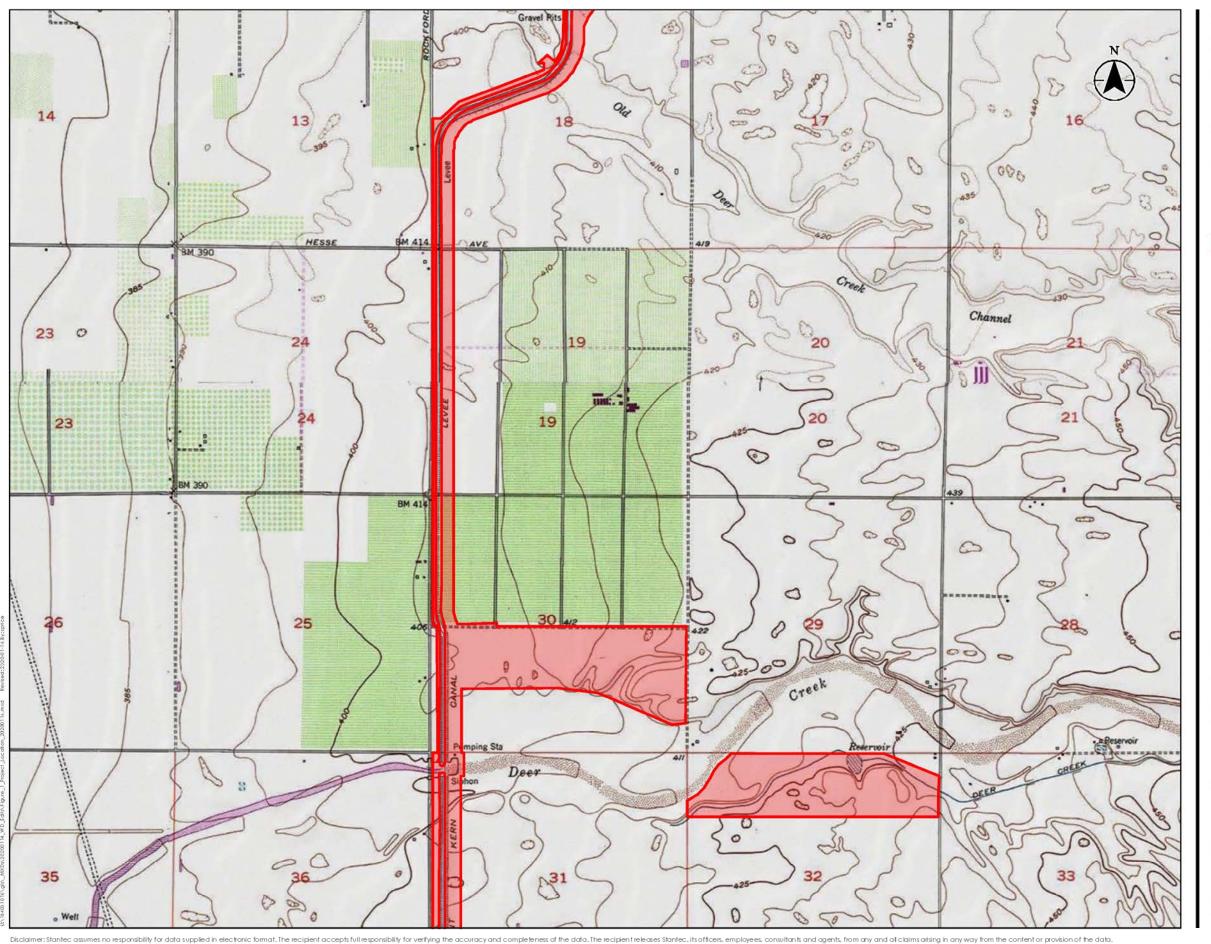
Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971) Sausalito School, California (1971)



Coordinate System: NAD 1983 StatePlane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps, 2019







1d

#### **Project Location**

Client/Project

Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

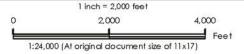
Correction Project

Project Location

184031016

Tulare and Kern Counties, California

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Study Area (2,249.49 acres)

Map Reference Point

#### Public Land Survey

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

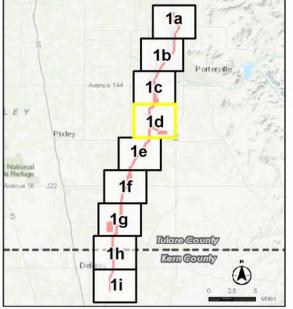
T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969)

Porterville, California (1971)

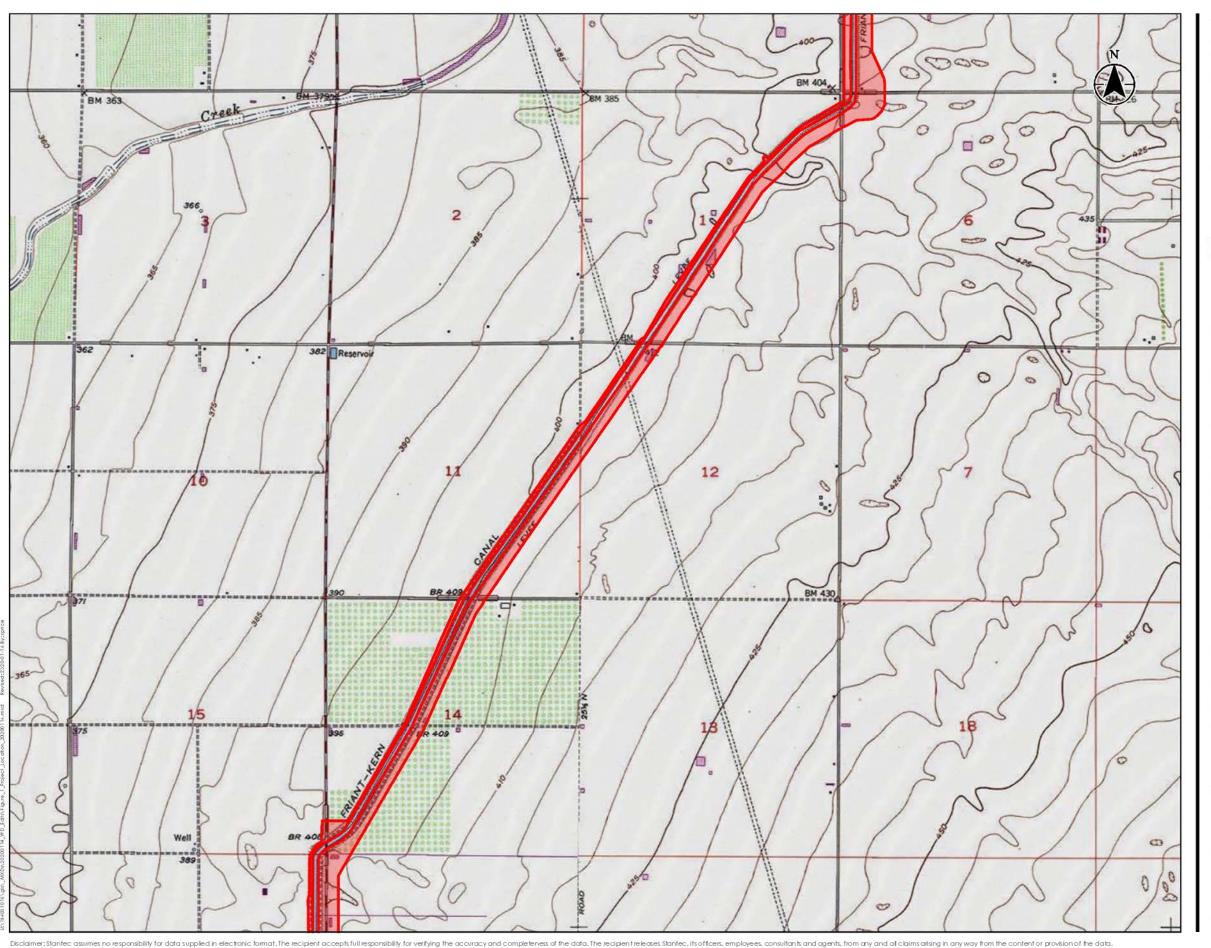
Sausalito School, California (1971)



Coordinate System: NA D 1983 State Plane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps, 2019







\_1e

#### Project Location

Project Location

Client/Project

Friant Water Authority

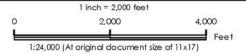
Friant-Kern Canal Middle Reach Capacity

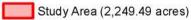
Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Map Reference Point

### **Public Land Survey**

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

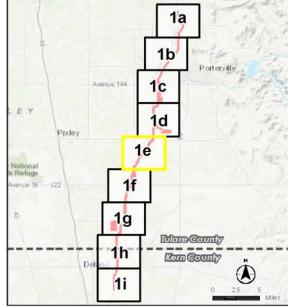
T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971)

Sausalito School, California (1971)

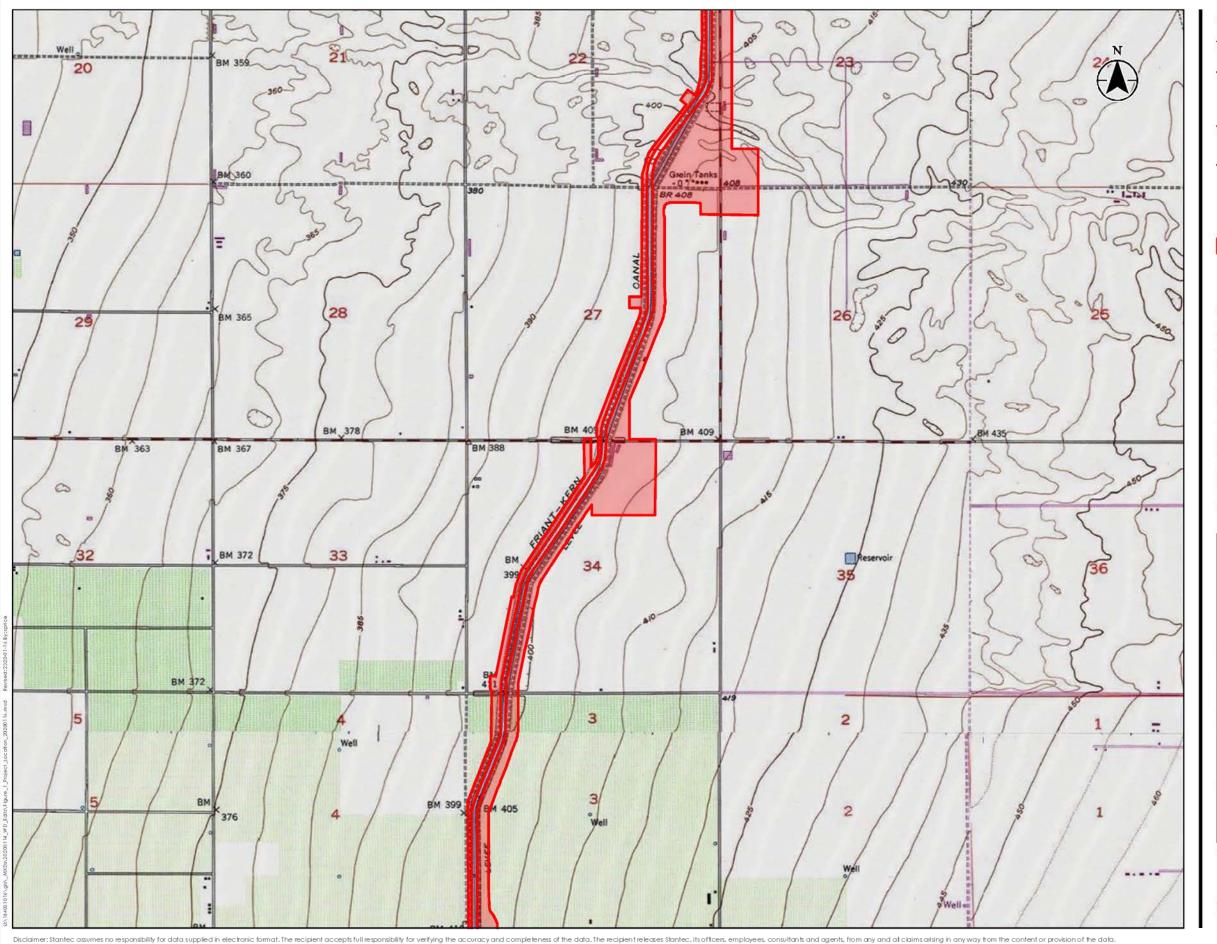


#### Notes

Coordinate System: NAD 1983 StatePlane California IV FIPS 0404 Feet
 ESRI USA Topo Maps, 2019







1f

#### Project Location

Client/Project

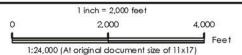
Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Correction Project

Project Location

Tulare and Kern Counties, California

184031016 Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Study Area (2,249.49 acres)

Map Reference Point

### Public Land Survey

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

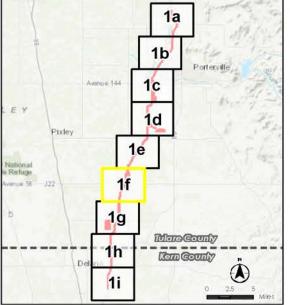
T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971)

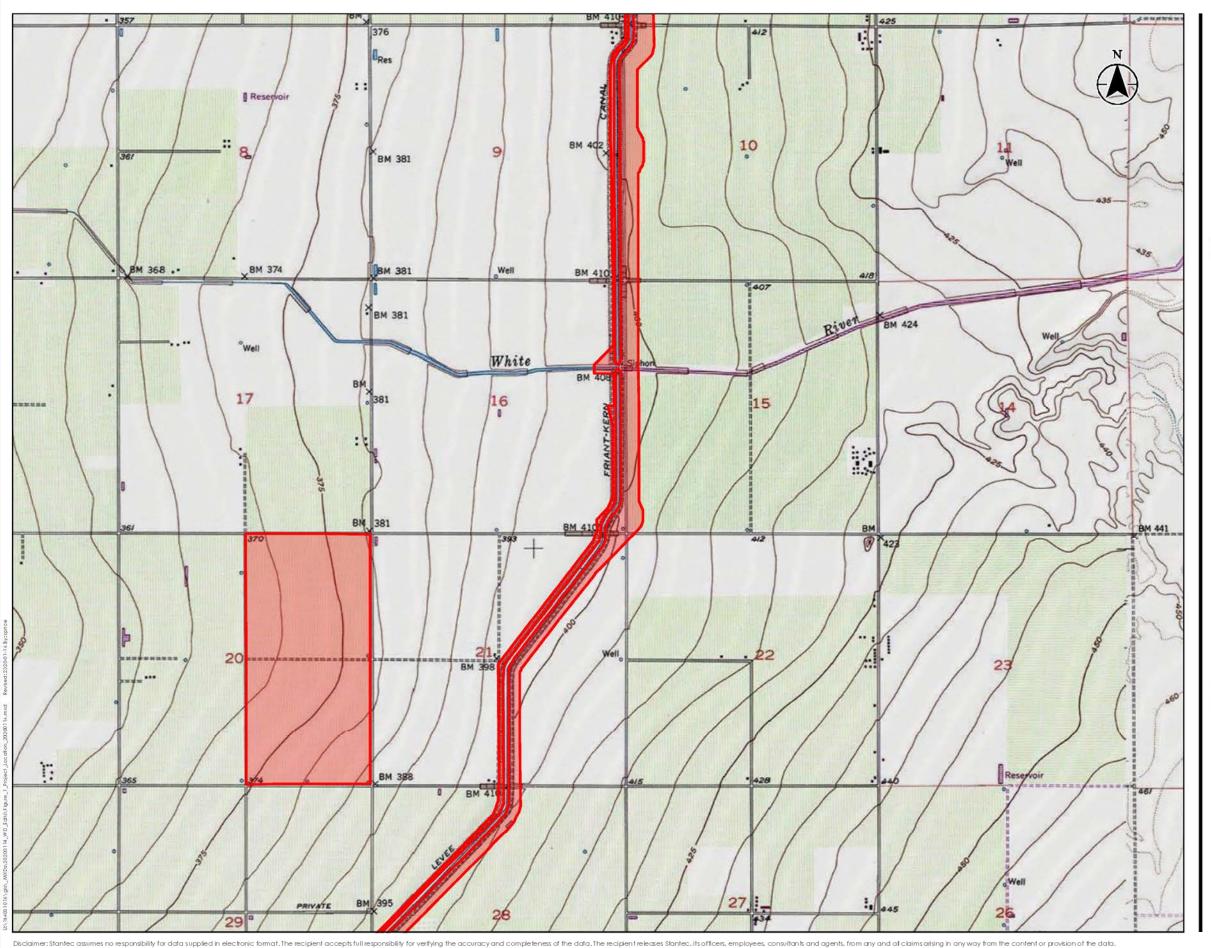
Sausalito School, California (1971)



Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps, 2019







1g

#### **Project Location**

Client/Project

Friant Water Authority

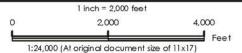
Friant-Kern Canal Middle Reach Capacity

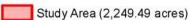
Correction Project

Project Location

Tulare and Kern Counties, California

184031016 Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Map Reference Point

#### Public Land Survey

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971) Sausalito School, California (1971)

1a 1b 1c 1g Tulare County 1h 1i

Coordinate System: NA D 1983 State Plane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps, 2019







1h

#### **Project Location**

Client/Project

Friant Water Authority

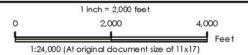
Friant-Kern Canal Middle Reach Capacity

Correction Project Project Location

184031016

Tulare and Kern Counties, California

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16



Study Area (2,249.49 acres)

Map Reference Point

### Public Land Survey

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

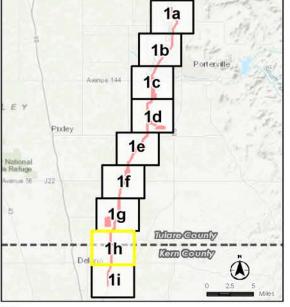
T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971) Sausalito School, California (1971)

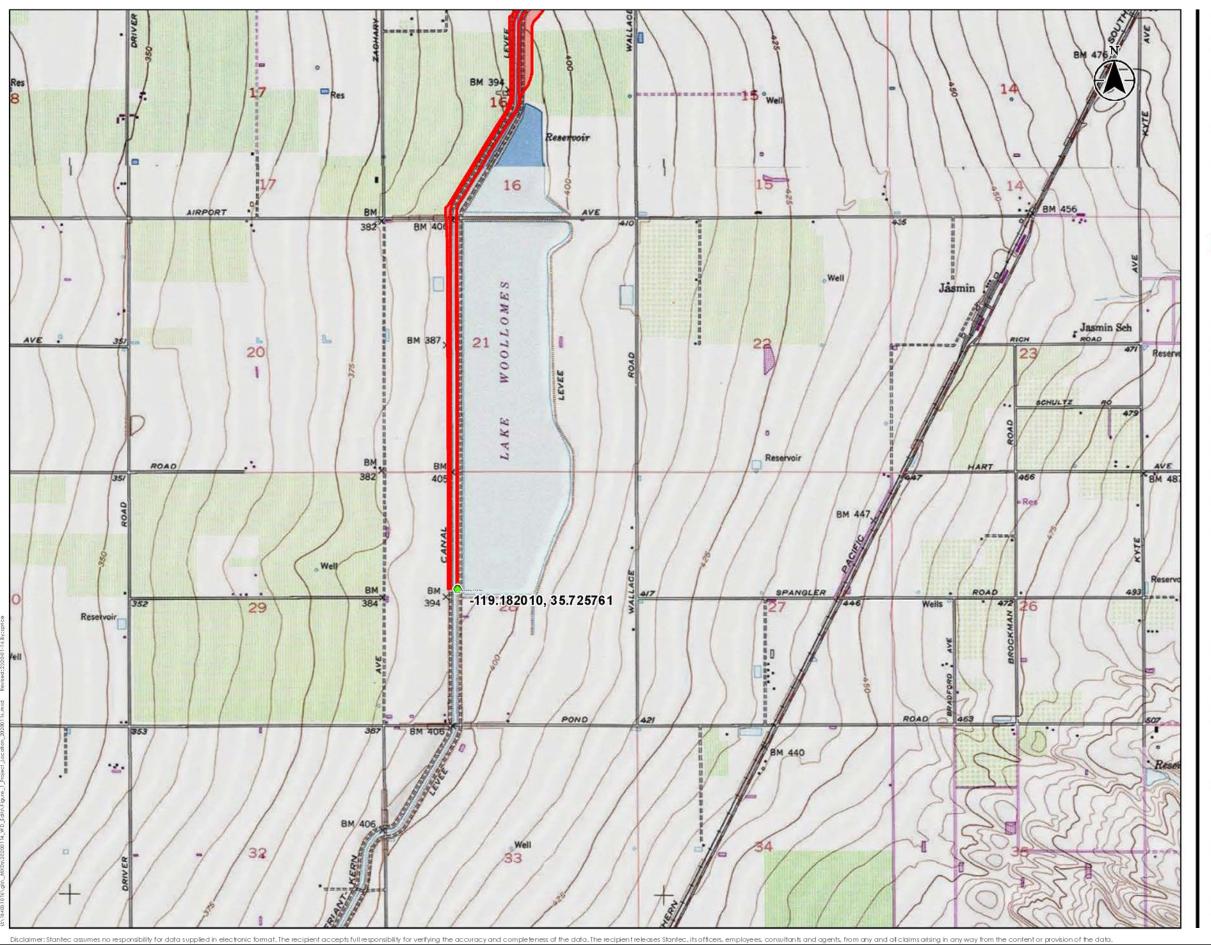
1a



Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps, 2019







1i

#### Project Location

Client/Project

Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

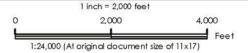
Correction Project

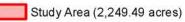
Project Location

184031016

Tulare and Kern Counties, California

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16





Map Reference Point

### **Public Land Survey**

T20S, R27E, Sec.21, 28, 33

T21S, R27E, Sec.03, 04, 09, 16, 20, 21, 29, 30, 31

T22S, R27E, Sec.06, 07, 18, 19, 30, 31, 32

T23S, R26E, Sec.01, 11, 12, 14, 15, 22, 23, 26, 27, 34

T23S, R27E, Sec.06

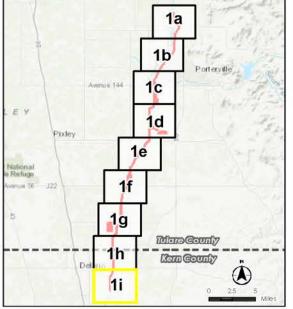
T24S, R26E, Sec.03, 09, 10, 15, 16, 20, 21, 22, 28, 33

T25S, R26E, Sec.04, 09, 16, 21, 28

#### 7.5' USGS Quadrangles

Delano East, California (1969) Ducor, California (1972) Lindsay, California (1969) McFarland, California (1969) Porterville, California (1971)

Sausalito School, California (1971)

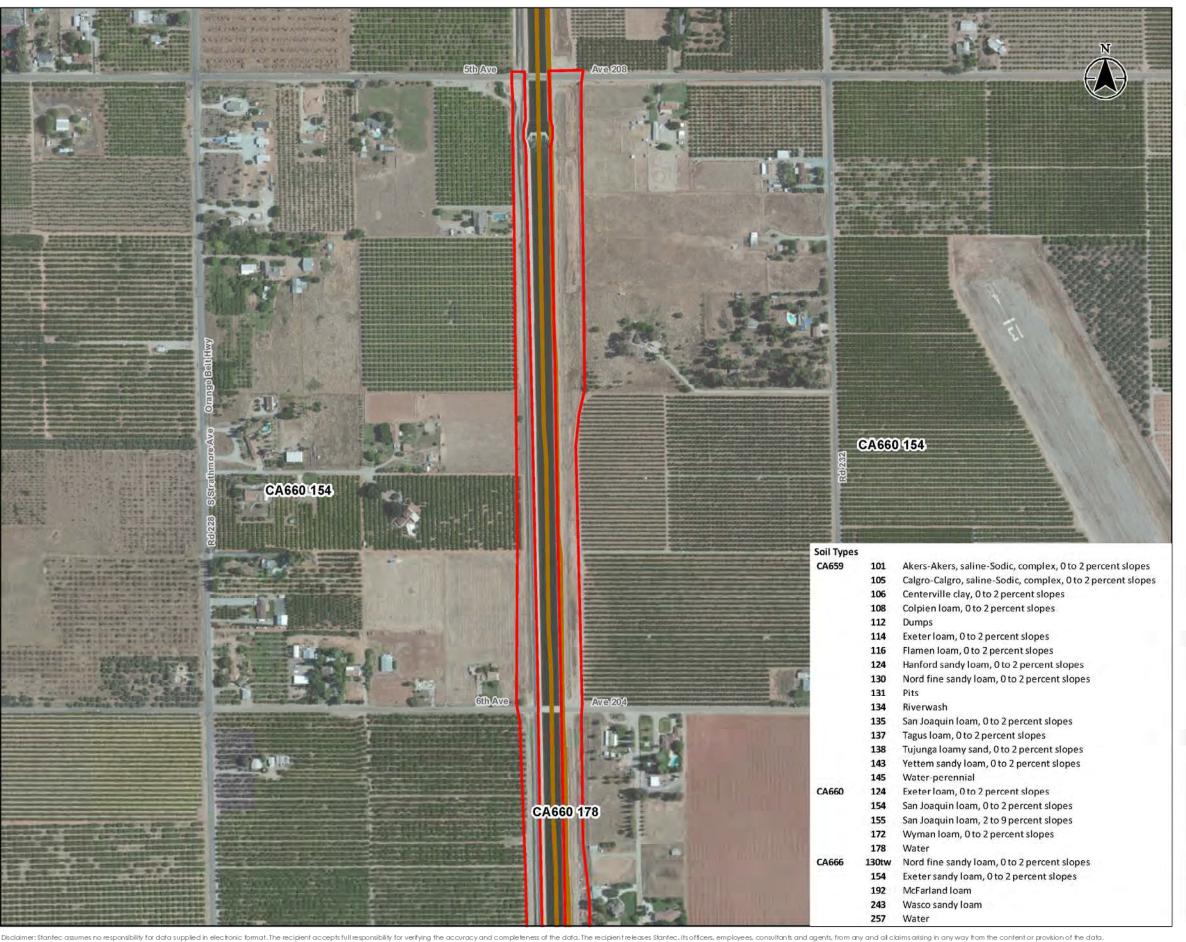


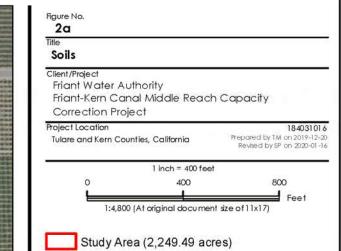
#### Note

Coordinate System: NAD 1983 StatePlane California IV FIPS 0.404 Feet
 ESRI USA Topo Maps; 2019









Soils

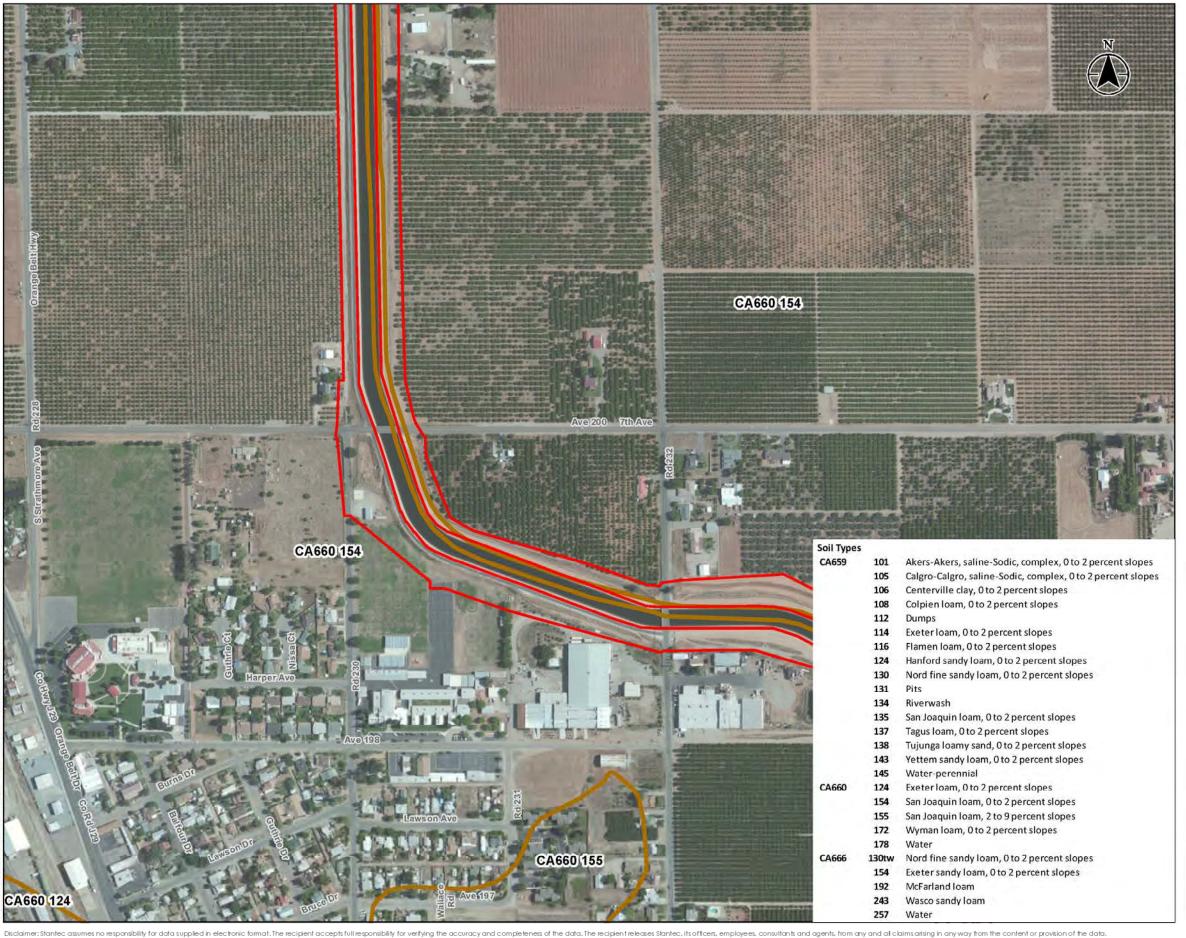


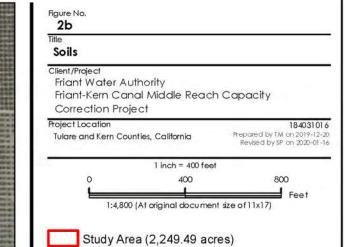
Notes

Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Otholmagery: ESRI World Imagery (Clarity), 2019

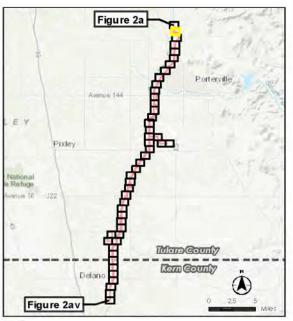








Soils

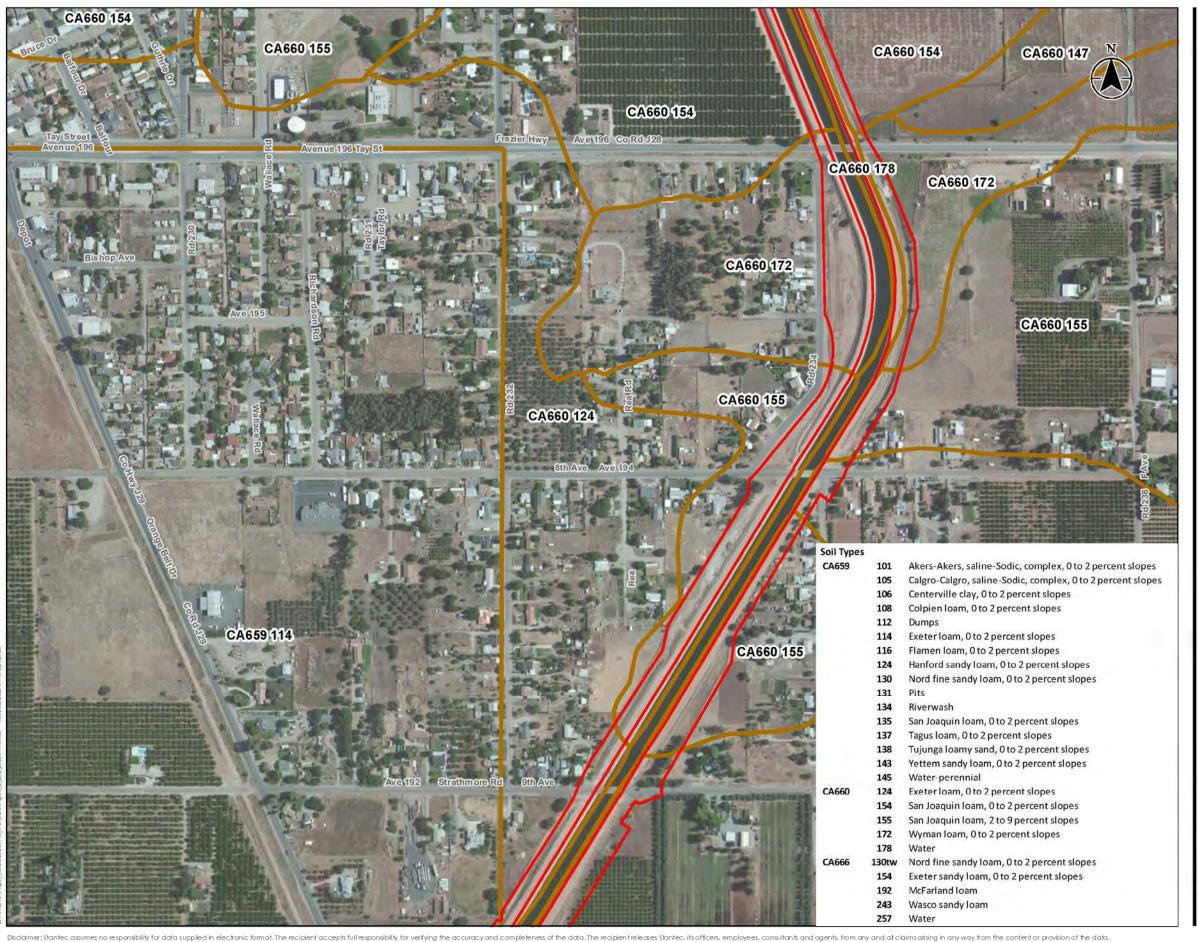


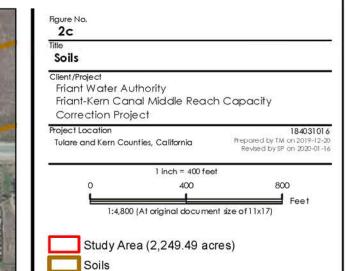
Notes

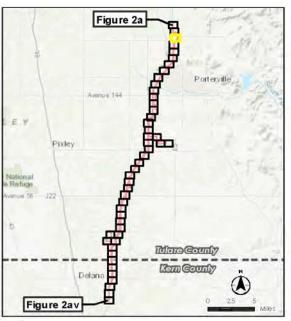
Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Ortholmagery: ESRI World Imagery (Clarity), 2019











Notes

Coardinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (SSSURGO), 1/28/2019
 Otholmagery: ESRI World Imagery (Clarity), 2019





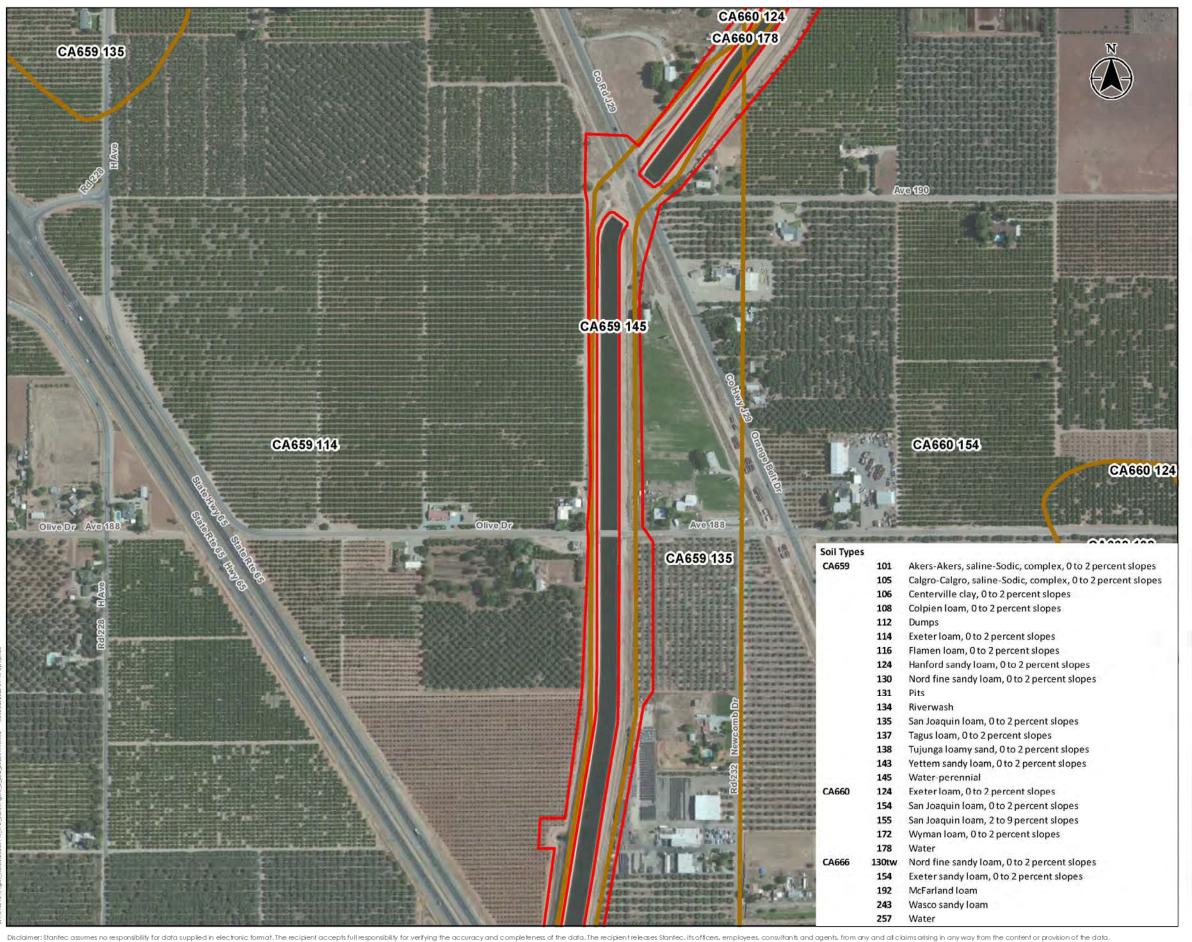


Figure No.

2d

Title

Soils

Client/Project
Friant Water Authority
Friant-Kern Canal Middle Reach Capacity
Correction Project

Project Location
Tulare and Kern Counties, California

184031016
Prepared by TM on 2019-12-20
Revised by SP on 2020-01-16

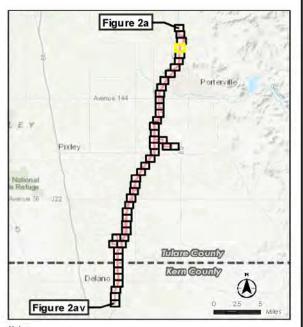
1 inch = 400 feet

0 400 800

1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

Soils



Note

Coordnate System: NAD 1983 State Plane Colifornia IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 17/28/2019
 Otholmagey: ESRI World Imagery (Clarity), 2019





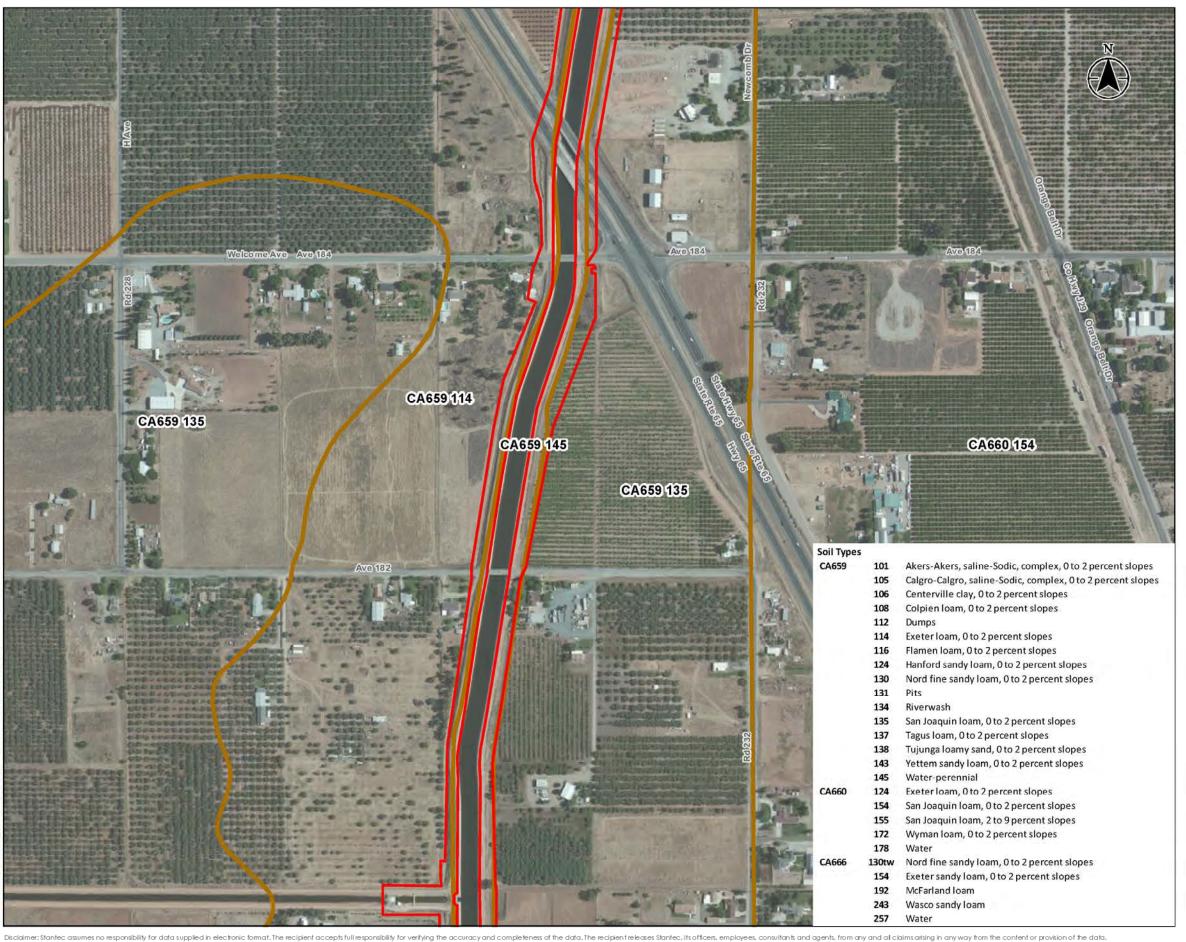


Figure No.

2e

Title

Soils

Client/Project
Friant Water Authority
Friant-Kern Canal Middle Reach Capacity
Correction Project

Project Location
Tulare and Kern Counties, California

184031016
Prepared by TM on 2019-12-20
Revised by SP on 2020-01-16

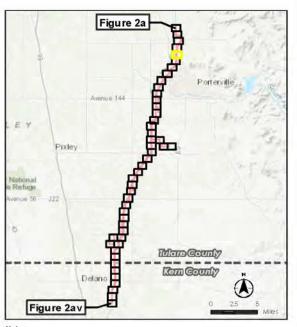
1 inch = 400 feet

0 400 800

1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

Soils

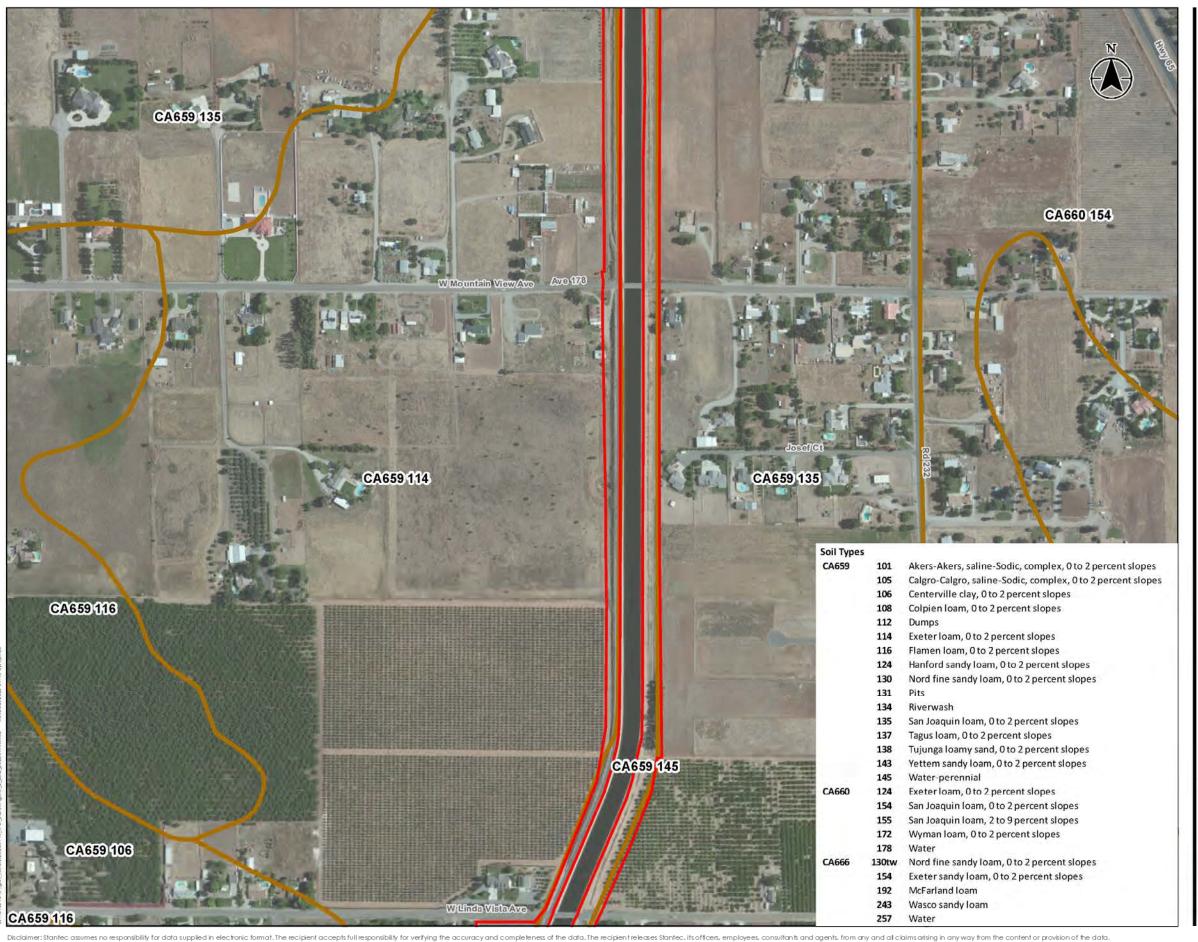


Note

Coordhafe System: NAD.1983 StatePlane California IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Cotholmagery: ESRI World Imagery (Clarity), 2019







Tiel

Soils

Client/Project

Friant Water Authority

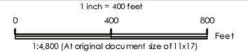
Friant-Kern Canal Middle Reach Capacity Correction Project

Project Location

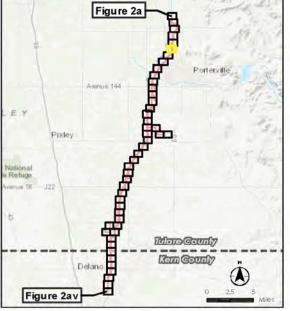
184031016

Tulare and Kern Counties, California

Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16



Study Area (2,249.49 acres)
Soils

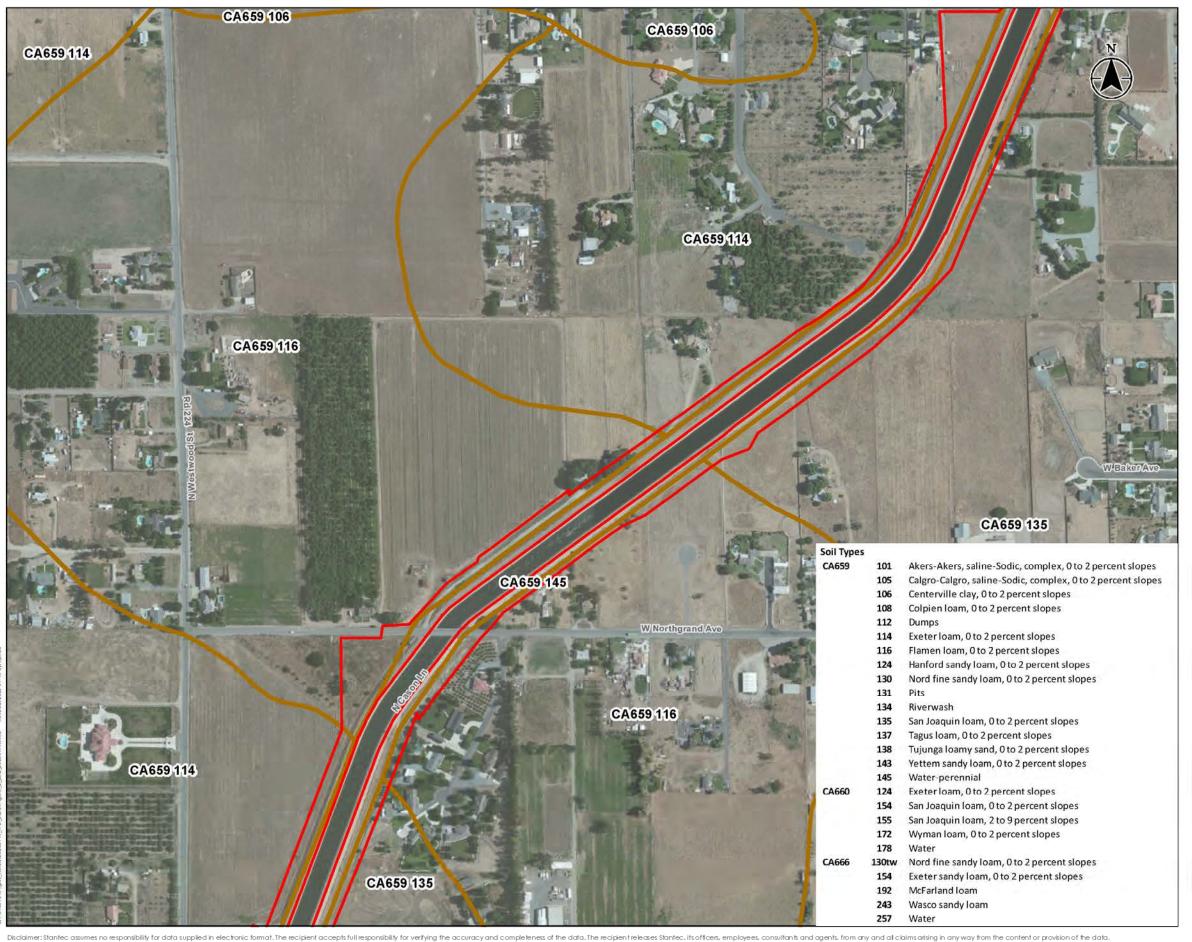


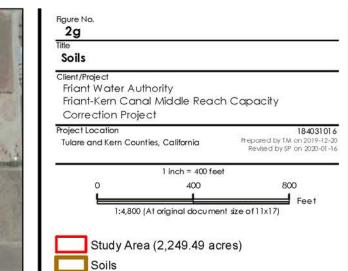
Notes

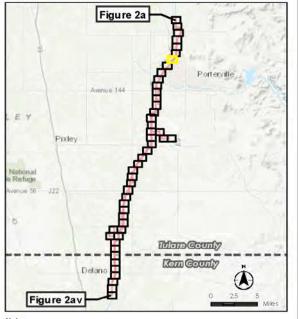
Coordinate System: NAD 1983 State Plane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Otholmagery: ESRI World Imagery (Clarity), 2019











Coordinate System: NAD 1983 State Plane California IV FIPS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSS URGO), 1/28/2019
 Otholmagery: ESRI World Imagery (Clarity), 2019





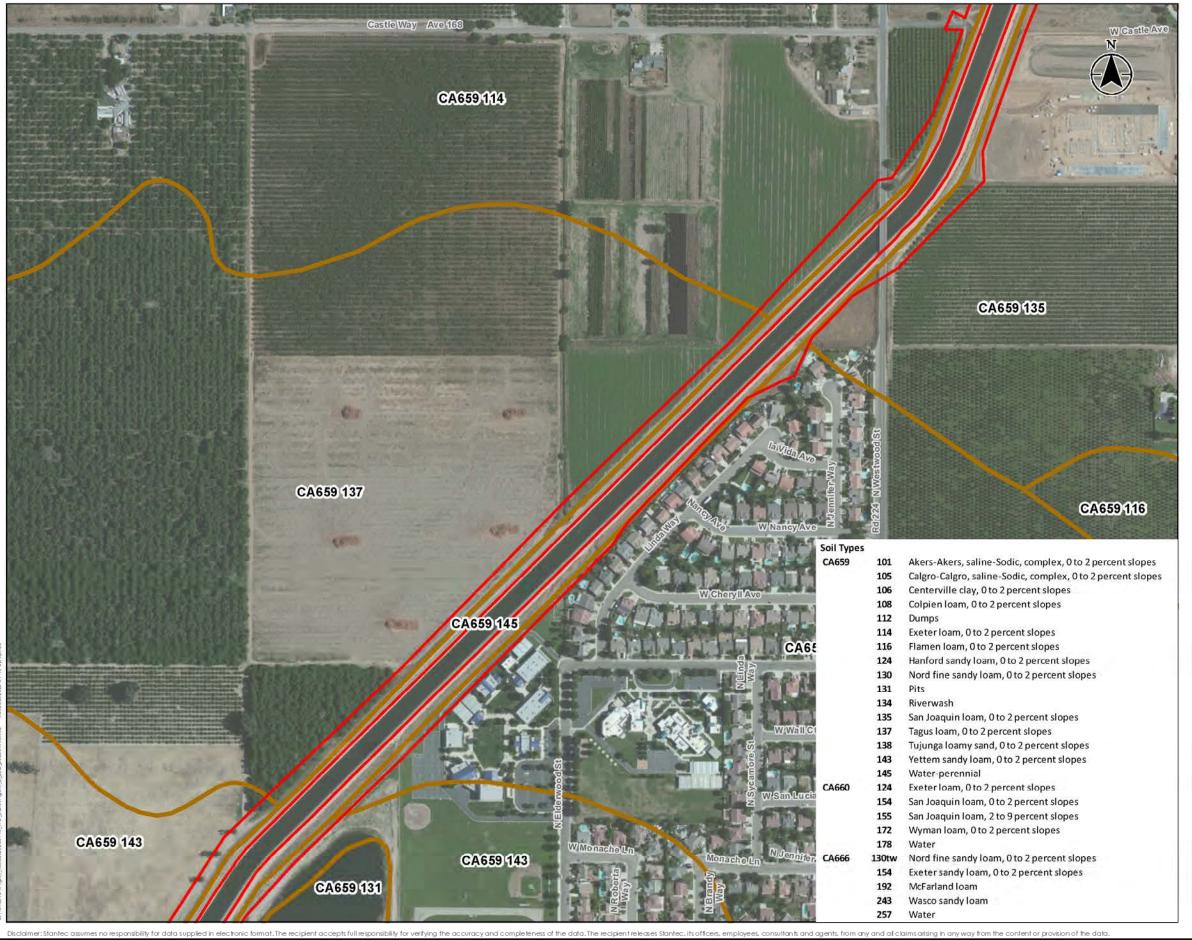


Figure No.

2h

Title

Soils

Client/Project
Friant Water Authority
Friant-Kern Canal Middle Reach Capacity
Correction Project

Project Location
Tulare and Kern Counties, California

184031016
Prepared by TM on 2019-12-20
Revised by SP on 2020-01-16

1 inch = 400 feet
0 400 800

1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

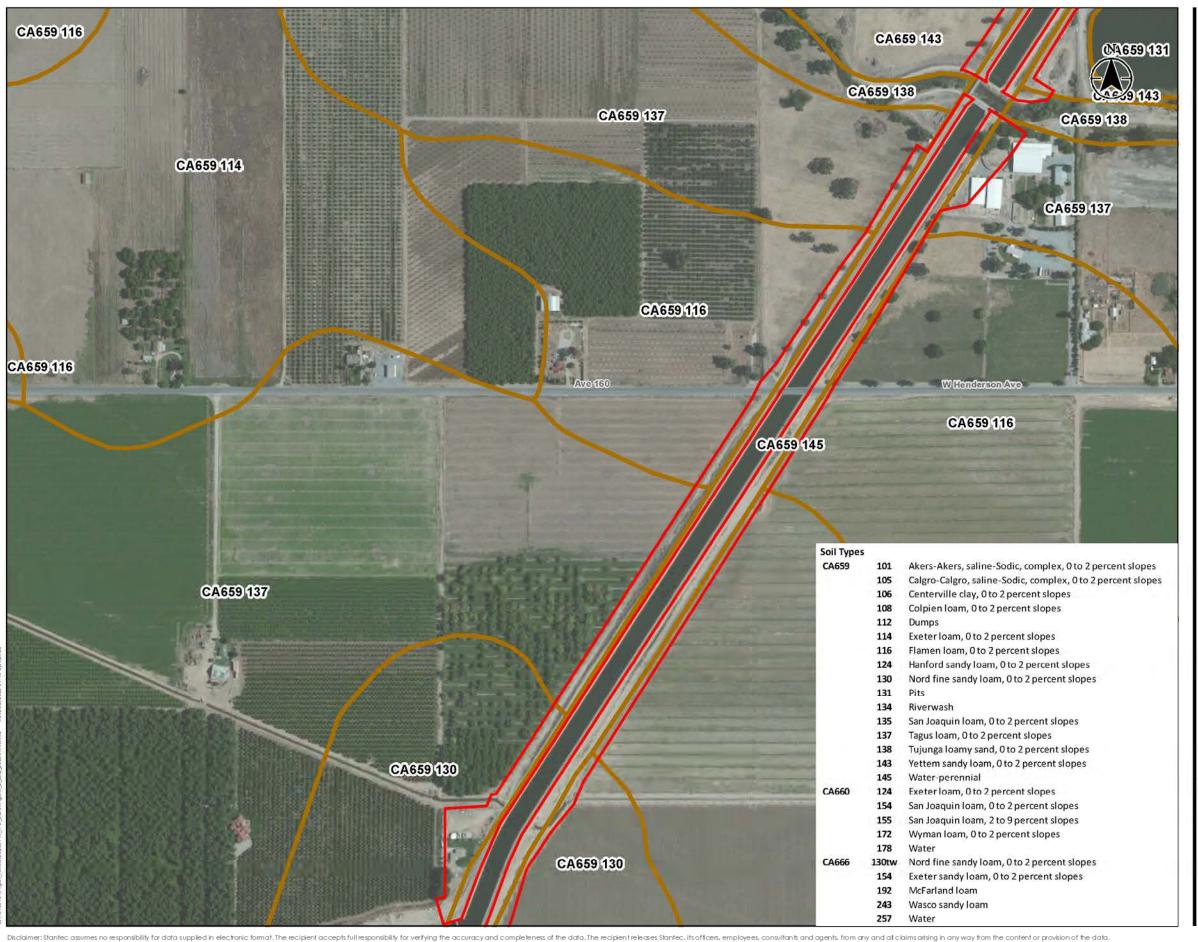


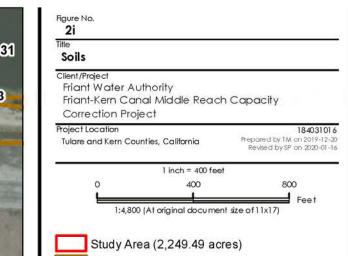
Notes

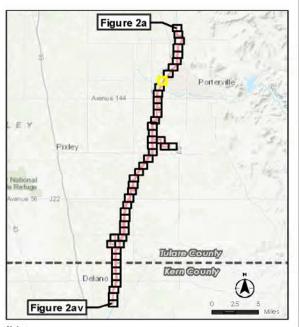
Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Stholmagery: ESRI World Imagery (Clarity), 2019









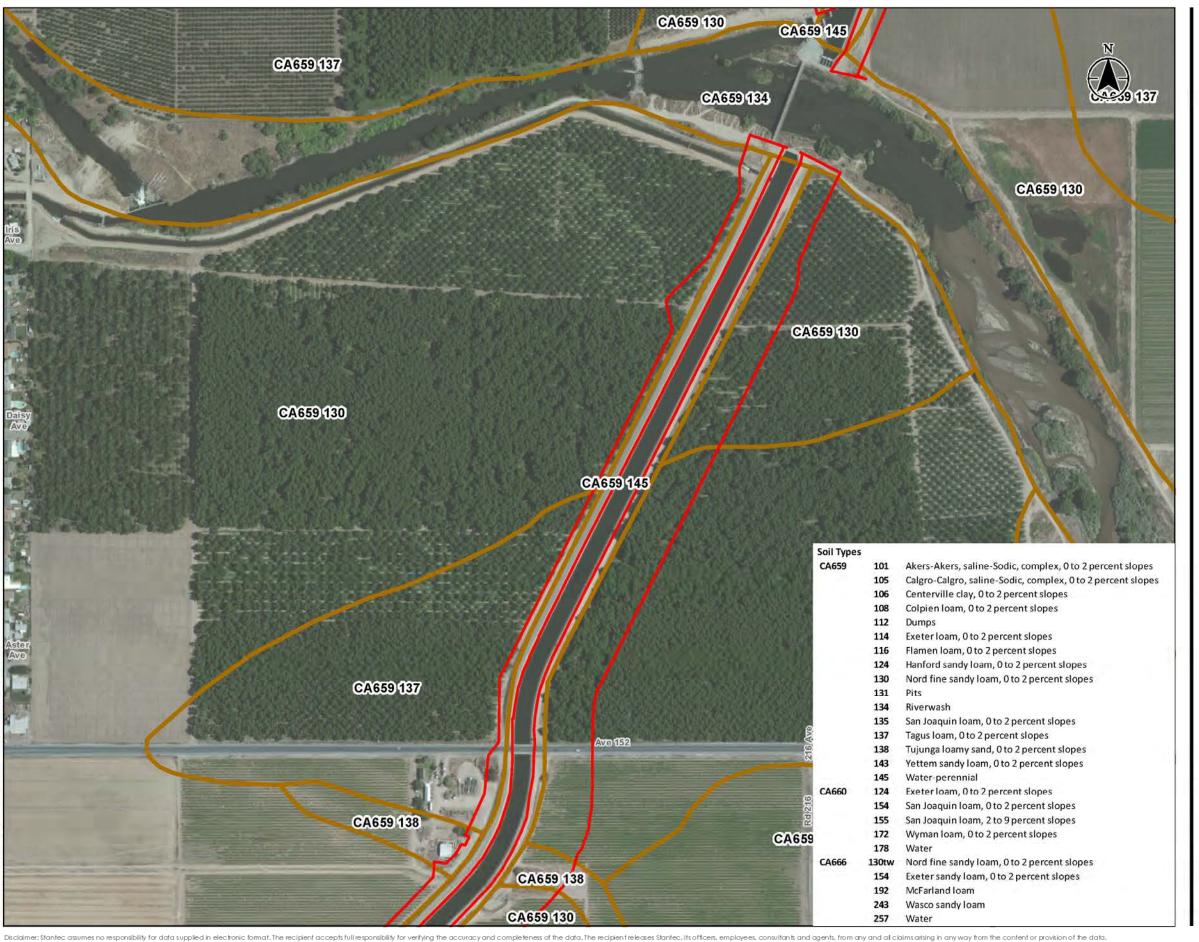


Notes

Coordinate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Otholmagery: ESRI World Imagery (Clarity), 2019







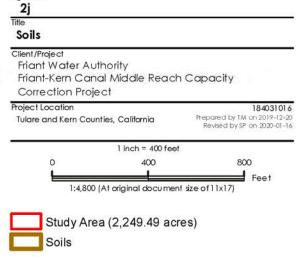
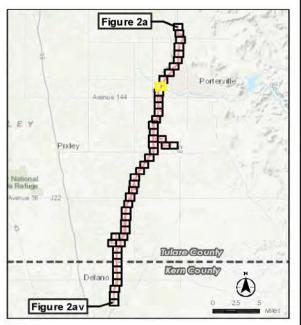


Figure No.

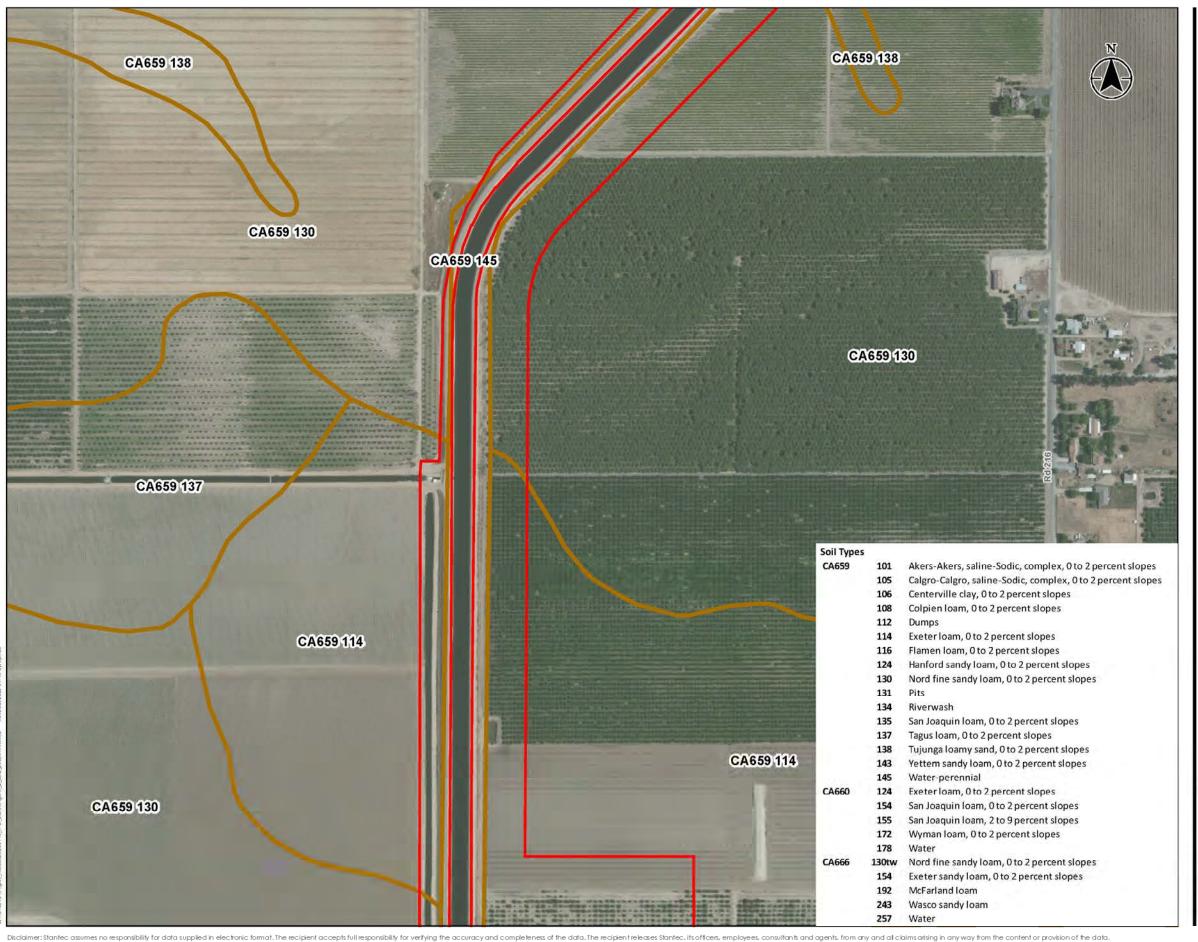


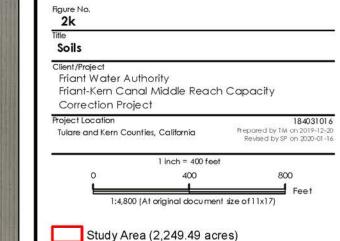
Notes

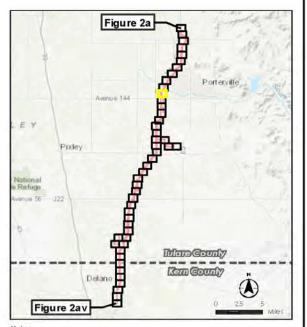
Coordinate System: NAD 1983 State Plane California IV FIPS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSS URGO), 17/28/2019
 Ortholmagery: ESRI World Imagery (Clarity), 2019











Notes

Coordinate System: NAD 1983 State Pione Colifornia IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019





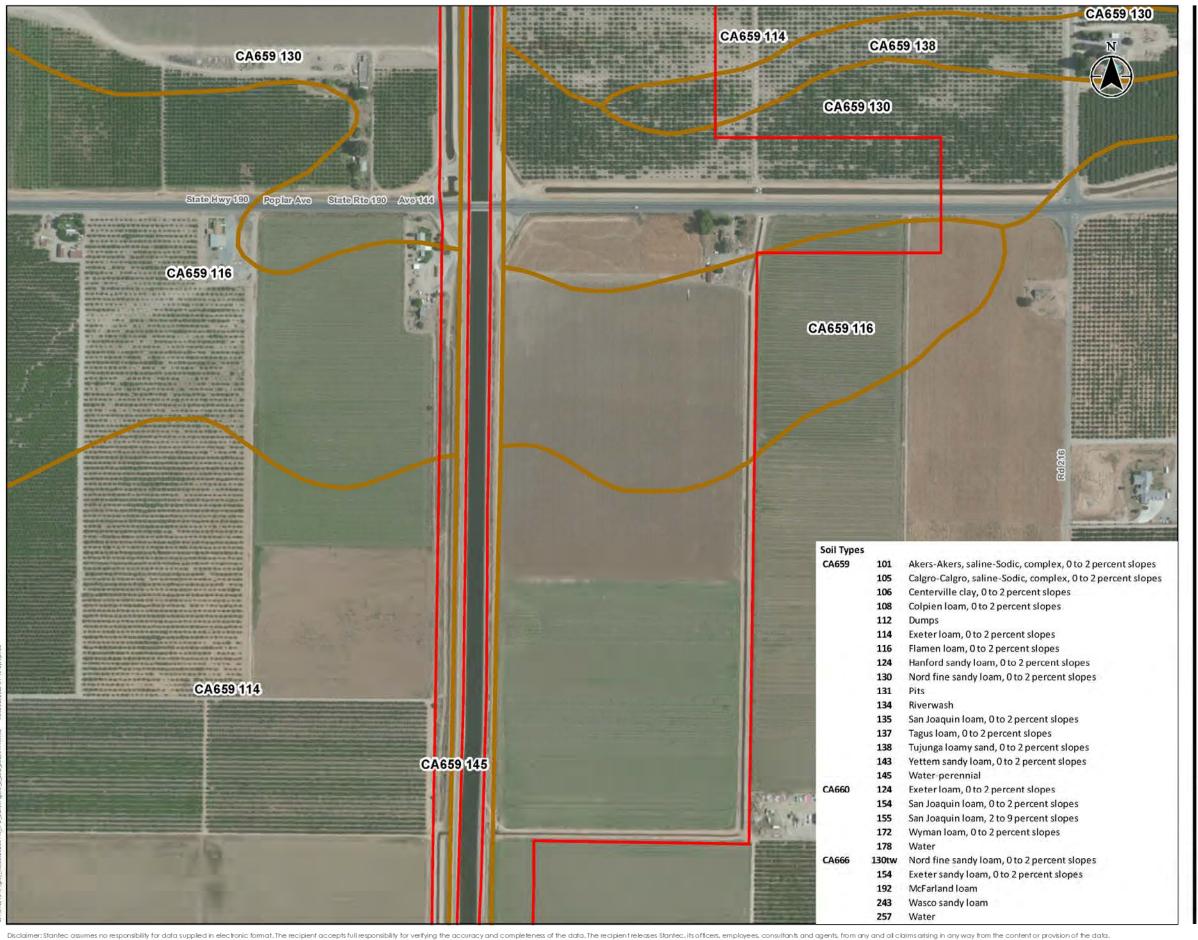
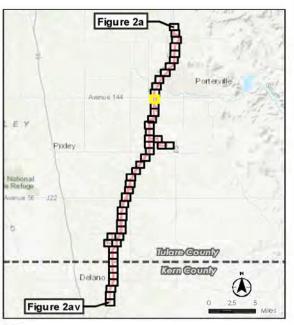


Figure No. Soils Client/Project Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16 Tulare and Kern Counties, California 1 inch = 400 feet 800 400 Feet 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Soils

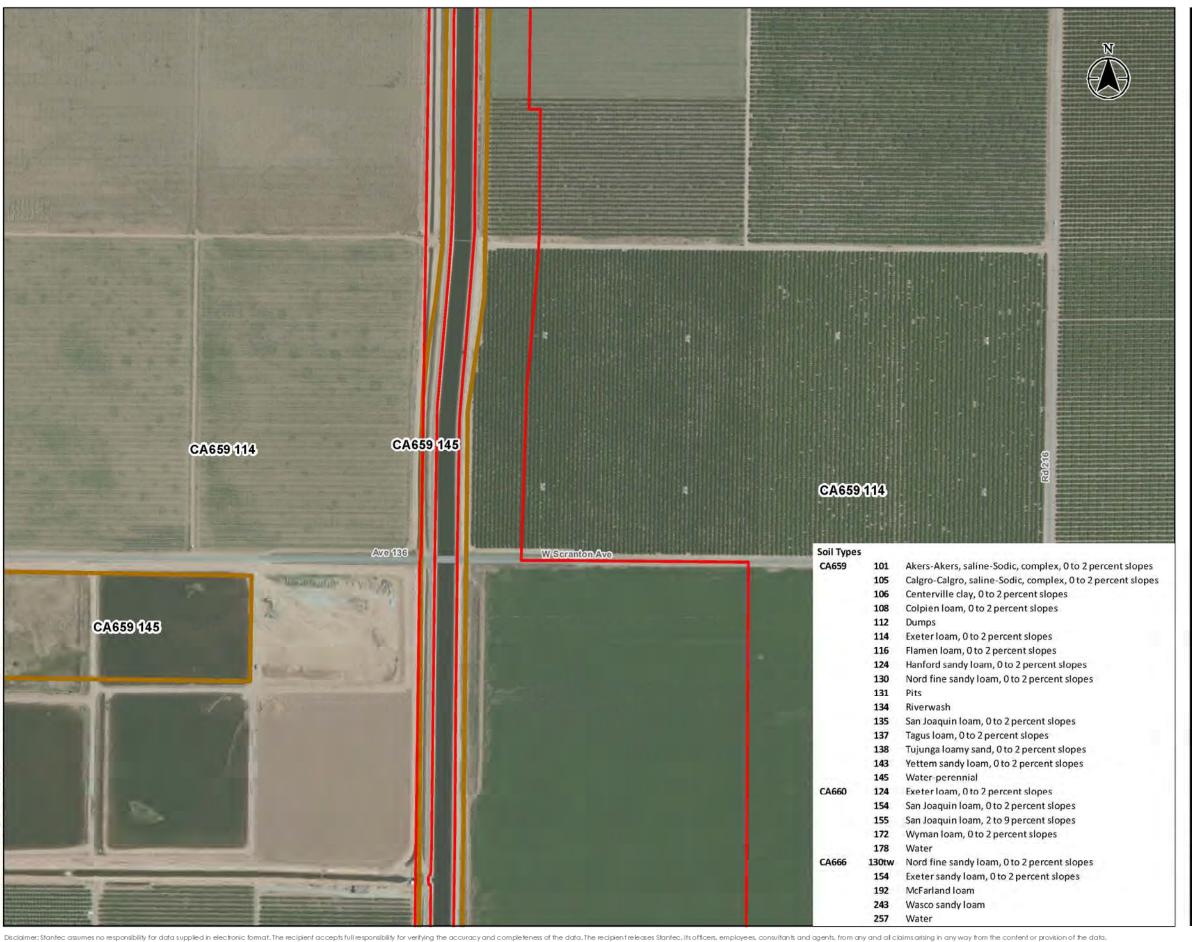


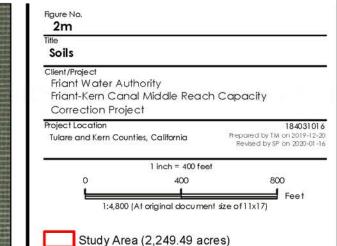
Notes

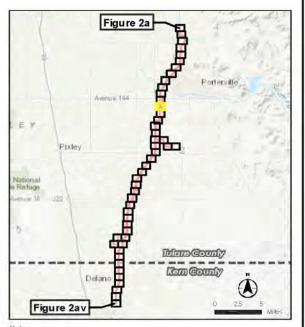
Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0.804 Feet
 USD A NRCS Grided Soil Survey Geographic (SSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019









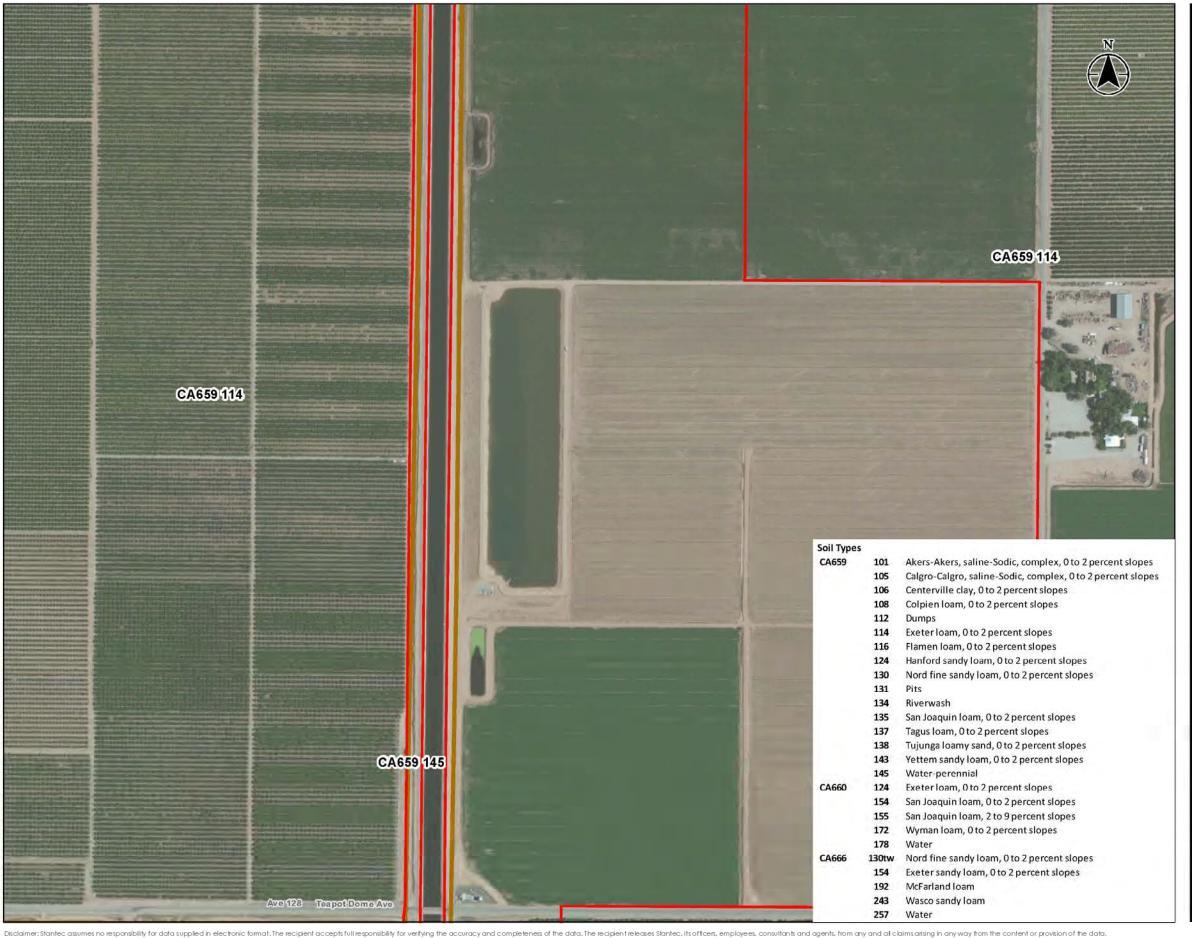


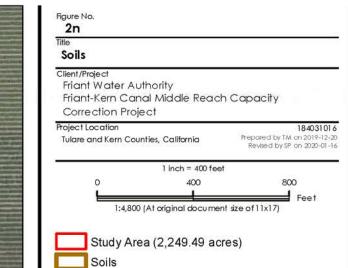
Notes

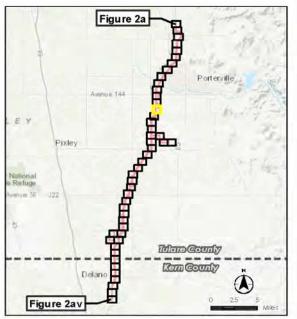
Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Stholmagery: ESRI World Imagery (Clarity), 2019







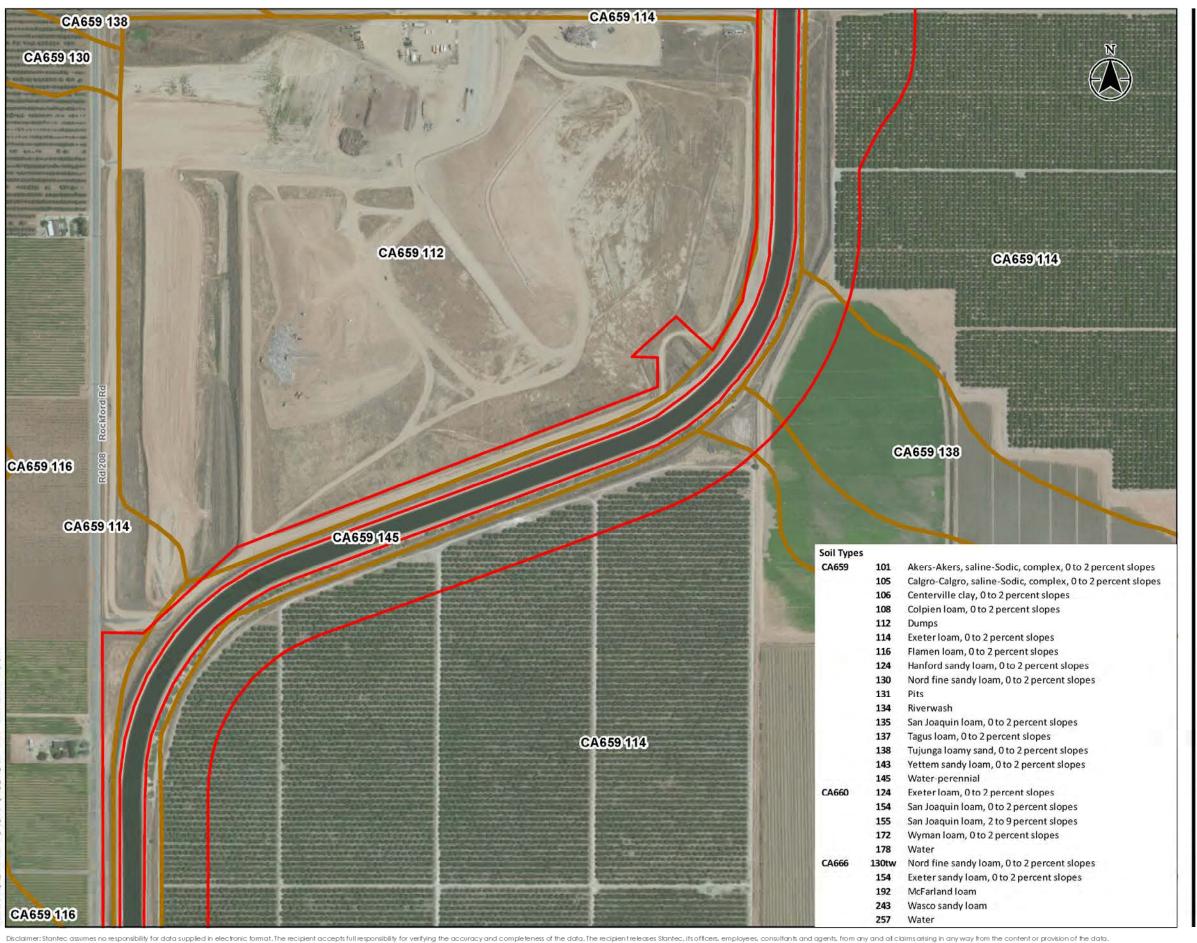


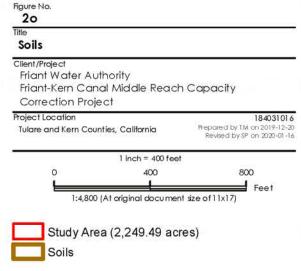


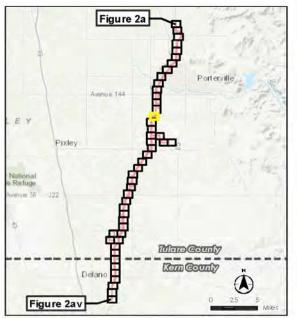
Coordinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019







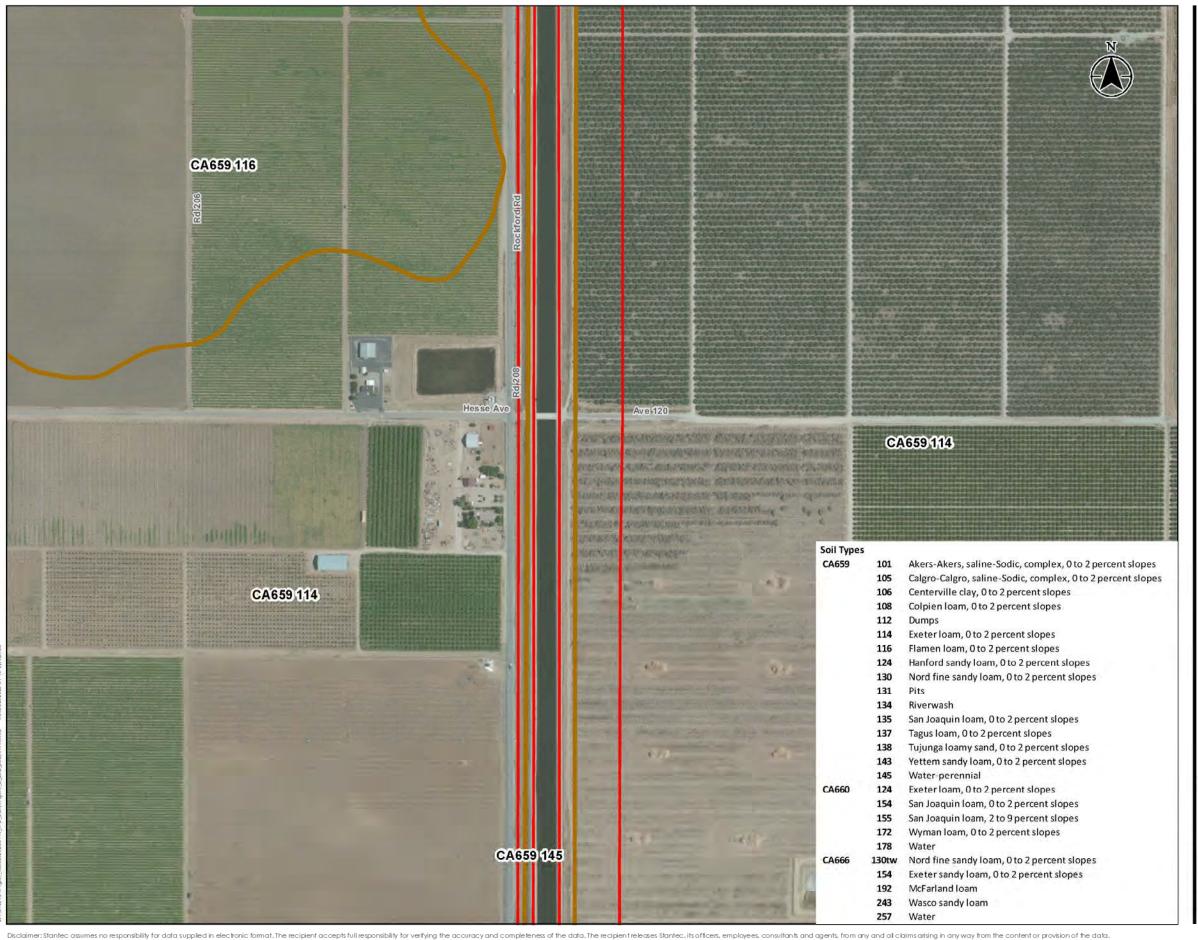


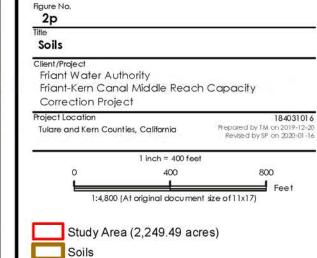


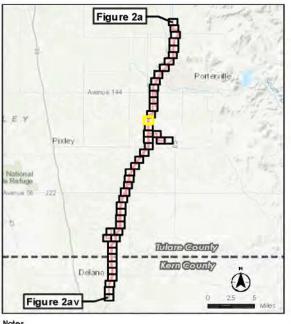
Coordnate System: NAD 1983 StatePlane California IV FIFS 0.804 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Otholmagey: ESRI World Imagery (Clarity), 2019







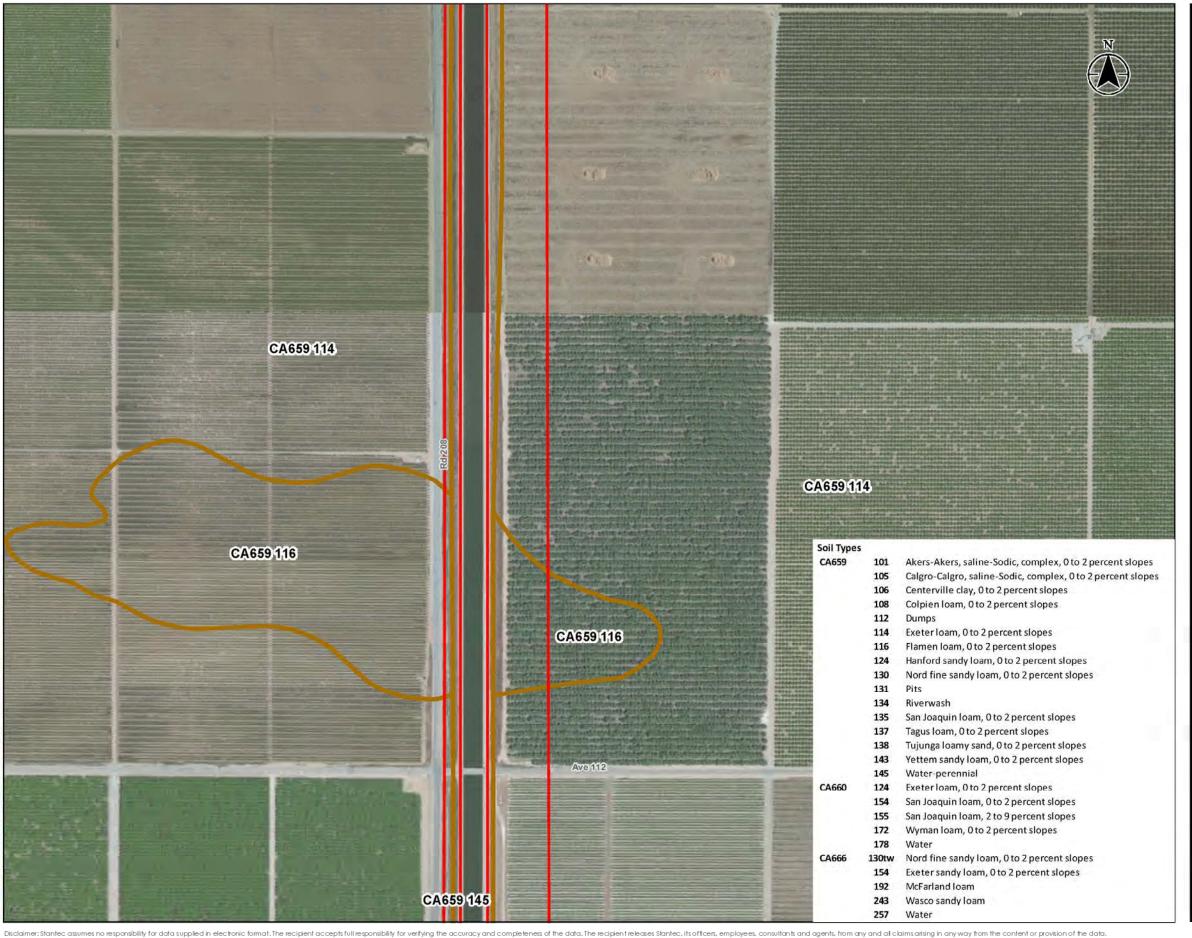


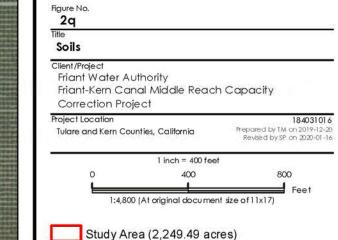


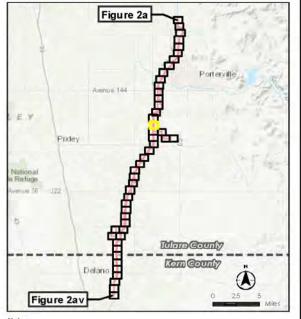
Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Statholmagery: ESRI World Imagery (Clarity), 2019









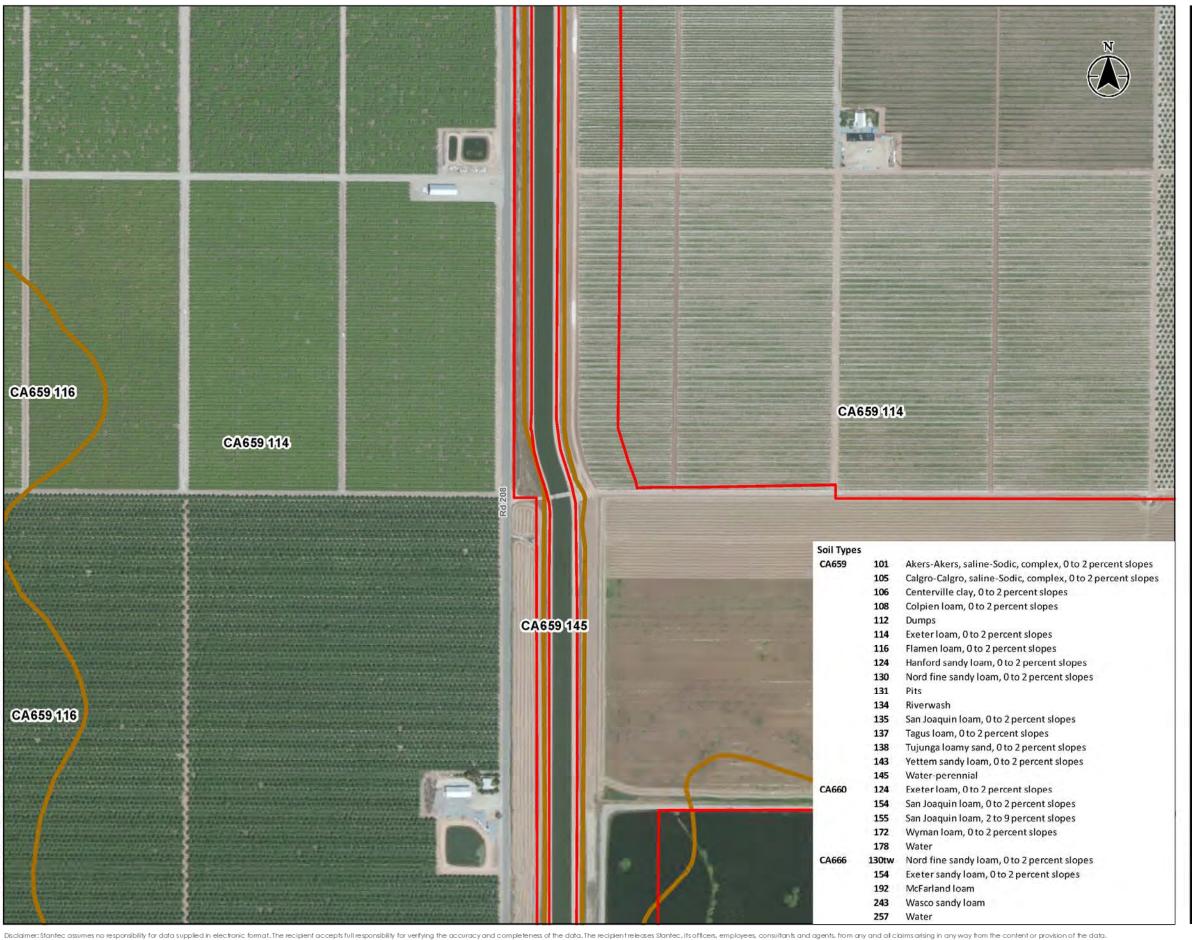


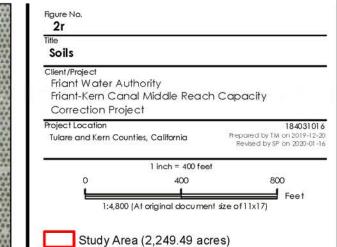
Note:

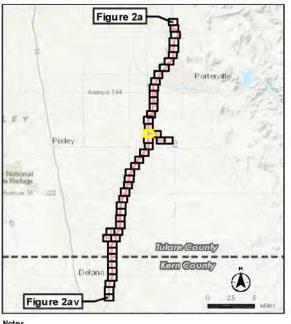
Coordinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Statholmagery: ESRI World Imagery (Clarity), 2019









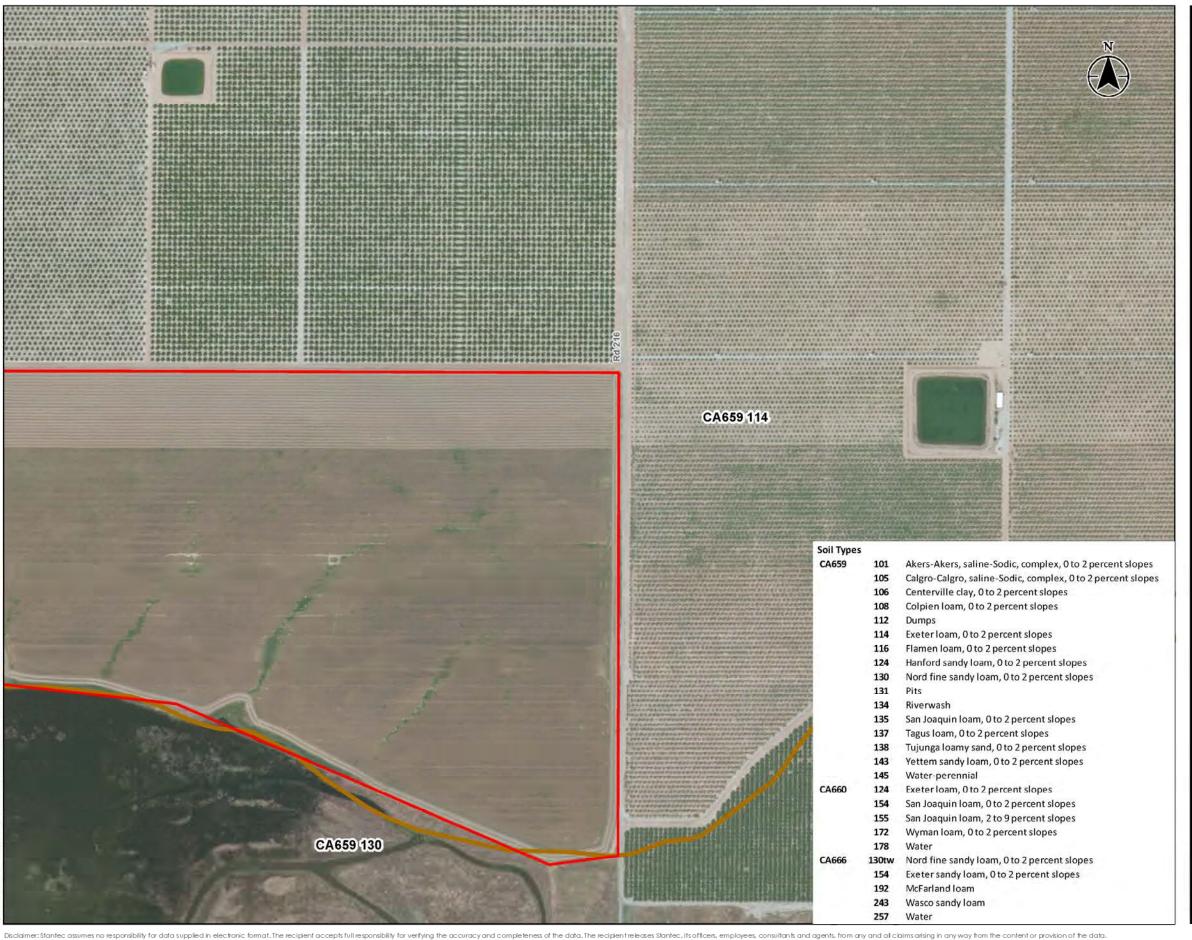


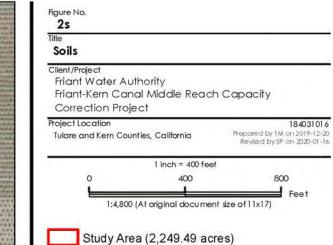
Notes

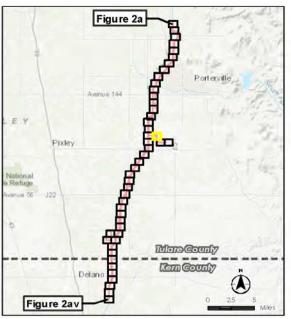
1. Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019









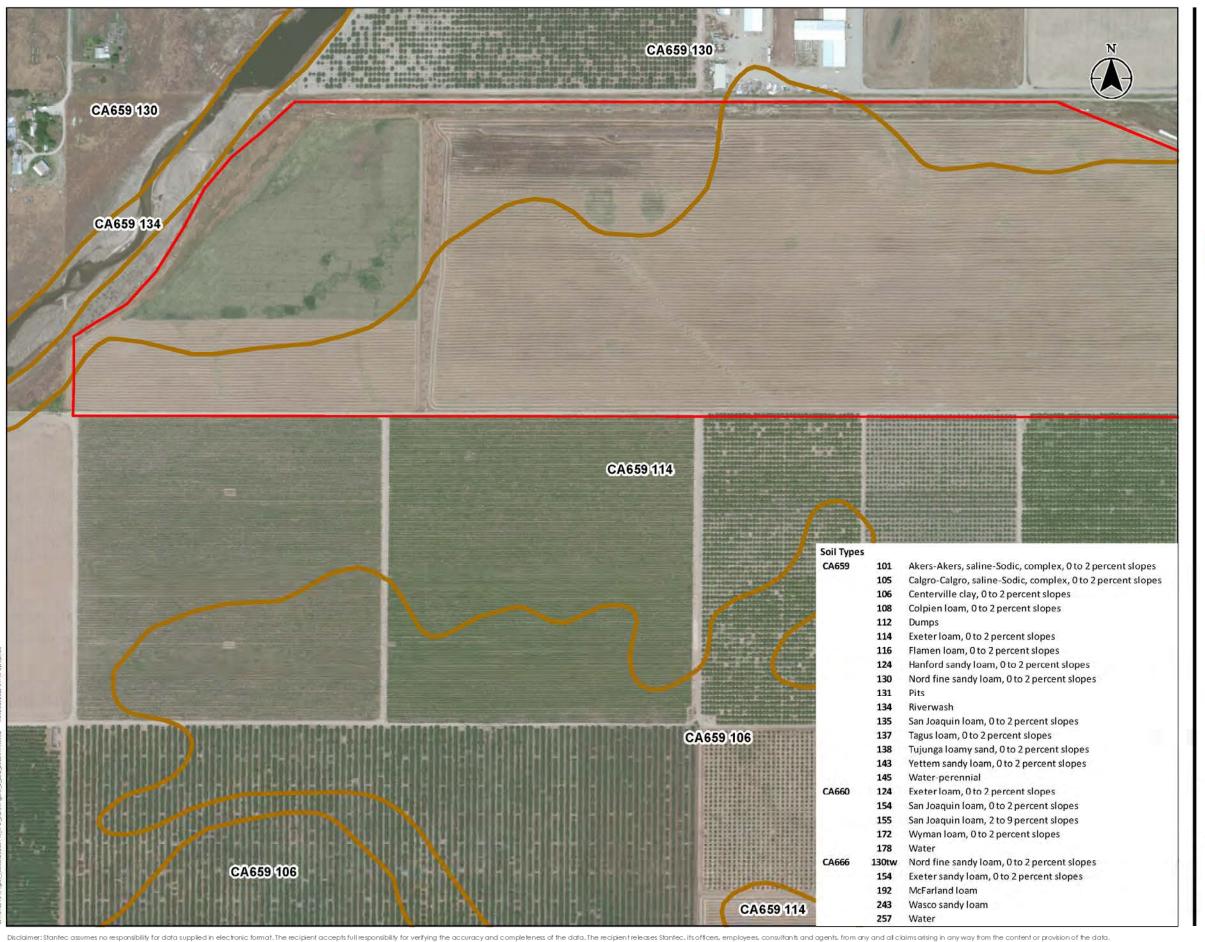


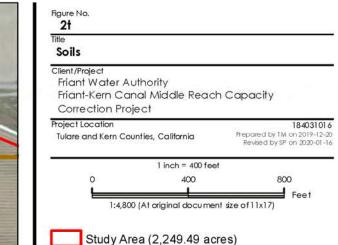
Notes

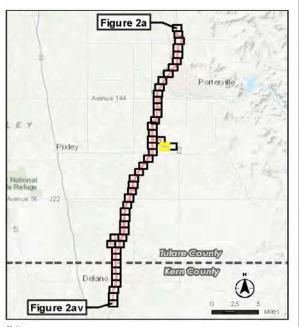
Coordinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Statholmagery: ESRI World Imagery (Clarity), 2019









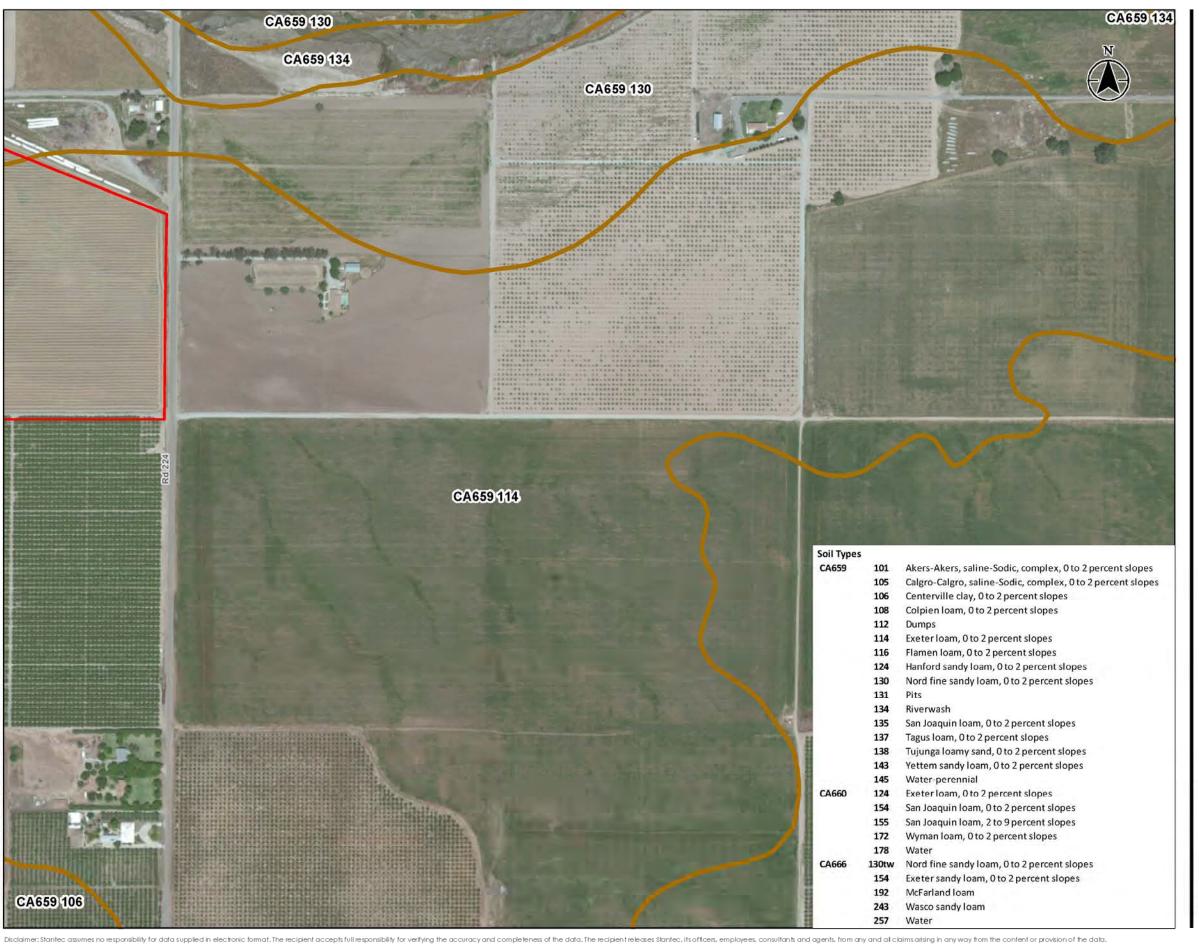


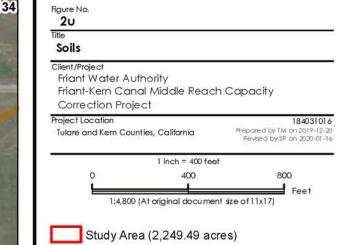
Note:

Coordinate System: NAD 1983 State Plane California IV FIFS 0.804 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019









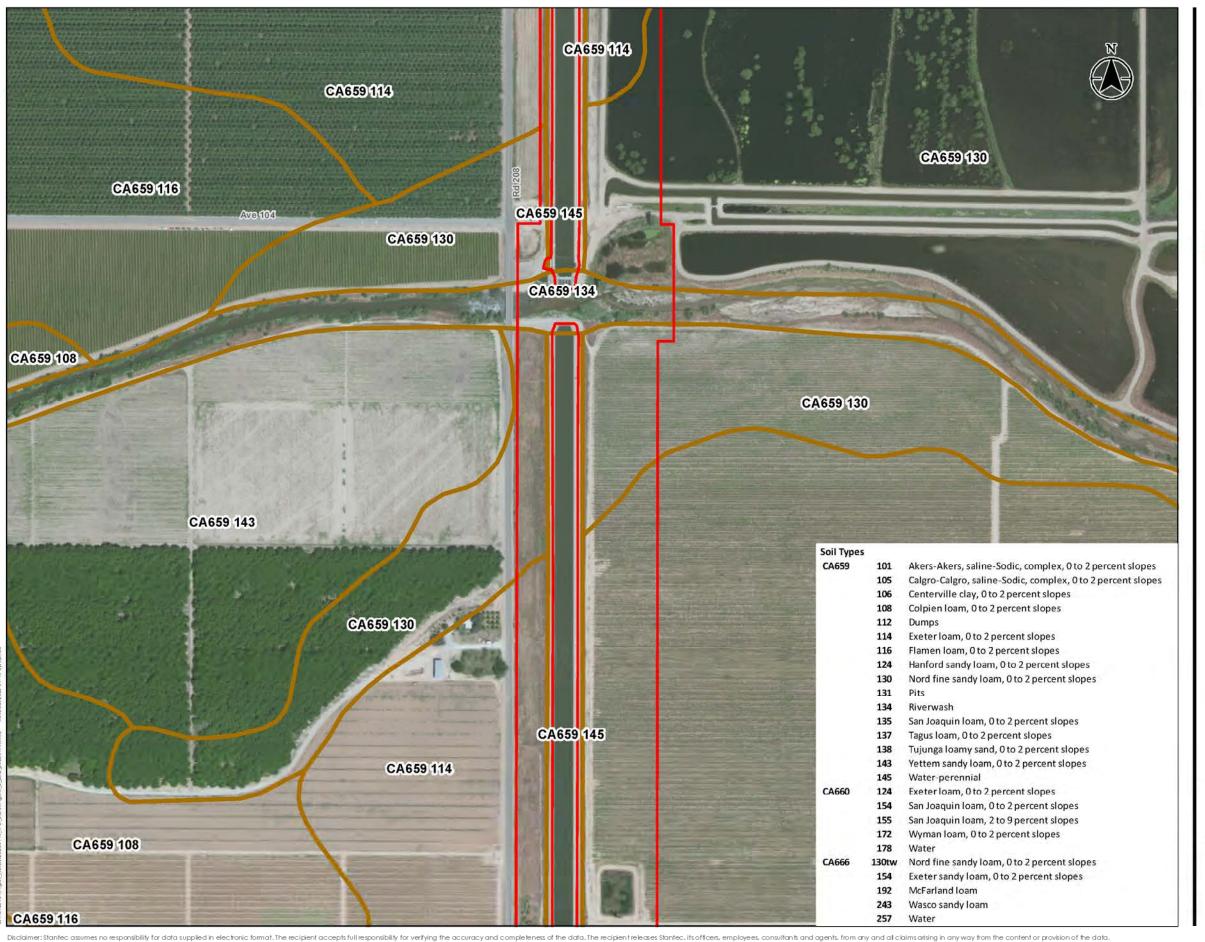


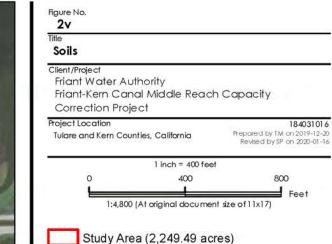
Notes

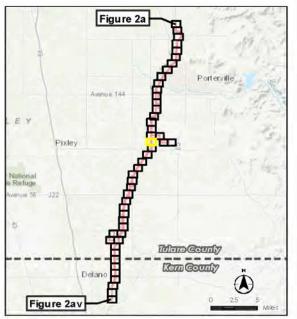
Coordinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019









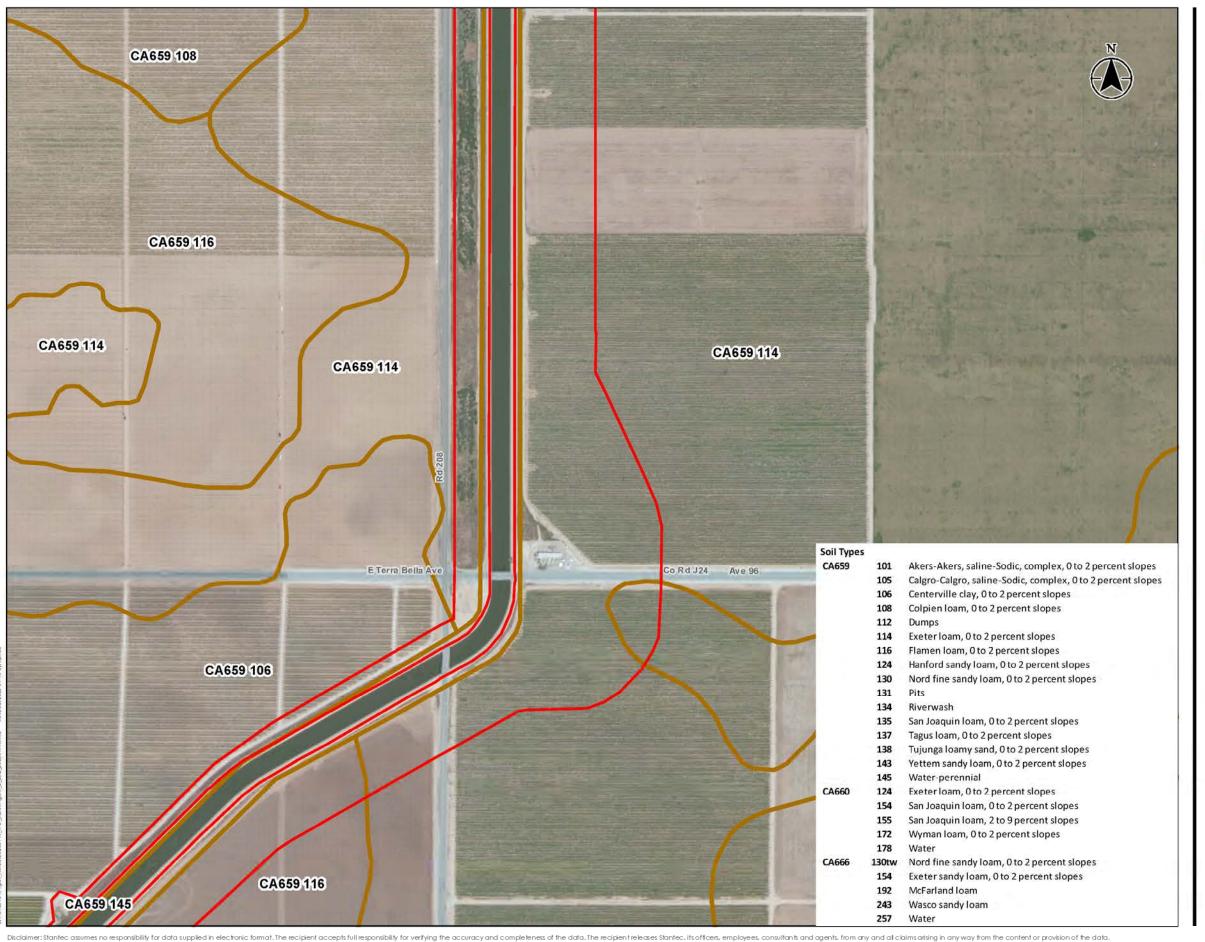


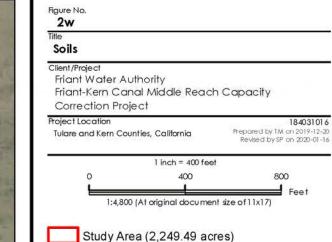
Notes

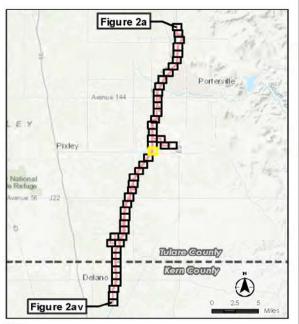
Coordinate System: NAD 1983 State Plane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Ortholmagery: ESRI World Imagery (Clarity), 2019









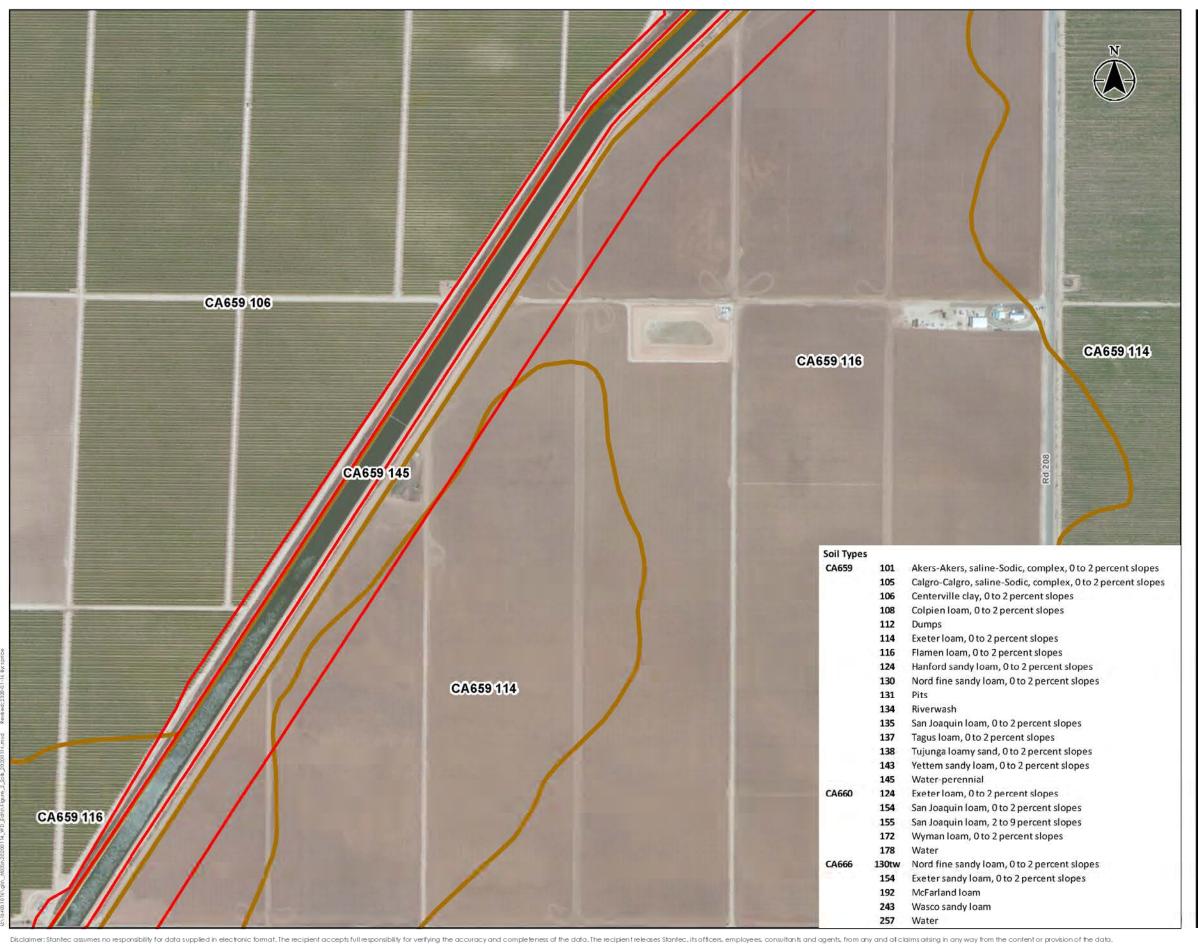


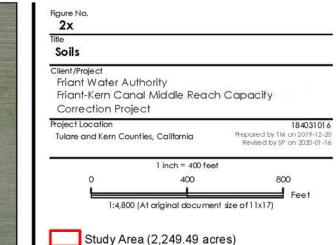
Note:

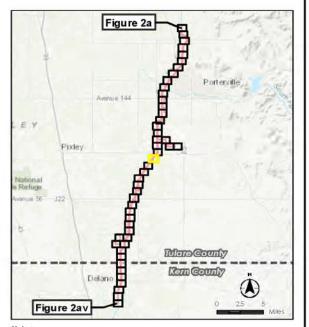
Coordinate System: NAD 1983 State Plane Colifornia IV FIPS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Citholmagery: ESRI World Imagery (Clarity), 2019







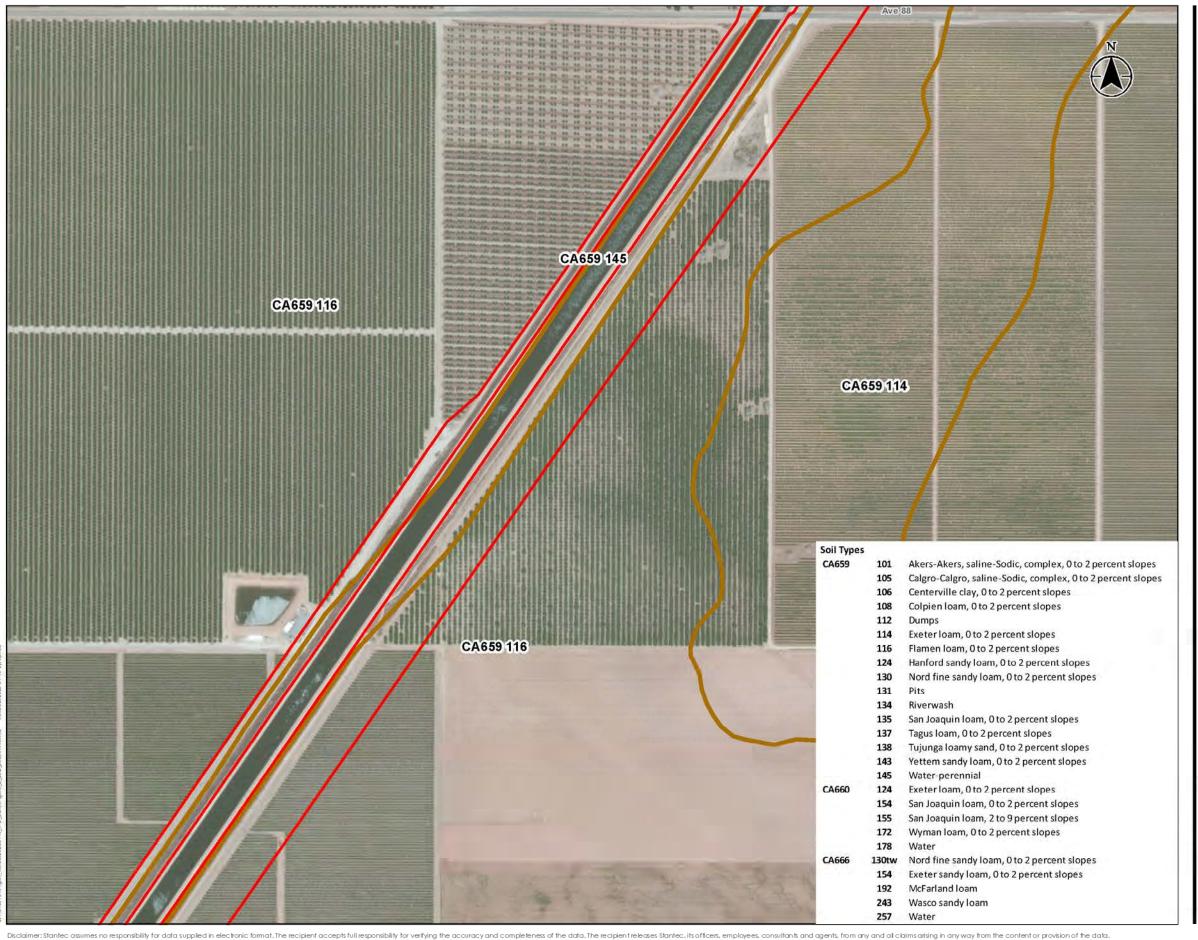


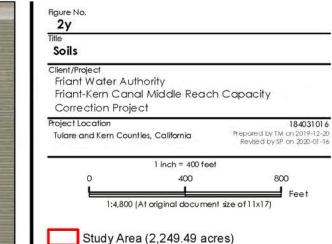


Coordinate System: NAD 1983 State Plane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019.











Notes

1. Coardhate System: NAD 1983 StatePlane California IV FIFS 0404 Feet 2. USDA NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019





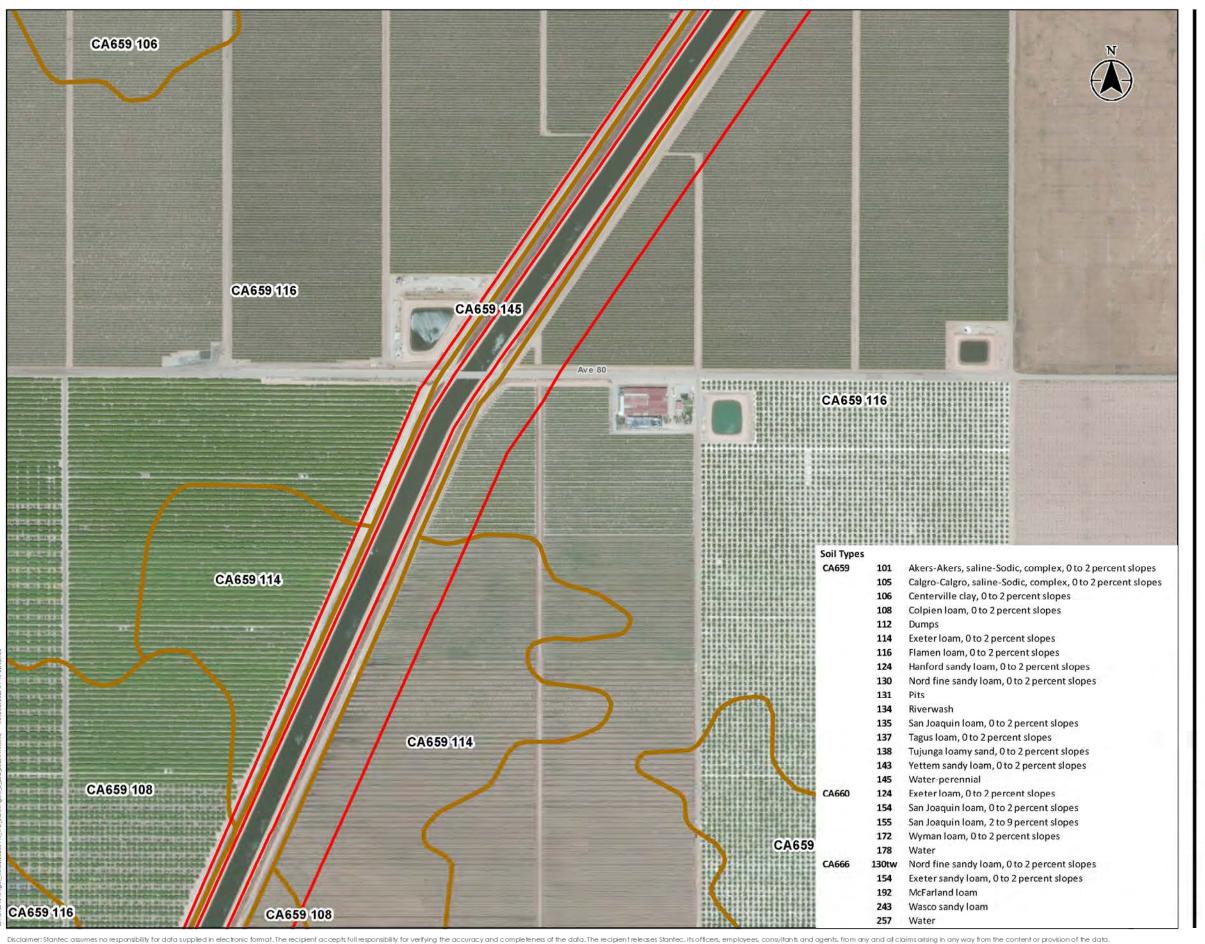


Figure No.

2z

Title

Soils

Client/Project
Friant Water Authority
Friant-Kern Canal Middle Reach Capacity
Correction Project

Project Location
Tulare and Kern Counties, California

184031016

Prepared by IM on 2019-12-20
Revised by SP on 2020-01-16

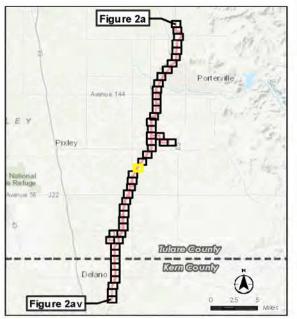
1 inch = 400 feet

0 400 800

1:4,800 (At original document size of 1 1x17)

Study Area (2,249.49 acres)

Soils



Note

Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019





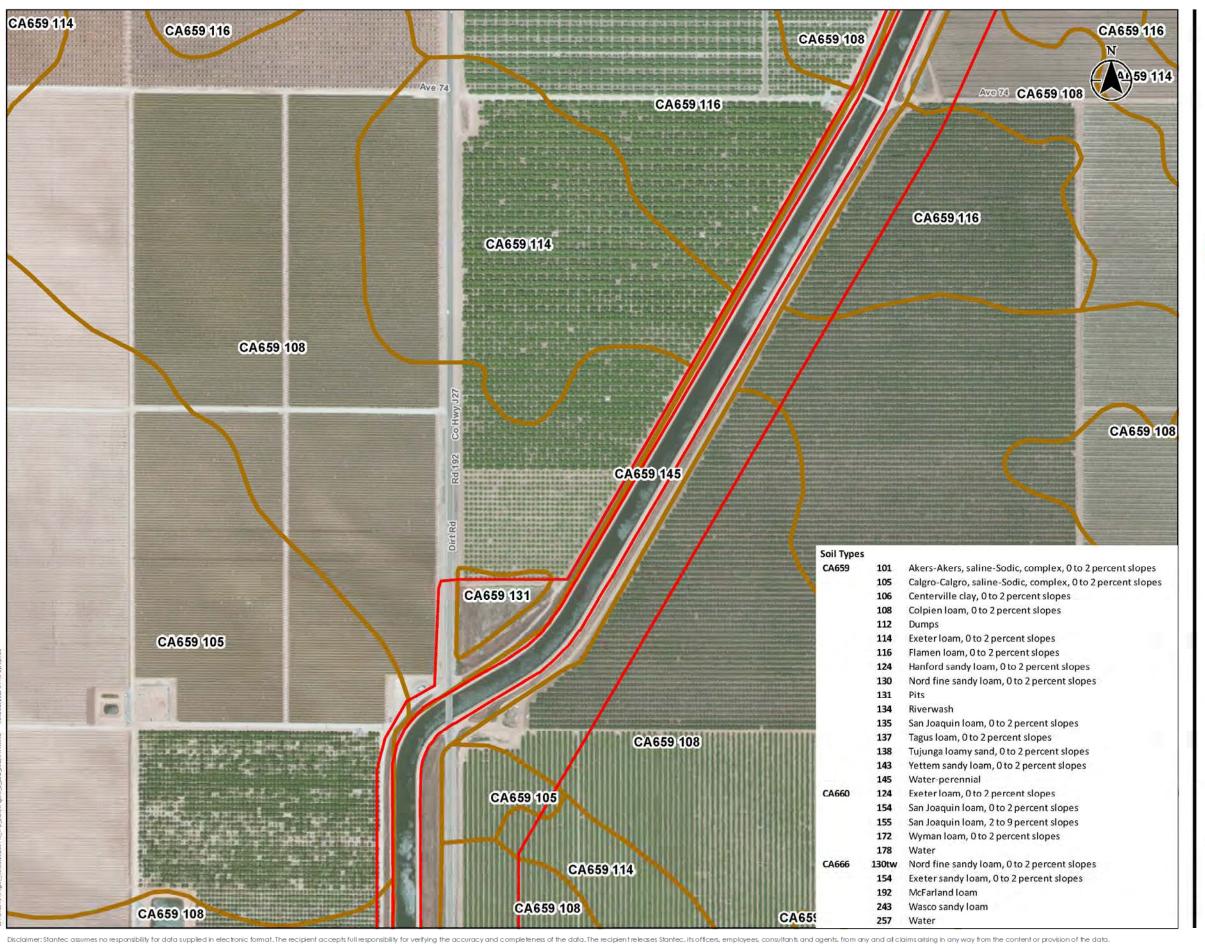
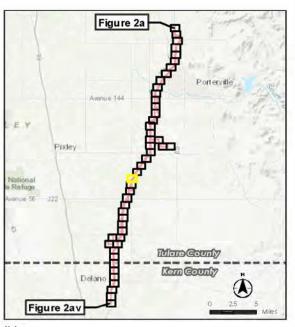


Figure No. 2aa Soils Client/Project Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2019-12-20 Revised by SP on 2020-01-16 Tulare and Kern Counties, California 1 inch = 400 feet 800 400 Feet 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Soils



Notes

1. Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019





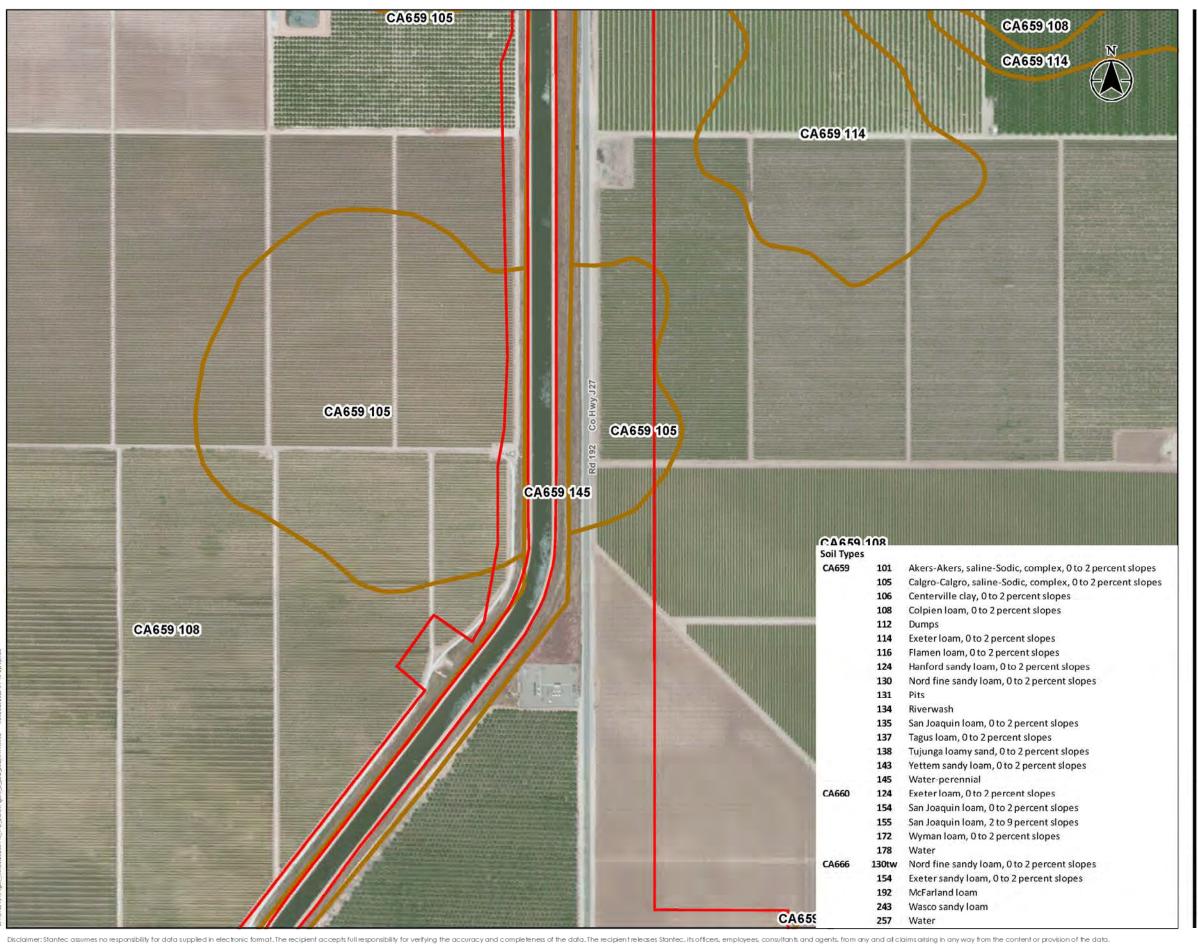


Figure No.

2ab

Title

Soils

Client/Project
Friant Water Authority
Friant-Kern Canal Middle Reach Capacity
Correction Project

Project Location
Tulare and Kern Counties, California

184031016
Prepared by 1M on 2019-12-20
Revised by SP on 2020-01-16

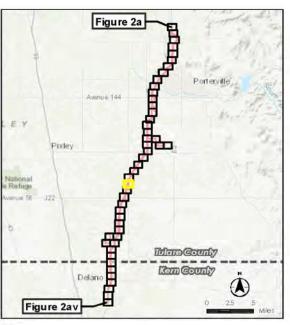
1 inch = 400 feet

0 400 800
Feet

1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

Soils

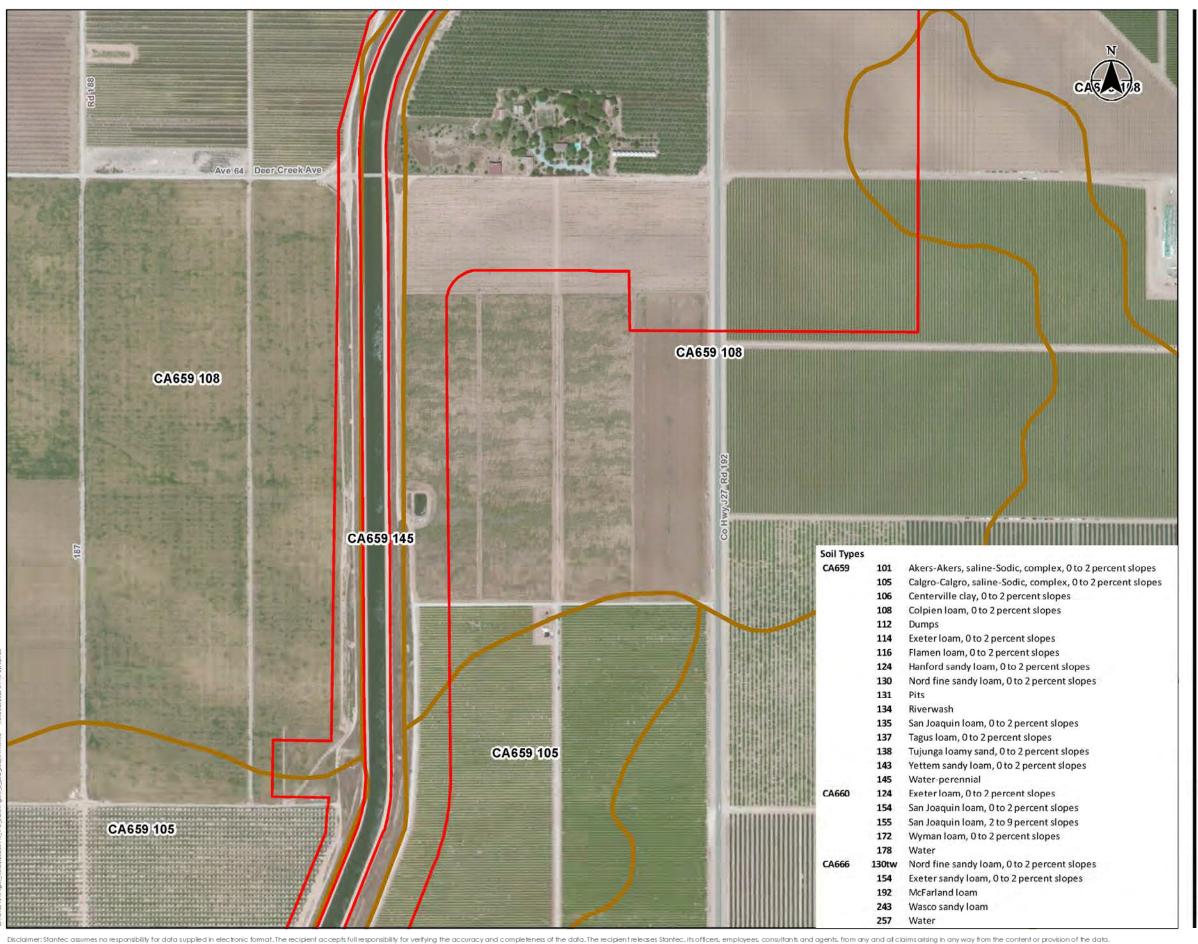


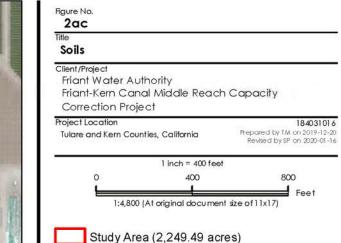
Notes

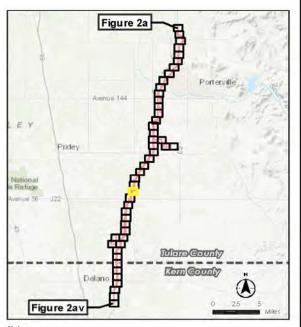
Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Otholmagery: ESRI World Imagery (Clarity), 2019



Friant WATER AUTHORITY





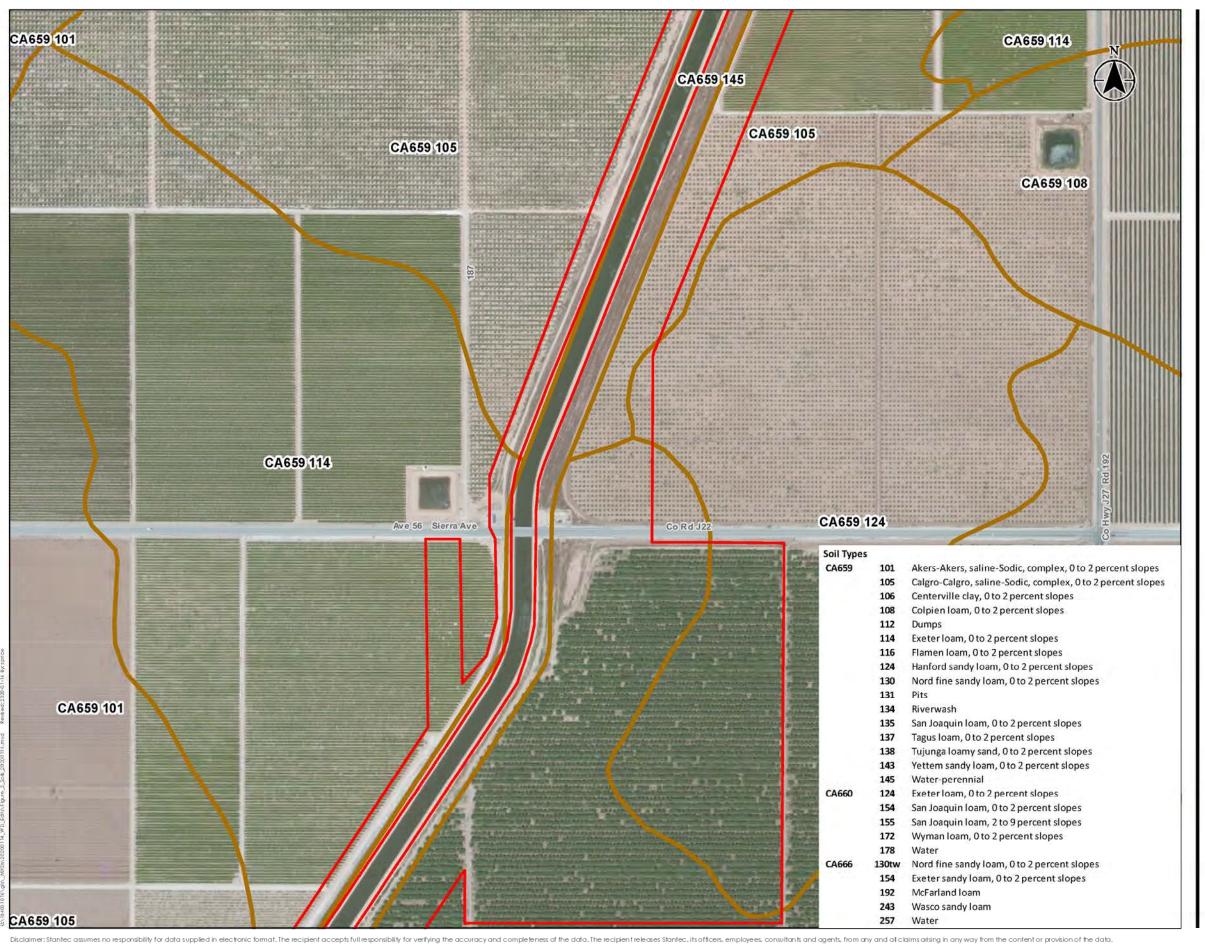


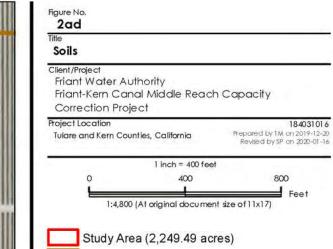
Notes

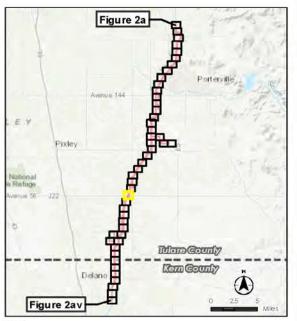
Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Ortholmagery: ESRI World Imagery (Clarity), 2019









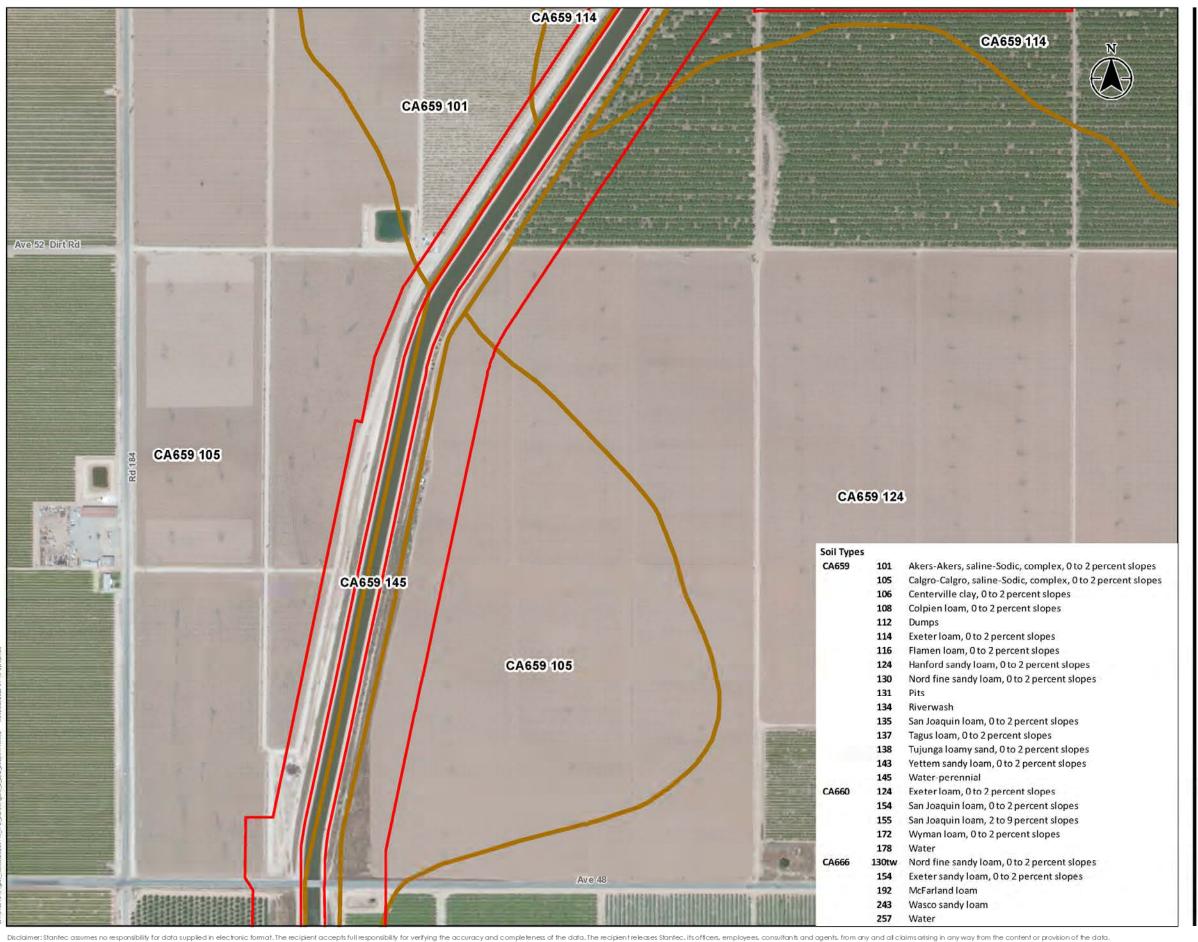


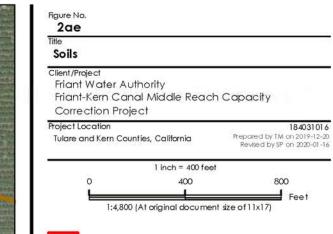
## Notes

Coordinate System: NAD 1983 State Plane Colifornia IV FIPS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Citholmagery: ESRI World Imagery (Clarity), 2019

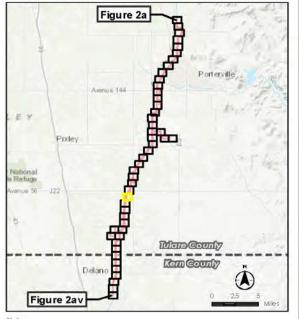










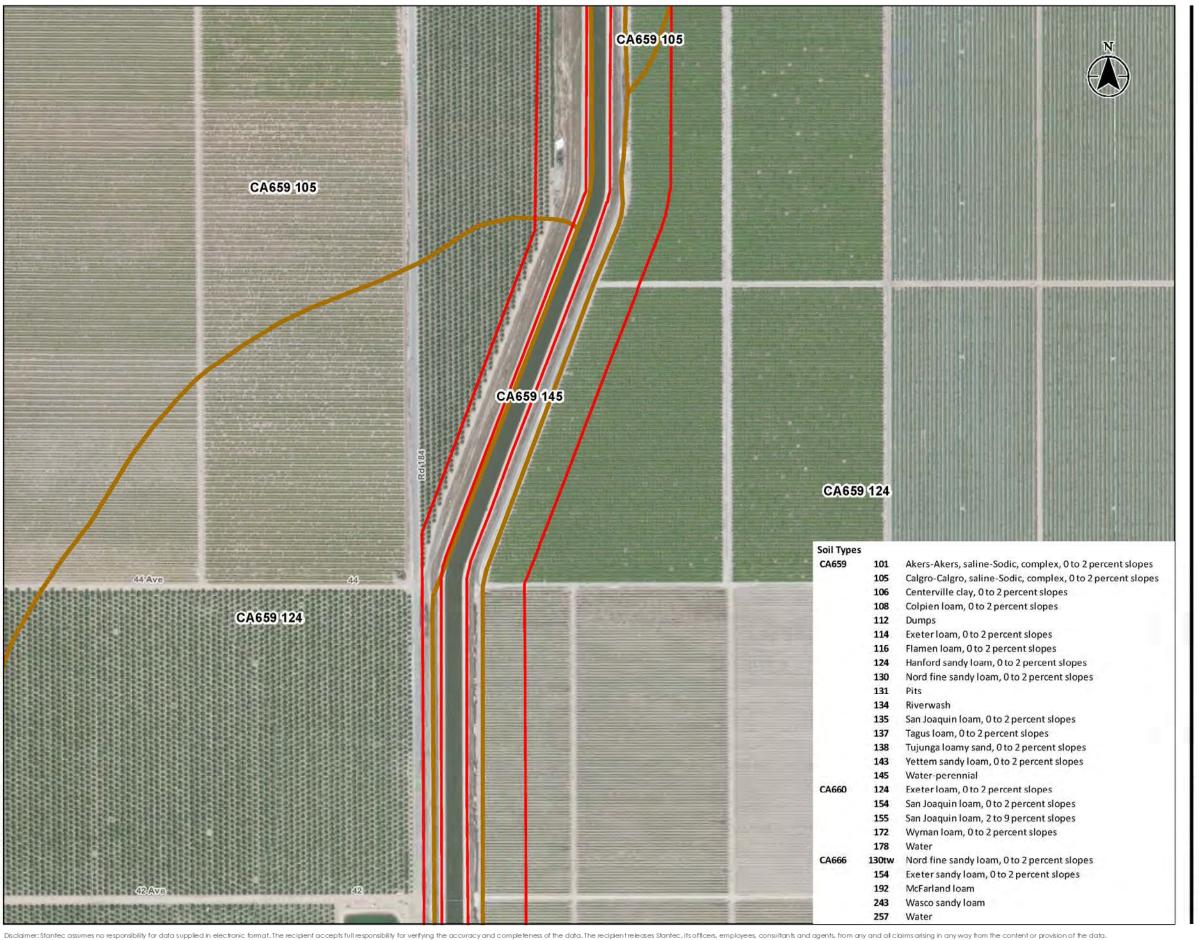


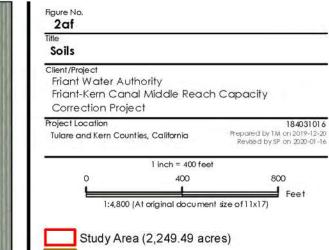
Note:

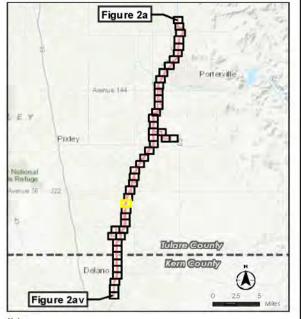
Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gsSURGO), 1728/2019
 Stholmagery: ESRI World Imagery (Clarity), 2019









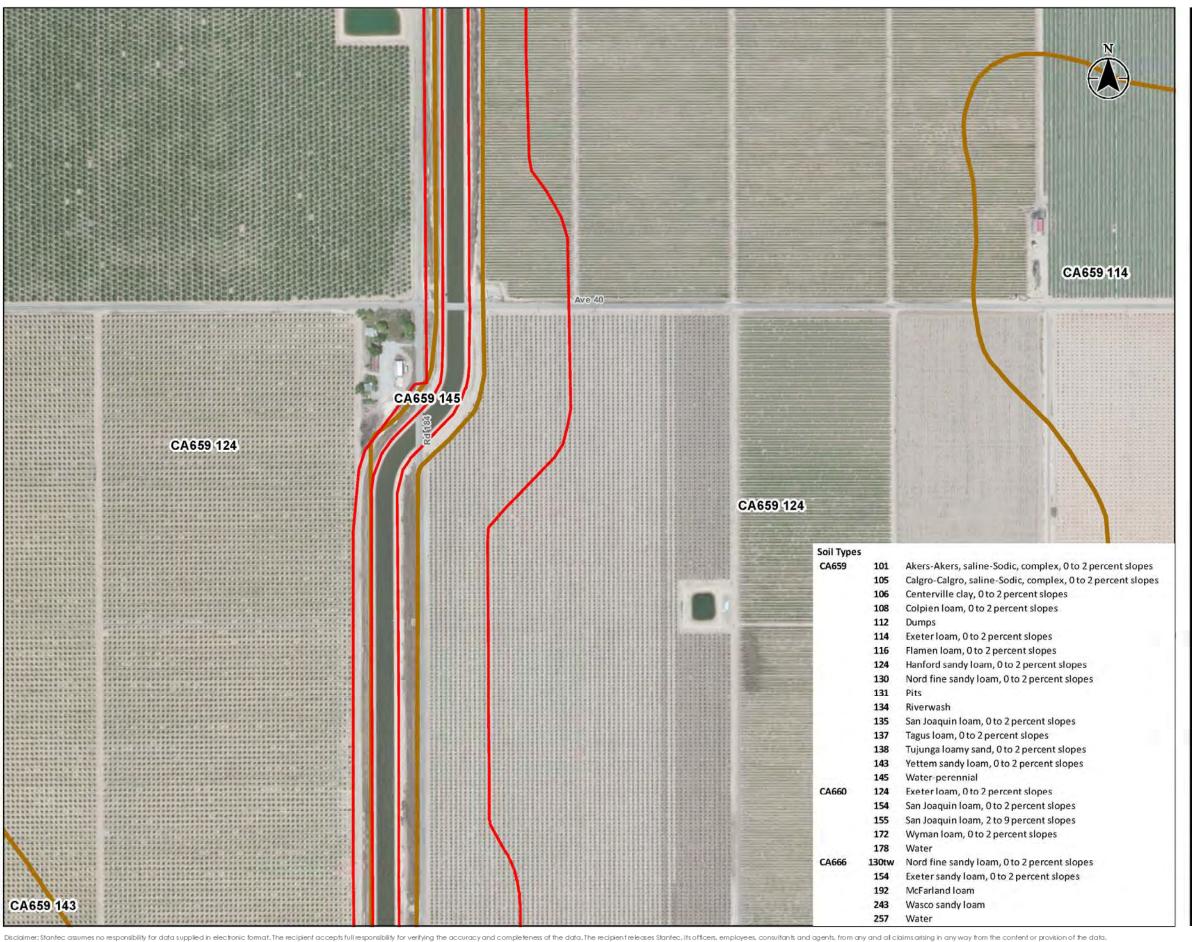


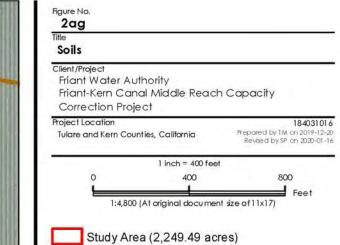
Note:

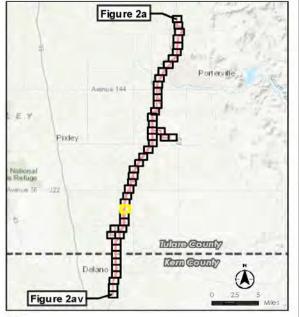
1. Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019









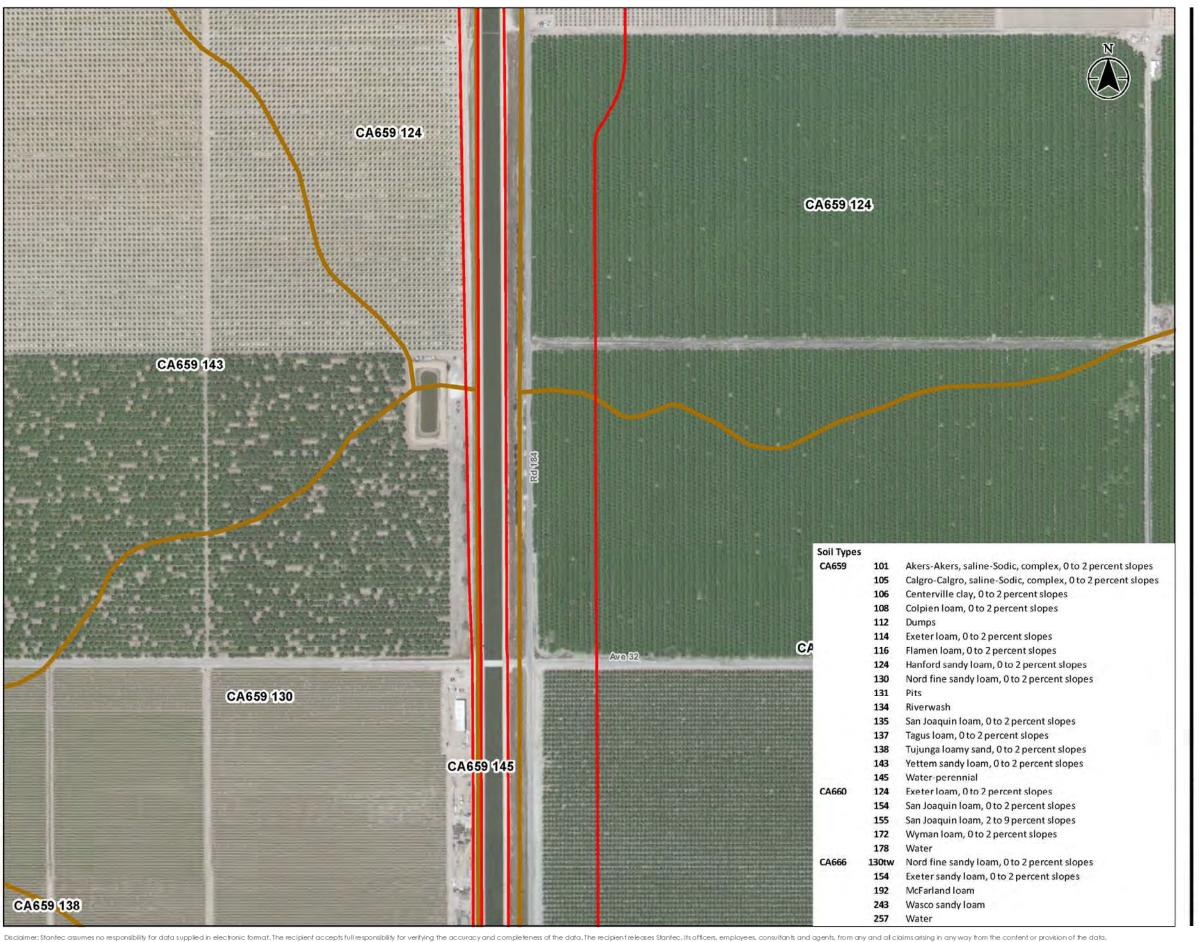


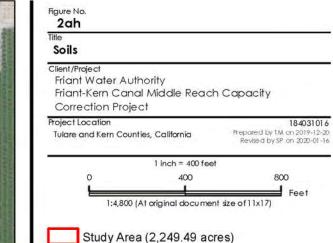
Notes

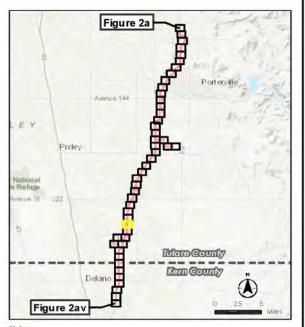
Coordnate System: NAD 1983 StatePlane California IV FIFS 0.604 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Antholmagey: ESRI World Imagery (Clarity), 2019







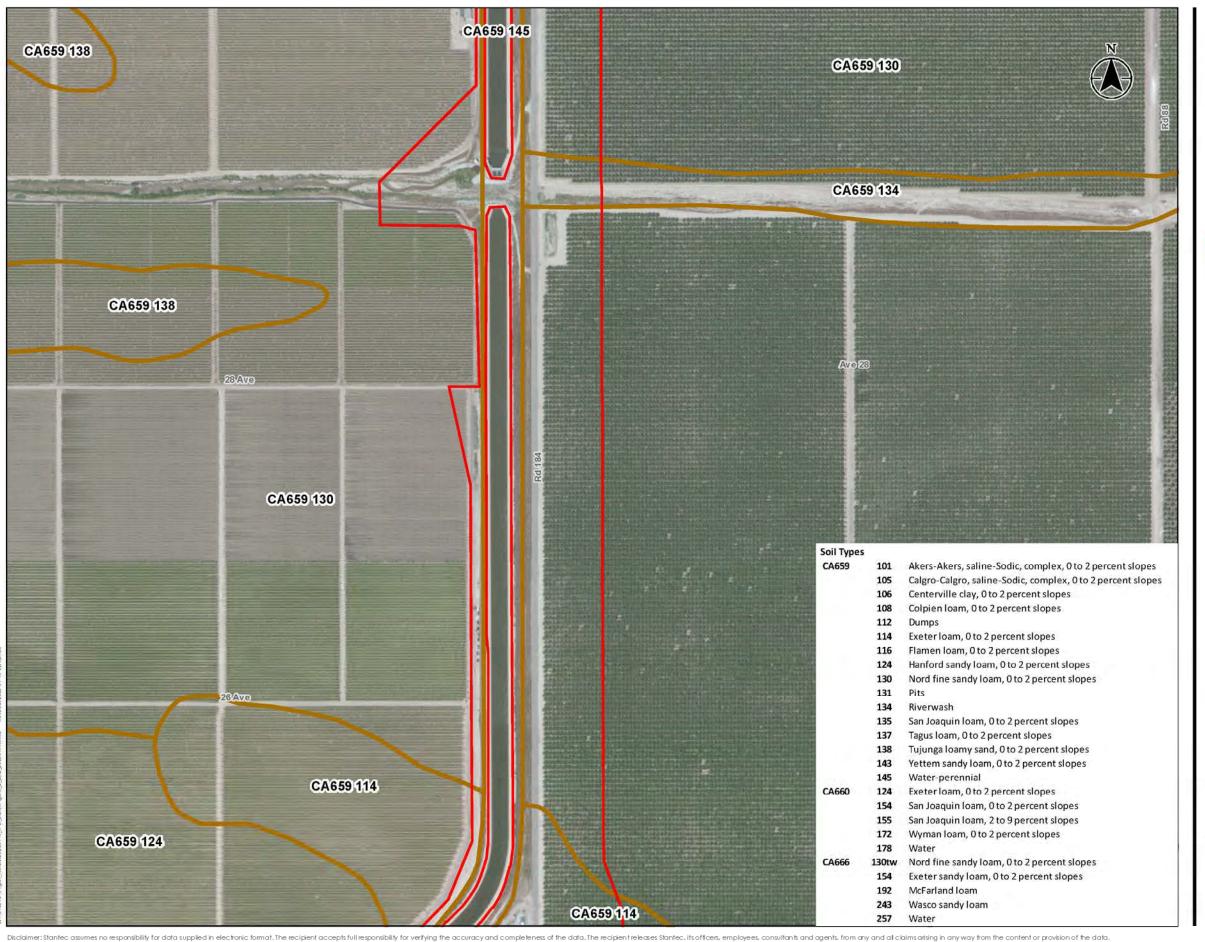


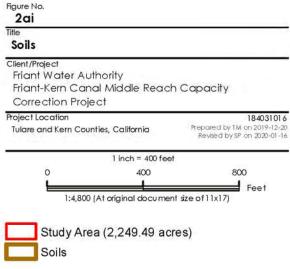


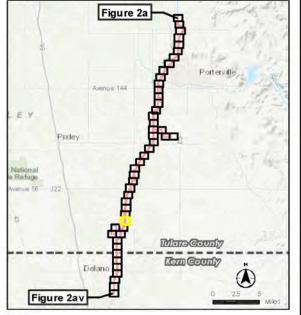
Coordnate System: NAD 1983 StatePlane California IV FIFS 0.804 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Stholmagey: ESRI World Imagery (Clarity), 2019









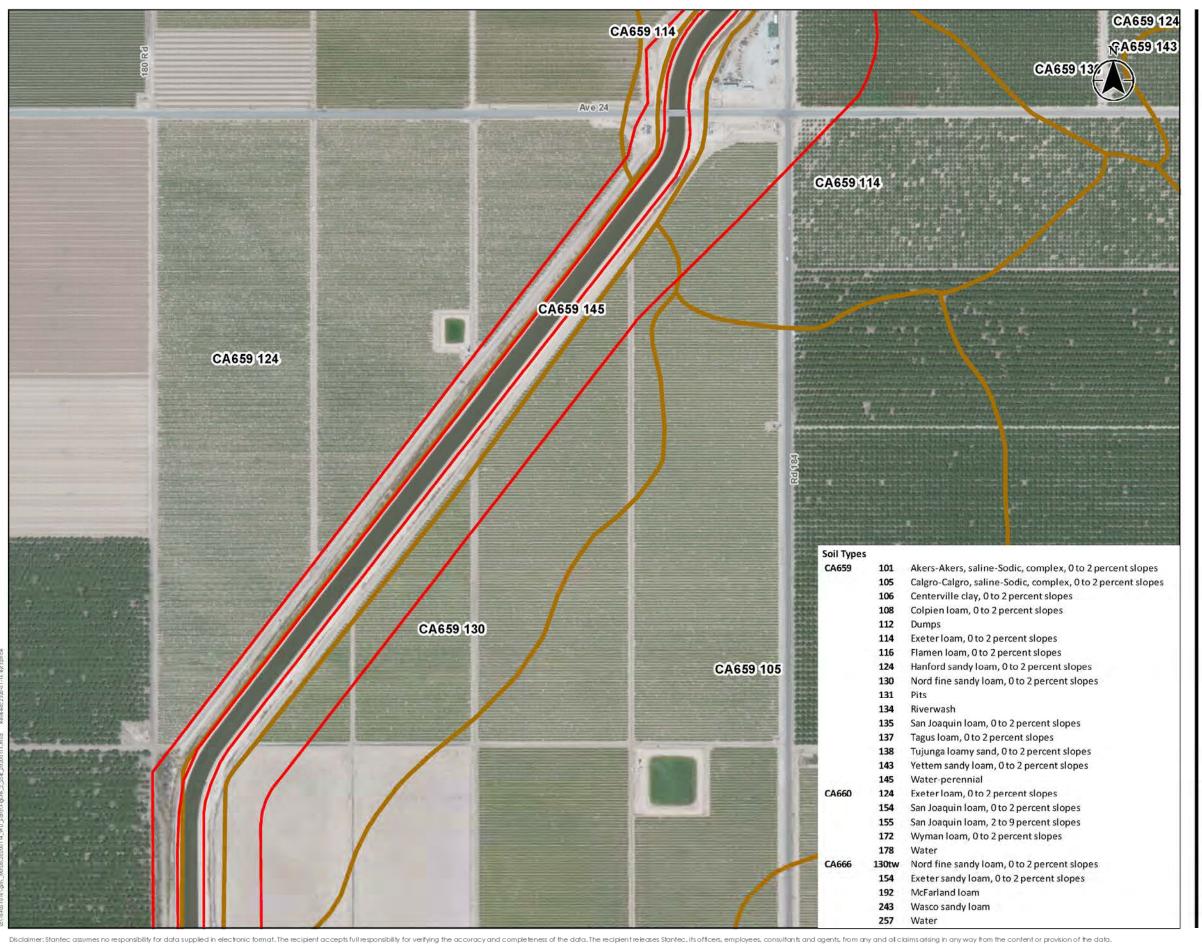


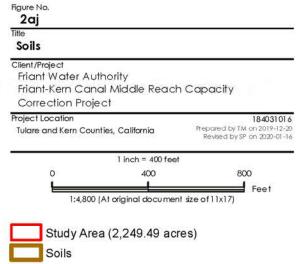
Note:

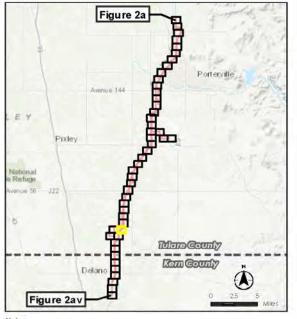
Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Critholmagery: ESRI World Imagery (Clarity), 2019









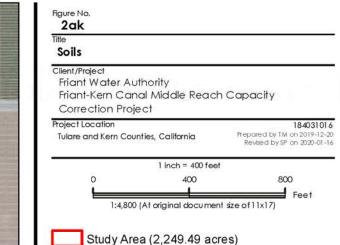


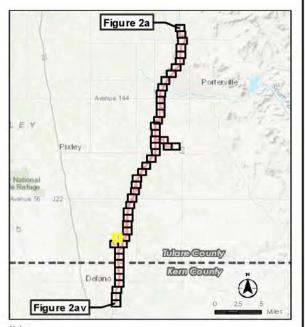
Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Actholimagery: ESRI World Imagery (Clarity), 2019









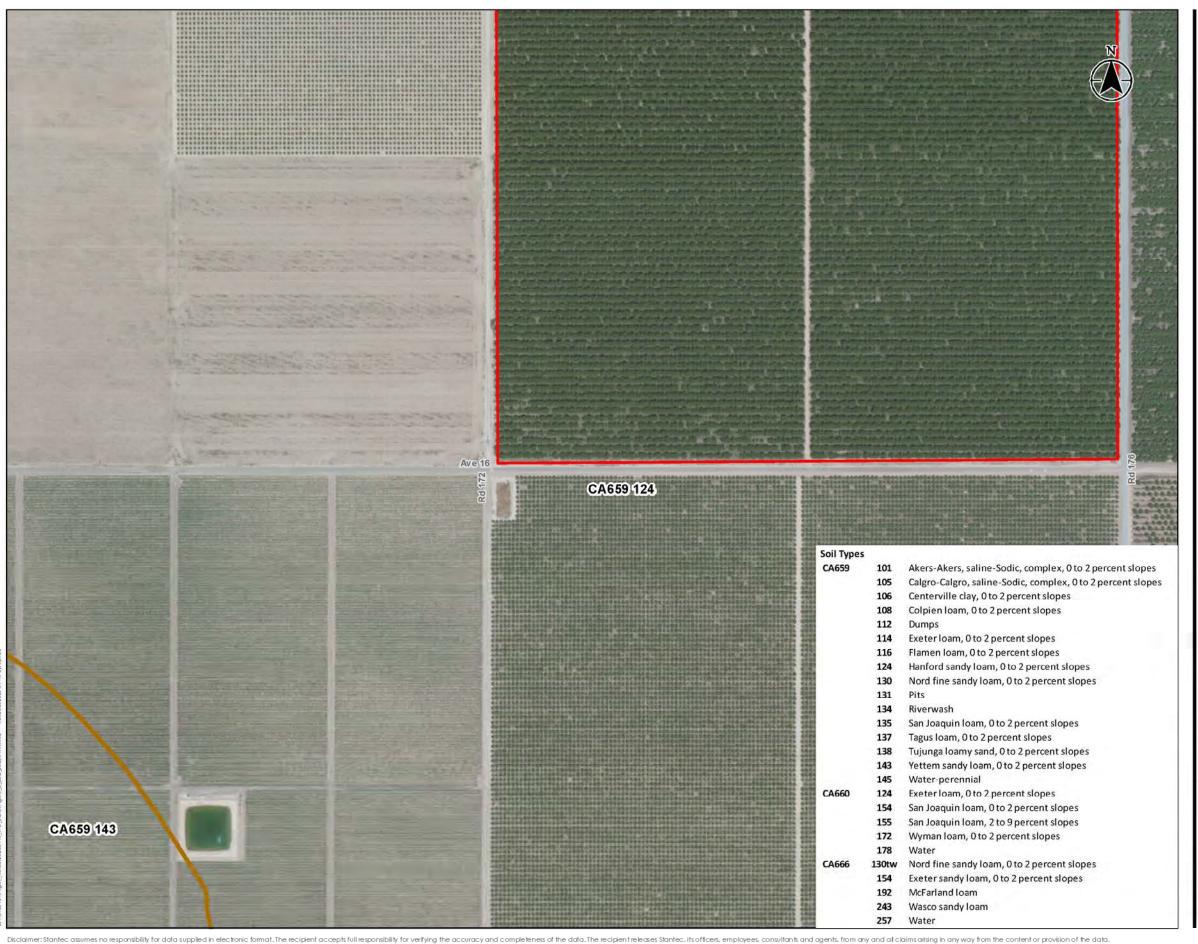


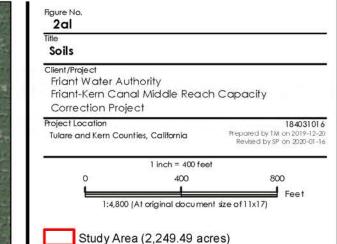
Notes

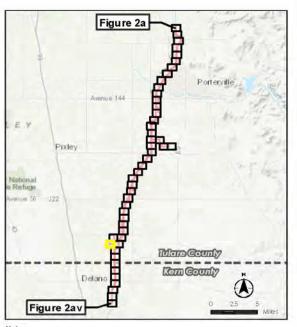
Coordinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019







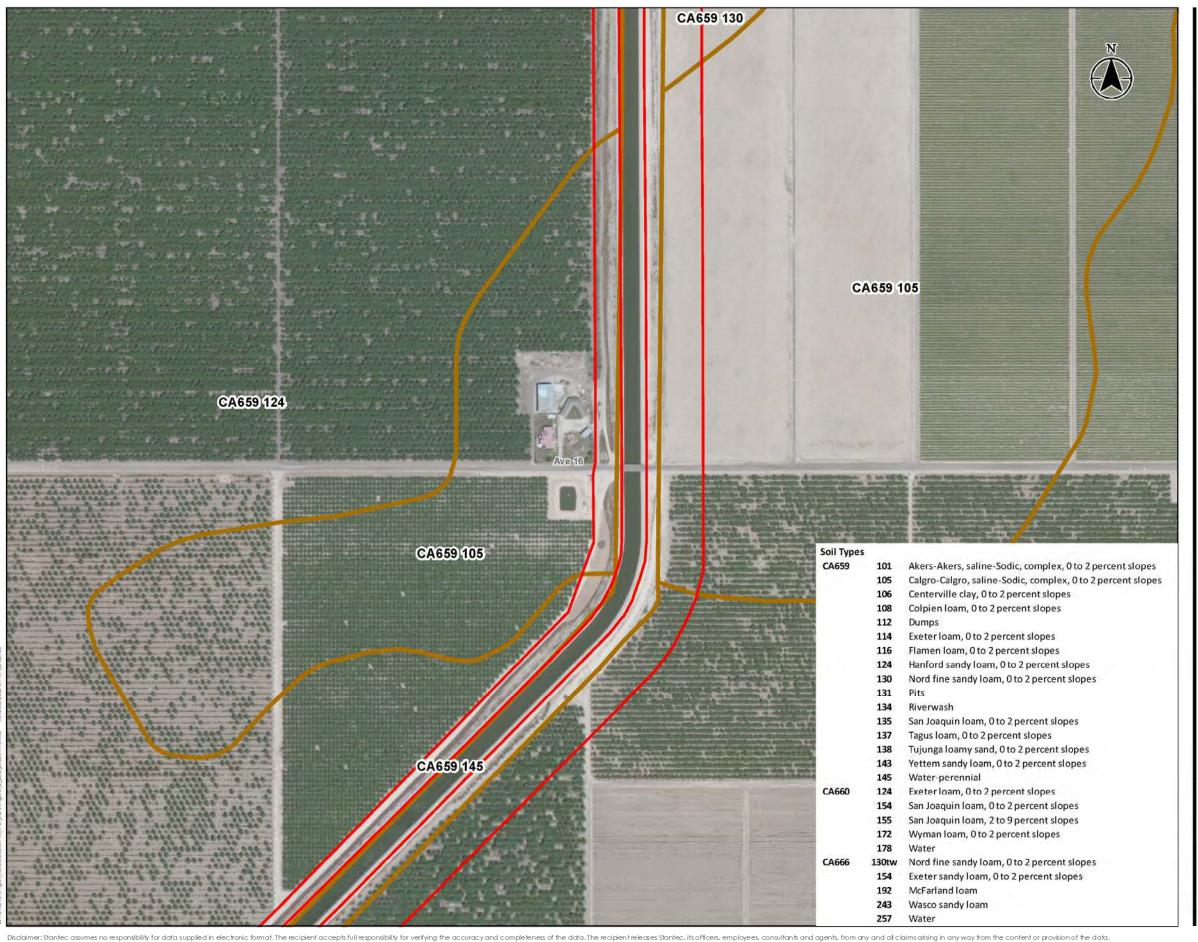


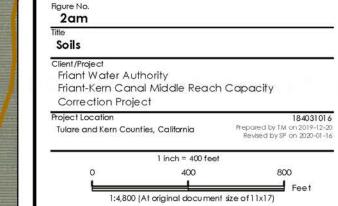


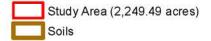
1. Coardhate System: NAD 1983 StatePlane California IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019

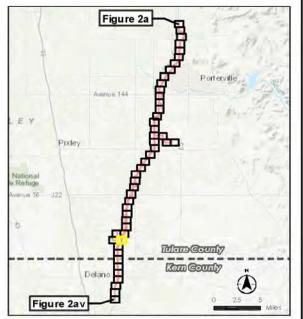








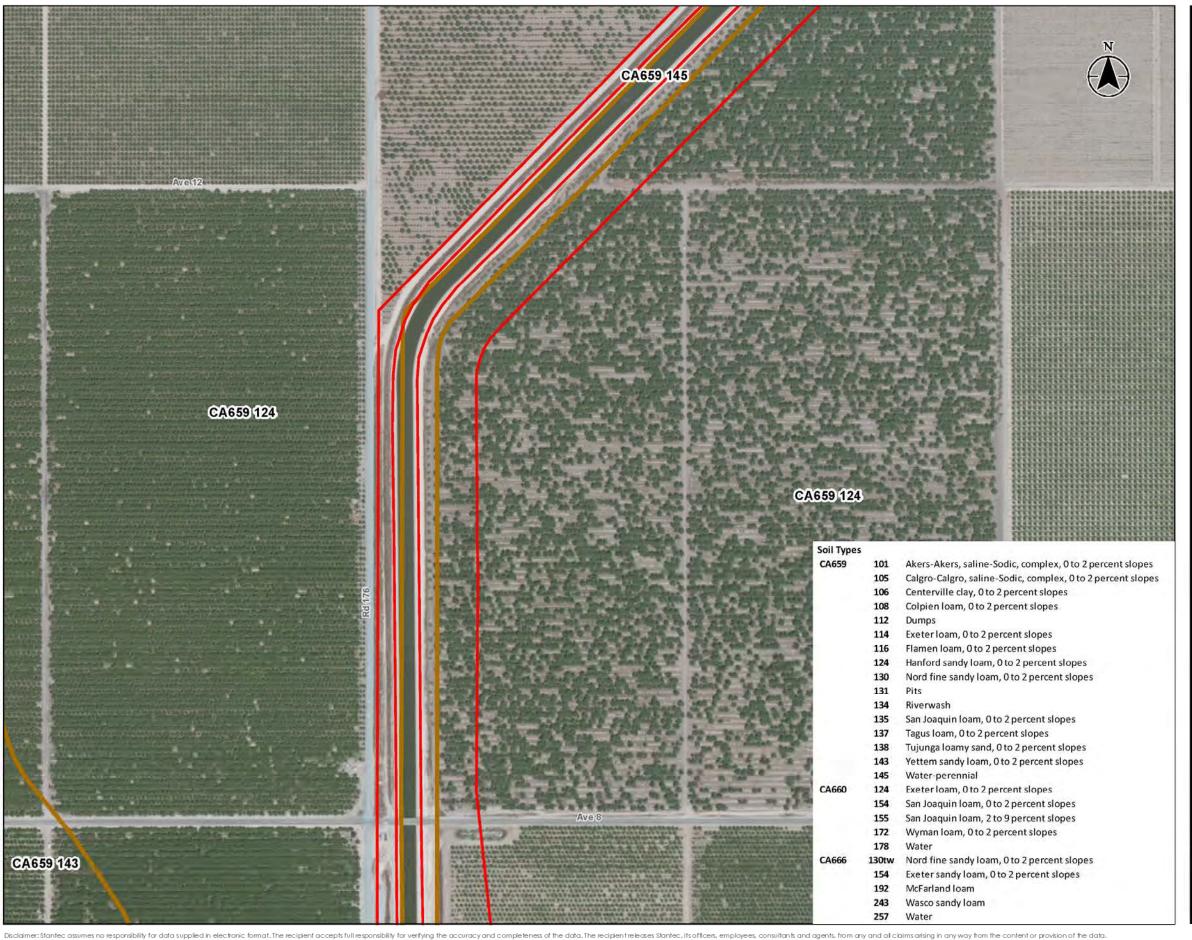


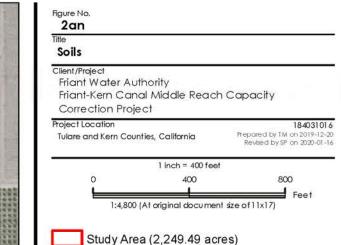


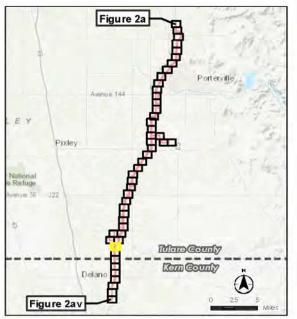
Coordhafe System: NAD.1983 StatePlane California IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Cotholmagery: ESRI World Imagery (Clarity), 2019









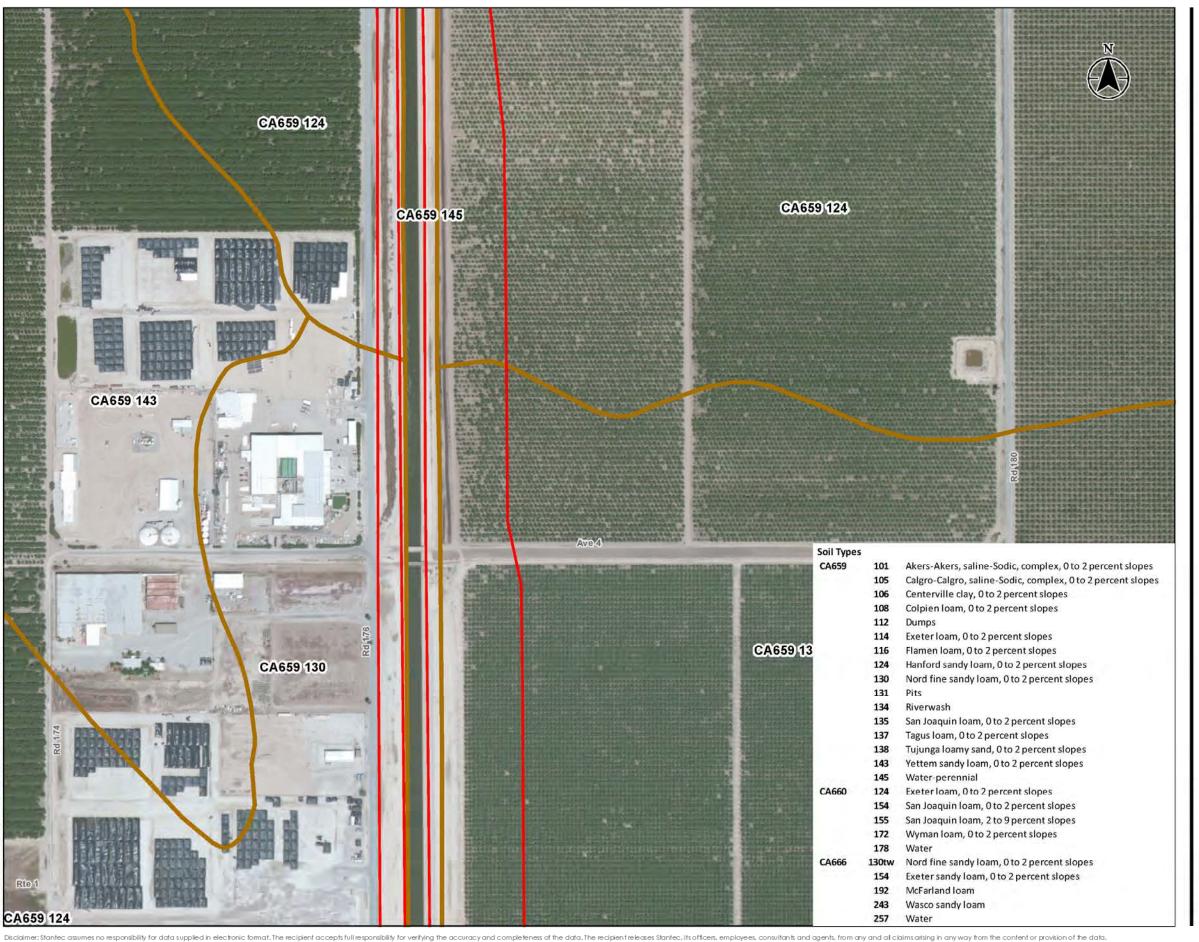


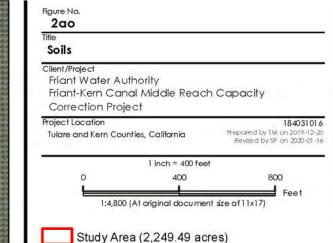
## Notes

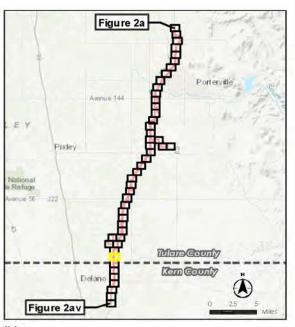
Coordnate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Stholmagey: ESRI World Imagery (Clarity), 2019









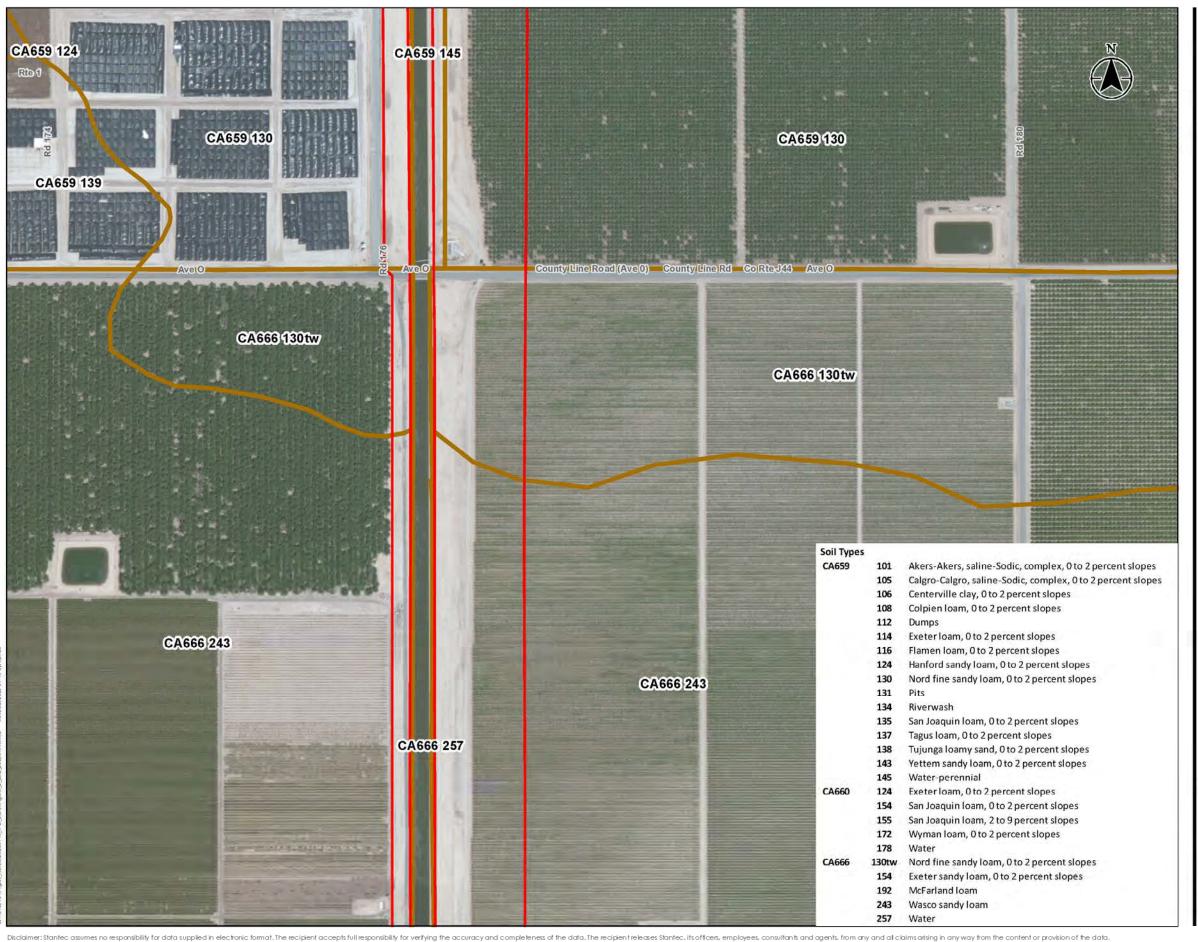


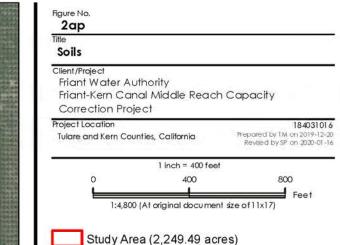
Notes

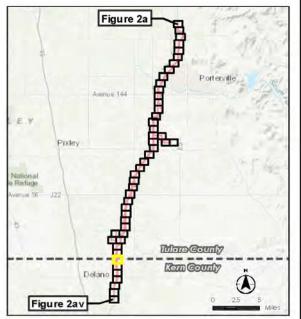
Coordnate System: NAD 1983 StatePlane California IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019
 Artholimagery: ESRI World Imagery (Clarity), 2019









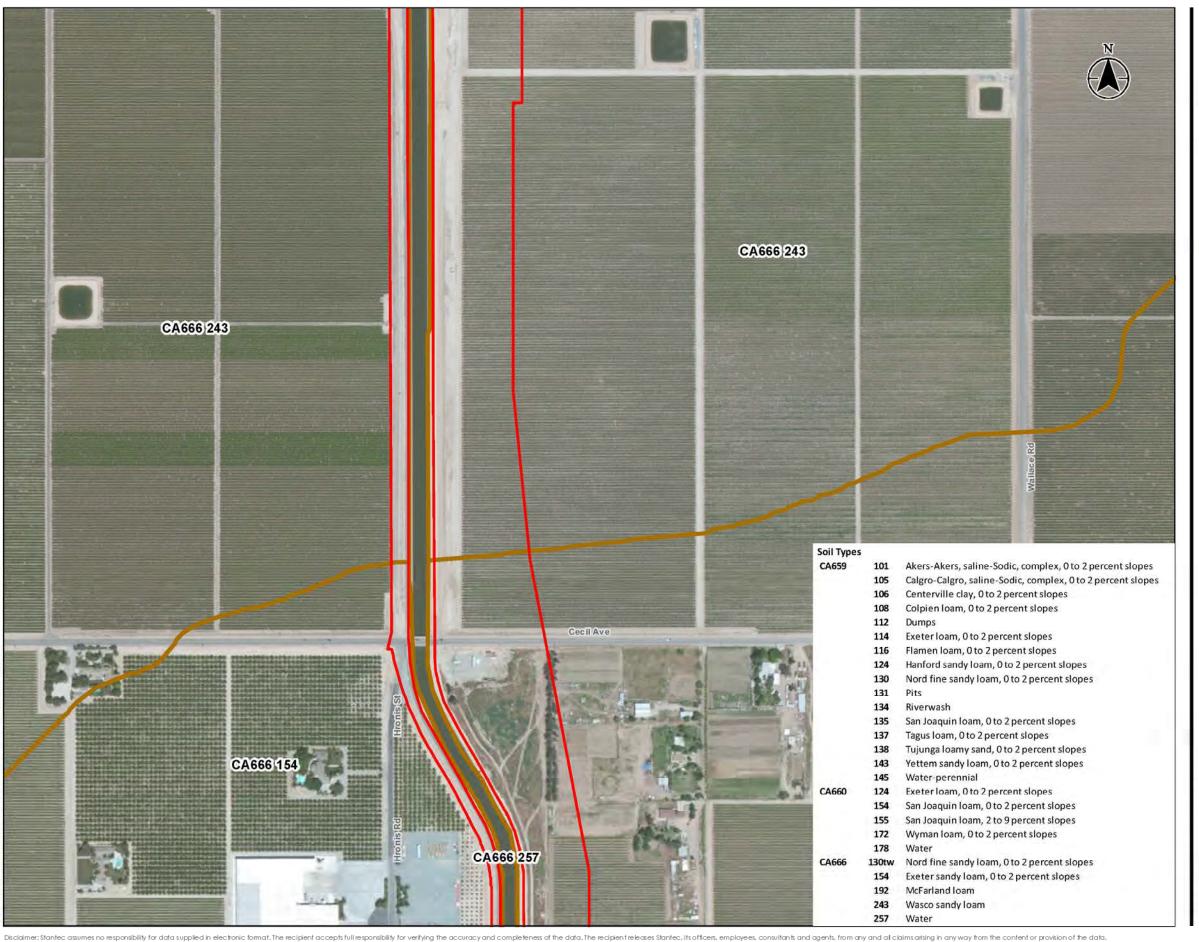


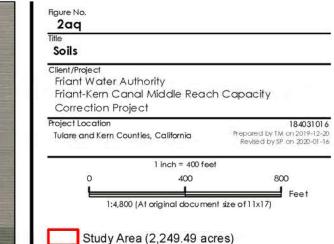
Notes

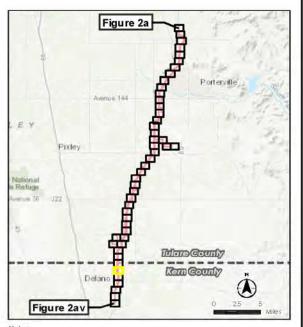
1. Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019







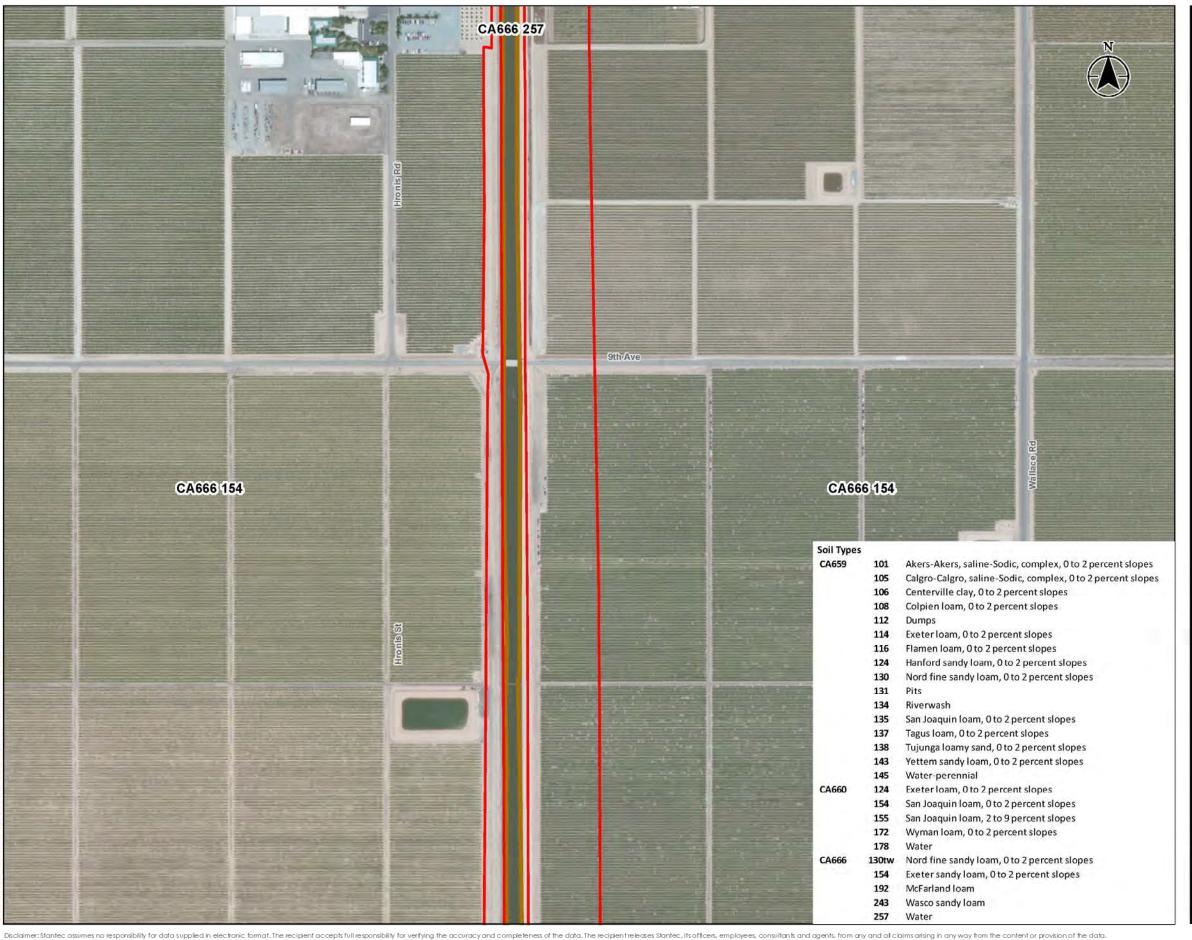


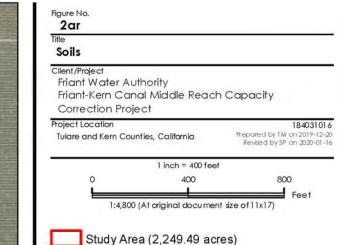


Coordnate System: NAD 1983 StatePlane California IV FIFS 0.604 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Stholmagey: ESRI World Imagery (Clarity), 2019









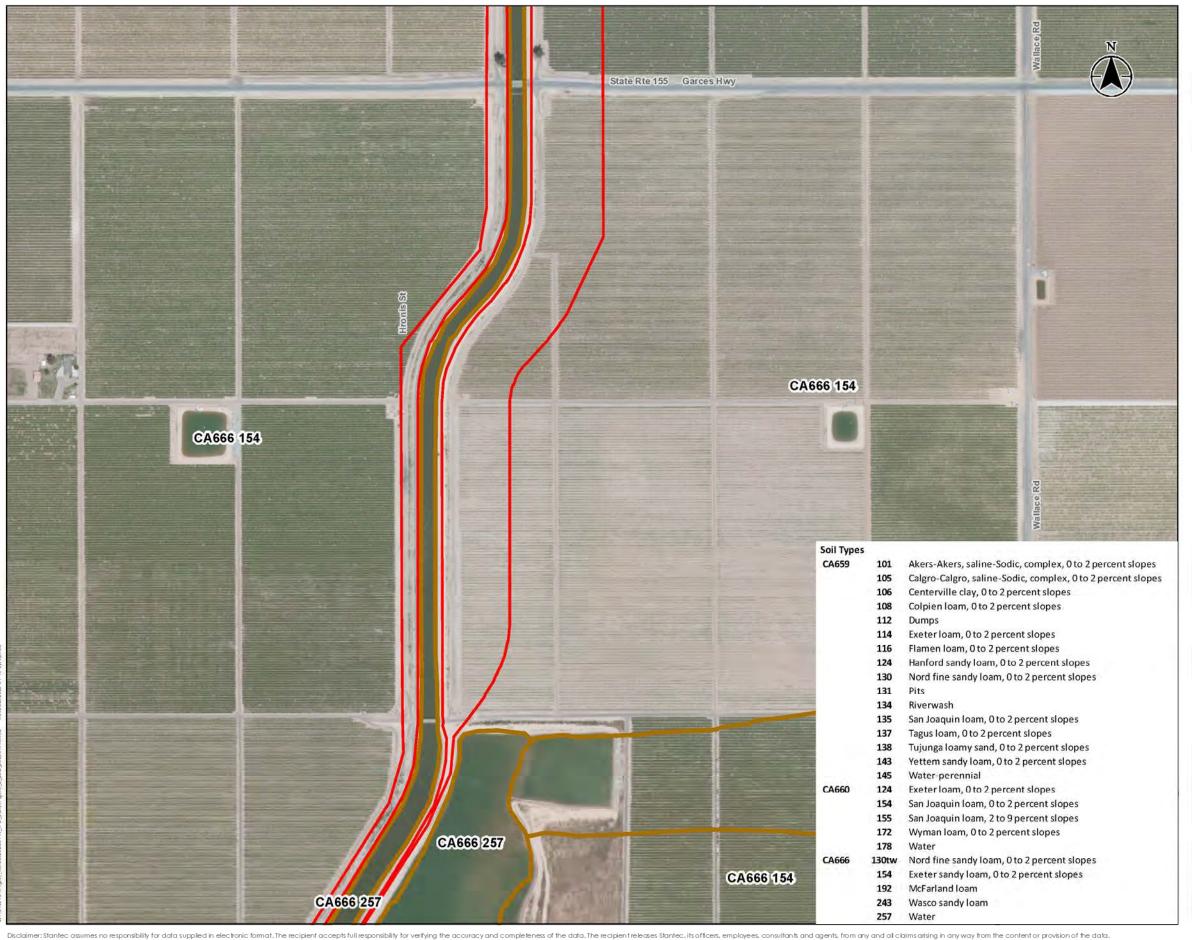


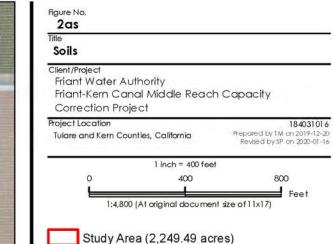
Notes

1. Coardhate System: NAD 1983 StatePlane California IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019







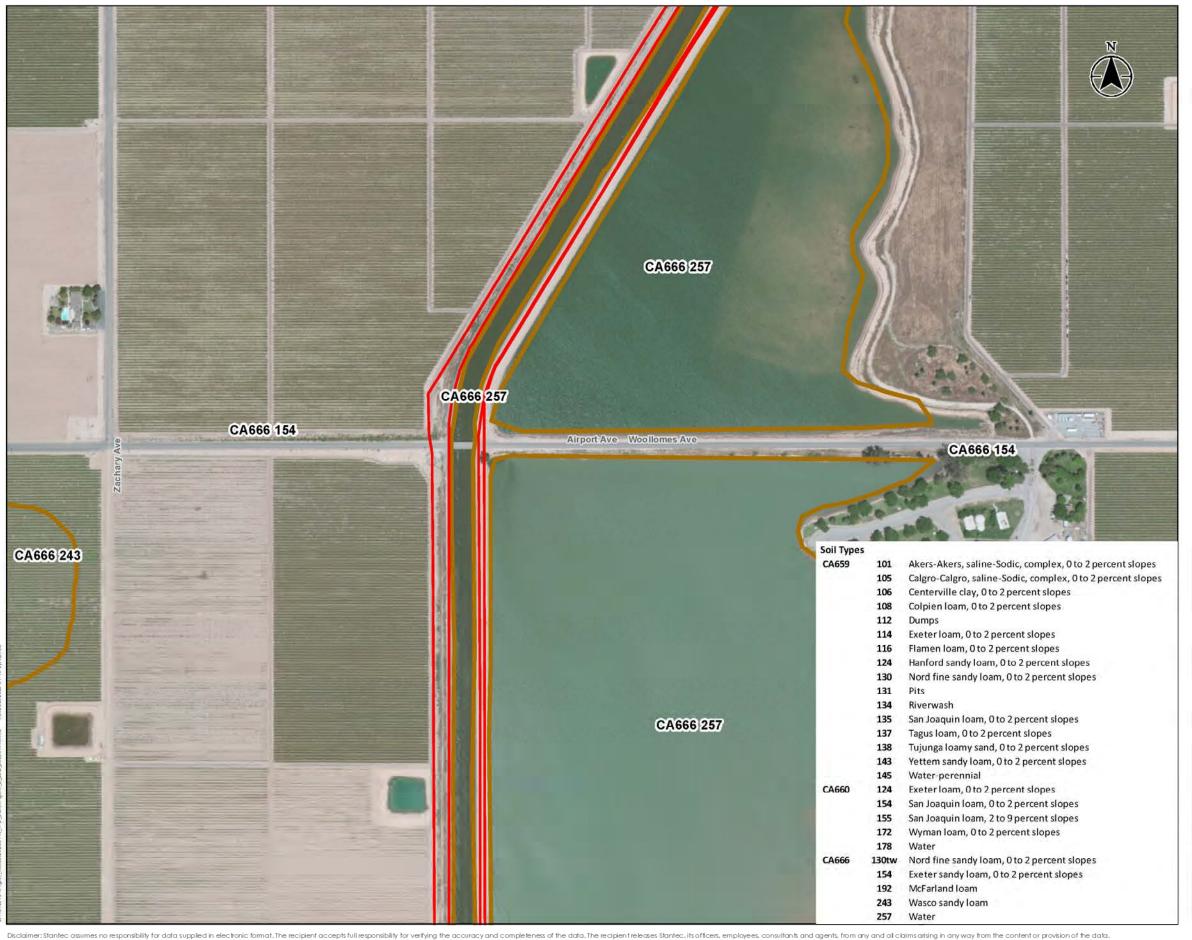


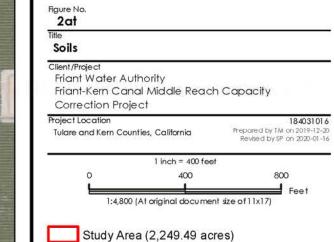


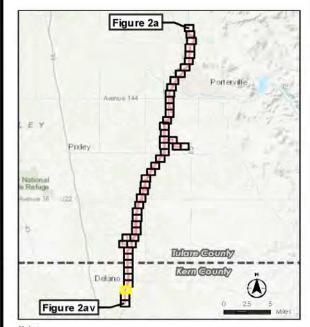
Coordinate System: NAD 1983 State Plane Colifornia IV FIFS 0404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 S. Ortholmagery: ESRI World Imagery (Clarity), 2019









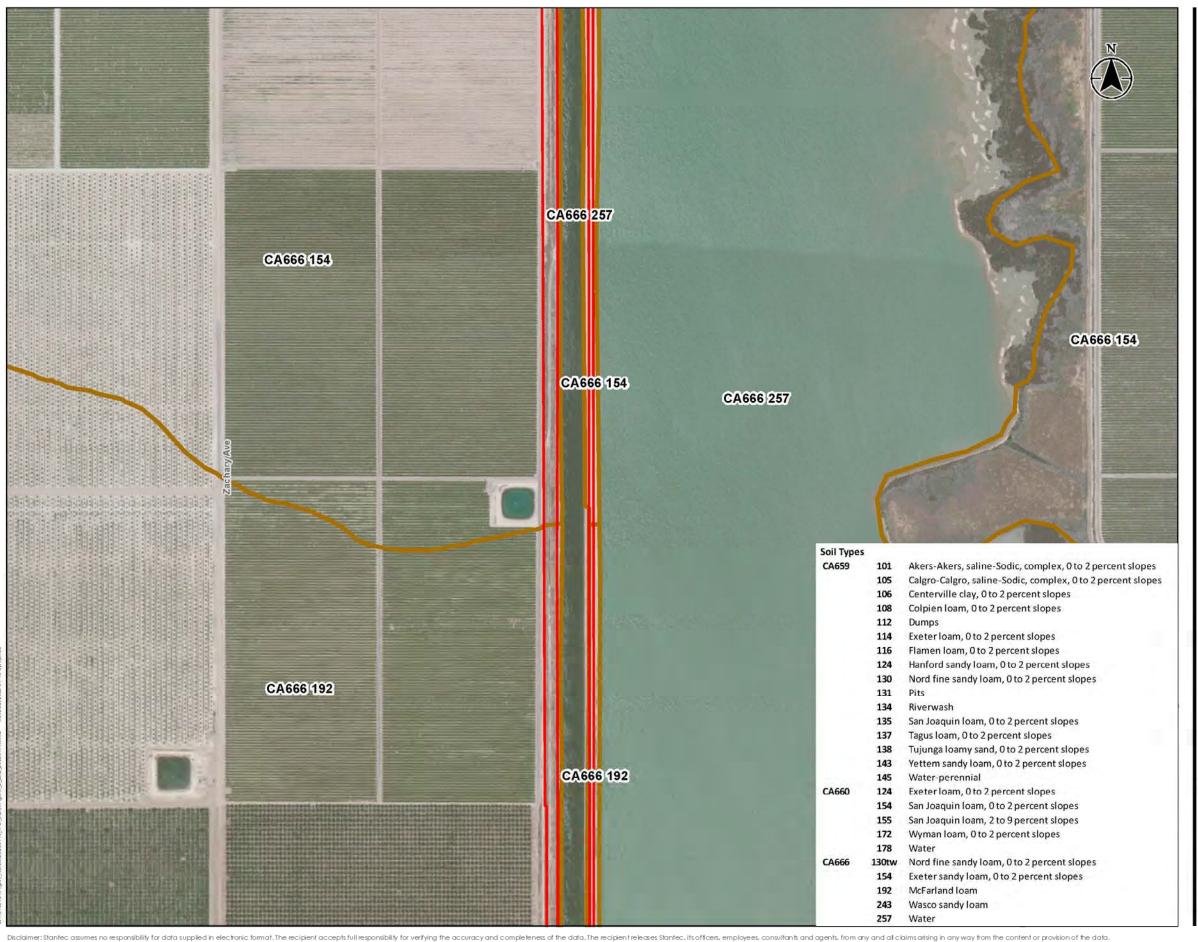


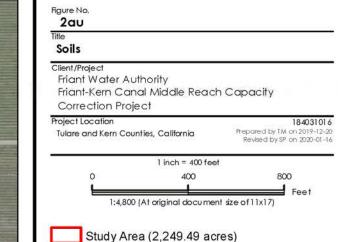
Notes

Coordnate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1728/2019
 Atholmagery: ESRI World Imagery (Clarity), 2019









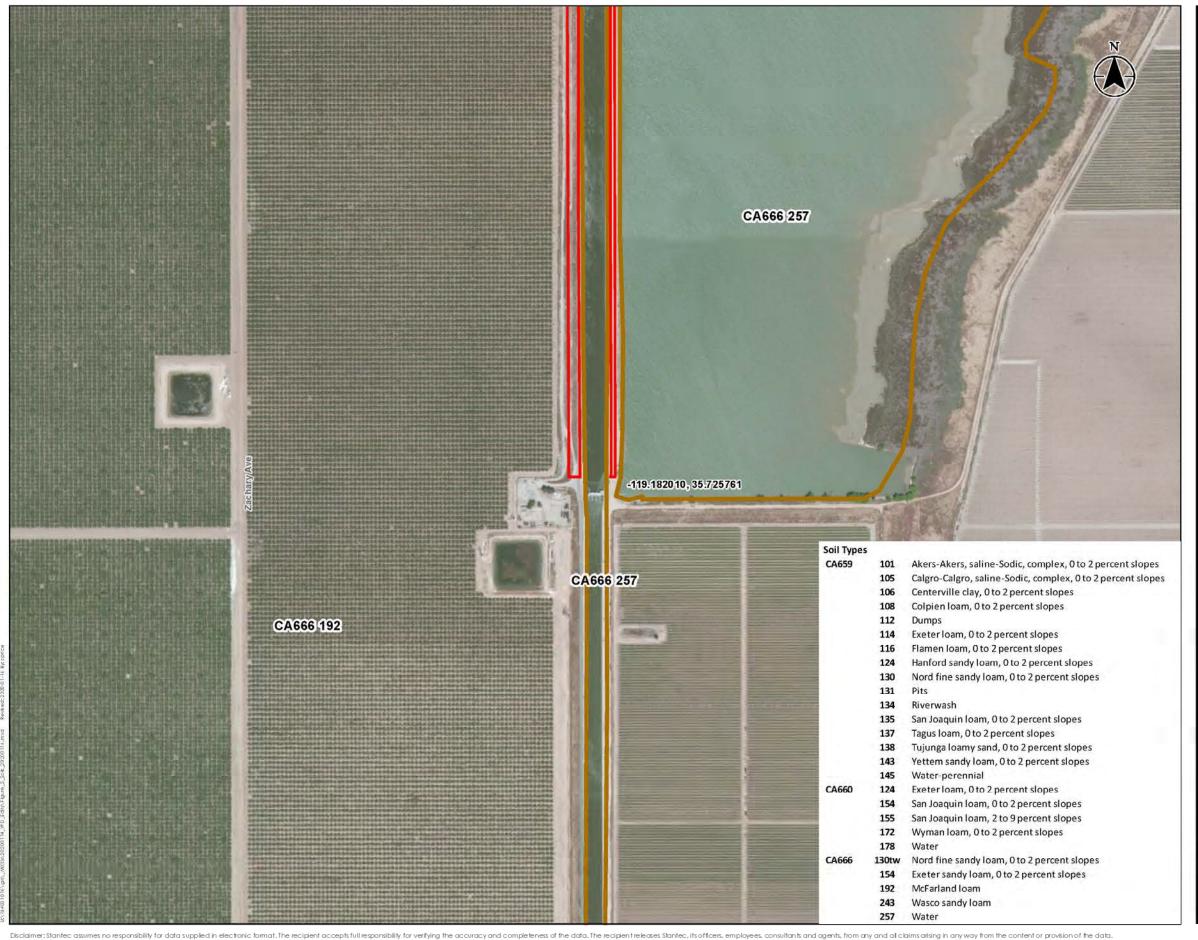


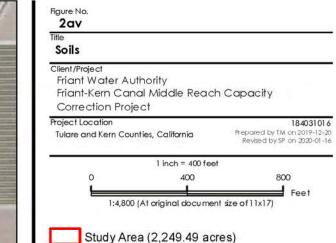
Notes

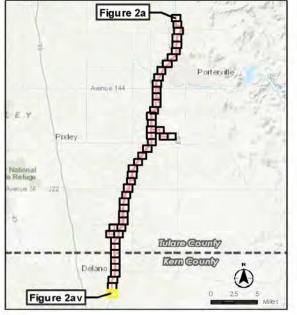
1. Coardhate System: NAD 1983 StatePlane California IV FIFS 0404 Feet 2. USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3. Ortholmagery: ESRI World Imagery (Clarity), 2019











Notes

1: Coordinate System: NAD 1983 StatePlane California IV FIFS 0404 Feet 2: USD A NRCS Grided Soil Survey Geographic (gSSURGO), 1/28/2019 3: Ortholmagery: ESRI World Imagery (Clarity), 2019







**Excluded Features** 

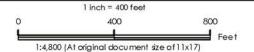
Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

Correction Project

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

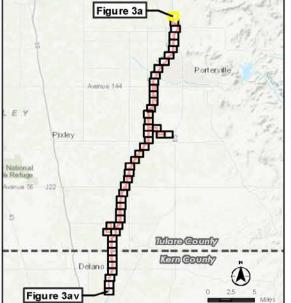
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

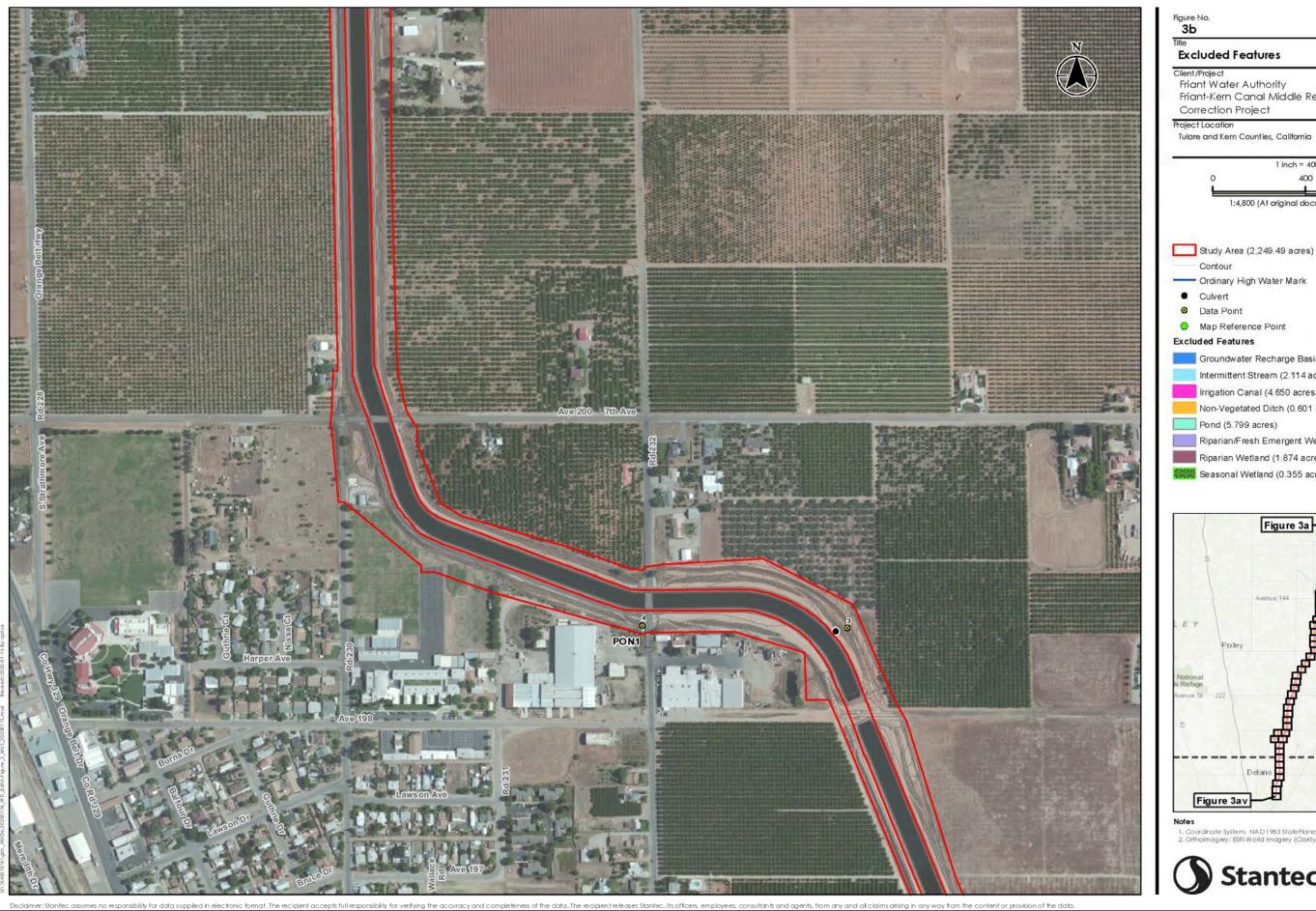
Seasonal Wetland (0.355 acre)



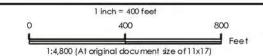
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







# Figure No. 3b **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

# **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

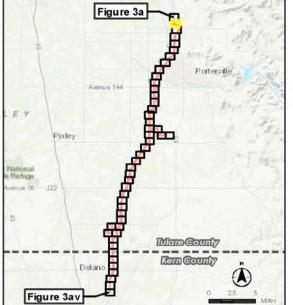
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

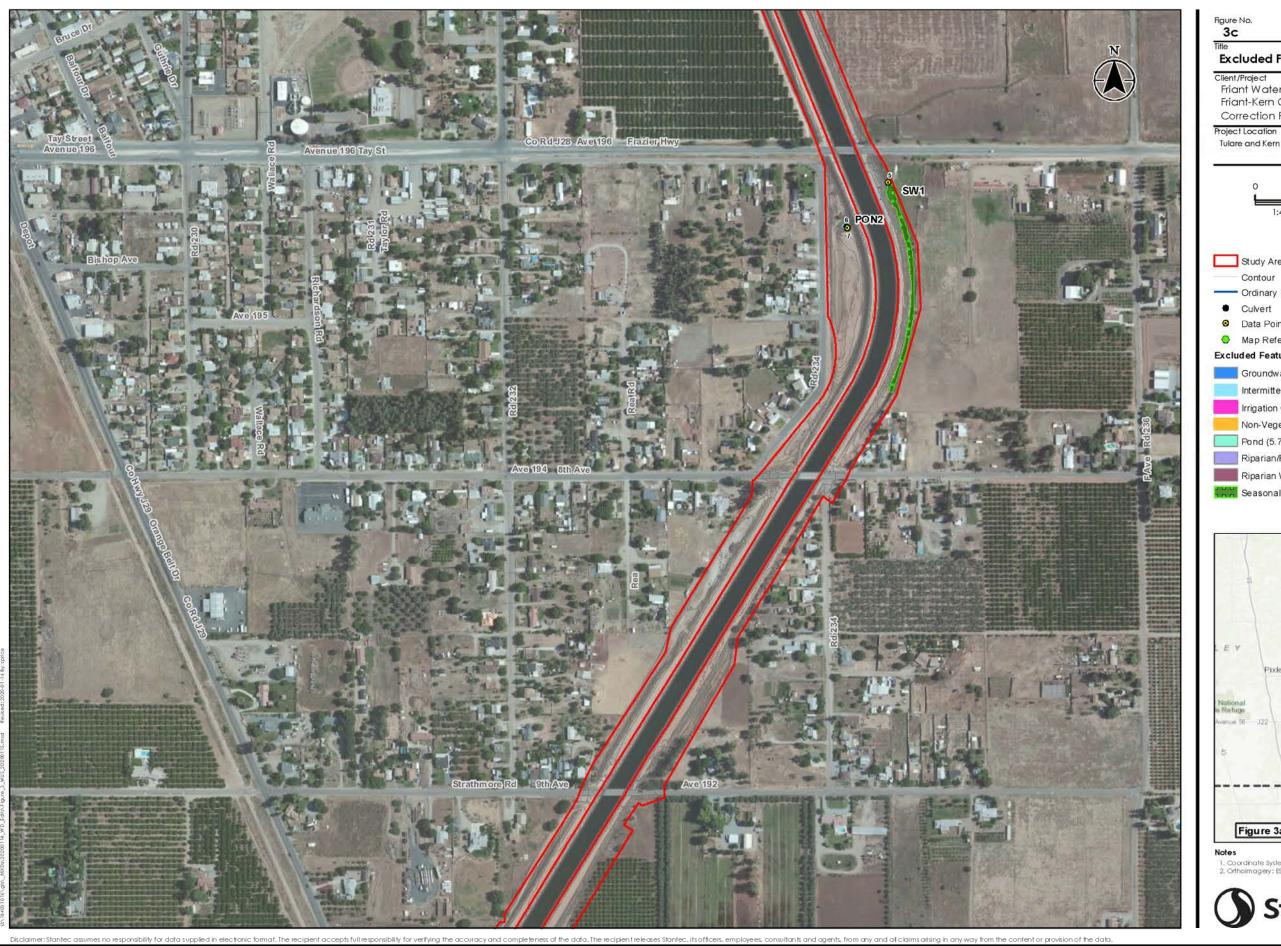
Seasonal Wetland (0.355 acre)



Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







3c

**Excluded Features** 

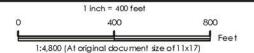
Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

Correction Project

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

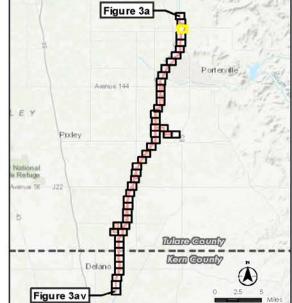
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



Coardhafe System: NAD 1983 State Plane California IV FIPS 0404 Feet
 Orthoimagery: ESRI World Imagery (Clarify), 2019







3d

# **Excluded Features**

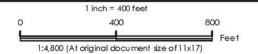
Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

## **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

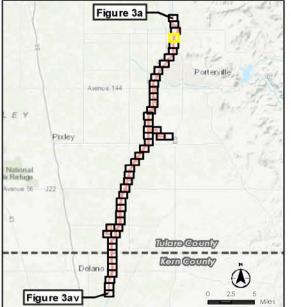
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

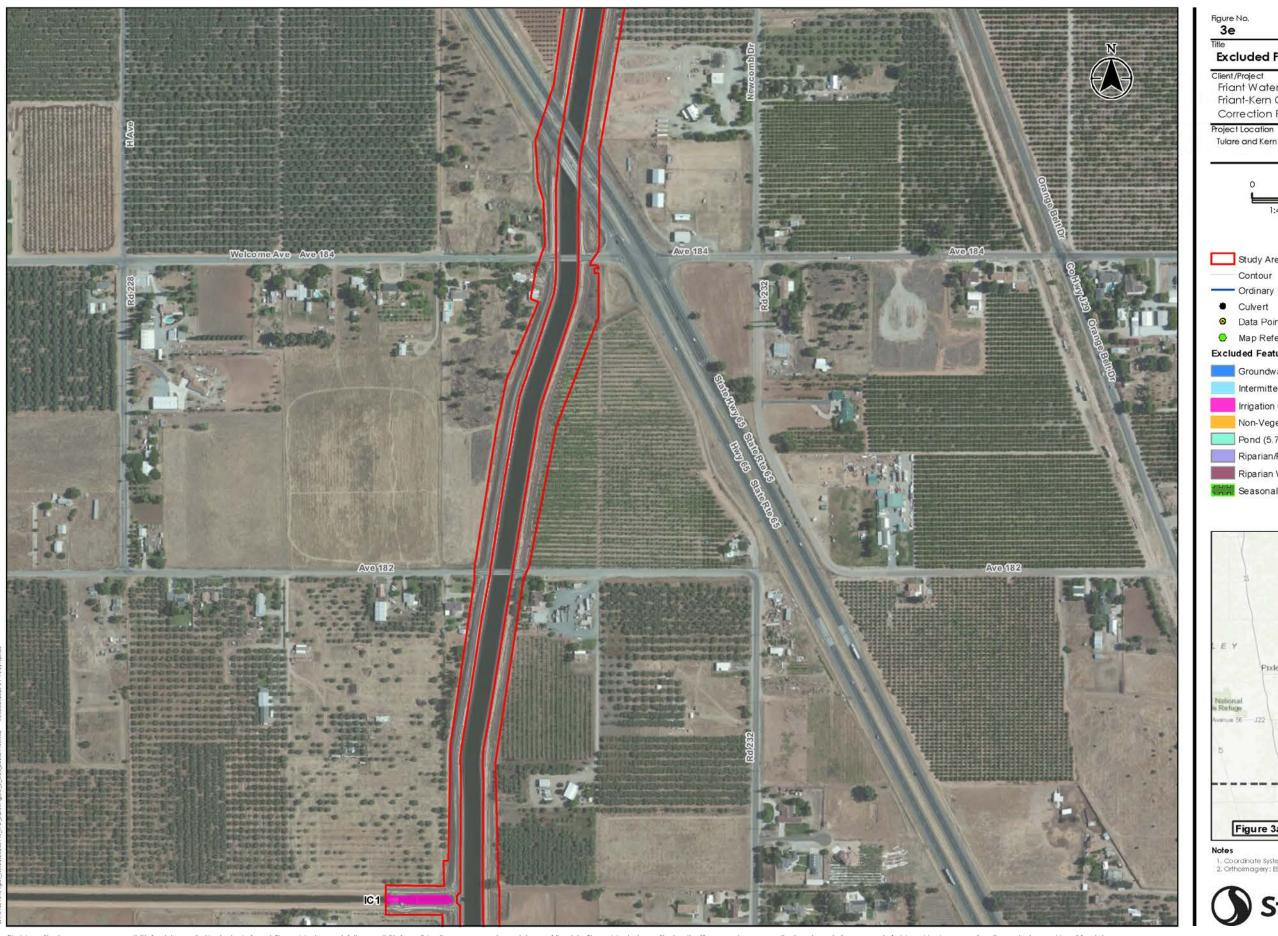
Seasonal Wetland (0.355 acre)



Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







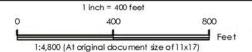
**Excluded Features** 

Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Correction Project

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

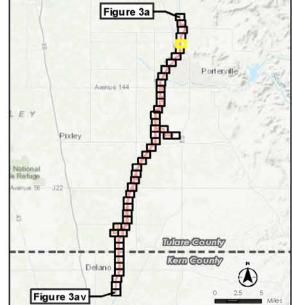
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)

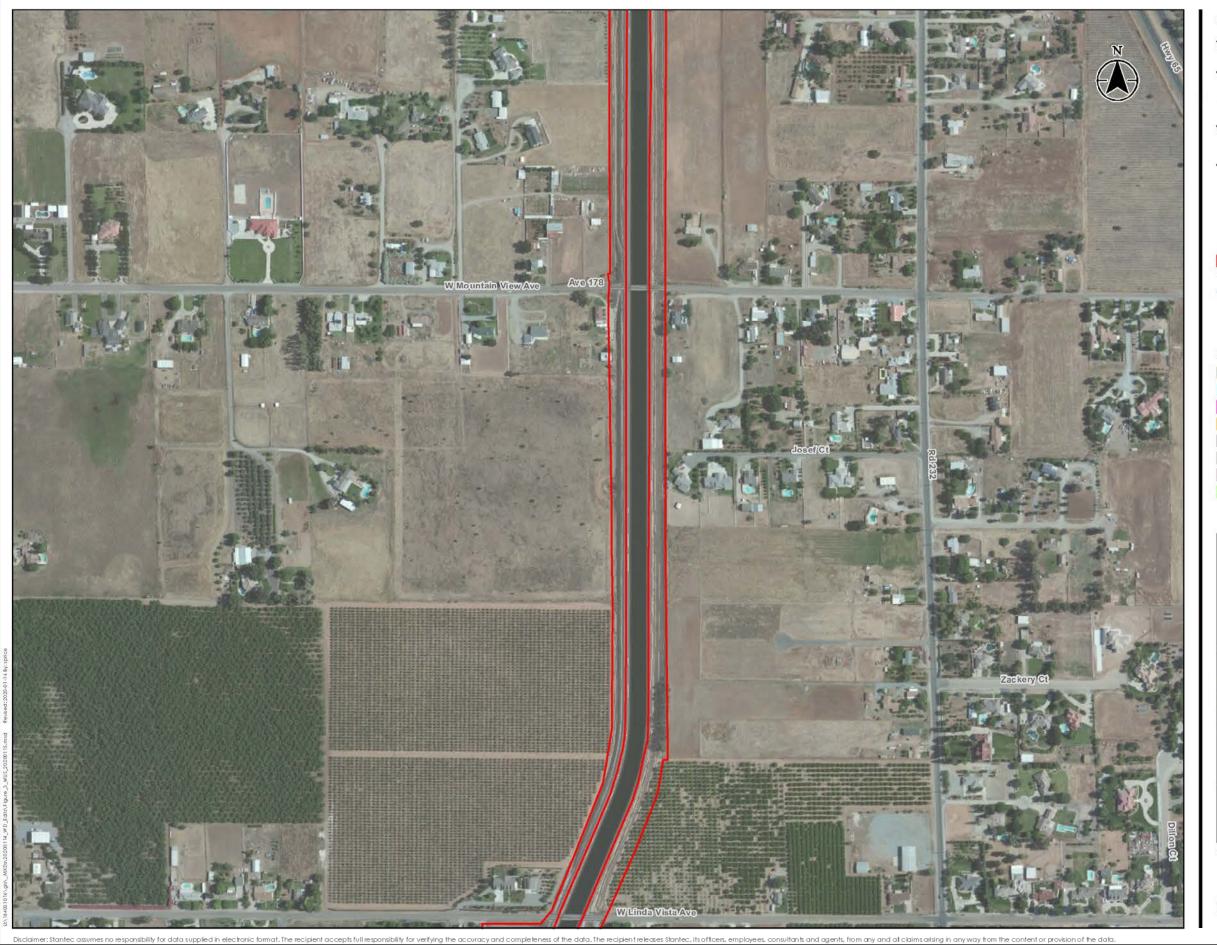


Coordhate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019





Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.



Title

**Excluded Features** 

Client/Proje

Friant Water Authority

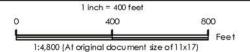
Friant-Kern Canal Middle Reach Capacity Correction Project

Project Location

18403101

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



### Note

Coordinate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







3g

# **Excluded Features**

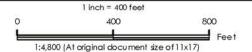
Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

Correction Project

Tulare and Kern Counties, California

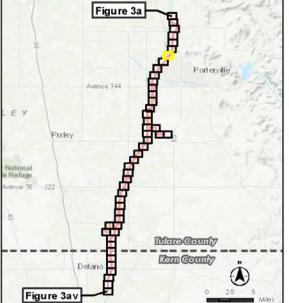
Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



- Study Area (2,249.49 acres)
  - Contour
- Ordinary High Water Mark
- Culvert
- Data Point
- Map Reference Point

## **Excluded Features**

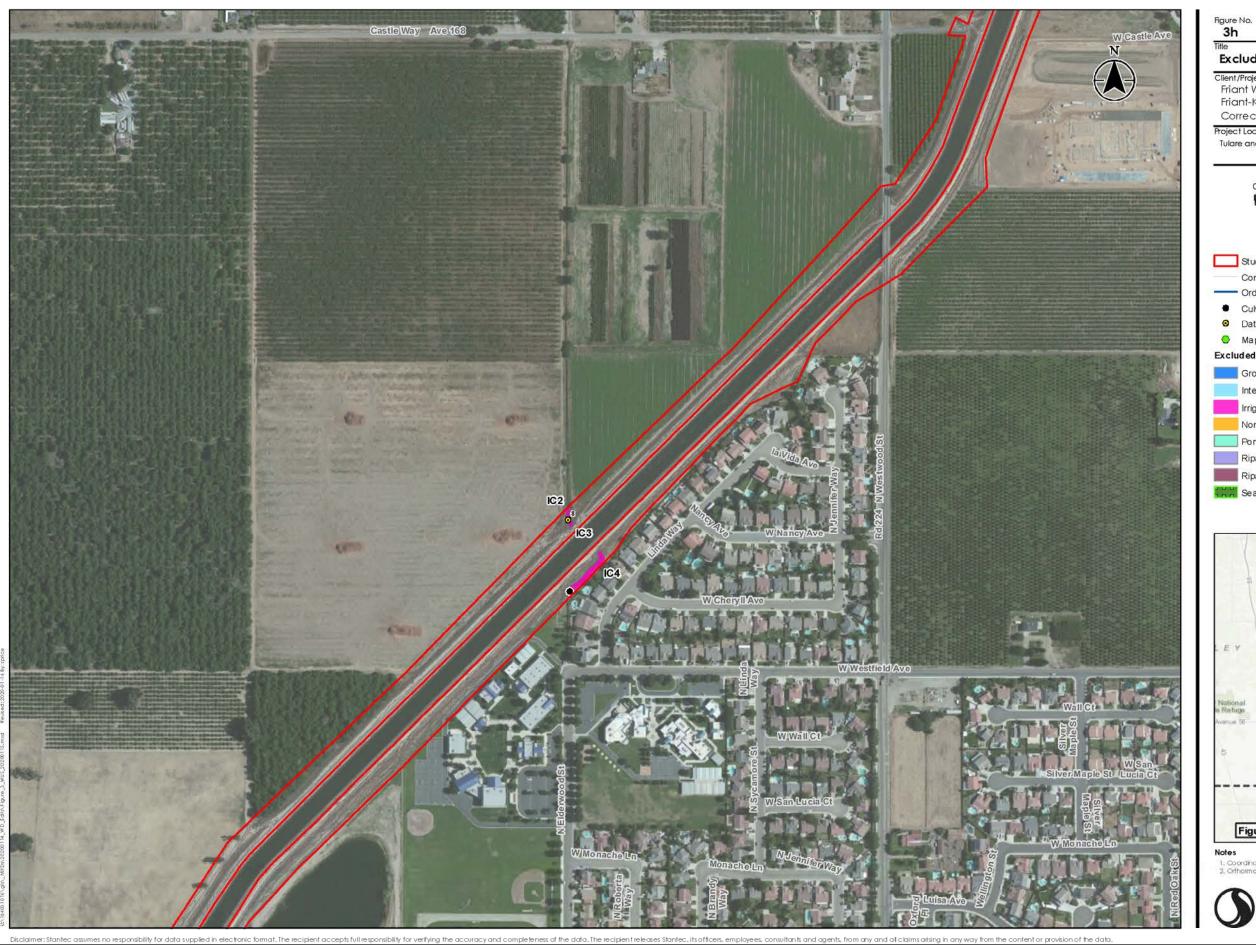
- Groundwater Recharge Basin (20.460 acres)
  - Intermittent Stream (2.114 acres, 2,294 linear feet)
- Irrigation Canal (4.650 acres, 12,229 linear feet)
- Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)
- Pond (5.799 acres)
- Riparian/Fresh Emergent Wetland Complex (0.011 acre)
- Riparian Wetland (1.874 acres)
- Seasonal Wetland (0.355 acre)



Coordhate System: NAD 1 983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







# 3h **Excluded Features** Client/Project Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 800 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert

**Excluded Features** 

Map Reference Point

Data Point

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

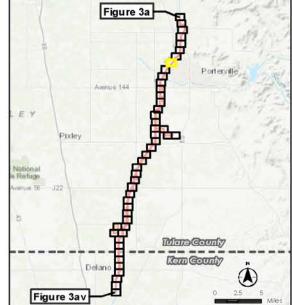
Irrigation Canal (4.650 acres, 12,229 linear feet)

Non-Vegetated Ditch (0.601 acre, 4,816 linear feet) Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

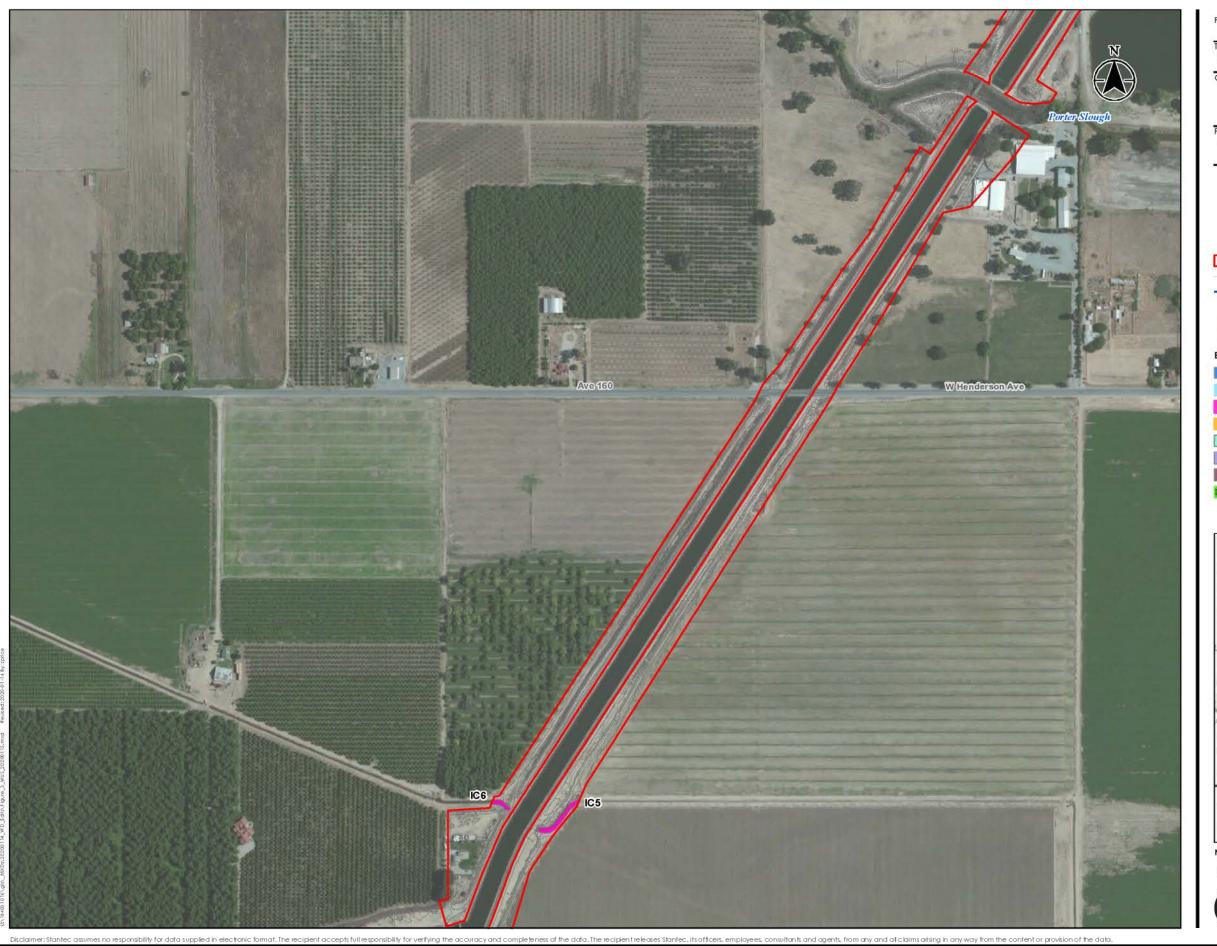
Seasonal Wetland (0.355 acre)



Coordhate Systems, NAD 1983 State Plane California IV FIPS 0404 Feet
 Cortholmagery: ESRI World Imagery (Clarity), 2019







**Excluded Features** 

Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

Correction Project Project Location

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15

1 inch = 400 feet 1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

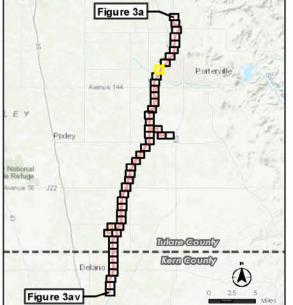
Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

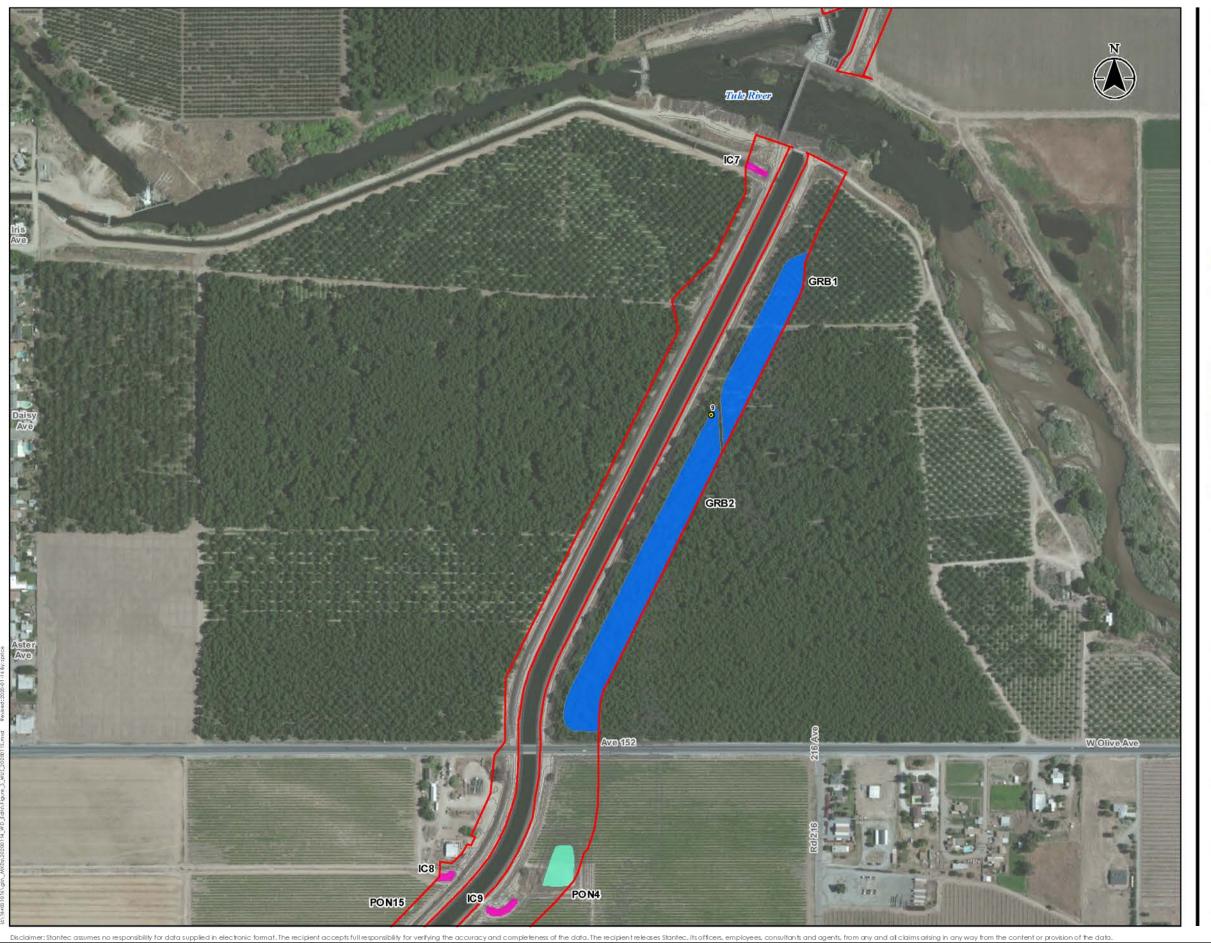
Seasonal Wetland (0.355 acre)

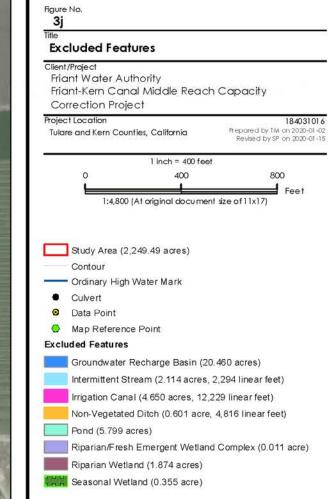


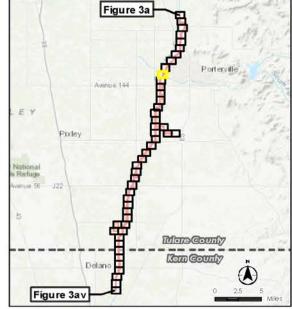
Coordhate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019











Coordhate System: NAD 1983 StatePlane California IV FIPS 0.404 Feet
 Critholmagery: ESRI World Imagery (Clarity), 2019

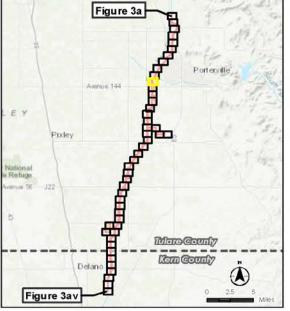






# Figure No. **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 800 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres) Intermittent Stream (2.114 acres, 2,294 linear feet) Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet) Pond (5.799 acres) Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)
Seasonal Wetland (0.355 acre)

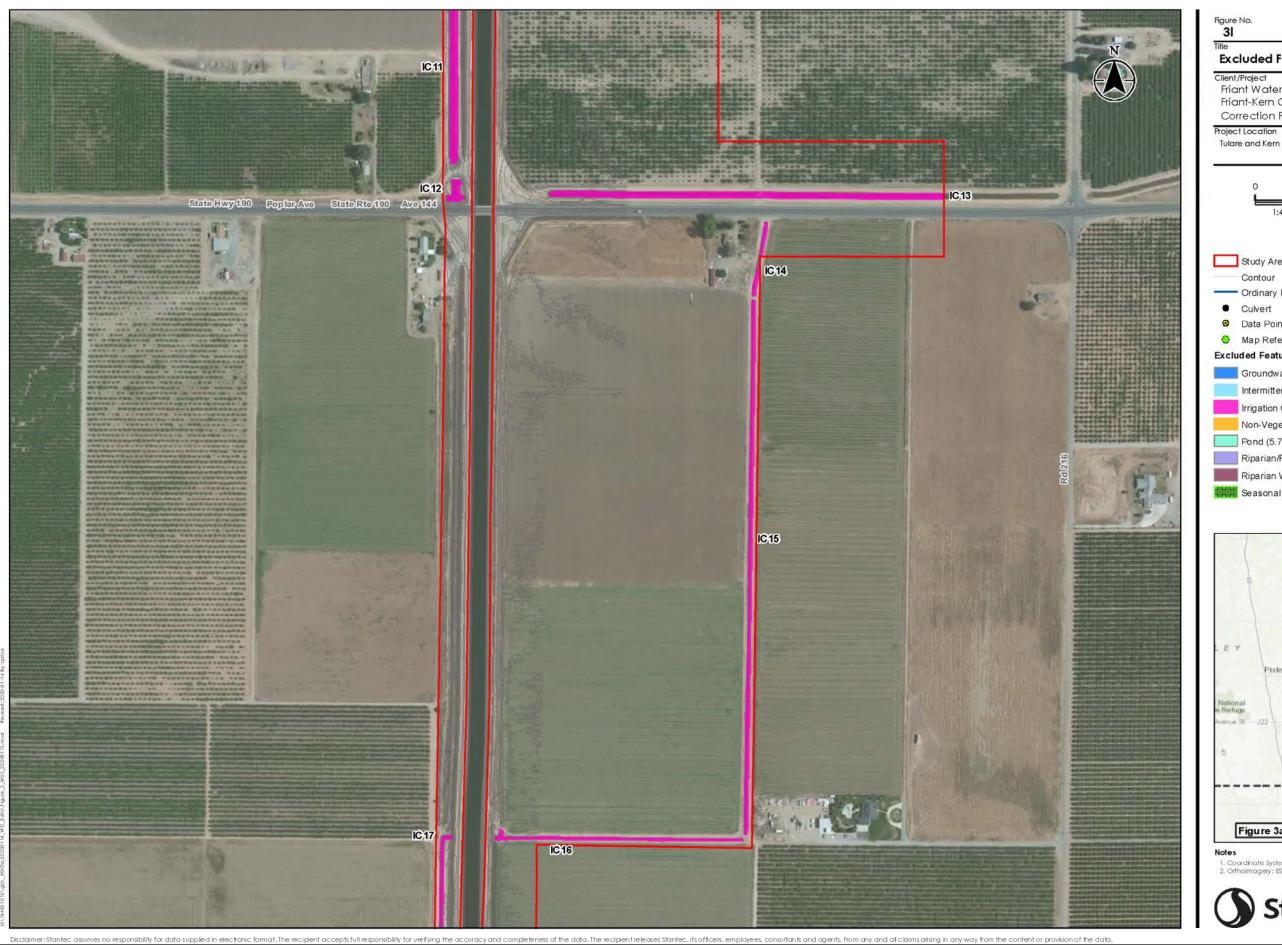


### Note

Coordinate System: NA D 1 983 State Plane California IV FIPS 0 404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 201 9







**Excluded Features** 

Friant Water Authority

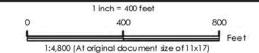
Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

## **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

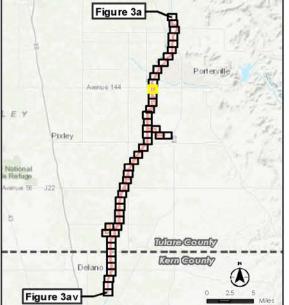
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







# **Excluded Features**

Friant Water Authority

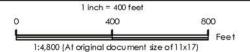
Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

## **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

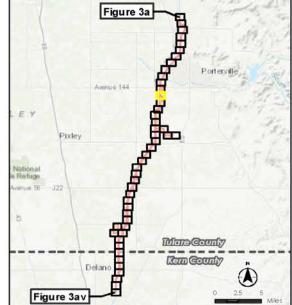
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







Figure No. 3n **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 400 800 Feet 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres) Intermittent Stream (2.114 acres, 2,294 linear feet) Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet) Pond (5.799 acres) Riparian/Fresh Emergent Wetland Complex (0.011 acre) Riparian Wetland (1.874 acres) Seasonal Wetland (0.355 acre)



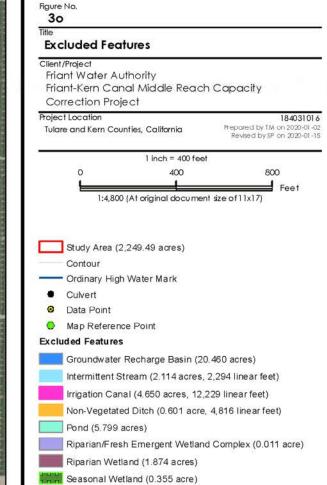
### Note

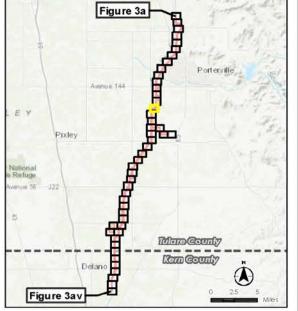
Coordhate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019









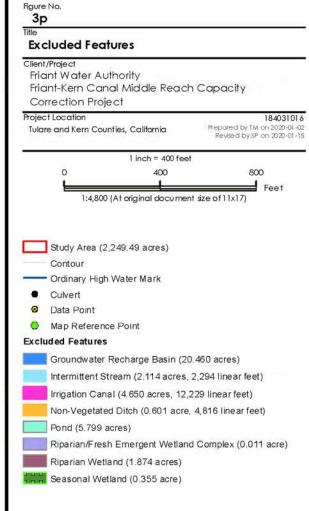


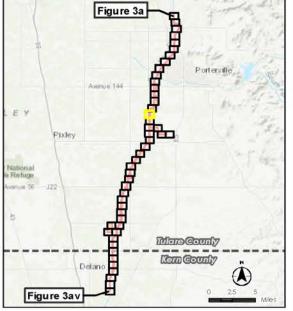
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







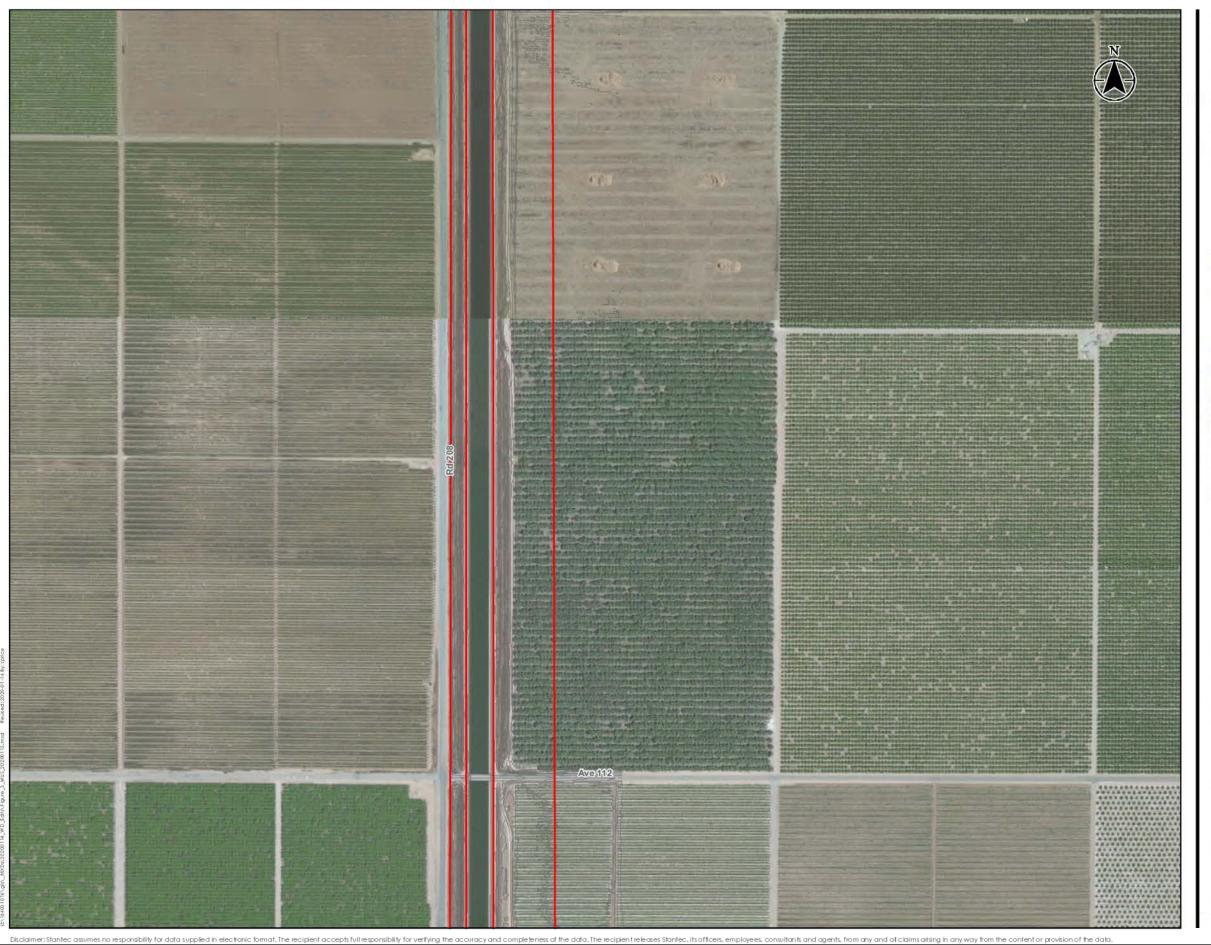


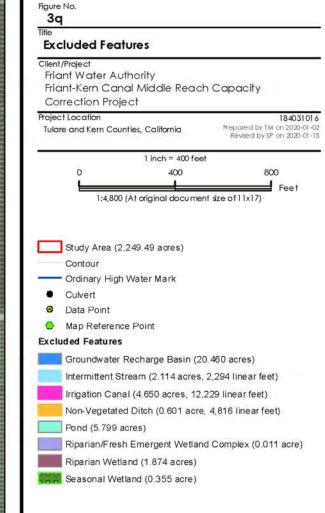


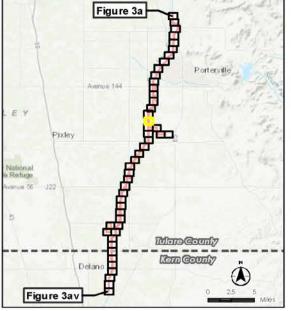
Coordinate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019









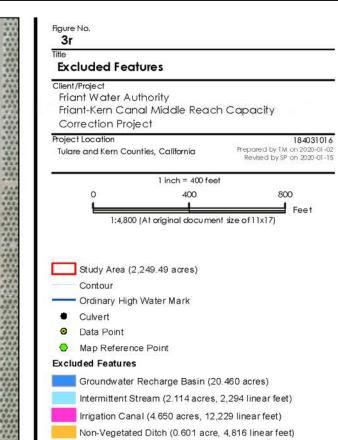


Coordinate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019











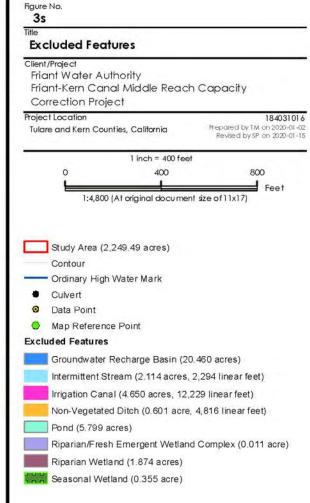
Coordhafe System: NA D 1 983 State Plane California IV FIPS 0 404 Feet
 Orthoimagery: ESRI World Imagery (Clarify), 2019

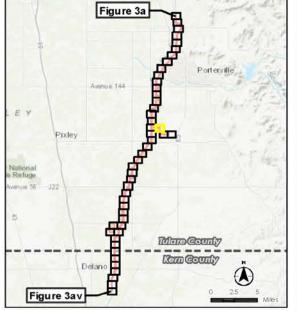




Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.





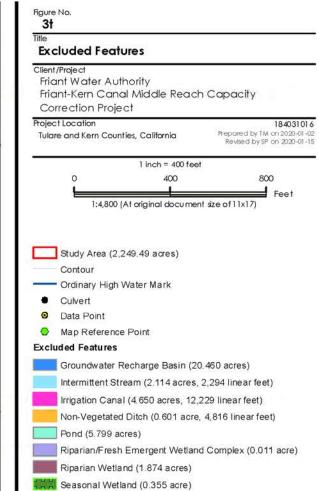


Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019











Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019





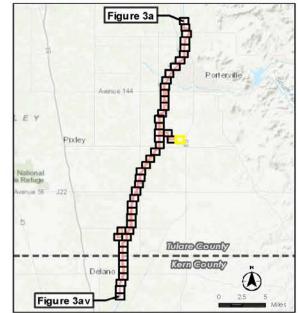
Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.



# Figure No. 3υ **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 400 800 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet) Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

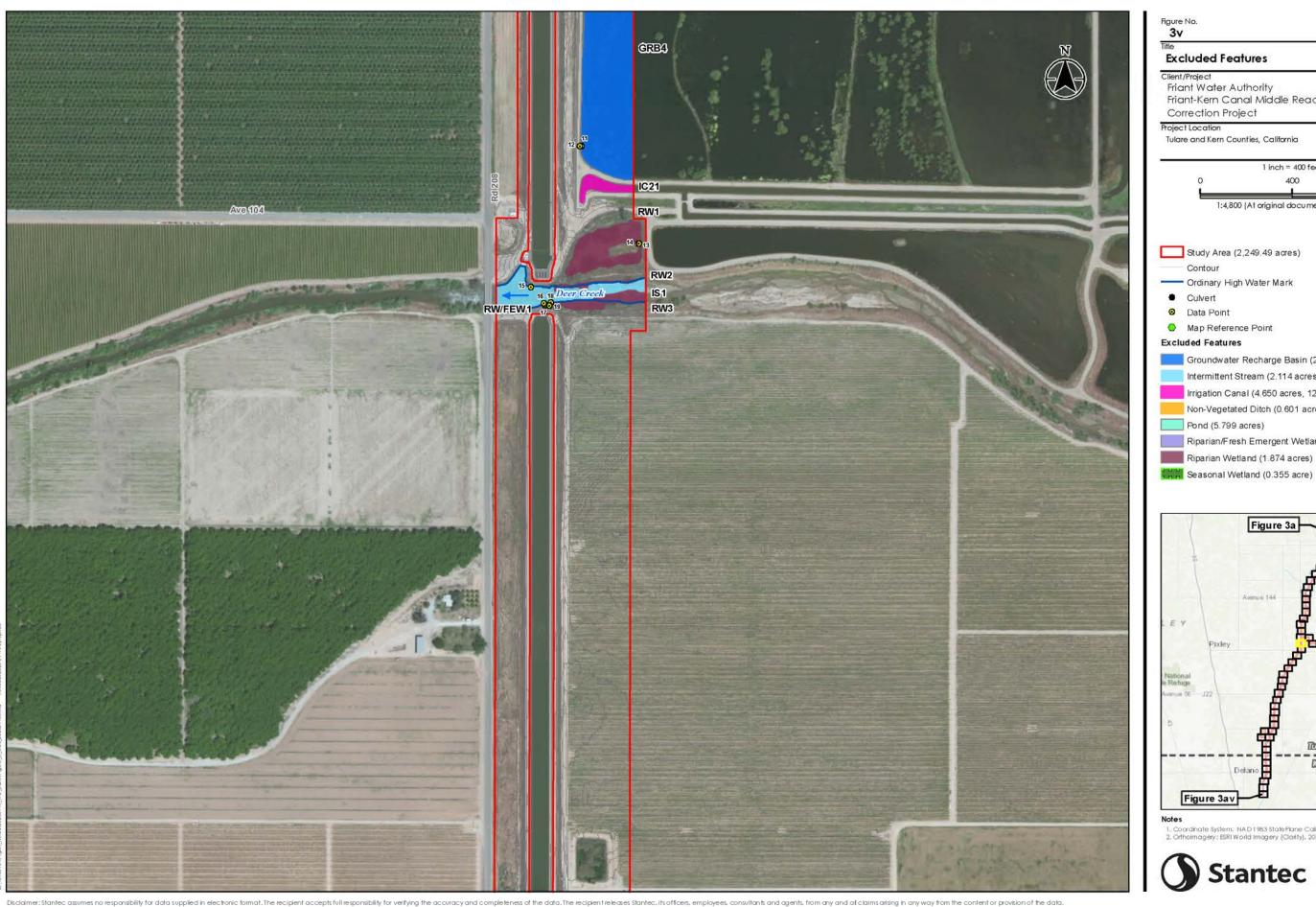
Pond (5.799 acres)

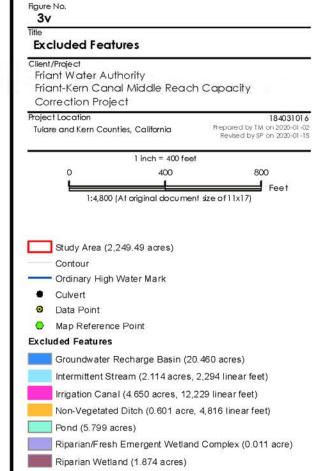


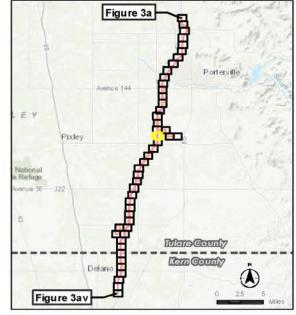
Coordinate System: NAD 1 983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019









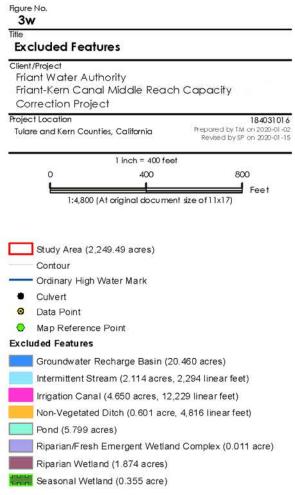


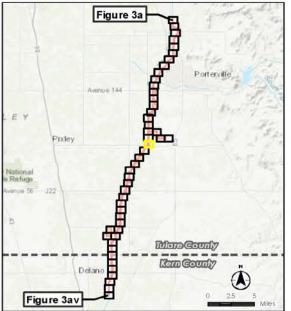
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019











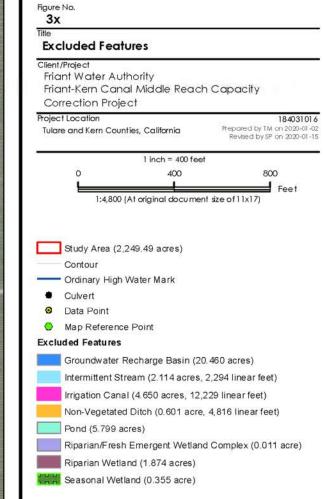
Coordhate System: NAD 1 983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019

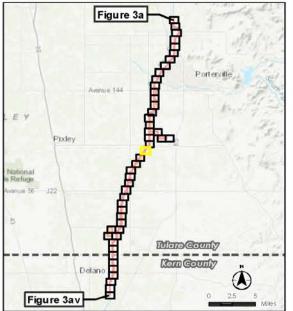




Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the occuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.





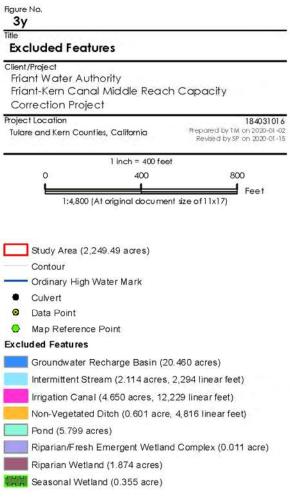


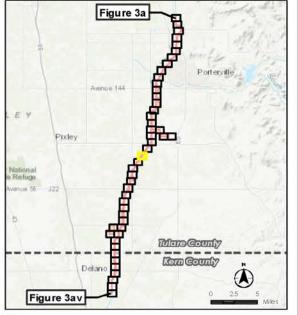
Coordhate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019











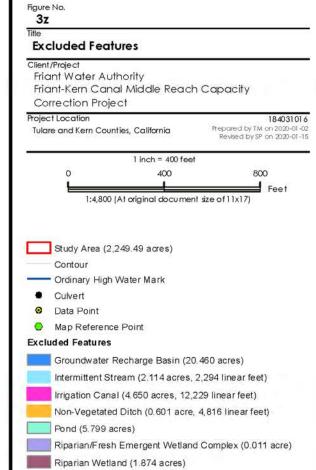
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019

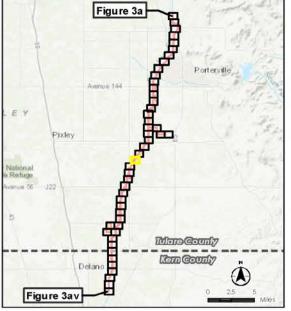




Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.







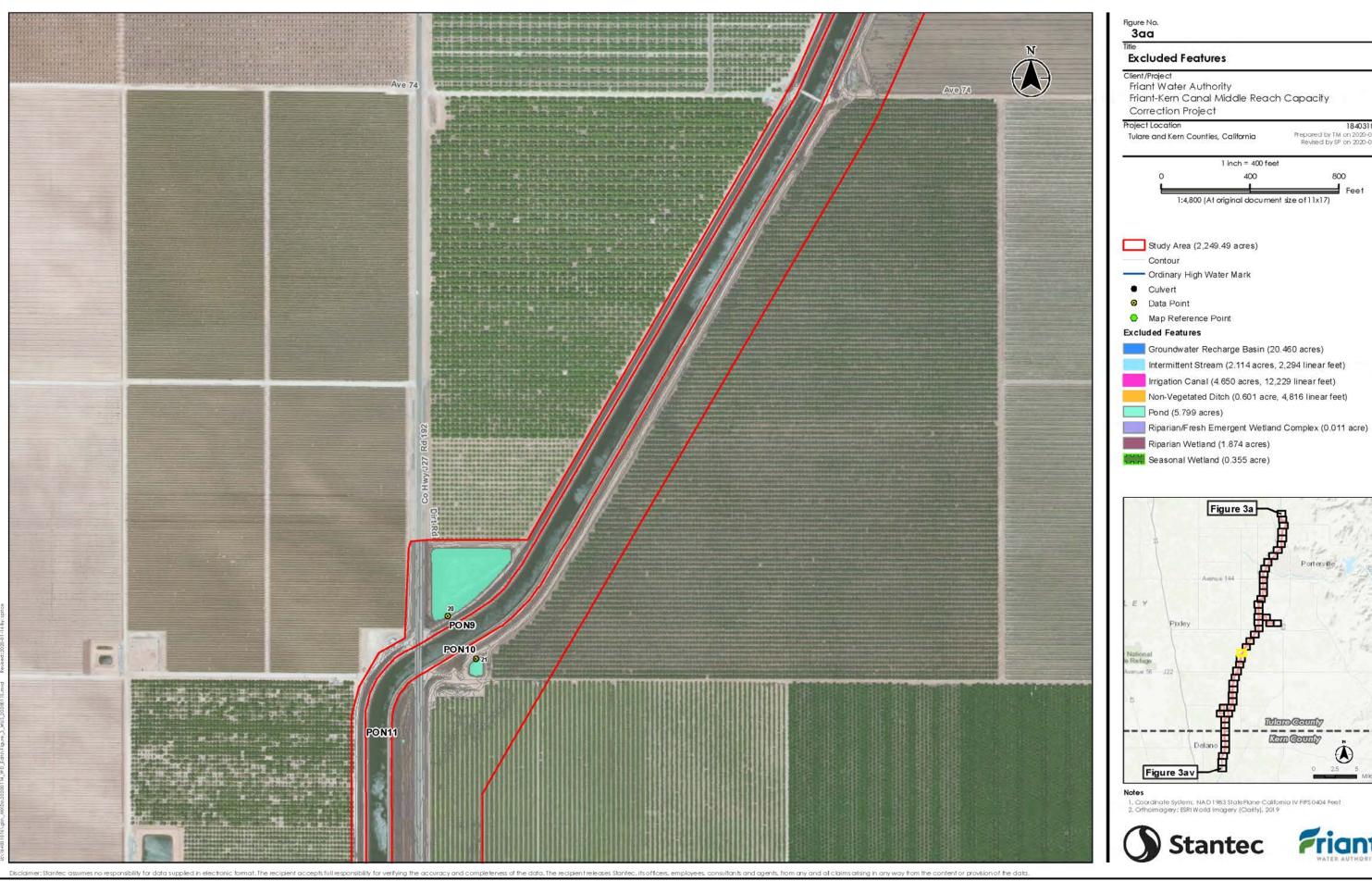
Coordinate System: NAD 1983 State Plane California IV FIPS 0404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019

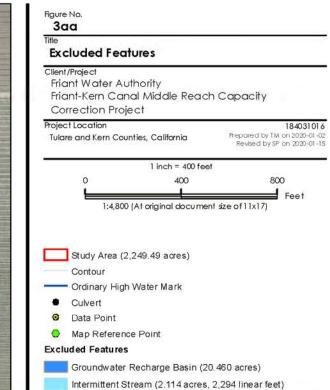


Seasonal Wetland (0.355 acre)

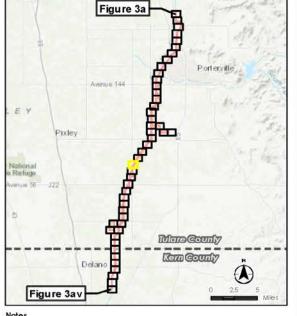


Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.





Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)



Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







3ab

# **Excluded Features**

Friant Water Authority

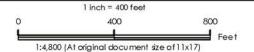
Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

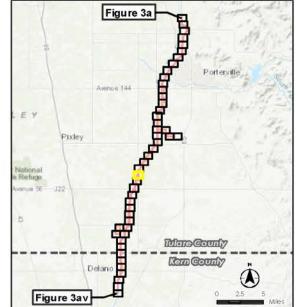
Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019





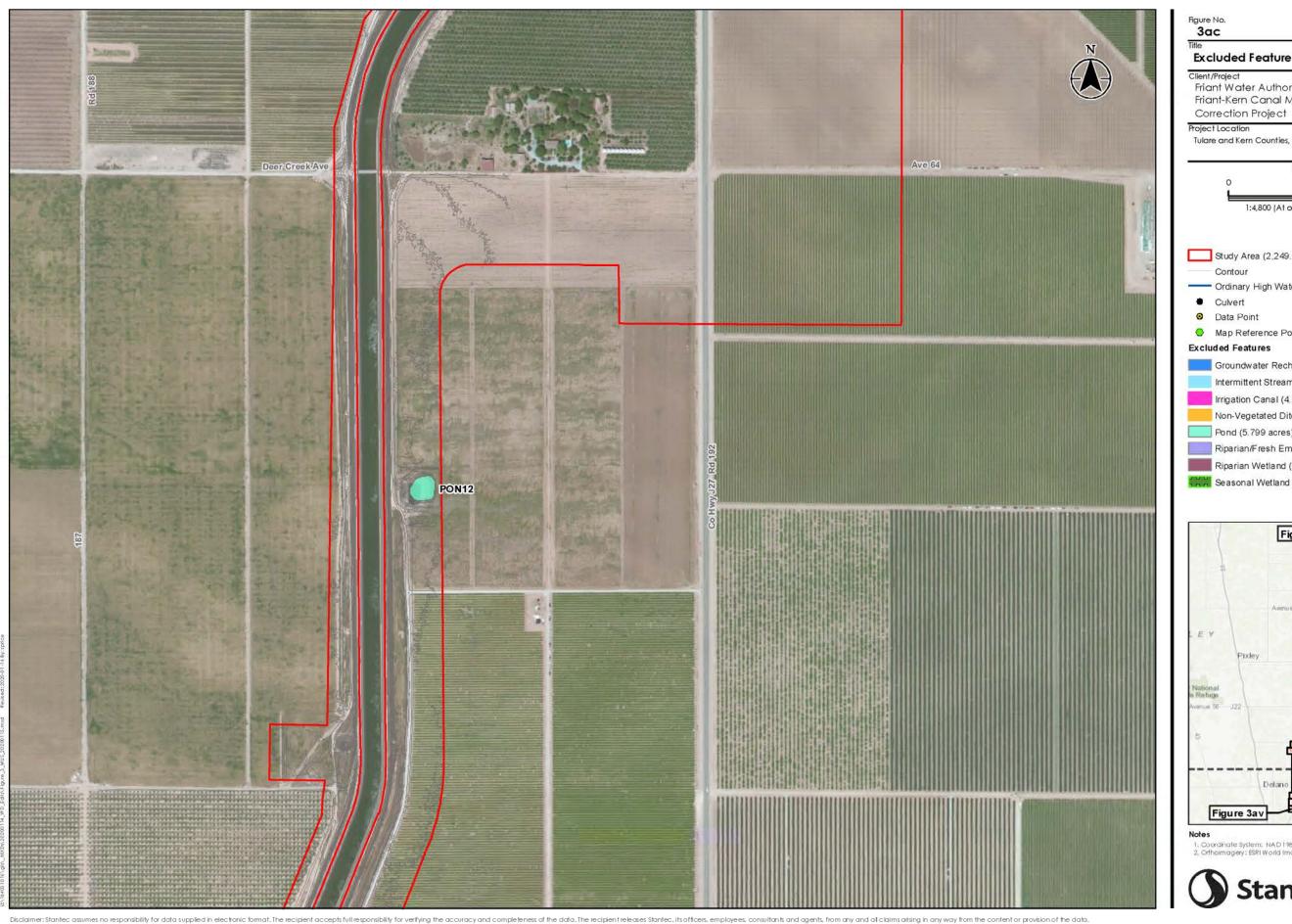


Figure No. 3ac **Excluded Features** 

Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Project Location Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 1 inch = 400 feet

184031016

400 800 1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

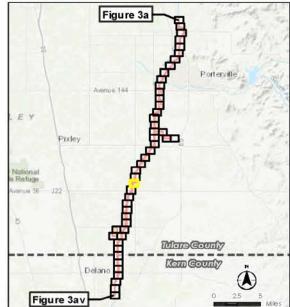
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)

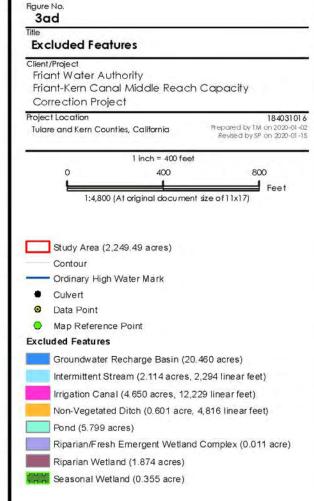


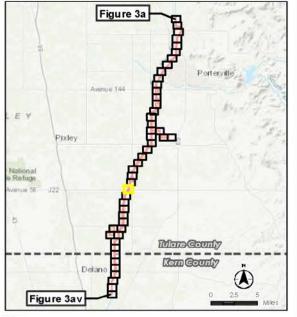
1, Coordinate System: NA D 1983 State Plane California IV FIPS 0.404 Feet 2. Orthoimagery: ESRI World Imagery (Clarity), 2019











Coordinate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







3ae

## **Excluded Features**

Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15

1 inch = 400 feet 400 800 1:4,800 (At original document size of 11x17)

Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

#### **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

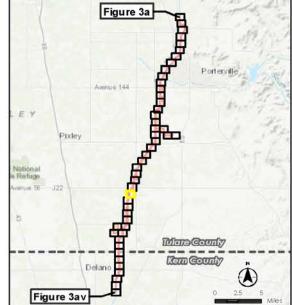
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)

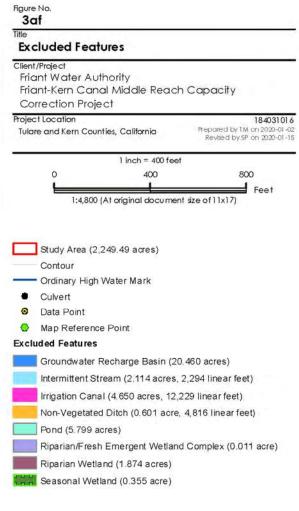


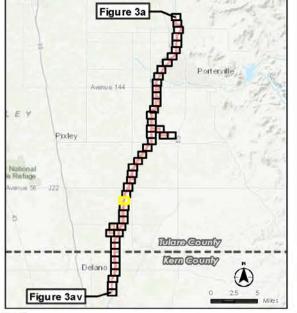
Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019









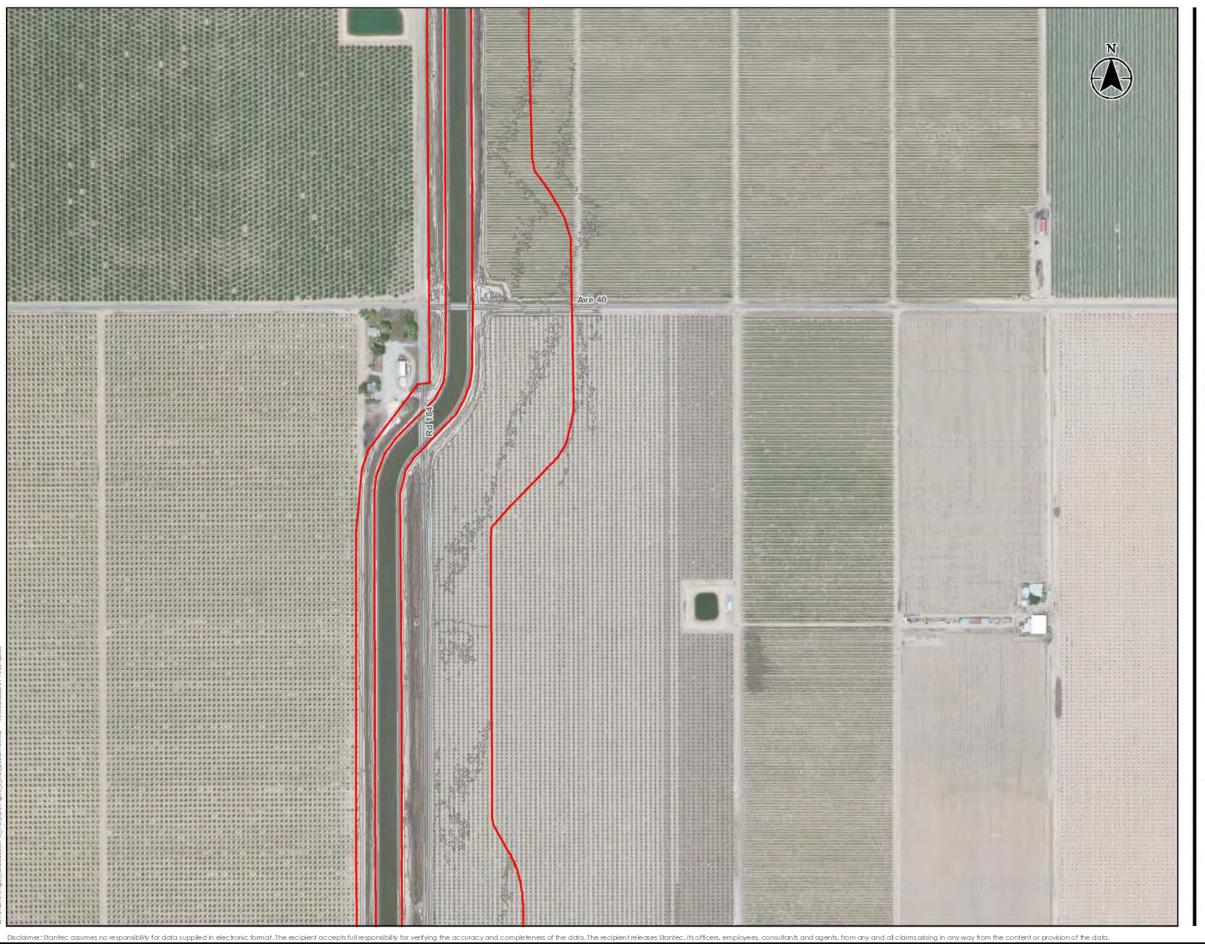


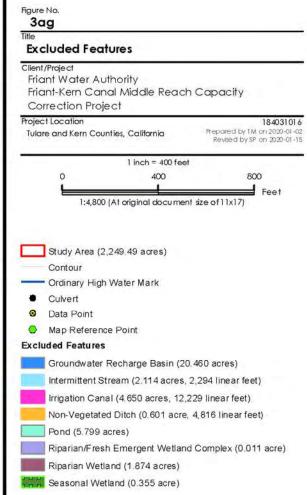
#### Note

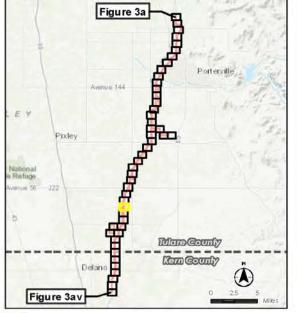
Coordinate Systems. NAD 1983 State Plane California IV FIPS 0404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019









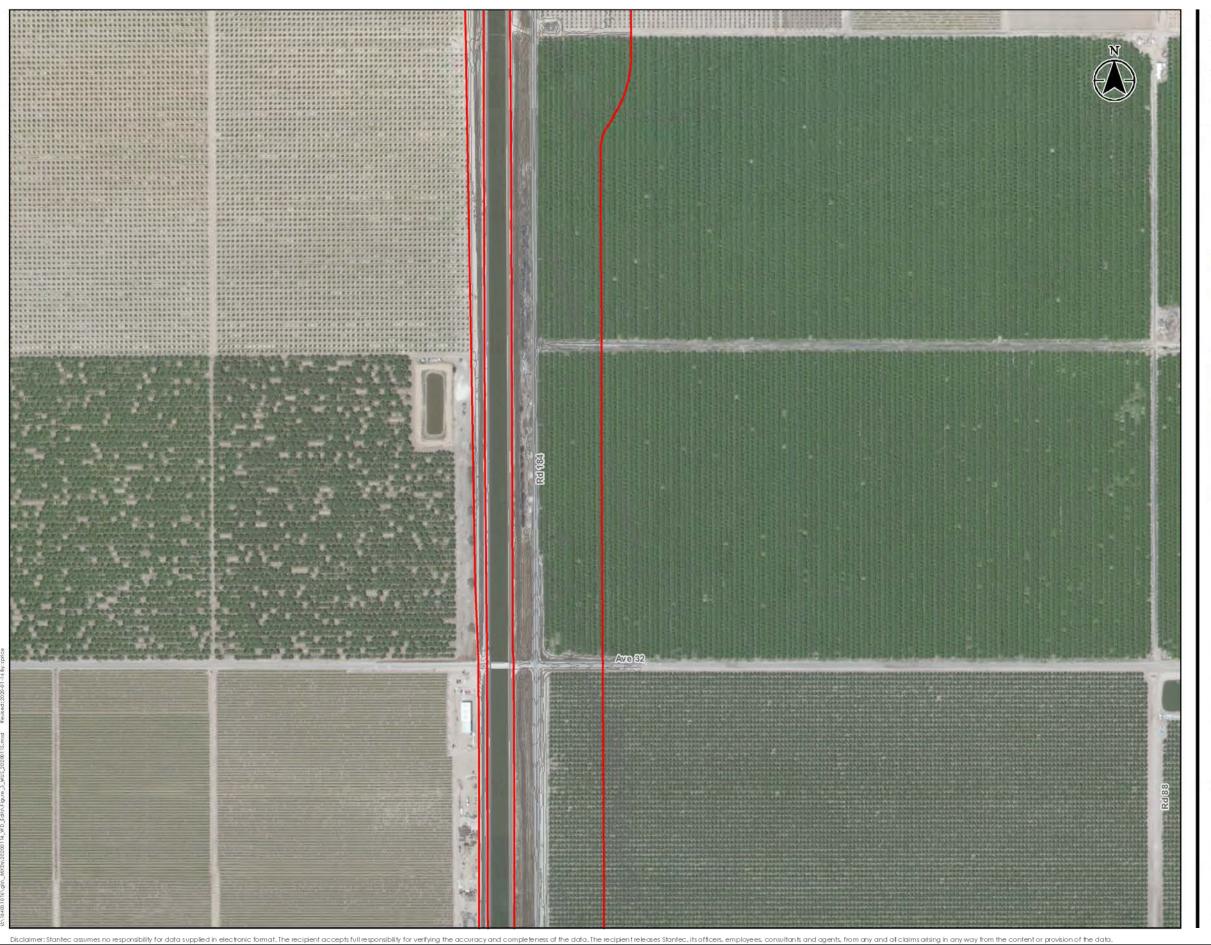


#### Notes

Coordinate System: NA D 1983 State Plane California IV FIPS 0404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







## Figure No. 3ah **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 400 800 Feet 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres) Intermittent Stream (2.114 acres, 2,294 linear feet)

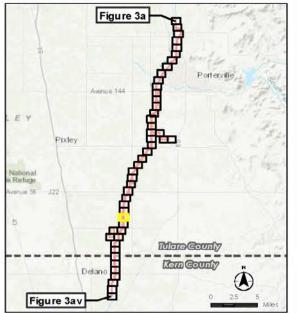
Irrigation Canal (4.650 acres, 12,229 linear feet)
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Pond (5.799 acres)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



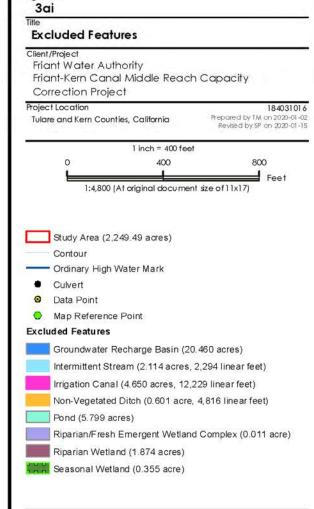
#### Note

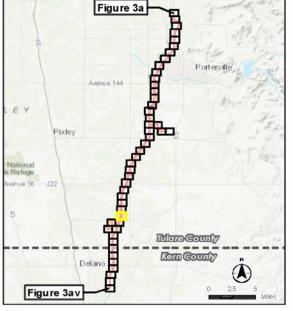
Coordhate System: NA D 1983 State Plane California IV FIPS 0404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019











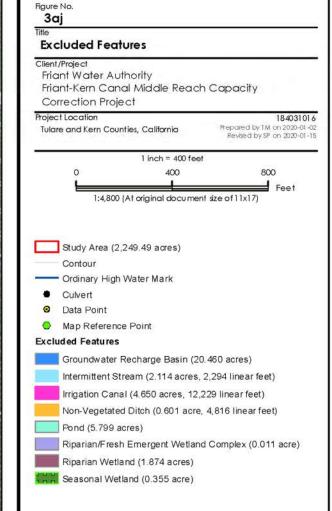
#### Note

Coordinate System: NAD 1983 State Plane California IV FIFS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019









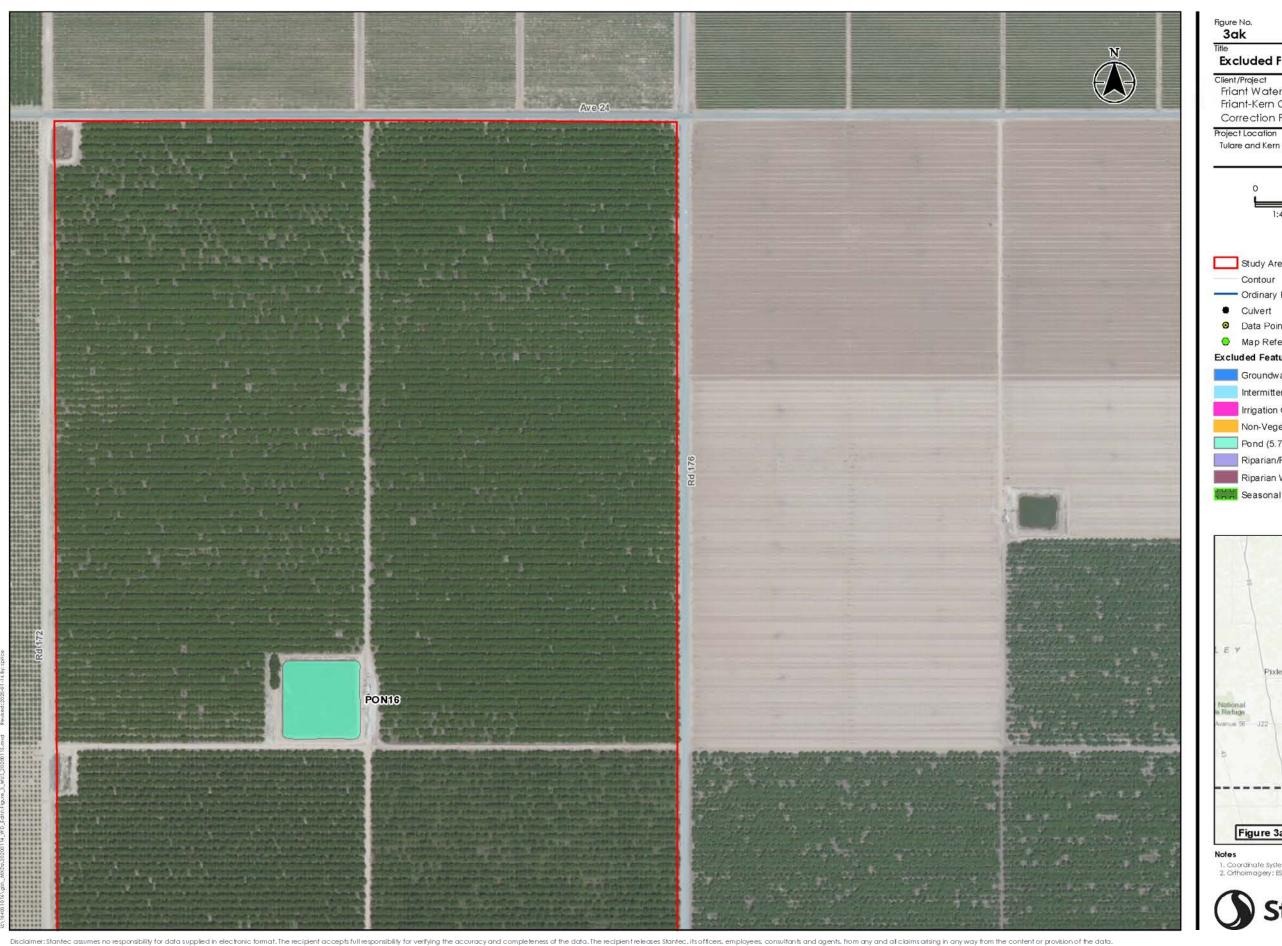


#### Note

Coordinate System: NAD 1983 State Plane California IV FIPS 0404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







3ak

## **Excluded Features**

Friant Water Authority

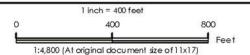
Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

#### **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

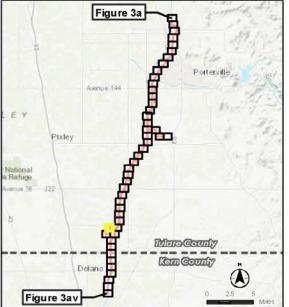
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

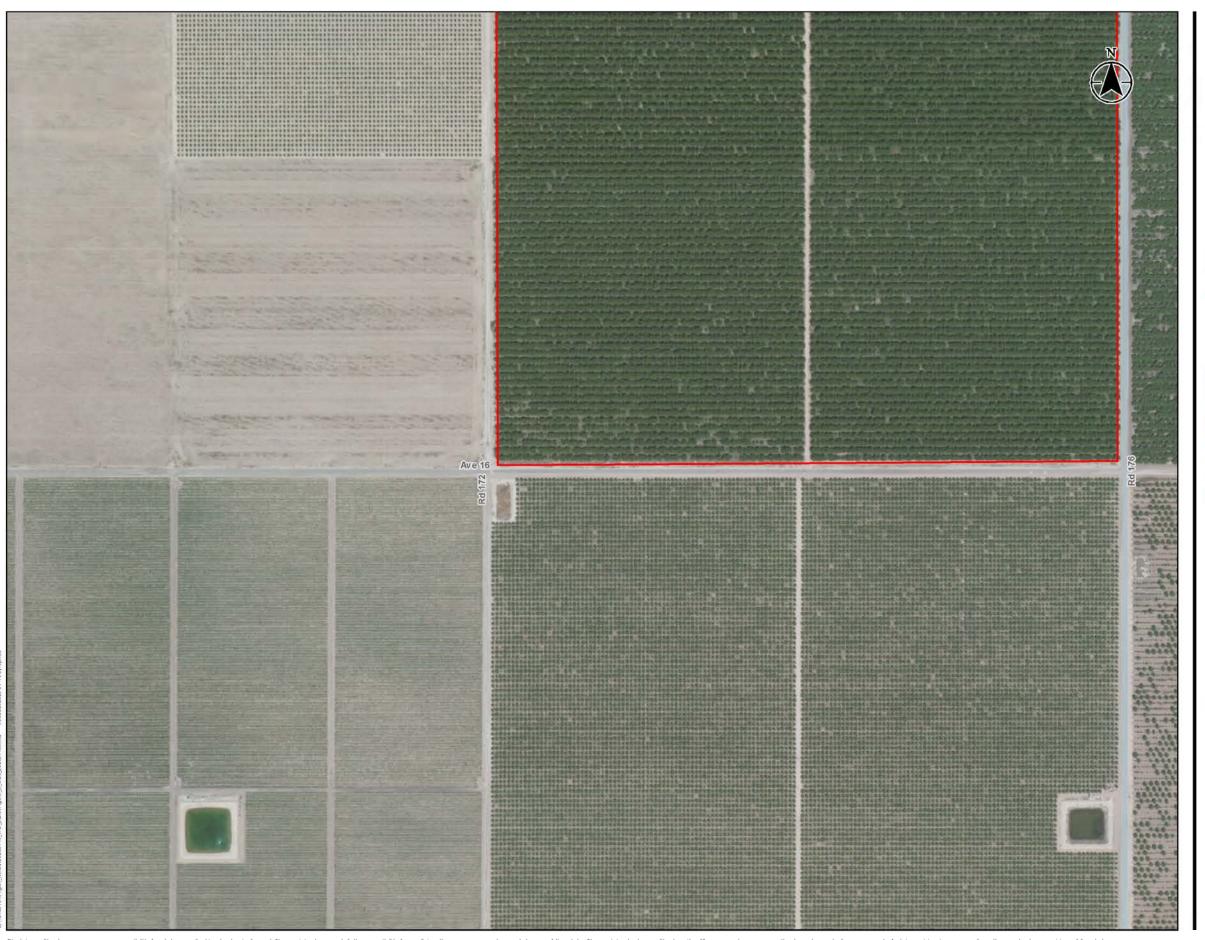
Seasonal Wetland (0.355 acre)

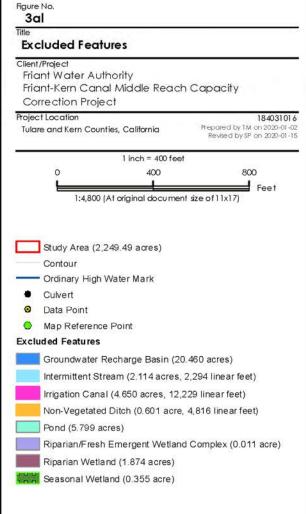


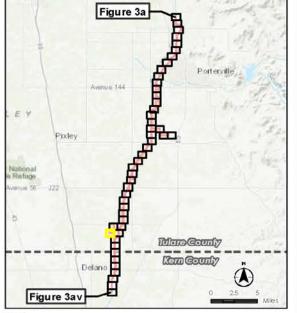
Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019











Coordinate System: NAD 1983 State Plane California IV FIPS 0404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019





Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.



## Figure No. 3am **Excluded Features**

Client/Project

Friant Water Authority

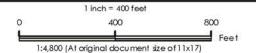
Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

**Excluded Features** 

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

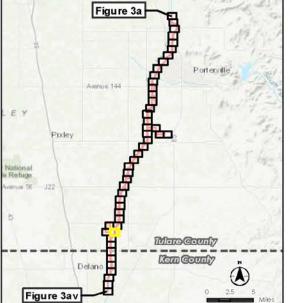
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)

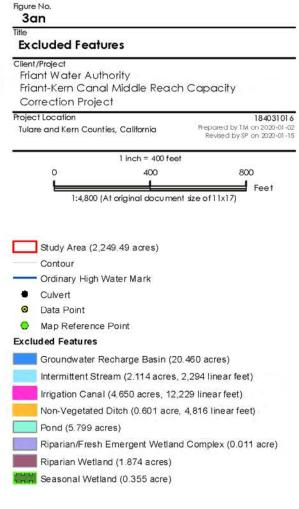


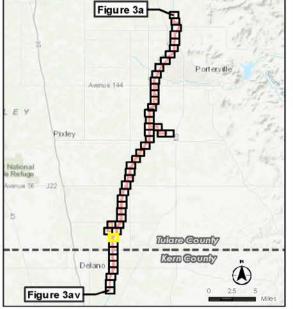
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019









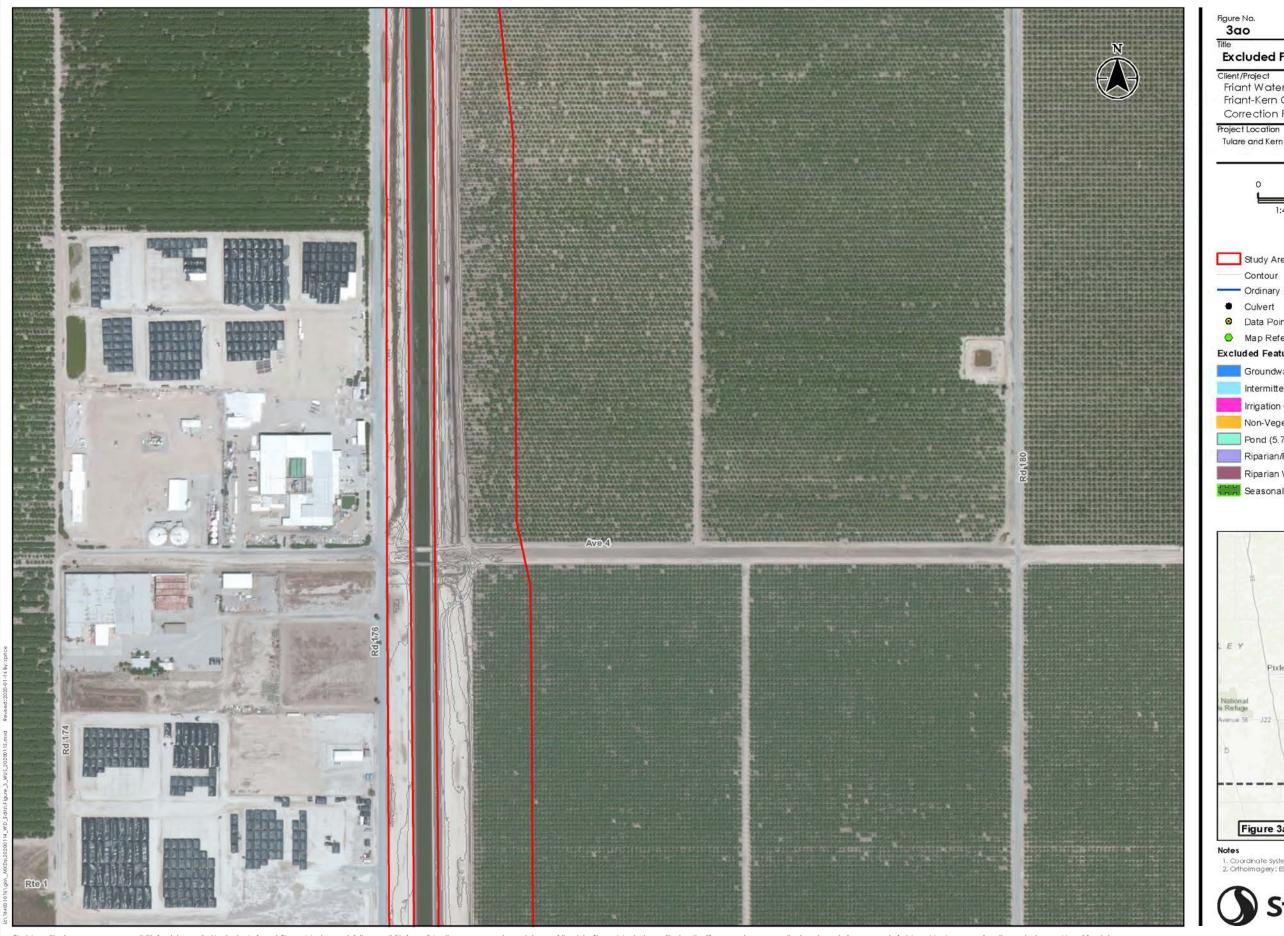


#### Note

Coordhate System: NA D 1 983 State Plane California IV FIPS 0 404 Feet
 Orthoimagery: ESRI World Imagery (Clarify), 2019







3ao

## **Excluded Features**

Friant Water Authority

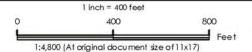
Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

#### **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

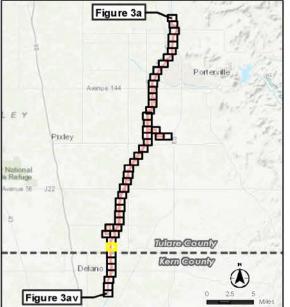
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



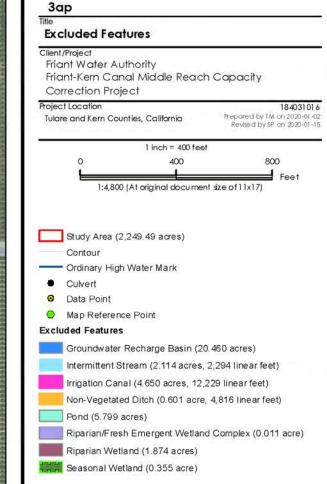
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019





Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.







#### Note

Coordhate System: NAD 1983 StatePlane California IV FIPS 0404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







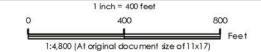
# Figure No. 3aq Title Excluded Features Client/Project

Client/Project
Friant Water Authority

Friant-Kern Canal Middle Reach Capacity Correction Project

Project Location 184031016

Tulare and Kern Counties, California Prepared by TM on 2020-01-02
Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

Excluded Features

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

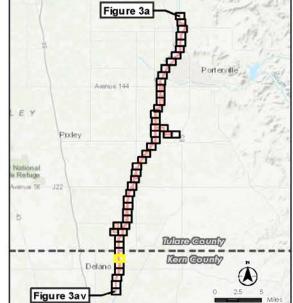
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

Seasonal Wetland (0.355 acre)



#### Note

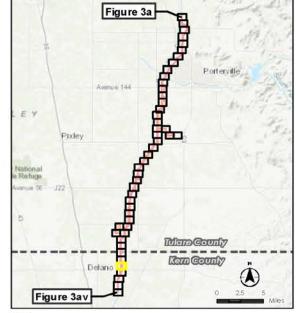
Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019







3ar **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 400 800 Feet 1:4,800 (At original document size of 11x17) Study Area (2,249,49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres) Intermittent Stream (2.114 acres, 2,294 linear feet) Irrigation Canal (4.650 acres, 12,229 linear feet) Non-Vegetated Ditch (0.601 acre, 4,816 linear feet) Pond (5.799 acres) Riparian/Fresh Emergent Wetland Complex (0.011 acre) Riparian Wetland (1.874 acres) Seasonal Wetland (0.355 acre)



Coordinate System: NA D 1 983 State Plane California IV FIPS 0.404 Feet
 Ortholmagery: ESRI World Imagery (Clarity), 2019



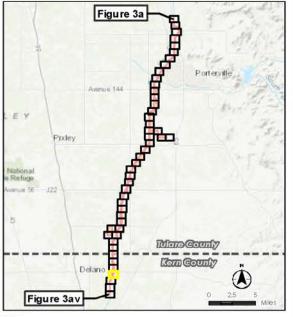




## Figure No. 3as **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 800 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres) Intermittent Stream (2.114 acres, 2,294 linear feet) Irrigation Canal (4.650 acres, 12,229 linear feet)

Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)



Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019





Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec. Its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.



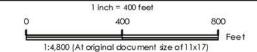
## Figure No. 3at Title Excluded Features Client/Project

Friant Water Authority

Friant-Kern Canal Middle Reach Capacity Correction Project

 
 Project Location
 184031016

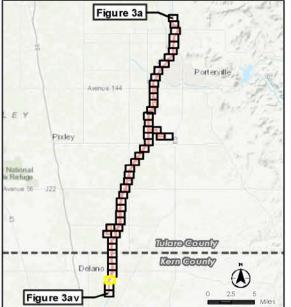
 Tulare and Kern Counties, California
 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



- Study Area (2,249.49 acres)
  - Contour
- Ordinary High Water Mark
- Culvert
- Data Point
- Map Reference Point

### Excluded Features

- Groundwater Recharge Basin (20.460 acres)
- Intermittent Stream (2.114 acres, 2,294 linear feet)
- Irrigation Canal (4.650 acres, 12,229 linear feet)
- Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)
- Pond (5.799 acres)
- Riparian/Fresh Emergent Wetland Complex (0.011 acre)
- Riparian Wetland (1.874 acres)
- Seasonal Wetland (0.355 acre)

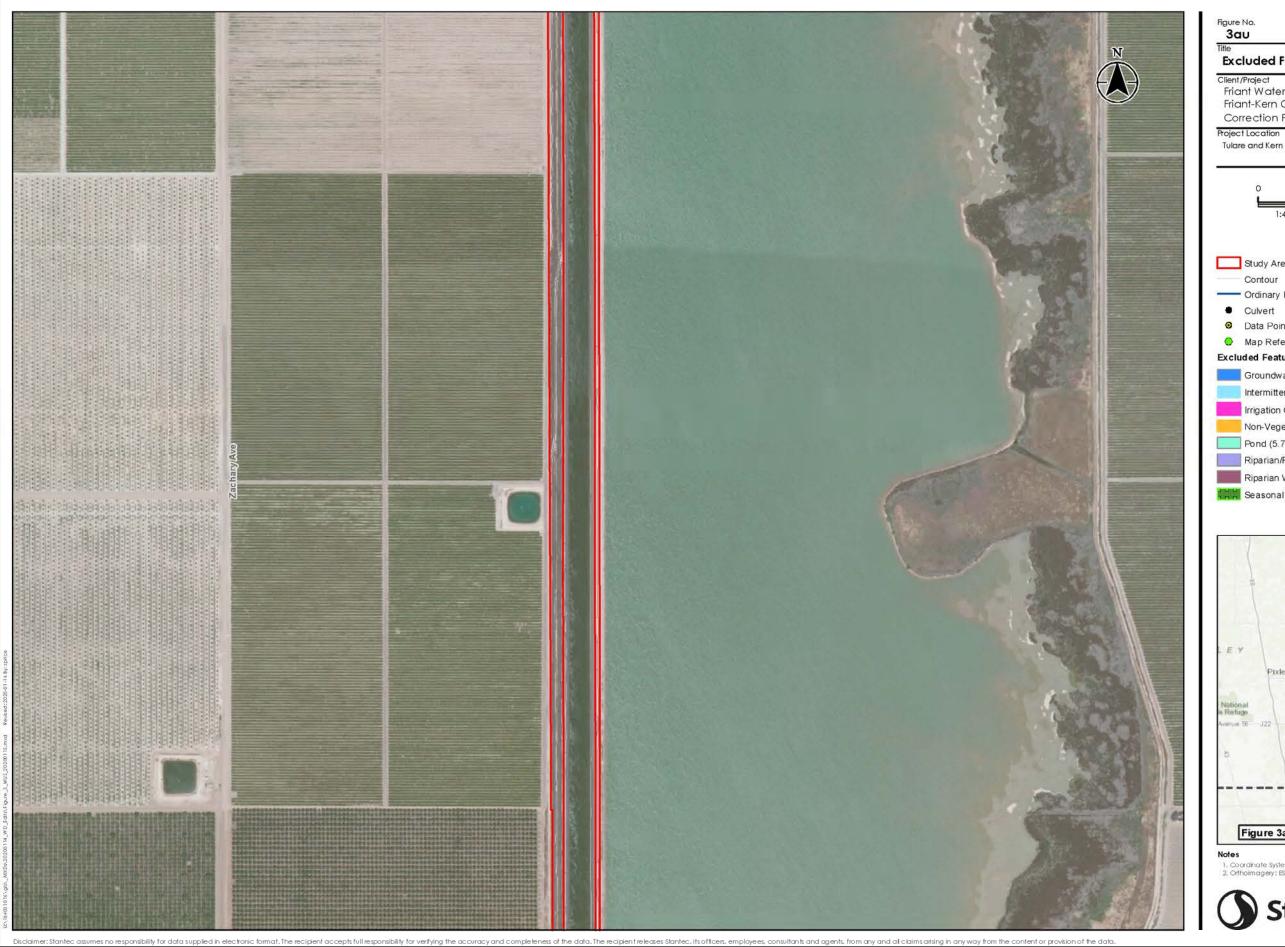


#### Note

Coordinate System: NA D 1 983 State Plane California IV FIPS 0 404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 201 9







3au

## **Excluded Features**

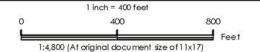
Friant Water Authority Friant-Kern Canal Middle Reach Capacity

Correction Project

184031016

Tulare and Kern Counties, California

Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15



Study Area (2,249.49 acres)

Contour

Ordinary High Water Mark

Culvert

Data Point

Map Reference Point

#### **Excluded Features**

Groundwater Recharge Basin (20.460 acres)

Intermittent Stream (2.114 acres, 2,294 linear feet)

Irrigation Canal (4.650 acres, 12,229 linear feet)

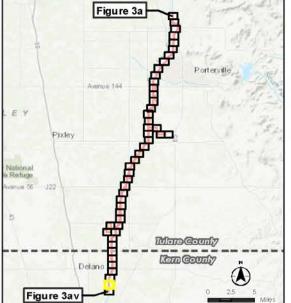
Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)

Riparian/Fresh Emergent Wetland Complex (0.011 acre)

Riparian Wetland (1.874 acres)

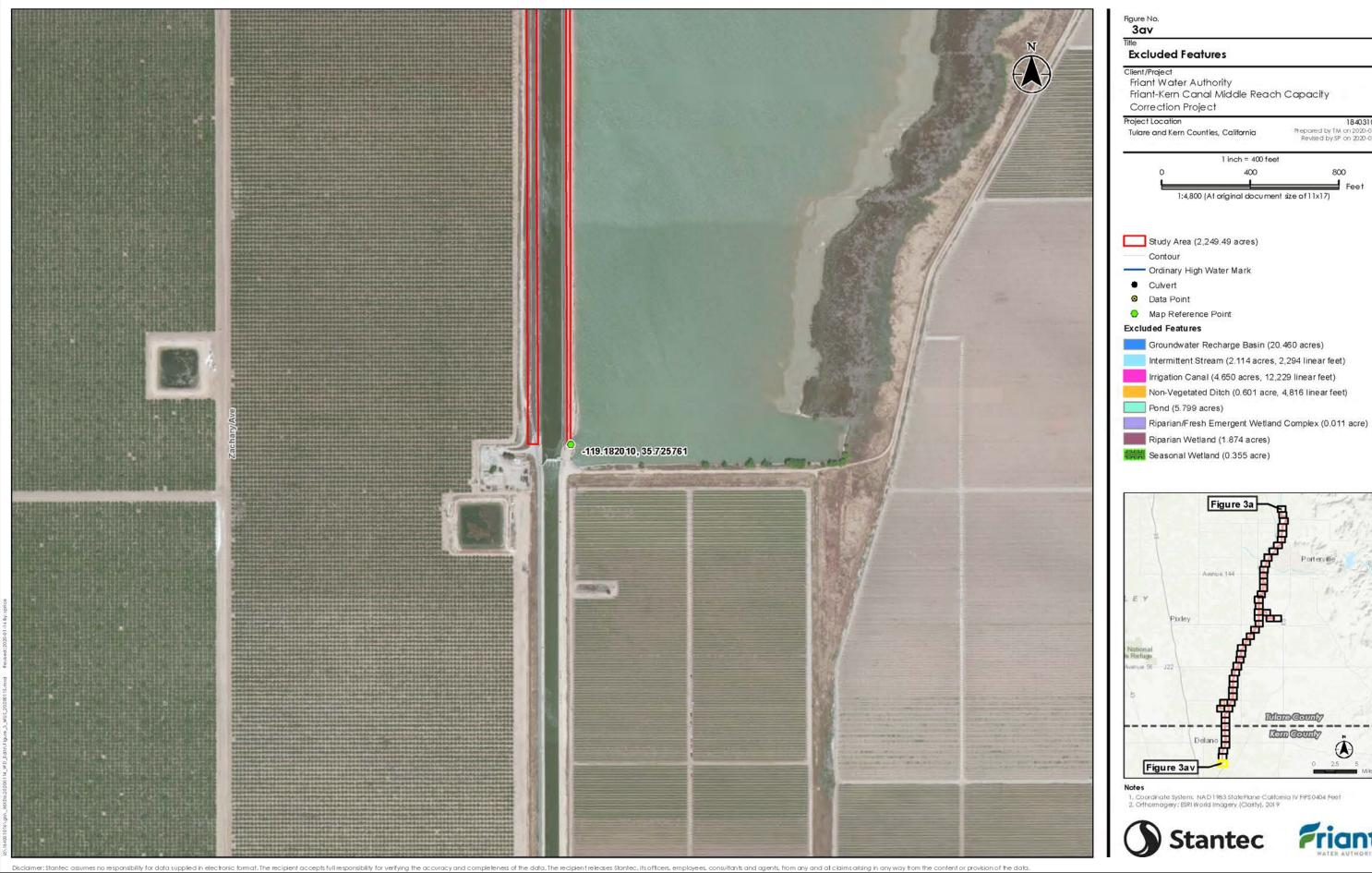
Seasonal Wetland (0.355 acre)



Coordinate System: NAD 1983 State Plane California IV FIPS 0.404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019



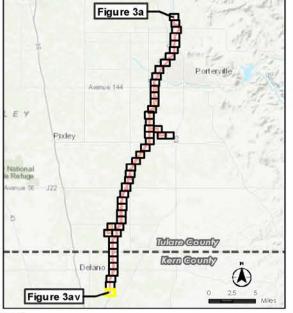




## Figure No. 3av **Excluded Features** Friant Water Authority Friant-Kern Canal Middle Reach Capacity Correction Project Project Location 184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-15 Tulare and Kern Counties, California 1 inch = 400 feet 800 1:4,800 (At original document size of 11x17) Study Area (2,249.49 acres) Contour Ordinary High Water Mark Culvert Data Point Map Reference Point **Excluded Features** Groundwater Recharge Basin (20.460 acres) Intermittent Stream (2.114 acres, 2,294 linear feet) Irrigation Canal (4.650 acres, 12,229 linear feet)

Non-Vegetated Ditch (0.601 acre, 4,816 linear feet)

Pond (5.799 acres)



1. Coordinate System: NAD 1983 State Plane California IV FIPS 0404 Feet 2. Orthoimagery: ESRI World Imagery (Clarity), 2019





	E	cluded Fea	tures				
ID	Туре	Cowardin	Longitude (DD)	Latitude (DD)	Area (ac)	Length (ft)	Width (ft)
gan.			440 0000 45	26.030163	2 000		
GRB1 GRB2	Groundwater Recharge Basin	L2US L2US	-119.089545 -119.091220	36.070457 36.057747	2.080 4.128		
GRB3	Groundwater Recharge Basin				8,461		
GRB4	Groundwater Recharge Basin	PUB RP2EM	-119.096421 -119.105666	36.027676 35.980841	5.791	-	
GRD4	Groundwater Recharge Basin Subtotal	REZEM	-119,105666	35.980841	20.460		
	300,0131				20.400		
IS1	Intermittent Stream	R4SB	-119.106475	35.977875	1.079	653	20-186
IS2	Intermittent Stream	R4SB	-119.152894	35.843730	0.059	251	9-15
IS3	Intermittent Stream	R4SB	-119.162532	35.843767	0.172	449	9-38
154	Internutient Stream	R458	-119 151395	35 843614	0.804	941	18-103
	Subtotal				Z.114	2,294	
	31334						
IC1	Irrigation Canal	R4SB	-119.058672	36.116219	0.185	271	23-33
IC2	Irrigation Canal	R4SB	-119.075284	36.089404	0.005	37	6
IC3	Irrigation Canal	R4SB	-119.075263	36.089301	0.009	39	2
IC4	Irrigation Canal	R4SB	-119.074994	36.088712	0.075	219	15
IC5	Irrigation Canal	R4SB	-119.087104	36.075461	0.060	215	8-19
IC6	Irrigation Canal	R/ISB	-119.087915	36.075614	0.016	77	7-11
IC7	Irrigation Canal	R4SB	-119.089616	36.072460	0.039	92	18
IC8	Irrigation Canal	R4SB	-119.093973	36.054357	0.037	77	9-26
IC9	Irrigation Canal	R4SB	-119.093195	36.053987	0.083	142	9-31
IC10	Irrigation Canal	R4SB	-119.097563	36.058508	0.029	84	7-29
IC11	Irrigation Canal	R4SB	-119.097539	36.054893	1.573	2,403	27
IC12	Irrigation Canal	R4SB	-119.097511	36.051396	0.080	87	29-71
IC13	Irrigation Canal	R4SB	-119.093346	36.051364	0.818	1,641	21
IC14	Irrigation Canal	R4SB	-119.093223	36.050617	0.078	315	13
IC15	Irrigation Canal	R4SB	-119.093358	36.047138	0.572	2,205	13
IC16	Irrigation Canal	R4SB	-119.095308	36.043991	0.215	1,030	6-45
IC17	Irrigation Canal	R4SB	-119.097711	36.042380	0.288	1,327	8
IC18	Irrigation Canal	R4SB	-119.097795	36.039739	0.091	522	2-16
IC19	Irrigation Canal	R4SB	-119.097933	36.035011	0.171	1,188	6
IC20	Irrigation Canal	R4SB	-119.097942	36.033058	0.010	25	18
C21	Irrigation Canal	RASH	119 105/78	35 979141	0.215	233	218
	Subtotal				4.650	12,229	
_							
NVD1	Non-Vegetated Ditch	R4SB	-119.057909	36.156778	0.015	352	2
NVD2	Non-Vegetated Ditch	R4SB	-119.057870	36.165629	0.027	585	2
NVD3	Non-Vegetated Ditch	R4SB	-119.095491	36.026552	0.481	2,542	6-12
NVD4	Non-Vegetated Ditch	R4SB	-119.096906	36.024931	0.023	404	2.5
NVD5	Non-Vegetated Ditch	R45B	-119.097185	36.023401	0.054	933	2.5
	Subtotal				0.601	4.016	
PONE	Ponc	LOB	-119.054041	36.150310	0.011	-	-
PON2	Ponc	PUB	-119.049006	36.144792	0.018		-
PON3	Pond	PUB	-119.056430	36.127339	0.005	H	90
PON4	Pond	PUB	-119.002367	36.054466	0.429	(4)	
PON5	Ponc	PEM	-119.096677	36.055603	0.087		
PONS	Pond	PEM	-119,096/52	36.031350	0,315		1
PON7	Pond	PUB	-119.097080	36.025109	0.287		54.
PONE	Pone	PEM	-119.112790	35.960401	0.011	-	***
PON9	Pond	PUB	-119/145141	35.922130	1.829	H	×
PON10	Pond	PUB	+119.142931	35.920996	0.091	- 11	6
PUNII	Pond	PUB	119.144047	35 920088	0.005	-	-
PON12	Pond	PUR	-119 147799	35,907662	0.710	+	5
PON13	Pond	PUB	-119.158117	35 877150	0.098	-	-
PON14	Pond	PEM	-119.177603	35.775491	0.004	-	500
PON15	Pond	PUB	-119.094463	36.054002	0.007	-4	-
PUN16	Pond	PEM	119.184055	35.827421	2,391		
	Subtotal				5.799		
		- 1207	- 122-7-5-7	P. Carlotte .	-		
W/FEW1	Riparian/Fresh Emergent Wetland Complex	RP155	-119.106638	35.977735	0.011		- 5
	Subtotal				0.011		
		*****		WE WITH 12			
		RP255	-119 105686	35 978399	1.113		
RW:	Riparian Welland		-119.105898	35.977978	0.141	-	-
RW2	Riparian Wetland	RPIFO					
RW2 RW3	Riparian Wetland Riparian Wetland	RP1FO	-119.105728	35,977773	0.442		2
RW2 RW3 RW4	Riparian Wetland Riparian Wetland Riparian Wetland	RP1FO RP1EM	-119.105728 -119.162525	35 843800	0.046	-	2
RW2 RW3 RW4 RW5	Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland	RP1FO RP1EM RP1EM	-119.105728 -119.162525 -119.162530	35 843800 35 843721	0.046		2
RW2 RW3 RW4 RW5 RW6	Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland	RP1FO RP1EM RP1EM RP1FO	-119.105728 -119.162525 -119.162530 -119.162140	35 843800 35 843721 35 843688	0.046 0.088 0.015	-	- C
RW2 RW3 RW4 RW5	Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland	RP1FO RP1EM RP1EM	-119.105728 -119.162525 -119.162530	35 843800 35 843721	0.046 0.088 0.015 0.029		2 0 0
RW2 RW3 RW4 RW5 RW6	Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland	RP1FO RP1EM RP1EM RP1FO	-119.105728 -119.162525 -119.162530 -119.162140	35 843800 35 843721 35 843688	0.046 0.088 0.015	-	_
RW2 RW3 RW4 RW5 RW6 RW7	Ripanan Wetland Ripanan Wetland Ripanan Wetland Ripanan Wetland Ripanan Wetland Ripanan Wetland	RP1FO RP1EM RP1EM RP1FO RP1SS	-119.105728 -119.162525 -119.162530 -119.162140 -119.160365	35 843800 35 843721 35 843688 35 843515	0.046 0.088 0.015 0.029 1.874	-	_
RW2 RW3 RW4 RW5 RW6	Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Riparian Wetland Subtotal	RP1FO RP1EM RP1EM RP1FO	-119.105728 -119.162525 -119.162530 -119.162140	35 843800 35 843721 35 843688	0.046 0.088 0.015 0.028 1.874		_
RW2 RW3 RW4 RW5 RW6 RW7	Ripanan Wetland Ripanan Wetland Ripanan Wetland Ripanan Wetland Ripanan Wetland Ripanan Wetland	RP1FO RP1EM RP1EM RP1FO RP1SS	-119.105728 -119.162525 -119.162530 -119.162140 -119.160365	35 843800 35 843721 35 843688 35 843515	0.046 0.088 0.015 0.029 1.874		_

Figure No. 3-Table

### **Excluded Features**

Client/Project

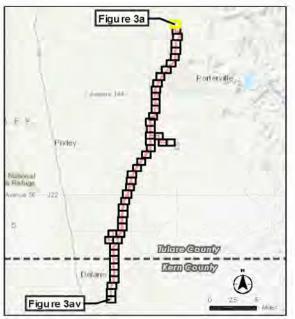
Friant Water Authority

Friant-Kern Canal Middle Reach Capacity

Correction Project Project Location

Tulare and Kern Counties, California

184031016 Prepared by TM on 2020-01-02 Revised by SP on 2020-01-16



Coordinate System; NAD 1983 state Plane California IV FIFS 0404 Feet
 Orthoimagery: ESRI World Imagery (Clarity), 2019







Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and at claims arising in any way from the content or provision of the data.

## Appendix B ROUTINE WETLAND DETERMINATION DATA FORMS

	DATA FORM -Arid West Region
v.110918 Project/Site: Friant-Kern Canal City/	County: Tulare County Sampling Date: 9/30/2019
Applicant/Owner: Friant State: California Investigator(s): G. Youngblood, C. Femino	Sampling Point 1 Feature ID: Upland  Section, Township, Range: Sec. 28, T20S, R27E
	Relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): Mediterranean California (ILat: 36.162844	Long: -119.058072 Datum: NAD83
Soil Map Unit Name: San Joaquin loam, 0 to 2 percent slopes (154)	NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year	
Are Vegetation $N$ , Soil $N$ , or Hydrology $N$ significantly distur-	`` ' ' '
Are Vegetation N, Soil N, or Hydrology N naturally problems	
SUMMARY OF FINDINGS – Attach site map showing sampling poin	
Hydrophytic Vegetation Present? Yes No x	the Compled Area
Hydric Soil Drecent?	the Sampled Area Yes No x
Wetland Hydrology Present? Yes x No	
Evaluation of features designated "Other Waters"  Characteristics: Type: Width:	Substrate:
,, <u> </u>	cour OHWM Mapped
Feature Designation: Perennial Intermi	
Natural Drainage Artificial Drain	age Navigable Water
Remarks: Depression which receives outflow from canal and dissipat	es to ground. May also pond from rainfall, but does not support
vegetation.	
VEGETATION – Use scientific names of plants. List all species in the	ne plot. MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev. Species Name Absolute Dominant	Indicator Dominance Test worksheet:
Tree Stratum (Plot size: ) % Cover Species?	Status Number of Dominant Species
1	That Are OBL, FACW, or FAC:(A)
2	
3	Total Number of Dominant
4	Species Across All Strata: 0 (B)
0 = Total Cover	
Sapling/Shrub Stratum (Plot size:)  1	Percent of Dominant Species
	That Are OBL, FACW, or FAC: #DIV/0! (A/B)
	Prevalence Index worksheet:
3	Total % Cover of: Multiply by:  OBL species 0 x 1 = 0
5	FACW species $0 \times 2 = 0$
0 = Total Cover	· ·
Herb Stratum (Plot size:	FACU species $0 \times 4 = 0$
1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	Column Totals: 0 (A) 0 (B)
3	Prevalence Index = B/A =
4	Hydrophytic Vegetation Indicators:
5	1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50%
6	$N_0$ 3 - Prevalence Index is $\le 3.0^1$
8	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9	data in Remarks or on a separate sheet)
10	5 - Wetland Non-Vascular Plants <sup>1</sup>
	6 - Problematic Hydrophytic Vegetation (Explain)
0 = Total Cover	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size: )	be present unless disturbed or problematic.
1	
2	
0 = Total Cover	
	Hydrophytic Vegetation Present?
% Bare Ground in Herb 25 % Cover of Biotic 75	
	Yes No X
	169 NO A
Remarks: No vegetation present	

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)  Doph Matrix Redox Features  **Location: PL=Pore Lining, M=Matrix, Planting Features  **Indicators for Problematic Hydric Soils  Historal (A1)  Historal (A1)  Historal (A1)  Sundy Redox (S5)  Historal (A2)  Sundy Medox (S6)  Historal (A2)  Sundy Redox (S6)  Historal (A2)  Sundy Redox (S6)  Historal (A2)  Sundy Redox (S6)  Redox Historal (A2)  Sundy Redox Matrix (F2)  Redox Historal (A2)  Redox Dark Sunface (A2)  To Mukok (A9) (LRR C)  Depleted Belox Martix (F2)  Thick Dark Sunface (A12)  Sandy Medox Mineral (S1)  Sandy Medox Mineral (S1)  Vernal Pools (F9)  **Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Planting Features  Redox Redox Peressions (F8)  **Indicators (Present):  Type:  Poptin (Riffresp:  Poptin (Riffresp:  Poptin (Riffresp:  Primary Indicators (minimum of one required; check all that apply)  Water Marise (S1) (Norniverne)  Sunface Water (A1)  High Water Table (A2)  Sunface (A12)  Saturation (A13)  Aquatic Invertebrates (B13)  Hydro Soil Present?  Pressure (A3)  Redox Redox Peressions (F8)  **Indicators (minimum of one required; check all that apply)  Water Marise (S1) (Rifferine)  Primary Indicators (minimum of one required; check all that apply)  Water Marise (S1) (Rifferine)  Primary Indicators (minimum of one required; check all that apply)  Water Marise (S1) (Rifferine)  Primary Indicators (minimum of one required; check all that apply)  Primary Indicators (minimum of one required; check all that apply)  Primary Indicators (minimum of one required; check all that apply)  Primary Indicators (Minimum of one required;	SOIL			Samp	oling Point 1
Type: C=Concentration, D=Deplation, RM=Reducal Matrix, CS=Coverad or Coated Sand Grains.  Type: C=Concentration, D=Deplation, RM=Reducal Matrix, CS=Coverad or Coated Sand Grains.  Tecation: PL=Pore Lining, M=Matrix, Pydric Soil indicators: (Applicable to all LRRs, unless otherwise noted.) Histosoi (A1) Histosoi (A1) Histosoi (A2) Sandy Redox (S5) Biack Histo (A3) Sandy Redox (S5) I com Muck (A9) (LRR C) Stratefied Layers (A5) (LRR C) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F2) Reduced Vertic (F8) Red Parent Material (F12) Redox Dark Surface (F6) Opher (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Dark Surface (F9) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Micky Mineral (S1) Vernal Pools (F9)  "Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  **Hydrogon Surface (Matrix (S1) Hydro Soil Present) Hydro Soil Presenty Primary Indicators (minimum of one required; check all that apply) Water Marks (B1) (Riverine) Diff (B4) Water Table (A2) X Biotic Crust (B12) Water Marks (B1) (Riverine) Diff (Deposits (B2) (Riverine)	Profile Description: (Describe to the	e depth needed to document the indic	ator or confirm	he absence of inc	licators.)
Type: C-Concentration, D-Depletion, RM-Raduced Matrix, CS-Coverad or Coaled Sand Grains.  **Location: PL=Pore Lining, M-Matrix  **Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histic Epipedon (A2)  Black Histic (A3)  Hydrogen Surfise (A4)  Loarny Mucky Mineral (F1)  Pydrogen Surfise (A4)  Loarny Gleyed Matrix (F2)  Red Parent Material (TF2)  Tom Muck (A9) (LRR C)  Depleted Below Dark Surface (A11)  Depleted Dark Surface (F7)  Thick Dark Surface (A22)  Sandy Mucky Mineral (S1)  Vernal Pools (F9)  Thick Dark Surface (A21)  Sandy Mucky Mineral (S1)  Vernal Pools (F9)  **Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.*  **Restrictive Layer: (A5)  **Remarks: No soils pit potential utilities  **YPROLOGY**  **Wetland Hydrology Indicators:  **Wetland Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Primary Indicators (Indinnum of one required: check all that apply)  Vestand Hydrology Indicators:  **Vestand Hydrology Indicators:  **Vestand Hydrology Present?**  Vestand Hydrology Present?  Vestand Hydrology Present?  Vestand Hydrology Present?  Vestand Hyd	Depth Matrix	Redox Features	3		
Histosol (A1) Histosol (A2) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Hydrogen Sulfide (A4) H	(inches) Color (moist)	% Color (moist) %	Type <sup>1</sup> Loc <sup>2</sup>	Texture	Remarks
Histosol (A1)  Histosol (A2)  Black Histic Epipedon (A2)  Sardy Redox (S5)  Black Histic (A3)  Hydrogen Sulfide (A4)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Tom Muck (A9) (LRR C)  Depleted Matrix (F2)  Depleted Matrix (F3)  Red Parent Material (TF2)  Thick Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Below Dark Surface (A11)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F2)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Wetland Hydrology Indicators:  Hydric Soil Present?  Type:  Uepth (inches):  Wetland Hydrology Indicators:  **Yes No**  **Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Salt Crust (B12)  Salt Crust (B12)  Salt Crust (B12)  Salt Crust (B13)  Water Marks (B1) (Riverine)  Salt Crust (B12)  Salt Crust (B12)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)		<u> </u>			
ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Histic Epipedon (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F2) To muck (A9) (LRR C) Depleted Matrix (F2) Depleted Matrix (F2) Sandy Redox (A5) Loamy Mucky Mineral (F1) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Mucky Mineral (S1) Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Salt Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Types Surface (A12) Sulface Water (A1) Salt Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Drainage Patterns (B10) Drainage Patterns (B10) Drainage Patterns (B10) Sulface Soli Cracks (B6) Saturation (Visible on Aerial Imagery (B7) Think Drain in Tilled Solis (C6) Inundation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Vest No Depth (inches): Water Table (C2) Saturation Present? Yes No Depth (inches): Water Table (R1) Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R3) Water Marks					
ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Straffied Layers (A5) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Straffied Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F2) Thick Dark Surface (A12) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (F1) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Search (F8) Sandy Mucky Mineral (S1) Search (F8) Search (F8) Search (F8) Search (F8) Some of the dependent of the search o					
ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Histic Epipedon (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F2) To muck (A9) (LRR C) Depleted Matrix (F2) Depleted Matrix (F2) Sandy Redox (A5) Loamy Mucky Mineral (F1) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Mucky Mineral (S1) Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Salt Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Types Surface (A12) Sulface Water (A1) Salt Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Drainage Patterns (B10) Drainage Patterns (B10) Drainage Patterns (B10) Sulface Soli Cracks (B6) Saturation (Visible on Aerial Imagery (B7) Think Drain in Tilled Solis (C6) Inundation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Vest No Depth (inches): Water Table (C2) Saturation Present? Yes No Depth (inches): Water Table (R1) Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R3) Water Marks					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (					
Histosol (A1)  Histosol (A2)  Black Histic Epipedon (A2)  Sardy Redox (S5)  Black Histic (A3)  Hydrogen Sulfide (A4)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Depleted Matrix (F2)  Depleted Matrix (F2)  Depleted Blow Dark Surface (A12)  Sandy Medox (A5)  Sandy Medox (A5)  Hydrogen Sulfide (A4)  Loamy Gleyed Matrix (F2)  Depleted Matrix (F2)  Depleted Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Dark Surface (A12)  Sandy Mucky Mineral (F1)  Sandy Mucky Mineral (F1)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Wernal Pools (F9)  Popleted Selow Dark Surface (A12)  Sandy Gleyed Matrix (S4)  Wetland Hydrology Indicators:  Water Marks (B1) (Indirection Indicators (B13)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Indirection Indicators (B3)  Drift Deposits (B3)  D					
Histosol (A1)  Histosol (A2)  Black Histic Epipedon (A2)  Sardy Redox (S5)  Black Histic (A3)  Hydrogen Sulfide (A4)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Tom Muck (A9) (LRR C)  Depleted Matrix (F2)  Depleted Matrix (F3)  Red Parent Material (TF2)  Thick Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Below Dark Surface (A11)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F2)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Wetland Hydrology Indicators:  Hydric Soil Present?  Type:  Uepth (inches):  Wetland Hydrology Indicators:  **Yes No**  **Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Salt Crust (B12)  Salt Crust (B12)  Salt Crust (B12)  Salt Crust (B13)  Water Marks (B1) (Riverine)  Salt Crust (B12)  Salt Crust (B12)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)					
Histosol (A1)  Histosol (A2)  Black Histic Epipedon (A2)  Sardy Redox (S5)  Black Histic (A3)  Hydrogen Sulfide (A4)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Depleted Matrix (F2)  Depleted Matrix (F2)  Depleted Blow Dark Surface (A12)  Sandy Medox (A5)  Sandy Medox (A5)  Hydrogen Sulfide (A4)  Loamy Gleyed Matrix (F2)  Depleted Matrix (F2)  Depleted Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Dark Surface (A12)  Sandy Mucky Mineral (F1)  Sandy Mucky Mineral (F1)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Wernal Pools (F9)  Popleted Selow Dark Surface (A12)  Sandy Gleyed Matrix (S4)  Wetland Hydrology Indicators:  Water Marks (B1) (Indirection Indicators (B13)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Indirection Indicators (B3)  Drift Deposits (B3)  D					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (					
ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Histic Epipedon (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F2) To muck (A9) (LRR C) Depleted Matrix (F2) Depleted Matrix (F2) Sandy Redox (A5) Loamy Mucky Mineral (F1) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Mucky Mineral (S1) Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Salt Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Types Surface (A12) Sulface Water (A1) Salt Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Drainage Patterns (B10) Drainage Patterns (B10) Drainage Patterns (B10) Sulface Soli Cracks (B6) Saturation (Visible on Aerial Imagery (B7) Think Drain in Tilled Solis (C6) Inundation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Vest No Depth (inches): Water Table (C2) Saturation Present? Yes No Depth (inches): Water Table (R1) Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R3) Water Marks					
ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Histic Epipedon (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F2) To muck (A9) (LRR C) Depleted Matrix (F2) Depleted Matrix (F2) Sandy Redox (A5) Loamy Mucky Mineral (F1) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Mucky Mineral (S1) Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Salt Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Types Surface (A12) Sulface Water (A1) Salt Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) (Riverine) Drainage Patterns (B10) Drainage Patterns (B10) Drainage Patterns (B10) Sulface Soli Cracks (B6) Saturation (Visible on Aerial Imagery (B7) Think Drain in Tilled Solis (C6) Inundation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Water Table (C2) Saturation Visible on Aerial Imagery (B7) Think Drain Remarks) Wetland Hydrology Present? Vest No Depth (inches): Water Table (C2) Saturation Present? Yes No Depth (inches): Water Table (R1) Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R2) Saturation Present? Yes No Depth (inches): Water Table (R3) Water Marks					
Histosol (A1)  Histosol (A2)  Black Histic Epipedon (A2)  Sardy Redox (S5)  Black Histic (A3)  Hydrogen Sulfide (A4)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Depleted Matrix (F2)  Depleted Matrix (F2)  Depleted Blow Dark Surface (A12)  Sandy Medox (A5)  Sandy Medox (A5)  Hydrogen Sulfide (A4)  Loamy Gleyed Matrix (F2)  Depleted Matrix (F2)  Depleted Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Dark Surface (A12)  Sandy Mucky Mineral (F1)  Sandy Mucky Mineral (F1)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Wernal Pools (F9)  Popleted Selow Dark Surface (A12)  Sandy Gleyed Matrix (S4)  Wetland Hydrology Indicators:  Water Marks (B1) (Indirection Indicators (B13)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B3) (Indirection Indicators (B3)  Drift Deposits (B3)  D					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histosol (A2) Stripped Matrix (S6) Histosol (A2) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Loamy Mucky Mineral (F1) Thydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Depleted Matrix (F3) Red Parent Material (TF2) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Syraphic Layer (if present): Type: Depth (inches): Wetland Hydrology Indicators: Wetland Hydrology Present?  Water Marks (B1) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Solface Soli Cracks (B6) Indicators for hydrophytic vegetation and wetland hydrology Present?  Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (Inches): Wetland Hydrology Present?  Yes No Depth (	Type: C-Concentration, D-Depletion, RM-	-Reduced Matrix, CS-Covered or Coate	ed Sand Grains	1 ocation: PI -	Pore Lining M-Matrix
Histosol (A1)  Sandy Redox (S5)  Histic Epipedon (A2)  Stripped Matrix (S6)  Black Histic (A3)  Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  To m Muck (A9) (LRR C)  Depleted Matrix (F2)  Reduced Vertic (F18)  Red Parent Material (TF2)  To m Muck (A9) (LRR D)  Redox Dark Surface (F6)  Depleted Below Dark Surface (A11)  Depleted Dark Surface (F7)  Thick Dark Surface (A12)  Redox Depressions (F8)  Sandy Mucky Mineral (S1)  Sandy Bucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Wetal Pools (F9)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Present?  Type:  Depth (mches):  Yes No  Indicators (Problematic Mydrology Indicators (2 or more required)  Water Marks (B1) (Riverine)  Sediment Deposits (B2) (Riverine)  Sediment Deposits (B2) (Riverine)  Sediment Deposits (B2) (Riverine)  Sediment Deposits (B2) (Riverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B3) (Riverine)  Drift Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Sediment Deposits (B3) (Nonriverine)  Sediment Deposits (B3) (Nonriverine)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C3)  Shallow Aquitard (D3)  FAC-Neutral Test (D5)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Wetland Hydrology Present?  Yes No Depth (inches):  Verall Pool Presence of Reduced fron (C4)  Saturation (Visible on Aerial Imagery (P7)  Thin Muck Storace of Reduced fron (C4)  FAC-Neutral Test (D5)		•	od Odrid Ordino.	Location: 1 L=	Toro Eliting, W-Matrix.
Histic Epipedon (A2)  Black Histic (A3)  Loarny Mucky Mineral (F1)  Loarny Mucky Mineral (F1)  Lydrogen Sulfide (A4)  Loarny Mucky Mineral (F1)  Stratified Layers (A5) (LRR C)  Depleted Matrix (F2)  Reduced Vertic (F18)  Red Parent Material (TF2)  Other (Explain in Remarks)  Depleted Bolw Dark Surface (A11)  Depleted Bolw Dark Surface (A12)  Redox Depressions (F8)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Redox Depressions (F8)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Restrictive Layer (if present):  Type:  Depth (inches):  Wetland Hydrology Indicators:  Wetland Hydrology Indicators:  Wetland Lydrology Indicators:  Wetland Hydrology Indicators:  Water (A1)  Salt Crust (B11)  Salt Crust (B12)  Salt Crust (B11)  Sediment Deposits (B2) (Riverine)  High Water Table (A2)  Salt Crust (B12)  Salt Crust (B12)  Salturation (A3)  Aquatic Invertebrates (B13)  Water Marks (B1) (Riverine)  Drift Deposits (B2) (Nonriverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B2) (Nonriverine)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C6)  FAC-Neutral Test (D5)  Wetland Hydrology Present?  Yes  No  Depth (inches):  Wetland Hydrology Present?  Ves  No  Depth (inches):  Wetland Hydrology Present?  Yes  No  Depth (inches):  Wetland Hydrology Present?  Yes  No  Depth (inches):  Wetland Hydrology Present?  Yes  No  Depth (inches):  Yes  No  Depth (inches):  Ves  Wetland Hydrology Present?  Yes  No  Depth (inches):  Yes  No  Dep		•		Indicators for D	oblematic Hydric Scile
Black Histic (A3)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4)  Loamy Gleyed Matrix (F2)  Reduced Vertic (F18)  Reduced Vertic (F1)  Reduced Vertic (F18)  Reduced Vertic (F18)  Reduced Vertic (F1)  Reduced Vertic (F1)  Reduced Vertic (F1)  Reduced Vertic (F1)					•
Hydrogen Sulfide (A4) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Wernal Pools (F9) Sandy Gleyed Matrix (S4) Wernal Pools (F9) Sandy Gleyed Matrix (S4)  Redox Depressions (F8) Sandy Gleyed Matrix (S4)  Redox Depressions (F8)  Sandy Gleyed Matrix (S4)  Redox Depressions (F8)  Sandy Gleyed Matrix (S4)  Redox Depressions (F8)  Sandy Gleyed Matrix (S4)  Redox Depressions (F8)  Sandy Gleyed Matrix (S4)  Redox Depressions (F8)  Sindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Remarks: No soils pit potential utilities  Recondary Indicators (2 or more required)  Water Marks (B1) (Riverine)  Sediment Deposits (B2) (Riverine)  Sediment Deposits (B2) (Riverine)  Presence (B12)  Drift Deposits (B3) (Riverine)  Presence of Reduced (C1)  Dry-Season Water Table (C2)  Craylish Burrows (C8)  Saturation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  FAC-Neutral Test (D5)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Redox Depth (inches):  Vestardace Water Present?  Yes No Depth (inches):  Vestardace Water Res					, , ,
Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Red Parent Material (TF2)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Other (Explain in Remarks)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Versiricitive Layer (if present):  Type: Hydric Soil Present?  Type: Permarks: No soils pit potential utilities  Primary Indicators (minimum of one required; check all that apply) Water Marks (B1) (Riverine)  Surface Water (A1) Salt Crust (B11) Sediment Deposits (B2) (Riverine)  High Water Table (A2) X Biotic Crust (B12) Drift Deposits (B3) (Riverine)  Saturation (A3) Aquatic Invertebrates (B13) Drainage Patterns (B10)  Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine) Presence of Reduced fron (C4) Saturation Nisible on Aerial Imagery Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Shallow Aquitard (D3)  Water-Stained Leaves (B9) Other (Explain in Remarks)  Presence of Reduced Iron (C4) Shallow Aquitard (D3) FAC-Neutral Test (D5)  Water-Stained Leaves (B9) Other (Explain in Remarks)  Presence Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		<del></del> ' ' ' '			, , ,
1 cm Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Below Dark Surface (A12)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Restrictive Layer (if present): Type: Depth (inches):  Wetland Hydrology Indicators:  Wetland Hydrology Indicators (inimimum of one required; check all that apply)  Surface Water (A1)  Saturation (A3)  Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Aquatic Invertebrates (B13)  Dirth Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Presence of Reduced fron (C4)  Surface Soil Cracks (B6)  Dirth Deposits (B3) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Dirth Deposits (B3) (Nonriverine)  Sediment Deposits (B3) (Riverine)  Dirth Deposits (B3) (Nonriverine)  Sediment Deposits (B3) (Nonriverine)  S	, , ,				, ,
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Restrictive Layer (if present): Type: Depth (inches): Remarks: No soils pit potential utilities    Primary Indicators (minimum of one required; check all that apply)	, , , , , ,				, ,
Thick Dark Surface (A12)	1 cm Muck (A9) ( <b>LRR D</b> )	Redox Dark Surface (F6)		Other (Expla	ain in Remarks)
Sandy Mucky Mineral (S1)	Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)			
Sandy Gleyed Matrix (S4)  Restrictive Layer (if present): Type: Depth (inches): Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B3) Friesdows (B3) Friesdow	Thick Dark Surface (A12)	Redox Depressions (F8)			
Sandy Gleyed Matrix (S4)  Restrictive Layer (if present): Type: Depth (inches):  Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Hydrogen Sulfide Odor (C1) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Water Table Present? Water Table (R2) Surface Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Wetland Hydrology Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (2 or more required)  Water Marks (B1) (Riverine) Secondary Indicators (B1) Secondary Indicators (B1)  Water Marks (B1) (Riverine) Secondary Indicators (B1) Secondary Indicators (B1)  Water Marks (B1) (Riverine)	Sandy Mucky Mineral (S1)	Vernal Pools (F9)	3Indicators of h	vdrophytic vegetati	on and wetland hydrology
Restrictive Layer (if present):	Sandy Gleved Matrix (S4)	<del></del>			, ,,
Type: Depth (inches): Remarks: No soils pit potential utilities    APPDROLOGY   Wetland Hydrology Indicators:   Primary Indicators (minimum of one required; check all that apply)   Water Marks (B1) (Riverine)			1		
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) Sufface Water (A2) Saturation (A3) Saturation (A3) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Dirit Deposits (B2) (Nonriverine) Dirit Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface Water Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	,			•	
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Salt Crust (B11) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Fresence of Reduced Iron (C4) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Other (Explain in Remarks)  Wetland Hydrology Present? Yes No Depth (inches): Seturation Present? Yes No Depth (inches): (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Depth (inches):			Yes No	
Wetland Hydrology Indicators:  Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Satt Crust (B11)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Drift Deposits (B3) (Riverine)  Drainage Patterns (B10)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Saturation (C4)  Saturation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present?  Water Table Present?  Yes No Depth (inches):  Saturation Present?  Yes No Depth (inches):  Yes X No Depth (includes capillary fringe)	Remarks: No soils pit potential utilities				
Wetland Hydrology Indicators:  Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Satt Crust (B11)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B3) (Riverine)  Drainage Patterns (B10)  Drainage Patterns (B10)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Oxidized Rhizospheres along Living Roots (C3)  Drift Deposits (B3) (Nonriverine)  Presence of Reduced Iron (C4)  Saturation Visible on Aerial Imagery  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C6)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present? Yes No Depth (inches):  Saturation Present? Yes No Depth (i					
Wetland Hydrology Indicators:  Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Satt Crust (B11)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Drift Deposits (B3) (Riverine)  Drainage Patterns (B10)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Saturation (C4)  Saturation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present?  Water Table Present?  Yes No Depth (inches):  Saturation Present?  Yes No Depth (inches):  Yes X No Depth (includes capillary fringe)					
Wetland Hydrology Indicators:  Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Satt Crust (B11)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Drift Deposits (B3) (Riverine)  Drainage Patterns (B10)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Dry-Season Water Table (C2)  Saturation (C4)  Saturation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present?  Water Table Present?  Yes No Depth (inches):  Saturation Present?  Yes No Depth (inches):  Yes X No Depth (includes capillary fringe)					
Primary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Riverine)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Primary Indicators (minimum of one required; check all that apply)  Mater Table (A2)  Saturation (A3)  Water Marks (B1)  Aquatic Invertebrates (B13)  Drainage Patterns (B10)  Dry-Season Water Table (C2)  Sediment Deposits (B2) (Nonriverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present? Yes No Depth (inches):  Water Table Present? Yes No Depth (inches):  Wetland Hydrology Present?  Yes No Depth (inches):  Yes X No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	HYDROLOGY				
Surface Water (A1) Salt Crust (B11) Sediment Deposits (B2) (Riverine)  Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Riverine)  Sediment Deposits (B3) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B2) (Nonriverine) Sediment Deposits (B3) (Nonriverine) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface Water Present? Yes No Depth (inches): Surface Water Table Present? Yes No Depth (inches): Surface Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Surface Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Wetland Hydrology Indicators:		Se		
High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B2) (Nonriverine)  Drift Deposits (B2) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B2) (Nonriverine)  Drift Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery  Saturation Visible on Aerial Imagery  (B7)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present? Yes No Depth (inches):  Water Table Present? Yes No Depth (inches):  Gaturation Present? Yes No Depth (inches):  (includes capillary fringe)  Drift Deposits (B3) (Riverine)  Drainage Patterns (B10)  Dry-Season Water Table (C2)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery  Saturation Neduction in Tilled Soils (C6)  FAC-Neutral Test (D5)  Wetland Hydrology Present?  Yes No Depth (inches):  Yes X No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Primary Indicators (minimum of one require	ed; check all that apply)		Water Mark	s (B1) (Riverine)
Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water Stained Leaves (B9)  Field Observations: Surface Water Present? Ves No Depth (inches): Saturation Present? Ves No Depth (inches): Cescribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Aquatic Invertebrates (B13) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (B7) Saturation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Thin Muck Surface (C7) Shallow Aquitard (D3) FAC-Neutral Test (D5)  Wetland Hydrology Present? Yes No Depth (inches): Yes X No  Cescribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Surface Water (A1)	Salt Crust (B11)		Sediment D	eposits (B2) (Riverine)
Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)  Field Observations: Surface Water Present? Water Table (D5) Sediment Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations: Surface Water Present? Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Seturation Present? Yes No Depth (inches): Yes X No Seturation Present? Yes X No Seturation Present? Yes No Depth (inches): Yes X No Seturation Present? Yes X No Seturation Present? Yes X No Seturation Present? Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3) Yes X No Seturation Visible on Aerial Imagery (D3)	High Water Table (A2)	X Biotic Crust (B12)		Drift Deposi	ts (B3) (Riverine)
Water Mark's (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Field Observations:  Surface Water Present? Yes No Depth (inches):  Water Table Present? Yes No Depth (inches):  Grayfish Burrows (C8)  Saturation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  Other (Explain in Remarks)  Wetland Hydrology Present?  Wetland Hydrology Present?  Yes No Depth (inches):  Grayfish Burrows (C8)  Saturation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  Wetland Hydrology Present?  Yes No Depth (inches):  Yes X No  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Field Observations: Surface Water Present?  Ves No Depth (inches): Saturation Present?  Ves No Depth (inches): Saturation Present?  Ves No Depth (inches): Saturation Visible on Aerial Imagery (B7)  Wetland Hydrology Present?  Yes No Depth (inches): Saturation Present?  Ves No Depth (inches): Saturation Visible on Aerial Imagery Saturation Vi					
Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C6)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface Water Present? Yes No Depth (inches):  Water Table Present? Yes No Depth (inches):  Gaturation Present? Yes No Depth (inches):  (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	, , ,	, , ,	iving Roots (C3)	,	` ,
Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface Water Present? Yes No Depth (inches): Staturation Present? Yes No Depth (inches): Staturation Present? Yes No Depth (inches): (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	. , ,	,			` '
Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) FAC-Neutral Test (D5)  Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations:  Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present?  Water Table Present? Yes No Depth (inches): Yes X No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Field Observations: Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present? Water Table Present? Yes No Depth (inches): Yes No Depth (inches): Yes X No Depth (inches): Yes X No Depth (inches): Yes X No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Inundation Visible on Aerial Imagery (		, ,	FAC-Neutra	l Test (D5)
Field Observations: Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present? Water Table Present? Yes No Depth (inches): Yes No Depth (inches): Yes X No Depth (inches): Yes X No Depth (inches): Yes X No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Water-Stained Leaves (B9)	Other (Explain in Remarks)			
Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present?  Vater Table Present? Yes No Depth (inches): Yes No Depth (inches): Yes X No Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	( )	,	Ī		
Vater Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches):  (includes capillary fringe)  Pescribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		Y Donth (inches):	,	Notional Hydrolog	, Present?
Saturation Present? Yes No Depth (inches): Yes X No (includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			1	vecialiu riyulolog	y Fiesenti
(includes capillary fringe)  Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				Yes X No	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				NO A NO	
	, , ,	monitoring well, aerial photos, previo	ous inspections)	if available:	
Remarks: Biotic crust indicates long duration ponding.			opcolions)		
Remarks: Biotic crust indicates long duration ponding.					
·· · · · · · · · · · · · · · · · · · ·	Remarks: Biotic crust indicates long dura	ation ponding.			

WETLAND DETERMINATION DATA FO	DRM -Arid West Region
v.110918  Project/Site: Friant-Kern Canal  City/County:	Tulare County Sampling Date: 9/30/2019
Applicant/Owner: Friant State: California  Investigator(s): G. Youngblood, C. Femino	Sampling Point 2 Feature ID: NVD1  Section, Township, Range: Sec. 28, T20S, R27E
	oncave, convex, none): Concave Slope (%): 1
Subregion (LRR): Mediterranean California (ILat: 36.166423	Long: -119.058088 Datum: NAD83
Soil Map Unit Name: San Joaquin loam, 0 to 2 percent slopes (154)	NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes	
Are Vegetation $N$ , Soil $N$ , or Hydrology $N$ significantly disturbed?	Are "Normal Circumstances" present? Yes X No
Are Vegetation N, Soil N, or Hydrology N naturally problematic?	(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sampling point locatio	
Hydrophytic Vegetation Present? Yes No x	
Hydric Soil Present? Yes No within a Wo	Vec No v
Wetland Hydrology Present? Yes x No	Statia:
Evaluation of features designated "Other Waters"	
Characteristics: Type: non-vegeted ditch Width: 2	Substrate: Soil
Indicators:     Defined bed and bank:     x     Scour x       Feature Designation:     Perennial     Intermittent	OHWM Mapped x Ephemeral x
Natural Drainage Artificial Drainage x	Navigable Water
Remarks: Data point documents OHWM of a non-vegetated ditch.	radigable videol
VEGETATION . Her exicutific means of plants list all exercise in the plat N	AUGT LIGT COVER IN DECECENDING ORDER
VEGETATION – Use scientific names of plants. List all species in the plot. No 3/3 Abbrev. Species Name Absolute Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: ) % Cover Species? Status	Number of Dominant Species
1	That Are OBL, FACW, or FAC: 0 (A)
2	<del></del>
3	Total Number of Dominant
4	Species Across All Strata: 0 (B)
0 = Total Cover	
Sapling/Shrub Stratum (Plot size:)	Percent of Dominant Species
1	That Are OBL, FACW, or FAC: ####### (A/B)
2	Prevalence Index worksheet:
3	Total % Cover of: Multiply by:
4	OBL species 0 x 1 = 0
5	FACW species 0 x 2 = 0
0 = Total Cover	FAC species0 x 3 =0
Herb Stratum (Plot size:)	FACU species x 4 = 0
l <sup>1</sup>	UPL species x 5 =0
$\begin{bmatrix} 2 \\ 3 \end{bmatrix}$ — — — — — — — — — — — — — — — — — —	Column Totals: 0 (A) 0 (B) Prevalence Index = B/A =
	Hydrophytic Vegetation Indicators:
5	1 - Rapid Test for Hydrophytic Vegetation
6	2 - Dominance Test is >50%
7	No 3 - Prevalence Index is ≤3.01
8	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9	data in Remarks or on a separate sheet)
10	5 - Wetland Non-Vascular Plants¹ 6 - Problematic Hydrophytic Vegetation¹ (Explain)
11	<del></del>
0 = Total Cover	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size:)	be present unless disturbed or problematic.
1 2	
0 = Total Cover	
——————————————————————————————————————	Hydrophytic Vegetation Present?
% Bare Ground in Hert 25 % Cover of Biotic 75	Trydrophytic vegetation Fresent?
// Jane 3.53.12 / 151 // Jord 5/ 5/ 5/ 5/ 5/ 5/ 5/ 5/ 5/ 5/ 5/ 5/ 5/	
	Yes No X
Remarks: No vegetation present	

SOIL			Sampling	Point 2
Profile Description: (Describe to the	depth needed to document the indic	ator or confirm t	the absence of indica	ators.)
Depth Matrix	Redox Features			,
		Type <sup>1</sup> Loc <sup>2</sup>	Texture	Remarks
	yo gener (mener) //	.,,,,,,	· ontair o	. tomanto
'Type: C=Concentration, D=Depletion, RM=	Reduced Matrix. CS=Covered or Coate	ed Sand Grains.	Location: PL=Por	e Lining, M=Matrix.
Hydric Soil Indicators: (Applicable to all I	·			J,
Histosol (A1)	Sandy Redox (S5)		Indicators for Probl	ematic Hydric Soils':
Histic Epipedon (A2)	Stripped Matrix (S6)		1 cm Muck (A9)	•
Black Histic (A3)	Loamy Mucky Mineral (F1)		2 cm Muck (A10	•
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)		Reduced Vertic	, ,
Stratified Layers (A5) ( <b>LRR C</b> )	Depleted Matrix (F3)		Red Parent Mat	` '
1 cm Muck (A9) (LRR D)	: ` ` ` `			` '
` ' ' '	Redox Dark Surface (F6)		Other (Explain i	n Remarks)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)			
Thick Dark Surface (A12)	Redox Depressions (F8)			
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	<sup>3</sup> Indicators of hy	drophytic vegetation a	and wetland hydrology
Sandy Gleyed Matrix (S4)		must be pr	esent, unless disturbe	d or problematic.
Restrictive Layer (if present):			Hydric Soil Prese	nt?
Type:			Vac	
Depth (Inches):			Yes No	
Remarks: No soils pit potential utilities				
LIVER OF COMME				
HYDROLOGY				
Wetland Hydrology Indicators:		Sec	condary Indicators (2 c Water Marks (B	
Primary Indicators (minimum of one required				, ,
Surface Water (A1)	Salt Crust (B11)			sits (B2) (Riverine)
High Water Table (A2)	X Biotic Crust (B12)		Drift Deposits (E	33) (Riverine)
Saturation (A3)	Aquatic Invertebrates (B13)		Drainage Patter	ns (B10)
Water Marks (B1) (Nonriverine)	Hydrogen Sulfide Odor (C1)		Dry-Season Wa	ter Table (C2)
Sediment Deposits (B2) (Nonriverine)	Oxidized Rhizospheres along Li	0 ( )	Crayfish Burrow	
Drift Debosits (R3) (Nouriverine)	Presence of Reduced Iron (C4)			le on Aerial Imagery (C
Surface Soil Cracks (B6)	Recent Iron Reduction in Tilled	Soils (C6)	Shallow Aquitar	` '
Inundation Visible on Aerial Imagery (B	' <del></del>		FAC-Neutral Te	st (D5)
Water-Stained Leaves (B9)	Other (Explain in Remarks)			
Field Observations:				
Surface Water Present? Yes No	X Depth (inches):	W	Vetland Hydrology Pr	esent?
Water Table Present? Yes No	Depth (inches):			
Saturation Present? Yes No	Depth (inches):		Yes X No	
(includes capillary fringe)		L		
Describe Recorded Data (stream gauge, r	monitoring well, aerial photos, previo	ous inspections)	, it available:	
Remarks: Biotic crust indicates long durat	ion ponding			
nemarks. Dione crust indicates long durat	non ponung.			

	ATION DATA FORM -Arid West Region
v.110918 Project/Site: Friant Kern Canal	City/County: Porterville Sampling Date: 9/30/2019
Applicant/Owner: Friant State: California	Sampling Point 3 Feature ID: Upland
Investigator(s): Chariss, Gabe, Jacqueline	Section, Township, Range: Sec. 33, T20S, R27E
Local relief (hillside, terrace, etc.): Depression	Local Relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): Mediterranean California (ILat: 36.150322	· · · · · · · · · · · · · · · · · · ·
Soil Map Unit Name: San Joaquin loam, 0 to 2 percent slopes (	
Are climatic / hydrologic conditions on the site typical for this time	
Are Vegetation $\frac{N}{N}$ , Soil $\frac{N}{N}$ , or Hydrology $\frac{N}{N}$ significantly Are Vegetation $\frac{N}{N}$ , Soil $\frac{N}{N}$ , or Hydrology $\frac{N}{N}$ naturally properties.	
SUMMARY OF FINDINGS – Attach site map showing sampling	
Hydrophytic Vegetation Present? Yes x No	ng pont rocations, transcots, important roatures, etc.
Hydric Soil Present?  Yes No x	Is the Sampled Area  Yes No x
Wetland Hydrology Present? Yes x No	within a Wetland?
Evaluation of features designated "Other Waters"	
_	Width: Substrate:
Indicators: Defined bed and bank:	Scour OHWM Mapped
Feature Designation: Perennial	Intermittent Ephemeral
Natural Drainage Artificia	al Drainage Navigable Water
Remarks: Depression which receives outflow from canal and dis	ssipates to ground. May also pond from rainfall, but does not support hydric soils.
	ies in the plot. MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev. Species Name Absolute Domin Tree Stratum (Plot size: ) % Cover Speci	
1	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
3	— —   <sub></sub>
	Total Number of Dominant
4	Species Across All Strata: 1 (B)
	l Cover
Sapling/Shrub Stratum (Plot size:)	Percent of Dominant Species
<sup>1</sup>	That Are OBL, FACW, or FAC: 1 (A/B)
2	Prevalence Index worksheet:
3	Total % Cover of: Multiply by:
4	OBL species 0 x 1 = 0
5	FACW species 30 x 2 = 60
<u>0</u> = Total	I Cover FAC species 0 x 3 = 0
Herb Stratum (Plot size:)	FACU species 0 x 4 = 0
1 Lepfus Leptochloa fusca 30 YE	ES FACW UPL species 5 x 5 = 25
2 Triter Tribulus terrestris 5 No	
3	Prevalence Index = B/A = 2.4286
5	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation
6	Yes 2 - Dominance Test is >50%
7	Yes 3 - Prevalence Index is ≤3.0¹
<del> </del>	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
9	5 - Wetland Non-Vascular Plants
10	6 - Problematic Hydrophytic Vegetation (Explain)
11	<del></del>
	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size:)	be present unless disturbed or problematic.
2	
0 = Total	Il Cover
	Hydrophytic Vegetation Present?
% Bare Ground in Hert 65 % Cover of Biotic 6	65
	,, <del>, , , , , , , , , , , , , , , , , ,</del>
	Yes X No
Demontos I hadronhadio provinteliani in deni	
Remarks: Hydrophytic vegetation is dominant.	

SOIL							Sar	mpling Point 3
	ription: (Describe to	the dent	n needed to docume	ent the ind	icator or	confirm		
Depth	Matrix	ine depi		lox Feature		COIIIIIII	tile absence of	maicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
(inches)	00101 (1110131)	70	Color (moist)	70	Турс	LOC	Texture	Remarks
0-6	7.5 YR 3/4	100					Loamy clay	
	7.5 111 5/4	100					Loanly Clay	
			<u></u>					
		,						
IT:	-ti D Dl-ti	A Dark			4 l O l	Our land	<u> </u>	Dana Liniaa M Matrix
,,	ration, D=Depletion, F		•		ited Sand	Grains.	Location: P	L=Pore Lining, M=Matrix.
-	tors: (Applicable to	all LRRs,		oted.)			Indicators for	Dualdamatia I buduia Cailaº.
Histosol (A1)	(4.0)		Sandy Redox (S5)					Problematic Hydric Soils*: k (A9) (LRR C)
Histic Epipede Black Histic (A			Stripped Matrix (S6) Loamy Mucky Mine					K (A3) (LKK B)
Hydrogen Sul			Loamy Gleyed Matr					Vertic (F18)
	ers (A5) ( <b>LRR C</b> )		_					nt Material (TF2)
1 cm Muck (A			Depleted Matrix (F3 Redox Dark Surface	•				olain in Remarks)
	ow Dark Surface (A11	、 <del> </del>		` ,			Other (Exp	Diain in Remarks)
Thick Dark St	•	)	Depleted Dark Surfa					
	` '	_	Redox Depressions Vernal Pools (F9)	(FO)	2			
Sandy Mucky		_	_ veinai Poois (F9)					ation and wetland hydrology
Sandy Gleyed					n	nust be pr		sturbed or problematic.
Restrictive Layer Type:	(If present):						Hydric Soil F	resent?
Depth (inches	3):						Yes	lo X
Remarks: No indi	cators of hydric soils	were obs	erved					<u> </u>
HYDROLOGY								
Wetland Hyd	rology Indicators:					Se		rs (2 or more required)
Primary Indicators	(minimum of one requ	ired; che	ck all that apply)				Water Ma	rks (B1) (Riverine)
Surface Wate	r (A1)		Salt Crust (B11)				Sediment	Deposits (B2) (Riverine)
High Water T	able (A2)	X	Biotic Crust (B12)				Drift Depo	sits (B3) (Riverine)
Saturation (A	3)		Aquatic Invertebrate	es (B13)			Drainage	Patterns (B10)
	(B1) (Nonriverine)		Hydrogen Sulfide O	dor (C1)				on Water Table (C2)
	oosits (B2) ( <b>Nonriver</b> i	ne)	Oxidized Rhizosphe	•	•	ots (C3)	•	Surrows (C8)
	(B3) (Nonriverine)		Presence of Reduc	,	,	۵)		Visible on Aerial Imagery (
X Surface Soil (	` ,	(DZ)	Recent Iron Reduct		d Soils (C	6)		quitard (D3)
	sible on Aerial Imager	y (B7)	Thin Muck Surface	' '			FAC-Neut	ral Test (D5)
Water-Staine	d Leaves (B9)		Other (Explain in Re	emarks)				
Field Observation						_		
Surface Water Pre		No X	Depth (inches):			V	Vetland Hydrolo	gy Present?
Water Table Prese Saturation Present		No X	Depth (inches):  Depth (inches):				Yes X N	ı. —
(includes cap		NO A	Deptil (illiches).				res A	···
	ed Data (stream gau	je, monif	oring well, aerial nh	otos, prev	ious ins	pections	, if available:	
	( 3	, ,	5 . , p	, μ		, ,	.,	
Remarks: Surface	soil cracks and bioti	c crust in	dicate long duration	ponding.				

WETLAND DETERMINA	TION DATA FOR	M -Arid West Region	
v.110918 Project/Site: Friant-Kern Canal	City/County:	Strathmore	Sampling Date: 10/1/2019
Applicant/Owner: Friant State: California	· · ·	ampling Point 4	Feature ID: PON1
Investigator(s): G. Youngblood, J. Phipps		Section, Township, Range	
Local relief (hillside, terrace, etc.): Depression		cave, convex, none): Coca	
Subregion (LRR): Mediterranean California (ILat: 36.150353	,	ong: -119.054053	Datum: NAD83
Soil Map Unit Name: San Joaquin loam, 0 to 2 percent slopes (1		NWI class	
Are climatic / hydrologic conditions on the site typical for this time			,
Are Vegetation Y, Soil Y, or Hydrology Y significantly		Are "Normal Circumsta (If needed, explain any	
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$ naturally pro SUMMARY OF FINDINGS – Attach site map showing samplin		_ ` ' '	,
		, transects, important le	atures, etc.
Hydrophytic Vegetation Present? Yes x No Hydric Soil Present? Yes No x	Is the Sampled	l Area	No. v
<u> </u>	within a Wetla	and?	No x
Wetland Hydrology Present? Yes x No  Evaluation of features designated "Other Waters"			
	/idth: Variable	Substrate:	Soil
Indicators: Defined bed and bank: X	Scour	OHWM Map	
<u></u>	ntermittent	Ephem	
Natural Drainage Artificial	Drainage	Navigable Wa	ater
Remarks: Pond with surface water and wetland vegetation alo	ng the edge. The t		
soil) and has been fairly recently excavated/ disturbe	ed.		
VEGETATION – Use scientific names of plants. List all species  3/3 Abbrev. Species Name Absolute Domin	_	Dominance Test worksh	
3/3 Abbrev. Species Name Absolute Domin Tree Stratum (Plot size: ) % Cover Specie		Number of Dominant S	
1	oo. Giaido	That Are OBL, FACW,	•
		, , ,	(',
3		Total Number of Domin	ant
		Species Across All Stra	
0 = Total	Cover	oposios rioroso riii otio	(B)
Sapling/Shrub Stratum (Plot size:	COVCI	D ( (D ) (O	
1		Percent of Dominant Sp That Are OBL, FACW,	
		Prevalence Index works	
3			
		Total % Cover of:	Multiply by:
		OBL species 0	-x1 = 0
$\frac{5}{0} = \overline{\text{Total}}$	Cover	FACW species 20	- x 2 = 40
<del></del>	Cover	FAC species 0	-x3 = 0
,	C FACIN		-x = 0
1 Lepfus Leptochloa fusca 18 YE		UPL species 0	-x5 = 0
2 Cypesc Cyperus esculentus 1 NC 3 Epicil Epilobium ciliatum 1 NC		Column Totals: 20 Prevalence Index =	$\frac{(A)}{= B/A} = \frac{40}{2}$ (B)
4		Hydrophytic Vegetation	4
5		1 - Rapid Test for Hy	drophytic Vegetation
6		Yes 2 - Dominance Test i	
7		$\overline{\gamma_{ m es}}$ 3 - Prevalence Index	is ≤3.0 <sup>1</sup>
8		4 - Morphological Ad	aptations <sup>1</sup> (Provide supporting
9		data in Remarks or o	
10		5 - Wetland Non-Vas	
11		6 - Problematic Hydro	ophytic Vegetation' (Explain)
20 = Total	Cover	1 Indicators of hydric soil	and wetland hydrology must
Woody Vine Stratum (Plot size:)		be present unless disturb	ed or problematic.
1			
2			
0 = Total	Cover		
	Ī	Hydrophytic	c Vegetation Present?
% Bare Ground in Hert 80 % Cover of Biotic			
		<u>-</u>	
		Yes	X No
Remarks: Dominant hydrophytic vegetation is present.			

Profile Descript Depth							Camp	ling Point 4
Denth	ion: (Describe to f	the depth	needed to docum	ent the in	dicator or	confirm	the absence of inc	dicators.)
	Matrix			dox Featu				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-6	10 yr 4/3	95	10 yr 2/1	5	C	M	Clay sand	
6-12	10 yr 4/3	80	5yr 3/4	10	С	M	Clay sand	
			10 yr 2/1	10	$\mathbf{C}$	M		
ype: C=Concentration	on, D=Depletion, R	.M=Reduc	ed Matrix, CS=Cov	ered or Co	ated Sand	Grains.	Location: PL=	Pore Lining, M=Matrix.
dric Soil Indicator	s: (Applicable to a	all LRRs,		•				
Histosol (A1)			Sandy Redox (S5)					oblematic Hydric Soil
Histic Epipedon (			Stripped Matrix (S6				,	A9) (LRR C)
Black Histic (A3)		_	Loamy Mucky Mine	, ,				A10) ( <b>LKK B</b> )
Hydrogen Sulfide	` '		Loamy Gleyed Mat	trix (F2)			Reduced Ve	rtic (F18)
Stratified Layers	` , ` ,		Depleted Matrix (F	3)			Red Parent I	Material (TF2)
1 cm Muck (A9) (	(LRR D)		Redox Dark Surfac	ce (F6)			Other (Expla	in in Remarks)
Depleted Below I	Dark Surface (A11)	, —	Depleted Dark Sur	face (F7)				
Thick Dark Surfa	, ,		Redox Depression	` ,				
Sandy Mucky Min	` ,		Vernal Pools (F9)	o (. o)	3			
			vernai r oois (i 9)					on and wetland hydrolo
Sandy Gleyed Ma	, ,				n	nust be p		rbed or problematic.
estrictive Layer (if p	present):						Hydric Soil Pre	esent?
Type: Depth ( <del>inches):</del>							Voo	
emarks: Concentrat	: 1	1	N 1 1 1 11 11 1	1. ,	1	1	Yes	X
YDROLOGY								
YDROLOGY Wetland Hydrol	ogy Indicators:					Se	econdary Indicators	(2 or more required)
		ired; chec	k all that apply)			Se		(2 or more required) (B1) ( <b>Riverine</b> )
Wetland Hydrolo imary Indicators (mi	nimum of one requ	ired; chec	1177			Se	Water Marks	(B1) (Riverine)
Wetland Hydrolo imary Indicators (mi Surface Water (A	nimum of one requ	ired; chec	Salt Crust (B11)			Se	Water Marks Sediment De	eposits (B2) (Riverine)
Wetland Hydrolo imary Indicators (mi  Surface Water (A  High Water Table	nimum of one requ	ired; chec	Salt Crust (B11) Biotic Crust (B12)	(D40)		Se	Water Marks Sediment De Drift Deposit	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine)
Wetland Hydroldimary Indicators (mid Surface Water (A High Water Table Saturation (A3)	nimum of one requ	iired; chec	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat			Se	Water Marks Sediment De Drift Deposit Drainage Pa	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10)
Wetland Hydroldimary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1	nimum of one requ (A1) (E (A2) (Nonriverine)		Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide (	Odor (C1)	v Living Do		Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season	6 (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10) Water Table (C2)
Wetland Hydroldimary Indicators (mid Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depositionary Indicators (B1 Sediment Depositionary Indicators (B1 Sediment Depositionary Indicators (Marks)	nimum of one requal (A1) (A2) (Nonriverine) (IS (B2) (Nonriveri		Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph	Odor (C1) ieres along			Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8)
Wetland Hydroldimary Indicators (mit and Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segment Deposits (B3 Drift Deposits (B3 Segment D	nimum of one requal (1) (A1) (A2) (Nonriverine) (IS (B2) (Nonriverine) (Nonriverine)		Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc	Odor (C1) eres alono ced Iron (C	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager
Wetland Hydroldimary Indicators (mit Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Deposits (B) Surface Soil Crad	nimum of one requiation  (A1)  (A2)  (Nonriverine)  (IS (B2) (Nonriverine)  (Nonriverine)  (ks (B6)	ne)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc	Odor (C1) teres along ced Iron (C ction in Tille	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3)
Wetland Hydrolomary Indicators (mit Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Deposits (B) Surface Soil Crac Inundation Visible	nimum of one requiation  (Nonriverine)  Its (BZ) (Nonriverine)  (Nonriverine)  Cks (B6)  e on Aerial Imagery	ne)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface	Odor (C1) teres along ced Iron (C tion in Tille (C7)	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3)
Wetland Hydrolomary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segiment Deposits (B) Surface Soil Crac Inundation Visible Water-Stained Le	nimum of one requiation  (Nonriverine)  Its (BZ) (Nonriverine)  (Nonriverine)  Cks (B6)  e on Aerial Imagery	ne)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc	Odor (C1) teres along ced Iron (C tion in Tille (C7)	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu	s (B1) (Riverine) eposits (B2) (Riverine) s (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3)
Wetland Hydrolomary Indicators (mides) Surface Water (American High Water Tables) Saturation (A3) Water Marks (B1) Sealment Deposits (B2) Surface Soil Crace Inundation Visibles Water-Stained Leeld Observations:	nimum of one required (A1)  e (A2)  ) (Nonriverine)  its (B2) (Nonriverine)  cks (B6)  e on Aerial Imagery  eaves (B9)	ne)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R	Odor (C1) teres along ced Iron (C tion in Tille (C7)	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mit) Surface Water (A) High Water Table Saturation (A3) Water Marks (B1) Segment Deposits (B3) Drift Deposits (B3) Surface Soil Crace Inundation Visible Water-Stained Leeld Observations: urface Water Presentater Table Present?	nimum of one required (A1)  e (A2)  ) (Nonriverine)  its (B2) (Nonriverine)  cks (B6)  e on Aerial Imagery  eaves (B9)  at? Yes X N  Yes N	ne)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R  Depth (inches): Depth (inches):	Odor (C1) peres along ced Iron (C ction in Tille c (C7) Remarks)	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mixing Surface Water (A) High Water Table Saturation (A3) Water Marks (B1) Segment Deposits (B2) Drift Deposits (B2) Surface Soil Crace Inundation Visible Water-Stained Leveld Observations: urface Water Presenter Table Present?	nimum of one requiation  (A1) (A1) (A2) (Nonriverine) (IIS (B2) (Nonriverine) (OKS (B6)) (EVE on Aerial Imagery (E	ne)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R	Odor (C1) peres along ced Iron (C ction in Tille c (C7) Remarks)	(4)	ots (C3)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mixing Surface Water (A) High Water Table Saturation (A3) Water Marks (B1) Segment Deposits (B) Surface Soil Crace Inundation Visible Water-Stained Leveld Observations: Inface Water Present ater Table Present? (includes capillar	nimum of one requiation  (A1) (A1) (A2) ((Nonriverine) (IIS (B2) (Nonriverine) (OKS (B6) (EX) (Nonriverine) (OKS (B6) (EX) (Nonriverine) (OKS (B9)  (A1) (A1) (A2) (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3	y (B7)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R  Depth (inches): Depth (inches):	Odor (C1) peres along ced Iron (C stion in Tille (C7) Remarks)	ed Soils (C	ots (C3) 6)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral  Wetland Hydrology	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mixing Surface Water (A) High Water Table Saturation (A3) Water Marks (B1) Segment Deposits (B2) Drift Deposits (B2) Surface Soil Crace Inundation Visible Water-Stained Leveld Observations: urface Water Presenter Table Present?	nimum of one requiation  (A1) (A1) (A2) ((Nonriverine) (IIS (B2) (Nonriverine) (OKS (B6) (EX) (Nonriverine) (OKS (B6) (EX) (Nonriverine) (OKS (B9)  (A1) (A1) (A2) (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3	y (B7)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R  Depth (inches): Depth (inches):	Odor (C1) peres along ced Iron (C stion in Tille (C7) Remarks)	ed Soils (C	ots (C3) 6)	Water Marks Sediment De Drift Deposit Drainage Pa Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral  Wetland Hydrology	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Deposits (B) Surface Soil Crac Inundation Visible Water-Stained Levalurface Water Present atter Table Present? (includes capillar escribe Recorded I	nimum of one requiation  (A1)  e (A2)  ) (Nonriverine)  its (B2) (Nonriverine)  cks (B6)  e on Aerial Imagery eaves (B9)  at? Yes X Yes N Yes N Yes Yes y fringe)  Data (stream gauge	y (B7)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R  Depth (inches): Depth (inches):	Odor (C1) peres along ced Iron (C stion in Tille (C7) Remarks)  1	ed Soils (C	ots (C3) 6) V	Water Marks Sediment De Drift Deposit Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral Wetland Hydrology Yes X No	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mixing Surface Water (A) High Water Table Saturation (A3) Water Marks (B1) Segment Deposits (B) Surface Soil Crace Inundation Visible Water-Stained Leveld Observations: Inface Water Present ater Table Present? (includes capillar	nimum of one requiation  (A1)  e (A2)  ) (Nonriverine)  its (B2) (Nonriverine)  cks (B6)  e on Aerial Imagery eaves (B9)  at? Yes X Yes N Yes N Yes Yes y fringe)  Data (stream gauge	y (B7)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R  Depth (inches): Depth (inches):	Odor (C1) peres along ced Iron (C stion in Tille (C7) Remarks)  1	ed Soils (C	ots (C3) 6) V	Water Marks Sediment De Drift Deposit Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral Wetland Hydrology Yes X No	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)
Wetland Hydrolomary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Deposits (B) Surface Soil Crac Inundation Visible Water-Stained Le eld Observations: Inface Water Present atter Table Present? (includes capillar escribe Recorded I	nimum of one requiation  (A1)  e (A2)  ) (Nonriverine)  its (B2) (Nonriverine)  cks (B6)  e on Aerial Imagery eaves (B9)  at? Yes X Yes N Yes N Yes Yes y fringe)  Data (stream gauge	y (B7)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrat Hydrogen Sulfide ( Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Thin Muck Surface Other (Explain in R  Depth (inches): Depth (inches):	Odor (C1) peres along ced Iron (C stion in Tille (C7) Remarks)  1	ed Soils (C	ots (C3) 6) V	Water Marks Sediment De Drift Deposit Dry-Season Crayfish Bur Saturation V Shallow Aqu X FAC-Neutral Wetland Hydrology Yes X No	to (B1) (Riverine) eposits (B2) (Riverine) es (B3) (Riverine) tterns (B10) Water Table (C2) rows (C8) isible on Aerial Imager itard (D3) Test (D5)

Tulare County         Sampling Date: 10/1/2019           Sampling Point 5         Feature ID: SW1           Section, Township, Range: Sec. 33, T20S, R27E           (concave, convex, none): Concave         Slope (%): 1           Long: -119.048417         Datum: NAD83
Sampling Point 5 Feature ID: SW1 Section, Township, Range: Sec. 33, T20S, R27E (concave, convex, none): Concave Slope (%): 1
Section, Township, Range: Sec. 33, T20S, R27E (concave, convex, none): Concave Slope (%): 1
(concave, convex, none): Concave Slope (%): 1
· · · · · · · · · · · · · · · · · · ·
Long: -119.048417 Datum: NAD83
NAME also a March and Allera
NWI classification None
es X No (If no, explain in Remarks.)
Are "Normal Circumstances" present? Yes X No
(If needed, explain any answers in Remarks.) tions, transects, important features, etc.
tions, transects, important leatures, etc.
mpled Area
Yes x No Wetland?
Substrate:
OHWM Mapped
Ephemeral
 Navigable Water
rts hydrophytic vegetation but has problematic seasonaly
canal as two large pumps are sitiuated above the feature.
ŭ <b>.</b> .
t. MUST LIST COVER IN DESECENDING ORDER
or Dominance Test worksheet:
Number of Dominant Species
That Are OBL, FACW, or FAC: 1 (A)
_
Total Number of Dominant
Species Across All Strata: 1 (B)
Percent of Dominant Species
That Are OBL, FACW, or FAC: 1 (A/B)
Prevalence Index worksheet:
Total % Cover of: Multiply by:
OBL species $70 \times 1 = 70$
FACW species 0 x 2 = 0
FAC species 12 x 3 = 36
FACU species 0 x 4 = 0
Prevalence Index = B/A = $\frac{131}{1.5057}$
Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
Yes 2 - Dominance Test is >50%
$\overline{\gamma_{\rm es}}$ 3 - Prevalence Index is $\leq 3.0^{\circ}$
4 - Morphological Adaptations <sup>1</sup> (Provide supporting
data in Remarks or on a separate sheet)
5 - Wetland Non-Vascular Plants <sup>1</sup>
6 - Problematic Hydrophytic Vegetation' (Explain)
1 Indicators of hydric soil and wetland hydrology must
be present unless disturbed or problematic.
_
<del>-</del>
<del>-</del>
Hydrophytic Vegetation Present?
, p,
<u></u>
Yes X No
Yes X No

						Samp	oling Point 5
<b>D</b>	ion: (Describe to t	he depth	needed to document the ind	icator or o	onfirm	the absence of in-	dicators.)
Depth	Matrix		Redox Feature	S			
(inches)	Color (moist)	%	Color (moist) %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
1-3	7.5yr 3/1	100				Clay	
3-12	7.5yr 3/2	100				Sandy clay	
pe: C=Concentrati	on, D=Depletion, R	M=Reduc	ed Matrix, CS=Covered or Coa	ted Sand (	Grains.	Location: PL=	Pore Lining, M=Matri
dric Soil Indicator	s: (Applicable to a	all LRRs,	unless otherwise noted.)				
Histosol (A1)			Sandy Redox (S5)				oblematic Hydric Sc
Histic Epipedon	` '		Stripped Matrix (S6)				(A9) ( <b>LRR C</b> )
Black Histic (A3)			Loamy Mucky Mineral (F1)				A10) ( <b>LKK B</b> )
_ Hydrogen Sulfide			Loamy Gleyed Matrix (F2)			Reduced Ve	ertic (F18)
Stratified Layers			Depleted Matrix (F3)			Red Parent	Material (TF2)
1 cm Muck (A9)	,		Redox Dark Surface (F6)			X Other (Expla	ain in Remarks)
	Dark Surface (A11)		Depleted Dark Surface (F7)				
Thick Dark Surfa	, ,		Redox Depressions (F8)				
Sandy Mucky Mi	neral (S1)		Vernal Pools (F9)	<sup>3</sup> Indicat	tors of h	ydrophytic vegetati	on and wetland hydro
Sandy Gleyed M	latrix (S4)			m	ust be p	resent, unless distu	rbed or problematic.
strictive Layer (if	present):					Hydric Soil Pro	esent?
Type: Depth (inches):						Yes X No	
	ass of dominant oh	limata ma	getation and wetland hydrolog	r. angaat	hridnia		
			ematic hydric soil as vegetation				
		_	clay layer at the surface.				,
	<i>v</i> 1						
DROLOGY							
Wetland Hydrol	logy Indicators:				Se	condary Indicators	(2 or more required)
	inimum of one requ	ired; chec	k all that apply)			Water Marks	s (B1) (Riverine)
-			Salt Crust (B11)			Sediment D	eposits (B2) (Riverine
-	<b>41</b> )		• , ,			Drift Deposit	ts (B3) (Riverine)
mary Indicators (mi Surface Water ( <i>F</i>	•	X	Biotic Crust (B12)				
mary Indicators (mi Surface Water ( <i>F</i> High Water Table	•	X	Biotic Crust (B12)  Aguatic Invertebrates (B13)				atterns (B10)
mary Indicators (mi Surface Water ( <i>F</i>	e (A2)	X	Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)			Drainage Pa	atterns (B10) Water Table (C2)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1	e (A2)		Aquatic Invertebrates (B13)	Living Roo	ots (C3)	Drainage Pa	Water Table (C2)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segiment Depos Dritt Deposits (B	e (A2)  I) (Nonriverine)  Bits (B2) (Nonriverine)  3) (Nonriverine)		Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4	)	( )	Drainage Pa Dry-Season Crayfish But Saturation V	Water Table (C2) rrows (C8) risible on Aerial Image
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segiment Depos Drift Deposits (B Surface Soil Crae	e (A2)  1) (Nonriverine)  Sits (B2) (Nonriverine)  3) (Nonriverine)  cks (B6)	ne)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled	)	( )	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu	Water Table (C2) rrows (C8) risible on Aerial Image litard (D3)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segment Depos Drift Deposits (B: Surface Soil Crad Inundation Visibl	e (A2)  I) (Nonriverine)  SIS (B2) (Nonriverine)  I) (Nonriverine)  Icks (B6)  Ie on Aerial Imagery	ne)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7)	)	( )	Drainage Pa Dry-Season Crayfish But Saturation V	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segiment Depos Drift Deposits (B Surface Soil Crae	e (A2)  I) (Nonriverine)  SIS (B2) (Nonriverine)  I) (Nonriverine)  Icks (B6)  Ie on Aerial Imagery	ne)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled	)	( )	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segiment Depos Drift Deposits (B: Surface Soil Crai Inundation Visibl	e (A2)  I) (Nonriverine)  SIS (B2) (Nonriverine)  I) (Nonriverine)  Icks (B6)  Ie on Aerial Imagery	ne)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7)	)	5)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra	Water Table (C2) rrows (C8) risible on Aerial Image iitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sealment Deposits (B Drift Deposits (B Surface Soil Crai Inundation Visibl Water-Stained Lo Id Observations: face Water Preser	e (A2)  1) (Nonriverine)  Sits (B2) (Nonriverine)  3) (Nonriverine)  cks (B6)  le on Aerial Imagery  eaves (B9)  nt? YesN	(B7)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches):	)	5)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu	Water Table (C2) rrows (C8) risible on Aerial Image iitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sealment Deposits (B Surface Soil Crai Inundation Visibl Water-Stained Le Id Observations: face Water Present?	e (A2)  1) (Nonriverine)  Sits (B2) (Nonriverine)  cks (B6)  le on Aerial Imagery  eaves (B9)  ht? Yes N	(B7)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches): Depth (inches):	)	5)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Segment Depos Drift Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Present ter Table Present?	e (A2)  (Nonriverine)  Sits (B2) (Nonriverine)	(B7)	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches):	)	5)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Segment Depos Drift Deposits (B) Surface Soil Crail Inundation Visible Water-Stained Louder Stained Louder Table Present? Iter Table Present?	e (A2)  (Nonriverine)  Sits (B2) (Nonriverine)	No X No X No X No X	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches): Depth (inches):	) I Soils (C6	(i)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra  Vetland Hydrology Yes X No	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Segment Depos Drift Deposits (B) Surface Soil Crail Inundation Visible Water-Stained Louder Stained Louder Table Present? Iter Table Present?	e (A2)  (Nonriverine)  Sits (B2) (Nonriverine)	No X No X No X No X	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches): Depth (inches):	) I Soils (C6	(i)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra  Vetland Hydrology Yes X No	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Segment Depos Drift Deposits (B) Surface Soil Crail Inundation Visible Water-Stained Louder Stained Louder Table Present? Iter Table Present?	e (A2)  (Nonriverine)  Sits (B2) (Nonriverine)	No X No X No X No X	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches): Depth (inches):	) I Soils (C6	(i)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra  Vetland Hydrology Yes X No	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3) I Test (D5)
mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Seament Depos Drift Deposits (B: Surface Soil Cra- Inundation Visibl Water-Stained Lo Id Observations: face Water Present ter Table Present? (includes capillar scribe Recorded I	e (A2)  (Nonriverine)  Sits (B2) (Nonriverine)	No X No X No X No X No X No X	Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)  Depth (inches): Depth (inches): Depth (inches):	) I Soils (C6	(i)	Drainage Pa Dry-Season Crayfish But Saturation V Shallow Aqu X FAC-Neutra  Vetland Hydrology Yes X No	Water Table (C2) rrows (C8) risible on Aerial Image uitard (D3) I Test (D5)

	ND DETERMIN	ATION DATA F	DRM -Arid West Region	
v.110918 Project/Site: Friant-Kern Canal		City/County:	Strathmore Sampling Date: 10/1/20	019
•	: California	only/ county.	Sampling Point 6 Feature ID: PON2	
Investigator(s): G. Youngblood, J. Phipps	. Camornia		Section, Township, Range: Sec. 33, T20S, R27E	
	ression	Local Poliof (c		
,		`		
Subregion (LRR): Mediterranean California				
Soil Map Unit Name: Wyman loam, 0 to 2 perc			NWI classification None	
Are climatic / hydrologic conditions on the site ty	•	•	<del></del> '	
Are Vegetation N, Soil N, or Hydrology			Are "Normal Circumstances" present? Yes X No	·
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology SUMMARY OF FINDINGS – Attach site map s			(If needed, explain any answers in Remarks.)	
		ng point locatio	ns, transects, important features, etc.	
Hydrophytic Vegetation Present? Yes		Is the Samp	led Area	
<u> </u>	No	within a W	etland? Yes x No	
Wetland Hydrology Present? Yes				
Evaluation of features designated "Other Wa Characteristics: Type: Pon		Width:	Substrate: Vegetated	
Indicators: Defined bed and bank: x	<u>u</u>	Scour	Substrate: Vegetated OHWM Mapped x	
Feature Designation: Perennial		Intermittent	Ephemeral	
Natural Drainage	Artificia	al Drainage	Navigable Water	
Remarks: Data point documents wetland frin				
•	0	•		
•	ts. List all spec	ies in the plot. I	MUST LIST COVER IN DESECENDING ORDER	
3/3 Abbrev. Species Name		inant Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	% Cover Spec	cies? Status	Number of Dominant Species	
			That Are OBL, FACW, or FAC: 2 (A)	
2				
3			Total Number of Dominant	
4			Species Across All Strata: 2 (B)	
	= Tota	al Cover		
Sapling/Shrub Stratum (Plot size:	)	-	Percent of Dominant Species	
1			That Are OBL, FACW, or FAC: 1 (A/B)	
2			Prevalence Index worksheet:	
3			Total % Cover of: Multiply by:	
4			OBL species $30 \times 1 = 30$	
5			FACW species 34 x 2 = 68	
	0 = Tota	al Cover	FAC species $0 \times 3 = 0$	
Herb Stratum (Plot size: )			FACU species 0 x 4 = 0	
1 Perlap Persicaria lapathifolia	30 YI	ES FACW	UPL species 0 x 5 = 0	
2 Cypesc Cyperus esculentus	2 N	O FACW	Column Totals: 64 (A) 98 (B)	
3 Cypery Cyperus erythrorhizos	30 Y	ES OBL	Prevalence Index = $B/A = 1.5313$	
4 Lepfus Leptochloa fusca		O FACW	Hydrophytic Vegetation Indicators:	
5 Unk Unknown	5 N	0 0	1 - Rapid Test for Hydrophytic Vegetation	
6			Yes 2 - Dominance Test is >50%	
7			Yes 3 - Prevalence Index is ≤3.01	
8			4 - Morphological Adaptations <sup>1</sup> (Provide support	ting
9			data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants¹	
10				n)
11		<del></del>	6 - Problematic Hydrophytic Vegetation' (Explai	•
	69 = Tota	al Cover	<sup>1</sup> Indicators of hydric soil and wetland hydrology mus	st
Woody Vine Stratum (Plot size:	)	<u></u>	be present unless disturbed or problematic.	
1			. 🖡	
2			. 🖡	
	0 = Tota	al Cover		
			Hydrophytic Vegetation Present?	
% Bare Ground in Hert 31 % Co	ver of Biotic			
<u> </u>				
			Yes X No	
Remarks: Dominant hydrophytic vegetation is p	resent.			

Profile Descript Depth (inches)	. /5						Samp	ling Point 6
	ion: (Describe to t	he depth	needed to docum	nent the inc	icator or	confirm	the absence of inc	dicators.)
(inches)	Matrix		Re	edox Feature	es			
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-6	10yr 4/1	95	7.5yr 4/6	5	С	PL	Sandy loam	
pe: C=Concentrati	on, D=Depletion, RI	M=Reduc	ced Matrix, CS=Co	ered or Coa	ited Sand	Grains.	Location: PL=	Pore Lining, M=Matri
	rs: (Applicable to a	II LRRs,		•				
Histosol (A1)			Sandy Redox (S5)					oblematic Hydric Sc
Histic Epipedon	` '		Stripped Matrix (S				1 cm Muck (/	, , , ,
Black Histic (A3)			Loamy Mucky Min					A10) ( <b>LKK B</b> )
Hydrogen Sulfide			Loamy Gleyed Ma				Reduced Ve	` ,
Stratified Layers		X	Depleted Matrix (F	,				Material (TF2)
1 cm Muck (A9)	,		Redox Dark Surfa	` ,			Other (Expla	in in Remarks)
- '	Dark Surface (A11)		Depleted Dark Su					
Thick Dark Surfa	,		Redox Depression	ns (F8)				
_Sandy Mucky Mi	, ,		Vernal Pools (F9)					on and wetland hydro
Sandy Gleyed M	` '				m	nust be p		rbed or problematic.
strictive Layer (if	present):						Hydric Soil Pre	esent?
Type: Depth (inches):							Yes X No	
	the requirements f	for denle	ted matrix		ı			
DROLOGY								
Wetland Hydrol	•					Se		(2 or more required)
nary Indicators (mi	inimum of one requi	red; che	ck all that apply)					(B1) (Riverine)
_Surface Water (A	<del>\</del> 1)		Salt Crust (B11)				Sediment De	eposits (B2) ( <b>Riverine</b>
High Water Table (A2)  Biotic Crust (							Drift Deposits	s (B3) (Riverine)
Saturation (A3) Aquatic Invertebrates				ites (B13)			Drainage Pa	` ,
			Hydrogen Sulfide	` ,				Water Table (C2)
Water Marks (B1		ie)	Oxidized Rhizospl		-	ots (C3)	Crayfish Bur	, ,
Seaiment Depos			Presence of Redu Recent Iron Redu	•		e)		isible on Aerial Image
Seaiment Depos Uritt Deposits (B				ction in Tille	a Solis (C	0)	Shallow Aqui	` '
Sediment Depos Drift Deposits (B Surface Soil Cra	cks (B6)	(B7)	_	o (C7)			A I AC-INCUII ai	1631 (D3)
Sealment Depos Drift Deposits (B Surface Soil Cra Inundation Visibl	cks (B6) le on Aerial Imagery	(B7)	Thin Muck Surface	` ,				
Sediment Depos Unit Deposits (B Surface Soil Cra	cks (B6) le on Aerial Imagery	(B7)	_	` ,	_			
Sealment Depos DITIT Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Lo	cks (B6) le on Aerial Imagery eaves (B9)		Thin Muck Surface Other (Explain in I	` ,		•	Madanal District	· Draggert?
Sealment Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Preser	cks (B6) le on Aerial Imagery eaves (B9)  ht? Yes N	lo X	Thin Muck Surface Other (Explain in I Depth (inches):	Remarks)		V	Vetland Hydrology	Present?
Sediment Deposits (B) Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Presenter Table Present?	cks (B6) le on Aerial Imagery eaves (B9)  ht? Yes N Yes N	lo X	Thin Muck Surface Other (Explain in I  Depth (inches): Depth (inches):	` ,		V		Present?
Sealment Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Preser	cks (B6) le on Aerial Imagery eaves (B9)  nt? Yes N Yes X N Yes X N	lo X	Thin Muck Surface Other (Explain in I Depth (inches):	Remarks)		V	Vetland Hydrology	Present?
Sediment Deposits (B) Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Present ter Table Present? uration Present? (includes capillar	cks (B6) le on Aerial Imagery eaves (B9)  nt? Yes N Yes X N Yes X N	lo X	Thin Muck Surface Other (Explain in I  Depth (inches): Depth (inches): Depth (inches):	Remarks)  3 1	rious insp		Yes X No	Present?
Sediment Deposits (B) Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Present ter Table Present? uration Present? (includes capillar	cks (B6) le on Aerial Imagery eaves (B9)  nt? Yes N Yes X N Yes X N ry fringe)	lo X	Thin Muck Surface Other (Explain in I  Depth (inches): Depth (inches): Depth (inches):	Remarks)  3 1	rious insp		Yes X No	Present?
Sediment Deposits (B) Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Present ter Table Present? uration Present? (includes capillat scribe Recorded I	cks (B6) le on Aerial Imagery eaves (B9)  nt? Yes N Yes X N Yes X N ry fringe)  Data (stream gauge	lo X lo	Thin Muck Surface Other (Explain in I  Depth (inches): Depth (inches): Depth (inches): Depth (inches): Depth (inches):	Remarks)  3 1  shotos, prev		oections	Yes X No	Present?
Sediment Deposits (B) Surface Soil Cra Inundation Visibl Water-Stained Lo Id Observations: face Water Present ter Table Present? uration Present? (includes capillat scribe Recorded I	cks (B6) le on Aerial Imagery eaves (B9)  nt? Yes N Yes X N Yes X N ry fringe)	lo X lo	Thin Muck Surface Other (Explain in I  Depth (inches): Depth (inches): Depth (inches): Depth (inches): Depth (inches):	Remarks)  3 1  shotos, prev		oections	Yes X No	Present?

	WETLA	ND DETE	RMINATION	DATA FO	RM -Arid West Region	
v.110918 Project/Site: Frian-I	Vor Corol		City	County:	Strathmore	Sampling Date: 10/1/2019
		G 1:6 :		· -		
Applicant/Owner: Fi		California	a	;	Sampling Point 7	Feature ID: Upland
	Youngblood, J. Phipps			-I D - II - f /	Section, Township, Range:	
Local relief (hillside	· · · · · ·	ression		•	ncave, convex, none): Conca	
	Mediterranean California (				Long: -119.049	Datum: NAD83
	e: Wyman loam, 0 to 2 perc				NWI classif	
•	logic conditions on the site ty	-	-	_		
	$\frac{N}{N}$ , Soil $\frac{N}{N}$ , or Hydrology					es" present? Yes X No
	N , Soil N , or Hydrology				(If needed, explain any a	
				nt location	ns, transects, important feat	ures, etc.
Hydrophytic Vegeta			x Is	the Sample	ed Area	
Hydric Soil Present				within a We	YAS N	O X
Wetland Hydrology			X			
	ures designated "Other Wa	ters"	. ما 4 ام		Culpatrata	
Characteristics: Indicators:	Type:		Width:	Scour	Substrate: OHWM Mappe	.d
Feature Designation			Interm		Ephemer	
r catale besignan	Natural Drainage	А	rtificial Drai		Navigable Wate	
Remarks: Upland	pair to data point 6				Travigable Trac	51
органа	pair to data point o					
VEGETATION – U	se scientific names of plan	ts. List all	species in	the plot. M	UST LIST COVER IN DESE	CENDING ORDER
3/3 Abbrev.	Species Name	Absolute	Dominant	Indicator	Dominance Test workshe	
	Plot size:)	% Cover	Species?	Status	Number of Dominant Spe	
					That Are OBL, FACW, or	FAC: 1 (A)
3					Total Number of Domina	
4					Species Across All Strata	: <u>2</u> (B)
		0 =	Total Cove	er		
Sapling/Shrub Strat	tum (Plot size:	)			Percent of Dominant Spe	cies
1					That Are OBL, FACW, or	FAC: 0.5 (A/B)
2					Prevalence Index worksh	eet:
3					Total % Cover of:	Multiply by:
4					OBL species 0	x 1 = 0
5					FACW species 0	x 2 = 0
		0 =	Total Cove	er	FAC species 2	x 3 = 6
Herb Stratum (F	Plot size:				FACU species 1	x 4 = 4
1 Croset	Croton setiger	5	YES	UPL	UPL species 5	x 5 = 25
2 Xanstr	Xanthium strumarium	2	YES	FAC	Column Totals: 8	(A) 35 (B)
3 Helann	Helianthus annuus	1	NO	FACU	Prevalence Index = I	3/A = 4.375
4					Hydrophytic Vegetation II	
5					1 - Rapid Test for Hydr	
6					No 2 - Dominance Test is	
					No 3 - Prevalence Index is	
8						otations <sup>1</sup> (Provide supporting
9					data in Remarks or on	•
10					5 - Wetland Non-Vascu	hytic Vegetation' (Explain)
			<del></del>			, ,
		8 =	Total Cove	er	•	d wetland hydrology must
Woody Vine Stratur	m (Plot size:	)			be present unless disturbed	l or problematic.
1						
2						
		0 =	Total Cove	er		
					Hydrophytic	Vegetation Present?
% Bare Gro	ound in Hert 92 % Co	ver of Bioti	c	-		
					1 _	
					Yes	No X
Remarks: Hydroph	ytic vegetation is not domina	nt.				
1						

SOIL							Sar	mpling Point 7
	ription: (Describe to	the dent	needed to docum	nent the in	dicator or	confirm		1 0
Depth	Matrix	ine depti		edox Featu		0011111111	the absence of	maioators.,
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
(1101100)	Color (molet)	70	Color (molet)	/0	1)00		roxtaro	Tromano
0-6	10yr 4/2	80	5yr 4/6	20	$\mathbf{C}$	$\operatorname{PL}$	Sandy loam	
	1031 112		0,1 10			-11	Sanay Isam	
L					<del></del> .			
	ration, D=Depletion, R				ated Sand	Grains.	Location: P	L=Pore Lining, M=Matrix.
-	tors: (Applicable to	all LRRs						
Histosol (A1)			_Sandy Redox (S5	,				Problematic Hydric Soils*:
Histic Epipedo			Stripped Matrix (S					k (A9) ( <b>LRR C</b> )
Black Histic (A			Loamy Mucky Mir					K (A10) ( <b>LKK B</b> )
Hydrogen Sul	` '		_Loamy Gleyed Ma					Vertic (F18)
	ers (A5) ( <b>LRR C</b> )	X	Depleted Matrix (I	,				nt Material (TF2)
1 cm Muck (A			Redox Dark Surfa	` ,			Other (Exp	plain in Remarks)
	ow Dark Surface (A11)		_ Depleted Dark Su					
Thick Dark Su	` ,		Redox Depression					
Sandy Mucky	Mineral (S1)		Vernal Pools (F9)		<sup>3</sup> Indica	ators of h	ydrophytic vegeta	ation and wetland hydrology
Sandy Gleyed					n	nust be p	resent, unless dis	sturbed or problematic.
Restrictive Layer	(if present):						Hydric Soil F	Present?
Type: Depth (inches	•1•						Yes X N	Io -
	eet requirements for	11.4.1					103 11	
itemarks. Sons me	eet requirements for	uepieteu	matrix.					
HYDROLOGY								
	rology Indicators:					Se	condary Indicator	rs (2 or more required)
-	(minimum of one requ	ired: che	ck all that apply)					rks (B1) (Riverine)
Surface Wate	<u> </u>	,	Salt Crust (B11)				Sediment	Deposits (B2) (Riverine)
High Water Ta	, ,		Biotic Crust (B12)					sits (B3) (Riverine)
·	` ,		_					, , , ,
Saturation (A3	o) (B1) ( <b>Nonriverine</b> )		Aquatic Invertebra Hydrogen Sulfide	, ,				Patterns (B10) on Water Table (C2)
	oosits (BZ) (Nonriveri	ne) —	Oxidized Rhizosp	, ,	ı I ivina Ro	ots (C3)	•	Burrows (C8)
	(B3) (Nonriverine)	<i>'</i> —	Presence of Redu			010 (00)	,	Visible on Aerial Imagery (C
Surface Soil C	Cracks (B6)		Recent Iron Redu	ction in Tille	ed Soils (C	6)		quitard (D3)
Inundation Vis	sible on Aerial Imager	y (B7)	Thin Muck Surfac	e (C7)			FAC-Neut	ral Test (D5)
Water-Stained	d Leaves (B9)		Other (Explain in	Remarks)				
Field Observation	e.							
Surface Water Pres		No X	Depth (inches):			٧	Vetland Hydrolo	gy Present?
Water Table Prese	nt? Yes 1	No X	Depth (inches):		-		-	
Saturation Present	? Yes I	No X	Depth (inches):				Yes	lo X
(includes capi			-					
Describe Recorde	ed Data (stream gaug	je, monit	oring well, aerial p	photos, pre	vious ins	pections	), if available:	
Domarke: Main 4:	cators of wetland hyd	mologer ==	ono obsorred					
iveillai ka. No inaid	tators of welland hyd	noiogy W	ere observed.					

	DETERMINA	TION DATA FO	RM -Arid West Region	
v.110918 Project/Site: Friant-Kern Canal		City/County:	Porterville Sampling	Date: 10/1/2019
	1:0	· · · · ·		
Applicant/Owner: Friant State: Ca	alifornia		<u></u>	e ID: IC3
Investigator(s): G. Youngblood, J. Phipps			Section, Township, Range: Sec. 20, T2	
Local relief (hillside, terrace, etc.): Ditc		`	· ,	ope (%): 1
Subregion (LRR): Mediterranean California (ILa		L		m: NAD83
Soil Map Unit Name: Tagus loam, 0 to 2 percent s			NWI classification	R5UBFx
Are climatic / hydrologic conditions on the site typic	al for this time	of year? Yes_	X No(If no, explain in Remarks.)	
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$			Are "Normal Circumstances" present	
Are Vegetation $N$ , Soil $N$ , or Hydrology $N$			(If needed, explain any answers in Re	emarks.)
SUMMARY OF FINDINGS – Attach site map sho	wing samplin	g point location	s, transects, important features, etc.	
	No	Is the Sample	d Area	
	No x	within a Wet	VAS NO V	
, ,,	No			
Evaluation of features designated "Other Water				_
Characteristics: Type: Irrigation ca	<u>nal</u> V	Vidth: Variable		tated
Indicators: Defined bed and bank: X		Scour X	OHWM Mapped X Ephemeral	
Feature Designation: Perennial		ntermittent X  Drainage X	· —	
Natural Drainage			Navigable Water	::
Remarks: Data point documents a irrigation can carried under the Friant Kern Canal b		s nyaric soils, bu	t supports nydropnytic vegetation. The	irrigation canal is
carried under the Friant Kern Canai b	y a syphon.			
VEGETATION – Use scientific names of plants.	List all specie	es in the plot. MI	JST LIST COVER IN DESECENDING O	RDER
-	osolute Domin		Dominance Test worksheet:	
Tree Stratum (Plot size:) %	Cover Specie	es? Status	Number of Dominant Species	
1			That Are OBL, FACW, or FAC: 2	(A)
2				
3			Total Number of Dominant	
4			Species Across All Strata: 2	(B)
	0 = Total	Cover		<del></del>
Sapling/Shrub Stratum (Plot size:	)		Percent of Dominant Species	
1			That Are OBL, FACW, or FAC: 1	(A/B)
2			Prevalence Index worksheet:	
3			Total % Cover of: Multiply by	y:
4			OBL species $40 \times 1 = 40$	<u></u> )
5			FACW species $23 \times 2 = 46$	3
	0 = Total	Cover	FAC species 20 x 3 = 60	)
Herb Stratum (Plot size: 5-foot radius )			FACU species $0 \times 4 = 0$	
1 Leeory Leersia oryzoides	40 YE	S OBL	UPL species $0 \times 5 = 0$	
2 Rorcur Rorippa curvipes	20 YE		Column Totals: 83 (A) 14	
3 Unk Unknown	10 NC		Prevalence Index = B/A = $\frac{1.78}{1.78}$	``
4 Rumcri Rumex crispus	10 NC	FAC	Hydrophytic Vegetation Indicators:	
5 Echcol Echinochloa colona	10 NC		1 - Rapid Test for Hydrophytic Veg	etation
6 Unk Unknown	2 NC	0	Yes 2 - Dominance Test is >50%	
7 Perlap Persicaria lapathifolia	1 NC		Yes 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
8 Lepfus Leptochloa fusca	1 NC	FACW	4 - Morphological Adaptations <sup>1</sup> (Pro	
9 Cypesc Cyperus esculentus	1 NC	) FACW	data in Remarks or on a separate s	sheet)
10			5 - Wetland Non-Vascular Plants	
11			6 - Problematic Hydrophytic Vegeta	ation' (Explain)
	95 = Total	Cover	<sup>1</sup> Indicators of hydric soil and wetland h	ydrology must
Woody Vine Stratum (Plot size:	)		be present unless disturbed or problem	atic.
1				
2		<u> </u>		
	0 = Total	Cover		
_			Hydrophytic Vegetation	Present?
% Bare Ground in Hert 5 % Cover	of Biotic		1	
<del></del>				
			Yes X No	
Remarks: Hydrophytic vegetation is dominant.	<u></u>			

SOIL							Sai	mpling Point 8
	iption: (Describe to	the denth	needed to docum	ent the in	dicator or	confirm		1 0
Depth	Matrix	ine depti		dox Featu		0011111111	ine absence of	maioators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
(1101103)	Odioi (moist)	70		70	Турс		TOXIGIO	remand
0-16	10yr 4/2	100					Sandy loam	
	10y1 4/2	100					Banay Ibani	
'Type: C=Concenti	ration, D=Depletion, I	RM=Reduc	ced Matrix, CS=Cove	ered or Co	ated Sand	Grains.	Location: P	L=Pore Lining, M=Matrix.
Hydric Soil Indica	tors: (Applicable to	all LRRs,	unless otherwise	noted.)				
Histosol (A1)			Sandy Redox (S5)					Problematic Hydric Soils*:
Histic Epipedo			Stripped Matrix (S6					k (A9) ( <b>LRR C</b> )
Black Histic (A			Loamy Mucky Mine					K (A10) ( <b>LKK B</b> )
Hydrogen Sul	` '		Loamy Gleyed Mat	trix (F2)			Reduced	Vertic (F18)
	ers (A5) ( <b>LRR C</b> )		Depleted Matrix (F	3)			Red Pare	nt Material (TF2)
1 cm Muck (A	9) ( <b>LRR D</b> )		Redox Dark Surfac	e (F6)			Other (Ex	plain in Remarks)
Depleted Belo	ow Dark Surface (A11	)	Depleted Dark Sur	face (F7)				
Thick Dark Su	ırface (A12)		Redox Depression	s (F8)				
Sandy Mucky	Mineral (S1)		Vernal Pools (F9)		3Indica	ators of h	vdrophytic vegeta	ation and wetland hydrology
Sandy Gleyed	Matrix (S4)		_					sturbed or problematic.
Restrictive Layer							Hydric Soil I	
Type:	,						•	
Depth (inches	5):						Yes	No X
Remarks: No indic	cators of hydric soils	were obse	erved.					
HYDROLOGY						_		
-	rology Indicators:					Se		rs (2 or more required)
	(minimum of one req	uired; che	11.07					rks (B1) (Riverine)
Surface Wate	r (A1)		Salt Crust (B11)					Deposits (B2) (Riverine)
High Water Ta	able (A2)		Biotic Crust (B12)				Drift Depo	osits (B3) (Riverine)
Saturation (A3			Aquatic Invertebrat	tes (B13)			Drainage	Patterns (B10)
	(B1) (Nonriverine)	=	Hydrogen Sulfide (	, ,			•	on Water Table (C2)
·	OOSITS (BZ) (Nonriver	ine)	Oxidized Rhizosph			ots (C3)	,	Burrows (C8)
Surface Soil C	(B3) (Nonriverine)		Presence of Reduce Recent Iron Reduce	•	,	·6)		Notice on Aerial Imagery (Capitard (D2)
	sible on Aerial Image	ry (B7)	Thin Muck Surface		eu Solis (C	0)		.quitard (D3) tral Test (D5)
Water-Stained	ŭ	y (D1)	Other (Explain in R	` '				irai rest (Bo)
vvater-Stainet	Leaves (D3)		Other (Explain in N	ciliaiks)	_			
Field Observation		NI- 37	Donath (in 1				Notional Heading	any Dragont?
Surface Water Prese Water Table Prese		No X	Depth (inches):		- [	V	Wetland Hydrolo	gy Present?
Saturation Present		No X	Depth (inches):  Depth (inches):		-		Yes X N	do C
(includes capi		110 21			-		100 1	
	ed Data (stream gau	ge, monit	oring well, aerial pl	notos, pre	vious insi	pections	), if available:	
	( 944	J.,	3 · · · , p.	, <sub> </sub>		,	,,	
Remarks: Sediemi	nt and drift deposits	indicate f	frequent flooding.					

	AND DETERMIN	IATION DATA FO	DRM -Arid West Region
v.110918  Project/Site: Friant-Kern Canal		City/County:	Tulare County Sampling Date: 12/10/2019
<u> </u>	te: California	City/County.	
Applicant/Owner: Friant Star Investigator(s): Gabe Youngblood, Chariss			Sampling Point 9 Feature ID: GRB2  Section, Township, Range: Sec. 30, T21S, R27E
	epression	Local Relief (co	oncave, convex, none): Concave Slope (%): 5
Subregion (LRR): Mediterranean California		_ `	Long: -119.090259 Datum: NAD83
Soil Map Unit Name: Nord fine sandy loam,			NWI classification None
Are climatic / hydrologic conditions on the site			X No (If no, explain in Remarks.)
Are Vegetation $Y$ , Soil $Y$ , or Hydrolog	• •		Are "Normal Circumstances" present? Yes X No
Are Vegetation $N$ , Soil $N$ , or Hydrolog			(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map			
Hydrophytic Vegetation Present? Yes	x No		
Hydric Soil Present? Yes	No x	Is the Sample within a We	VAC NO V
Wetland Hydrology Present? Yes	x No	within a vve	statiu:
Evaluation of features designated "Other V			
Characteristics: Type: Detention	on basin	Width: N/A	Substrate: Soil
Indicators: Defined bed and bank: X Feature Designation: Perennial	-	Scour Intermittent X	OHWM Mapped X Ephemeral
Natural Drainage	Artific	ial Drainage X	Navigable Water
			ated by drift deposits and wave formed shelving . Feature
=	_		banks but the rest of the feature had been recently disked.
			·
VECETATION . Her estautific names of place	unto I int all amos	siaa in tha nlat N	HIGT LIST COVER IN DESECTIONS ORDER
3/3 Abbrev. Species Name		ninant Indicator	IUST LIST COVER IN DESECENDING ORDER  IDominance Test worksheet:
Tree Stratum (Plot size:		ecies? Status	Number of Dominant Species
1			That Are OBL, FACW, or FAC: 2 (A)
2			
3			Total Number of Dominant
4			Species Across All Strata: 2 (B)
	0 = Tot	al Cover	
Sapling/Shrub Stratum_(Plot size:	)		Percent of Dominant Species
1 Sallae Salix laevigata	5 Y	ES FACW	That Are OBL, FACW, or FAC: 1 (A/B)
2 Tamchi Tamarix chinensis	1 N	NO FAC	Prevalence Index worksheet:
3			Total % Cover of: Multiply by:
4			OBL species 0 x 1 = 0
5			FACW species 5 x 2 = 10
	<u>6</u> = Tot	al Cover	FAC species <u>26</u> x 3 = <u>78</u>
Herb Stratum (Plot size:	_)		FACU species 3 x 4 = 12
1 Echcol Echinochloa colona		ES FAC	UPL species $2 \times 5 = 10$
2 Amapal Amaranthus palmeri 3 Triter Tribulus terrestris		NO FACU UPL	Column Totals: $36$ (A) $110$ (B) Prevalence Index = B/A = $3.0556$
4		to oil	Hydrophytic Vegetation Indicators:
5			1 - Rapid Test for Hydrophytic Vegetation
6			Yes 2 - Dominance Test is >50%
7			N <sub>0</sub> 3 - Prevalence Index is ≤3.0 <sup>1</sup>
8			4 - Morphological Adaptations (Provide supporting
9			data in Remarks or on a separate sheet)
10			5 - Wetland Non-Vascular Plants <sup>1</sup> 6 - Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
11	20 Tak	al Cavar	
Was du Vina Stratum (Distaire)	30 = Tot	al Cover	Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Woody Vine Stratum (Plot size:1	)		be present unless disturbed of problematic.
2			
	0 = Tot	al Cover	
		ai Covei	Hydrophytic Vegetation Present?
% Bare Ground in Hert 70 % C	Cover of Biotic		riyarophytic vegetation riesent:
// // // // // // // // // // // // //			
			Yes X No
Remarks: Hydrophytic vegetation is dominant			

SOIL							Sar	mpling Point 9
	on: (Describe to	the dent	n needed to docum	ent the in	dicator or	confirm		1 0
Depth	Matrix	ine depi		dox Featu		0011111111	the absence of t	indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
(moneo)	Color (molot)	70	Color (molot)	70	1)00		TOXIGIO	romano
0-4	10YR 4/2	100					Sandy Loam	
	10110 1/2	100					Ballay Boalli	<del></del>
4-16	10YR 4/2	100					Sand	
<u> </u>								
								_
l					<del></del> .			
'Type: C=Concentratio	•				ated Sand	Grains.	Location: Pl	L=Pore Lining, M=Matrix.
Hydric Soil Indicators	s: (Applicable to	all LRRs		noted.)				
Histosol (A1)			Sandy Redox (S5)					Problematic Hydric Soils*:
Histic Epipedon (A	A2)		Stripped Matrix (S6					k (A9) ( <b>LRR C</b> )
Black Histic (A3)			Loamy Mucky Mine					K (A10) ( <b>LKK B</b> )
Hydrogen Sulfide	` '		Loamy Gleyed Mat					Vertic (F18)
Stratified Layers (			_ Depleted Matrix (F	,				nt Material (TF2)
1 cm Muck (A9) (I	,		Redox Dark Surfac	` ,			Other (Exp	olain in Remarks)
Depleted Below D	,	)	_ Depleted Dark Sur					
Thick Dark Surface	, ,		Redox Depression	s (F8)				
Sandy Mucky Min	eral (S1)		Vernal Pools (F9)		<sup>3</sup> Indica	ators of h	ydrophytic vegeta	ation and wetland hydrology
Sandy Gleyed Ma	trix (S4)				n	nust be p	resent, unless dis	sturbed or problematic.
Restrictive Layer (if p	resent):						Hydric Soil F	Present?
Type:								
Depth (inches):							Yes N	lo X
Remarks: No indicato:	rs of hydric soil v	were obse	rved.					
HYDROLOGY								
Wetland Hydrolo	av Indicators:					80	condary Indicator	rs (2 or more required)
Primary Indicators (min		iirad: aba	ok all that apply)			36		rks (B1) ( <b>Riverine</b> )
		illeu, che	1177					Deposits (B2) (Riverine)
Surface Water (A	•		Salt Crust (B11)					. , , , , . ,
High Water Table	(A2)		Biotic Crust (B12)					sits (B3) (Riverine)
Saturation (A3)	(Nonrivorino)		Aquatic Invertebrat	, ,				Patterns (B10)
Water Marks (B1) Segiment Deposit		ine) —	<ul><li>Hydrogen Sulfide (</li><li>Oxidized Rhizosph</li></ul>	, ,	Livina Do	oto (C2)	•	on Water Table (C2) Surrows (C8)
X Dritt Debosits (R3	` , `	o, <u> </u>	Presence of Reduc	•		uis (C3)	,	Visible on Aerial Imagery (C
Surface Soil Crac	, ,	_	Recent Iron Reduc	•	,	6)		quitard (D3)
Inundation Visible	` '	y (B7)	Thin Muck Surface		(-	-,		ral Test (D5)
Water-Stained Lea	aves (B9)		Other (Explain in R	emarks)				
Field Observations	,		` .					
Field Observations: Surface Water Present	? Yes	No X	Depth (inches):			V	Vetland Hydrolo	av Present?
Water Table Present?		No X	Depth (inches):		-	_		g,
Saturation Present?		No X	Depth (inches):		-		Yes X N	lo 📉
(includes capillary			-					
Describe Recorded D	ata (stream gau	ge, monit	oring well, aerial pl	notos, pre	vious ins	pections	), if available:	
Pomarka: Dute 1	ta in die-		1					
Remarks: Drift deposi	us maicate wetla	ına nyaro	nogy.					

	TERMINATI	ON DATA FO	ORM -Arid West Region	
v.110918 Project/Site: Friant-Kern Canal	_	City/County:	Tulare County	Sampling Date: 12/10/2019
		· · —	•	
Applicant/Owner: Friant State: Califo Investigator(s): Gabe Youngblood, Chariss Femino	ornia		Sampling Point 10 Section, Township, Range:	Feature ID: PON6
Local relief (hillside, terrace, etc.): Depression		ocal Poliof (or		
Subregion (LRR): Mediterranean California (Lat: 3		•	oncave, convex, none): Conca	
Soil Map Unit Name: Exeter loam, 0-2% slopes (114)	6.031467		Long: -119.096964 NWI classif	Datum: NAD83 Fication None
Are climatic / hydrologic conditions on the site typical for				· ·
Are Vegetation <u>x</u> , Soil <u>x</u> , or Hydrology <u>x</u> s	-	•	(If needed, explain any a	ces" present? Yes x No
Are Vegetation $\underline{x}$ , Soil $\underline{x}$ , or Hydrology $\underline{x}$ n SUMMARY OF FINDINGS – Attach site map showin				
	y samping	point location	ns, transects, important lea	tures, etc.
Hydrophytic Vegetation Present? Yes x No Hydric Soil Present? Yes No		Is the Sampl	ed Area Yes N	lo x
	<u> </u>	within a We	etland?	0 x
Wetland Hydrology Present? Yes x No Evaluation of features designated "Other Waters"				
Characteristics: Type: Irrigation pond	Wic	dth: N/A	Substrate:	Soil
Indicators: Defined bed and bank: X		Scour	OHWM Mappe	
Feature Designation: Perennial	Inte	ermittent X	Ephemer	ral
Natural Drainage	Artificial D	rainage X	Navigable Wat	er
Remarks: Data point documents an irrigation pond v	which suppo	rts facultativ	e species along its banks and	d obligate plants in the bottom of
the feature. The feature lacks hydric soils	but support	ts dominant h	ydrophytic vegetation and v	vetland hydrology.
VEGETATION – Use scientific names of plants. List  3/3 Abbrev. Species Name Absolu			IDST LIST COVER IN DESE	
3/3 Abbrev. Species Name Absolu Tree Stratum (Plot size: ) % Cov.			Number of Dominant Spe	
1	ог орошоо	. Otatao	That Are OBL, FACW, or	
				(,,
3	_		Total Number of Domina	nt
	_	_	Species Across All Strata	
<u> </u>	= Total C		Species Across Air Strate	(B)
Conline (Chrish Christian (Diet eines	= 10tal C	ovei		
Sapling/Shrub Stratum (Plot size:)			Percent of Dominant Spe	
			That Are OBL, FACW, or	
2			Prevalence Index worksh	
3			Total % Cover of:	Multiply by:
4			OBL species 0	x 1 =0
5		_	FACW species 45	x 2 = 90
0	= Total C	over	FAC species 10	x 3 = <u>30</u>
Herb Stratum (Plot size:)			FACU species 0	x 4 =0
1 Lepfus Leptochloa fusca 40	YES YES	FACW	UPL species 0	x 5 = 0
2 Rumcri Rumex crispus 10		FAC	Column Totals: 55	(A) 120 (B)
3 Cypera Cyperus eragrostis 5	NO	FACW	Prevalence Index = Hydrophytic Vegetation I	2.1010
5		_	1 - Rapid Test for Hydi	
6			Yes 2 - Dominance Test is	
7		_	Yes 3 - Prevalence Index is	_
8	_			ptations <sup>1</sup> (Provide supporting
9			data in Remarks or on	
10			5 - Wetland Non-Vasc	
11		_		ohytic Vegetation՝ (Explain)
55	= Total Co	over	1 Indicators of hydric soil ar	nd wetland hydrology must
Woody Vine Stratum (Plot size:	_)		be present unless disturbed	, 0,
1	_'	-		
	_			
	= Total C	over		
	- 10tai 0	0701	Hydrophytic	Vegetation Present?
% Bare Ground in Hert 0 % Cover of E	Biotic 45		Hydrophytic	regetation riesent?
70 Date Steam in Field 70 Cover of E	0 40			
			Yes	X No
Remarks: Hydrophytic vegetation is dominant. Cattails	(Typha sp.)	dominante in	the bottom of the feature.	
	,			

Profile Desc							San	. 0
	ription: (Describe to	the deptl	n needed to docum	nent the inc	dicator or	confirm	the absence of i	ndicators.)
Depth	Matrix		Re	edox Featur	es			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-3	7.5YR 4/6	95	5YR 4/6	5	С	$_{\mathrm{PL}}$	Sandy Loam	
0.0	7.0110 110		0110 110			112	Sanay Boam	
3-8	10YR 5/3	90	5YR 4/6	10	С	PL	Sandy Loam	
8	Compacted layer							
					·			
	ration, D=Depletion, R		•		ated Sand	Grains.	Location: PL	_=Pore Lining, M=Matri
Histosol (A1)	ators: (Applicable to	ali LRKS,	Sandy Redox (S5	•			Indicators for F	Problematic Hydric Sc
Histic Epiped	` '		Stripped Matrix (S	66)				(A9) ( <b>LRR C</b> )
Black Histic ( Hydrogen Su	•		Loamy Mucky Mir Loamy Gleyed Ma					(A10) ( <b>LKK B</b> ) /ertic (F18)
	ers (A5) ( <b>LRR C</b> )		Depleted Matrix (I					it Material (TF2)
1 cm Muck (A	(A9) (LRR D)	_	Redox Dark Surfa	ice (F6)				plain in Remarks)
•	ow Dark Surface (A11)	)	Depleted Dark Su	, ,				
Thick Dark S Sandy Mucky	` ,		Redox Depression Vernal Pools (F9)		3			
Sandy Gleye	, ,		_ vernai i oois (i <i>s)</i>			ators of h		tion and wetland hydro
Sanuv Gieve	3 Matrix (54)				r	nust be p	resent, unless dist	turbed or problematic.
rictive Layer	(if present):				r	nust be p	resent, unless dis Hydric Soil P	turbed or problematic. resent?
trictive Layer Type: Depth (inches	(if present): Compac	eted soil	mrod		r	nust be p		resent?
trictive Layer Type: Depth (inchestarks: No indi	(if present):	8	rved.		r	nust be p	Hydric Soil P	resent?
trictive Layer Type: Depth (inchestarks: No indi	(if present):  Compacing S): cators of hydric soil w	8	rved.		r		Hydric Soil P	resent?
trictive Layer Type: Depth (inchestarks: No indi	(if present): Compac	8 vere obse			r		Hydric Soil P Yes N	resent?
trictive Layer Type: Depth (inchestarks: No indi	(if present): Compacts): cators of hydric soil well- lrology Indicators: (minimum of one requ	8 vere obse			r		Hydric Soil P Yes N  condary Indicator Water Mar Sediment I	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine
rictive Layer Type: Depth (inches larks: No indi ROLOGY Wetland Hyd ary Indicators Surface Water High Water T	(if present):  Compact  Compac	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12)		r		Hydric Soil P Yes N  condary Indicator Water Mar Sediment I Drift Depos	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine)
ROLOGY Wetland Hycary Indicators Surface Water T	(if present):  Compacing C	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra	ates (B13)	r		Hydric Soil P Yes N  condary Indicator Water Mar Sediment I Drift Depos	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10)
ROLOGY Wetland Hyc ary Indicators Surface Water High Water T Saturation (A Water Marks Segiment De	(if present): Compaces: Cators of hydric soil versions: (minimum of one requer (A1) (able (A2) (B1) (Nonriverine) (posits (B2) (Nonriverine)	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp	ates (B13) Odor (C1) heres along	Living Ro	Se	Hydric Soil P Yes N  condary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) on Water Table (C2) urrows (C8)
ROLOGY Wetland Hycary Indicators Surface Water High Water T Saturation (A Water Marks Segiment De Drift Deposits	(if present): Compaces): cators of hydric soil vertical v	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu	ates (B13) Odor (C1) heres along uced Iron (C	Living Ro	Seconds (C3)	recondary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) on Water Table (C2) urrows (C8) Visible on Aerial Image
ROLOGY Wetland Hycary Indicators Surface Water Type: Depth (Inchestarks: No indicators ROLOGY Wetland Hycary Indicators Surface Water High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil of	(if present): Compaces): cators of hydric soil vertical v	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille	Living Ro	Seconds (C3)	Hydric Soil P Yes N  Condary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) on Water Table (C2) urrows (C8)
ROLOGY Wetland Hydracy Indicators Surface Water High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil of Inundation Vi	(if present): Compact (is): Cators of hydric soil vertical vertica	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7)	Living Ro	Seconds (C3)	Hydric Soil P Yes N  Condary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) on Water Table (C2) urrows (C8) Visible on Aerial Image
ROLOGY Wetland Hyc ary Indicators Surface Water High Water T Saturation (A water Marks Sediment De Drift Deposits Surface Soil ( Inundation Vi Water-Staine	(if present): Compaces): Cators of hydric soil we cators: (minimum of one requer (A1) (able (A2) (a) (B1) (Nonriverine) (B3) (Nonriverine) (Cracks (B2) (Nonriverine) (Cracks (B6) (Sible on Aerial Imagery (d Leaves (B9) (ns:	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7)	Living Ro	<u>Se</u>	recondary Indicator: Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac FAC-Neutr	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) in Water Table (C2) urrows (C8) Visible on Aerial Image quitard (D3) ral Test (D5)
ROLOGY Wetland Hycary Indicators Surface Water Mater M	(if present):  Compact  Compact  Compact  Compact  Cators of hydric soil we cators of hydric soil we cators  Irology Indicators:  (minimum of one requestre (A1)  (able (A2)  (B1) (Nonriverine)  (B3) (Nonriverine)  Cracks (B6)  sible on Aerial Imager of Leaves (B9)  ns:  (Sent? Yes	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7)	Living Ro	<u>Se</u>	Hydric Soil P Yes N  Condary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) in Water Table (C2) urrows (C8) Visible on Aerial Image quitard (D3) ral Test (D5)
ROLOGY Wetland Hycary Indicators Surface Water High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil of Inundation Vi Water-Staine HObservation ace Water Preserration Present	(if present): Compacible Compacible Cators of hydric soil with the cators (minimum of one require (A1) able (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) Cracks (B6) sible on Aerial Imagery d Leaves (B9)  ns: sent? Yes   1 s	8 vere obse	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7)	Living Ro	<u>Se</u>	recondary Indicator: Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac FAC-Neutr	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) In Water Table (C2) urrows (C8) Visible on Aerial Image quitard (D3) ral Test (D5)  gy Present?
ROLOGY Wetland Hyc ary Indicators Surface Water High Water T Saturation (A Water-Marks Sediment De Drift Deposits Surface Soil of Inundation Vi Water-Staine Hobservation ace Water Preserration Present (includes cap	(if present): Compacible Compacible Cators of hydric soil with the cators (minimum of one require (A1) able (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) Cracks (B6) sible on Aerial Imagery d Leaves (B9)  ns: sent? Yes   1 s	vere observere observer observere observere observere observere observere observere ob	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) d Soils (C		Hydric Soil P Yes N  Condary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac FAC-Neutr  Wetland Hydrolog	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) In Water Table (C2) urrows (C8) Visible on Aerial Image quitard (D3) ral Test (D5)  gy Present?
ROLOGY Wetland Hyc ary Indicators Surface Water High Water T Saturation (A Water-Marks Sediment De Drift Deposits Surface Soil of Inundation Vi Water-Staine Hobservation ace Water Preserration Present (includes cap	(if present): Compacible Cators of hydric soil was cators: (minimum of one requert (A1) able (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) Cracks (B6) sible on Aerial Imagery d Leaves (B9)  ns: sent? Yes 1 it? Yes 1 it? Yes 1 it]	vere observere observer observere observere observere observere observere observere ob	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) d Soils (C		Hydric Soil P Yes N  Condary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac FAC-Neutr  Wetland Hydrolog	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) In Water Table (C2) urrows (C8) Visible on Aerial Image quitard (D3) ral Test (D5)  gy Present?
ROLOGY Wetland Hyder Tyan ary Indicators Surface Water High Water T Saturation (A water Marks Sediment De Drift Deposits Surface Soil of Inundation Vi Water-Staine Hobservation ace Water Preser Table Preser Includes cap	(if present): Compacible Cators of hydric soil was cators: (minimum of one requert (A1) able (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) Cracks (B6) sible on Aerial Imagery d Leaves (B9)  ns: sent? Yes 1 it? Yes 1 it? Yes 1 it]	vere observere o	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) d Soils (C	Sections	Hydric Soil P Yes N  Accondary Indicators Water Mar Sediment I Drift Depos Drainage F Dry-Seaso Crayfish B Saturation Shallow Ac FAC-Neutr  Wetland Hydrolog Yes X N  ), if available:	s (2 or more required) ks (B1) (Riverine) Deposits (B2) (Riverine) Patterns (B10) In Water Table (C2) urrows (C8) Visible on Aerial Image quitard (D3) ral Test (D5)  gy Present?

	ATION DATA FORM -Arid West Region
v.110918 Project/Site: Friant-Kern Canal	City/County: Tulare County Sampling Date: 12/11/2019
Applicant/Owner: Friant State: California	Sampling Point 11 Feature ID: GRB4
Investigator(s): Gabe Youngblood, Chariss Femino	Section, Township, Range: Sec. 30, T22S, R27E
Local relief (hillside, terrace, etc.): Depression	Local Relief (concave, convex, none): Concave Slope (%): 5
Subregion (LRR): Mediterranean California (ILat: 35.979627	
Soil Map Unit Name: Nord fine sandy loam, 0-2% slopes (130)	NWI classification None
Are climatic / hydrologic conditions on the site typical for this tim	
Are Vegetation $\underline{}$ , Soil $\underline{}$ , or Hydrology $\underline{}$ significantl	
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$ naturally p	
SUMMARY OF FINDINGS – Attach site map showing sampli	ng point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes x No	Is the Sampled Area
Hydric Soil Present? Yes x No	within a Wetland?
Wetland Hydrology Present? Yes x No	
Evaluation of features designated "Other Waters"	
,, <u> </u>	Width: N/A Substrate: Soil
Indicators: Defined bed and bank: X	Scour OHWM Mapped X Intermittent X Ephemeral
Feature Designation: Perennial Natural Drainage Artificia	
_	2 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Remarks: Data point documents a groundwater recharge bas	in which supports all three wetland parameters.
VEGETATION – Use scientific names of plants. List all spec	ies in the plot. MUST LIST COVER IN DESECENDING ORDER
·	inant Indicator Dominance Test worksheet:
Tree Stratum (Plot size: ) % Cover Spec	
1	That Are OBL, FACW, or FAC: 1 (A)
2	
3	Total Number of Dominant
4	Species Across All Strata: 1 (B)
	al Cover
Sapling/Shrub Stratum (Plot size: )	
1	Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)
	Prevalence Index worksheet:
<u>,</u>	
3	Total % Cover of: Multiply by:
	OBL species 0 x 1 = 0
5	FACW species 0 x 2 = 0
	FAC species $80 \times 3 = 240$
Herb Stratum (Plot size:)	FACU species 0 x 4 = 0
1 Xanstr Xanthium strumarium 80 YI	ES FAC UPL species $0 \times 5 = 0$
2	Column Totals: 80 (A) 240 (B)
3	Prevalence Index = B/A = 3
	Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation
6	Yes 2 - Dominance Test is >50%
	$\frac{1 \text{ es}}{\text{Yes}}$ 3 - Prevalence Index is $\leq 3.0^{\circ}$
,—————————————————————————————————————	
8	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
9	5 - Wetland Non-Vascular Plants
10	6 - Problematic Hydrophytic Vegetation' (Explain)
11	
<del></del>	1 Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size:)	be present unless disturbed or problematic.
<sup>1</sup>	
2	
<u>0</u> = Tota	al Cover
<u> </u>	Hydrophytic Vegetation Present?
% Bare Ground in Hert 0 % Cover of Biotic	20
	Yes X No
Remarks: Hydrophytic vegetation is dominant.	

•	ntion: /Donoriho to	41141						
	•	tne aepti	n needed to docum	nent the in	dicator or	confirm	the absence of	indicators.)
Depth _	Matrix		Re	edox Featur				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	TTD 0 /s		**************************************	_		DI		
1-16	7.5YR3/1	95	5YR4/6	5	C	PL	Loamy sand	
								-
<del></del>								
								-
<del></del>					<del></del> .			
	ation, D=Depletion, R		•		ated Sand	Grains.	Location: P	L=Pore Lining, M=Matri
	ors: (Applicable to	all LRRs,		•			la dia stana fan	Danklamatia Ukadaia Ca
Histosol (A1)	(4.0)		Sandy Redox (S5	•				Problematic Hydric So
Histic Epipedor Black Histic (A	` '		Stripped Matrix (S Loamy Mucky Mir					k (A9) ( <b>LRR C</b> ) k (A1U) ( <b>LRK B</b> )
-	•							, , , , , ,
Hydrogen Sulfi			Loamy Gleyed Ma					Vertic (F18)
1 cm Muck (A9	rs (A5) (LRR C)	V	_ Depleted Matrix (I	,				nt Material (TF2)
- `	, ,		Redox Dark Surfa	` ,			Other (Ex	plain in Remarks)
	v Dark Surface (A11	)	_ Depleted Dark Su					
Thick Dark Sur	,		Redox Depression	, ,				
Sandy Mucky N			Vernal Pools (F9)					ation and wetland hydro
Sandy Gleyed	, ,				n	nust be p	·	sturbed or problematic.
trictive Layer (i	, ,				n	nust be p	resent, unless dis Hydric Soil F	
	f present):				n	nust be p	Hydric Soil I	
trictive Layer (i Type: Depth (inches):	f present):	or indica	tor F6 Redox Dark	: Surface.	n	nust be p	Hydric Soil I	Present?
trictive Layer (i Type: Depth (inches):	f present):	for indica	tor F6 Redox Dark	: Surface.	n	nust be p	Hydric Soil I	Present?
trictive Layer (i Type: Depth (inches):	f present):	for indica	tor F6 Redox Dark	Surface.	n	nust be p	Hydric Soil I	Present?
trictive Layer (i Type: Depth (inches): narks: Soil meet	f present):	or indica	tor F6 Redox Dark	Surface.	n	nust be p	Hydric Soil I	Present?
trictive Layer (i Type: Depth (inches): narks: Soil meet	if present): : ts the requirments i	or indica	tor F6 Redox Dark	Surface.	n		Hydric Soil F	Present?
trictive Layer (i Type: Depth (inches): narks: Soil meet	if present): : ts the requirments f			Surface.	n		Hydric Soil F  Yes X N  condary Indicato	Present?  No  rs (2 or more required)
trictive Layer (i Type: Depth (inches): narks: Soil meet PROLOGY Wetland Hydro	if present):  is the requirments follogy Indicators: minimum of one requirements.		ck all that apply)	Surface.	n		Hydric Soil F  Yes X N  condary Indicato  Water Ma	rs (2 or more required) rks (B1) (Riverine)
trictive Layer (in Type: Depth (inches): Depth	ology Indicators: minimum of one require. (A1)	uired; che	ck all that apply) _Salt Crust (B11)				Hydric Soil F Yes X N  condary Indicato Water Ma Sediment	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine
trictive Layer (in Type: Depth (inches): Depth	if present):  its the requirments follogy Indicators: minimum of one requirements (A1) ble (A2)	uired; che	ck all that apply) Salt Crust (B11) Biotic Crust (B12)		n		condary Indicato Water Ma Sediment Drift Depo	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine)
Trictive Layer (in Type: Depth (inches): Depth	ology Indicators: minimum of one requirements (A1) ble (A2)	uired; che	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra	ates (B13)	n		condary Indicato Water Ma Sediment Drift Depo	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10)
Trictive Layer (in Type: Depth (inches): Depth	ology Indicators: minimum of one require (A1) ble (A2) B1) (Nonriverine)	uired; che	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide	ates (B13) Odor (C1)		Se	condary Indicato Water Ma Sediment Drift Depo	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10) on Water Table (C2)
DROLOGY Wetland Hydronary Indicators (r Surface Water High Water Tal Saturation (A3) Water Marks (b	ts the requirments follogy Indicators: minimum of one requirments (A1) ble (A2) bl (Nonriverine) posits (B2) (Nonriverine)	uired; che	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp	ates (B13) Odor (C1) heres along	Living Ro	Se	condary Indicato Water Ma Sediment Drift Depo	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8)
DROLOGY Wetland Hydronary Indicators (nary Indicators (na	ts the requirments follogy Indicators: minimum of one requirments (A1) ble (A2) bl) (Nonriverine) bisis (B2) (Nonriverine) B3) (Nonriverine)	uired; che	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu	ates (B13) Odor (C1) heres along uced Iron (C	Living Ro	Se	condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Sease Crayfish E Saturation	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image
DROLOGY Wetland Hydronary Indicators (nary Indicators (na	ts the requirments follogy Indicators: minimum of one requirments (A1) ble (A2) bl) (Nonriverine) bisis (B2) (Nonriverine) B3) (Nonriverine)	ne)	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille	Living Ro	Se	condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Sease Crayfish E Saturation	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10) on Water Table (C2) Surrows (C8) n Visible on Aerial Image
DROLOGY Wetland Hydronary Indicators (nary Indicators (na	ts the requirments follogy Indicators: minimum of one requirments (A1) ble (A2) ble (A2) construction (Nonriverine) consts (B2) (Nonriverine) cracks (B6) ble on Aerial Imager	ne)	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7)	Living Ro	Se	condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Seaso Crayfish E Saturation Shallow A	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10) on Water Table (C2) Surrows (C8) n Visible on Aerial Image
ROLOGY Wetland Hydro ary Indicators (r Surface Water High Water Tal Saturation (A3) Water Marks (b Sediment Deposits ( Surface Soil Cr Inundation Visii Water-Stained	ts the requirments in the requirments of the requirment of the requirement of the requirements of the requirement of the requir	ne)	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7)	Living Ro	Se	condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Seaso Crayfish E Saturation Shallow A	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) sits (B3) (Riverine) Patterns (B10) on Water Table (C2) Surrows (C8) n Visible on Aerial Image
DROLOGY Wetland Hydronary Indicators (r Surface Water High Water Tal Saturation (A3) Water Marks (E Segment Deposits ( Surface Soil Cr Inundation Visil Water-Stained d Observations	cology Indicators: minimum of one requirements (A1) ble (A2) blin (Nonriverine) bracks (B6) ble on Aerial Imager Leaves (B9)	ne) X	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7)	Living Ro		condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Sease Crayfish E Saturation Shallow A X FAC-Neut	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image equitard (D3) tral Test (D5)
ROLOGY Wetland Hydro ary Indicators (r Surface Water High Water Tal Saturation (A3) Water Marks (b Sediment Deposits ( Surface Soil Cr Inundation Visii Water-Stained	ology Indicators: minimum of one requ (A1) ble (A2) strict (B2) (Nonriverine) racks (B6) ble on Aerial Imager Leaves (B9) strict (Passer) cent? Yes	ne)	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7)	Living Ro		condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Seaso Crayfish E Saturation Shallow A	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image equitard (D3) tral Test (D5)
Trictive Layer (in Type: Depth (inches): Depth	ts the requirments follogy Indicators: minimum of one requirments (A1) ble (A2) ble (A2) consts (B2) (Nonriverine) cracks (B6) ble on Aerial Imager Leaves (B9) cent? Yes	ne) X	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7)	Living Ro		condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Sease Crayfish E Saturation Shallow A X FAC-Neut	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image equitard (D3) tral Test (D5)  ogy Present?
Trictive Layer (in Type: Depth (inches): Depth	ts the requirments in the requirments of the requirment of the requirment of the requirement of the requirem	uired; che  X  ne)  X  y (B7)  No  X  No  X  No  X	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) ed Soils (C		condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Seaso Crayfish E Saturatior Shallow A X FAC-Neut	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image equitard (D3) tral Test (D5)  ogy Present?
Trictive Layer (in Type: Depth (inches): Depth	cology Indicators: minimum of one requirements (A1) ble (A2) blic (A2) consist (B2) (Nonriverine) cracks (B6) ble on Aerial Imager Leaves (B9) cent? Yes Yes Yes	uired; che  X  ne)  X  y (B7)  No  X  No  X  No  X	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) ed Soils (C		condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Seaso Crayfish E Saturatior Shallow A X FAC-Neut	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image equitard (D3) tral Test (D5)  ogy Present?
Trictive Layer (in Type: Depth (inches): Depth	ts the requirments in the requirments of the requirment of the requirment of the requirement of the requirem	uired; che  X  ne)  X  y (B7)  No  X  No  X  No  X	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along iced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) ed Soils (C		condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Seaso Crayfish E Saturatior Shallow A X FAC-Neut	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image equitard (D3) tral Test (D5)  ogy Present?
Trictive Layer (in Type: Depth (inches): Depth	ble on Aerial Imager Leaves (B9)  ent? Yes ent? Yes ent? Yes ery Yes ary fringe)  I Data (stream gauge	y (B7)  No X No X No X No X O R R R R R R R R R R R R R R R R R R	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) ed Soils (C	ots (C3) 6)	condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Sease Crayfish E Saturation Shallow A X FAC-Neut  Vetland Hydrolo Yes X N	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Desits (B3) (Riverine) Desits (B4) (Riverine) Desits (B5) (Riverine) Desits (B6) (Riverine) Desits (B7) (Riverine)
Trictive Layer (in Type: Depth (inches): Depth	ts the requirments in the requirments of the requirment of the requirment of the requirement of the requirem	y (B7)  No X No X No X No X O R R R R R R R R R R R R R R R R R R	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebra Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in  Depth (inches): Depth (inches): Depth (inches):	ates (B13) Odor (C1) heres along uced Iron (C ction in Tille e (C7) Remarks)	Living Ro 4) ed Soils (C	ots (C3) 6)	condary Indicato Water Ma Sediment Drift Depo Drainage Dry-Sease Crayfish E Saturation Shallow A X FAC-Neut  Vetland Hydrolo Yes X N	rs (2 or more required) rks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Desits (B3) (Riverine) Desits (B4) (Riverine) Desits (B5) (Riverine) Desits (B6) (Riverine) Desits (B7) (Riverine)

	TION DATA FORM -Arid West Region
v.110918	City/County Tulors County Compline Date: 10/11/9010
Project/Site: Friant-Kern Canal	City/County: Tulare County Sampling Date: 12/11/2019
Applicant/Owner: Friant State: California	Sampling Point 12 Feature ID: Upland
Investigator(s): Gabe Youngblood, Chariss Femino	Section, Township, Range: Sec. 30, T22S, R27E
Local relief (hillside, terrace, etc.): Terrace	Local Relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): Mediterranean California (ILat: 35.979623	Long: 119.106096 Datum: NAD83
Soil Map Unit Name: Nord fine sandy loam, 0-2% slopes (130)	NWI classification None
Are climatic / hydrologic conditions on the site typical for this time	of year? Yes X No (If no, explain in Remarks.)
Are Vegetation $N$ , Soil $N$ , or Hydrology $N$ significantly	· · · · · · · · · · · · · · · · · · ·
Are Vegetation N, Soil N, or Hydrology N naturally pro	
SUMMARY OF FINDINGS – Attach site map showing samplin	
Hydrophytic Vegetation Present? Yes No x	
Hydric Soil Present? Yes No x	Is the Sampled Area Yes No x
Wetland Hydrology Present? Yes No x	within a Wetland?
Evaluation of features designated "Other Waters"	
	/idth: Substrate:
Indicators: Defined bed and bank:	Scour OHWM Mapped
Feature Designation: Perennial I	ntermittent Ephemeral —
<u> </u>	Drainage Navigable Water
Remarks: Data point documents uplands adjacent to a ground	Ü
VEGETATION – Use scientific names of plants. List all specie	·
3/3 Abbrev. Species Name Absolute Domir Tree Stratum (Plot size: ) % Cover Species	
Tree Stratum (Plot size:) % Cover Special) % Cover Special	
	That Are OBL, FACW, or FAC: 0 (A)
	<u> </u>
3	Total Number of Dominant
4	Species Across All Strata: 1 (B)
= Total	Cover
Sapling/Shrub Stratum (Plot size:)	Percent of Dominant Species
1	That Are OBL, FACW, or FAC: 0 (A/B)
2	Prevalence Index worksheet:
3	Total % Cover of: Multiply by:
4	OBL species $0 \times 1 = 0$
5	FACW species 5 x 2 = 10
0 = Total	
Herb Stratum (Plot size:	FACU species 75 x 4 = 300
1 Amaalb Amaranthus albus 70 YE	
2 Erican Erigeron canadensis 5 NC	<del></del>
3 Leptus Leptochloa tusca 5 NC	(-)
4	Hydrophytic Vegetation Indicators:
5	1 - Rapid Test for Hydrophytic Vegetation
6	No 2 - Dominance Test is >50%
7	N <sub>0</sub> 3 - Prevalence Index is ≤3.0 <sup>1</sup>
8	4 - Morphological Adaptations (Provide supporting
9	data in Remarks or on a separate sheet)
10	5 - Wetland Non-Vascular Plants
11	6 - Problematic Hydrophytic Vegetation (Explain)
80 = Total	Cover Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size: )	be present unless disturbed or problematic.
1	
	<del></del>
$\frac{2}{0} = \text{Total}$	Cover
<u> </u>	
0/ Dans Onward in Harth 200 0/ Osward Dietie	Hydrophytic Vegetation Present?
% Bare Ground in Hert 20 % Cover of Biotic 0	<u>'</u>
	Vas Na V
	YesNo X
Pomarka: Hydrophytic vagetation is not deminant	
Remarks: Hydrophytic vegetation is not dominant.	

SOIL							Sa	mpling Point	12
	iption: (Describe to	the dent	needed to docum	ent the in	dicator or	confirm			
Depth	Matrix	ine depii		dox Featur		0011111111	the absence of	maioators.,	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remar	ks
(monoc)	Color (molot)	70	Color (molot)	70	1)00		TOXICIO	rtoman	
1-16	10YR	100					Loamy sand		
	10110	100					Loamy sand		
<del></del>									
									_
								-	
									<u> </u>
'Type: C=Concentr	ration, D=Depletion, I	RM=Redu	ced Matrix, CS=Cove	ered or Co	ated Sand	Grains.	Location: F	L=Pore Lining, I	M=Matrix.
Hydric Soil Indica	tors: (Applicable to	all LRRs,	unless otherwise	noted.)					
Histosol (A1)			Sandy Redox (S5)				Indicators for	Problematic Hy	/dric Soils°:
Histic Epipedo			Stripped Matrix (S6					k (A9) ( <b>LRR C</b> )	
Black Histic (A	<del>1</del> 3)		Loamy Mucky Mine	eral (F1)			2 cm iviud	K (A10) ( <b>LKK B</b> )	)
Hydrogen Sul	fide (A4)		Loamy Gleyed Mat	trix (F2)			Reduced	Vertic (F18)	
Stratified Laye	ers (A5) ( <b>LRR C</b> )		Depleted Matrix (F	3)			Red Pare	nt Material (TF2)	)
1 cm Muck (A	9) ( <b>LRR D</b> )		Redox Dark Surfac	e (F6)			Other (Ex	plain in Remark	s)
Depleted Belo	w Dark Surface (A11	)	Depleted Dark Sur	face (F7)					
Thick Dark Su	ırface (A12)		Redox Depression	s (F8)					
Sandy Mucky	Mineral (S1)		Vernal Pools (F9)		3Indic	ators of h	ydrophytic veget	ation and wetlan	d hydrology
Sandy Gleyed			-				resent, unless di		, ,,
Restrictive Layer						р.	Hydric Soil		J.1.4.10.
Type:	(								
Depth (inches	s):						Yes	No X	
Remarks: No indic	cators of hydric soil v	were obse	rved.						
HYDROLOGY									
Wetland Hyd	rology Indicators:					Se	condary Indicato		
Primary Indicators	(minimum of one requ	uired; che	ck all that apply)					ırks (B1) ( <b>Riveri</b> ı	*
Surface Wate	r (A1)		Salt Crust (B11)				Sediment	Deposits (B2) (I	Riverine)
High Water Ta	able (A2)		Biotic Crust (B12)				Drift Depo	osits (B3) (River	ine)
Saturation (A3	3)		Aquatic Invertebrat	tes (B13)			 Drainage	Patterns (B10)	
Water Marks (	(B1) (Nonriverine)		Hydrogen Sulfide C	Odor (C1)				on Water Table	(C2)
·	oosits (B2) (Nonriver	ine)	Oxidized Rhizosph			ots (C3)	,	Burrows (C8)	
	(B3) (Nonriverine)		Presence of Reduc	,	,	_,		n Visible on Aeria	al Imagery (C
Surface Soil C	` '	(DZ)	Recent Iron Reduc		ed Soils (C	6)		Aquitard (D3)	
	sible on Aerial Image	y (B7)	Thin Muck Surface	, ,			FAC-Neu	tral Test (D5)	
Water-Stained	d Leaves (B9)		Other (Explain in R	temarks)					
Field Observation	s:								
Surface Water Pres		No X	Depth (inches):		_	V	Vetland Hydrolo	ogy Present?	
Water Table Prese	· · · · · · · · · · · · · · · · · · ·	No X	Depth (inches):		_		v		
Saturation Present		No X	Depth (inches):		-		Yes	No X	
(includes capi	ed Data (stream gau	ae monit	oring well, serial pl	notos pro	vious ins	nactions	if available:		
pescribe Recorde	a Data (Stream yau)	ge, monit	ornig wen, aeriai pi	iotos, pre	vious IIIS	pecilons,	, ii available:		
Remarks: No indic	cators of wetland hy	drology w	ere observed.						

v.110918	WETLA	ND DETER	MINATION	V DATA FO	RM -Arid West Region
			0	<b>10</b>	T
Project/Site: Fria				/County:	Tulare County Sampling Date: 12/11/2019
Applicant/Owner		California	1		Sampling Point 13 Feature ID: Upland
• , ,	Gabe Youngblood, Chariss Fe				Section, Township, Range: Sec. 31, T22S, R27E
,	· · · · · · · · · · · · · · · · · · ·	ression		al Relief (co	oncave, convex, none): Concave Slope (%): 2
	): Mediterranean California (			l	Long: -119.105244 Datum: NAD83
Soil Map Unit Na	me: Nord fine sandy loam, 0-	2% slopes (	(130)		NWI classification None
•	drologic conditions on the site ty	•	-	_	X No(If no, explain in Remarks.)
Are Vegetation	$\underline{N}$ , Soil $\underline{N}$ , or Hydrology	N signifi	cantly distu	ırbed?	Are "Normal Circumstances" present? Yes X No
Are Vegetation	$\underline{N}$ , Soil $\underline{N}$ , or Hydrology				(If needed, explain any answers in Remarks.)
			mpling po	int location	ns, transects, important features, etc.
Hydrophytic Veg		No	X Is	s the Sample	ed Area
Hydric Soil Prese		No		within a We	VAS NO V
Wetland Hydrolo			X		
	eatures designated "Other Wa	ters"	14 <i>C</i> 141		0.1.4.4
Characteristics: Indicators:	: Type: Defined bed and bank:		Width:	: Scour	Substrate: OHWM Mapped
Feature Designa				nittent	Ephemeral
reature Designi	Natural Drainage	A	rtificial Drai		Navigable Water
Remarks: Data	*				site adjacent to Deer Creek which lacks indicators of
	plogy and hydrophytic vegetati		prosumou	014 0011011	and adjusted to Boot ereel which takes maleuters of
]	7				
	·		species in	the plot. M	UST LIST COVER IN DESECENDING ORDER
3/3 Abbrev. Tree Stratum	Species Name (Plot size: )	Absolute	Dominant	Indicator	Dominance Test worksheet:
	(Plot Size)	% Cover	Species?	Status	Number of Dominant Species
1					That Are OBL, FACW, or FAC:(A)
2		- —			
3					Total Number of Dominant
4			T		Species Across All Strata: 2 (B)
0 11 /01 1 0		0 =	: Total Cove	er er	
	tratum (Plot size:	)			Percent of Dominant Species
1		- —			That Are OBL, FACW, or FAC: 0 (A/B)
2		- —			Prevalence Index worksheet:
3		- —			Total % Cover of: Multiply by:
4		- —			OBL species 0 x 1 = 0
5					FACW species $7 \times 2 = 14$
		0 =	: Total Cove	er	FAC species $0 \times 3 = 0$
					· — —
_	(Plot size: 5-foot radius )				FACU species 73 x 4 = 292
1 Helann	Helianthus annuus	35	YES	FACU	FACU species $\begin{array}{c c} \hline 73 & x \ 4 = & 292 \\ \hline UPL species & 5 & x \ 5 = & 25 \\ \hline \end{array}$
1 Helann 2 Lacser	Helianthus annuus  Lactuca serriola	20	YES	FACU	FACU species $73$ x 4 = $292$ UPL species $5$ x 5 = $25$ Column Totals: $85$ (A) $331$ (B)
1 Helann 2 Lacser 3 Unk	Helianthus annuus  Lactuca serriola  Unknown	20	YES	FACU 0	FACU species $\begin{array}{c cccc} \hline 73 & x & 4 & = & 292 \\ \hline UPL species & 5 & x & 5 & = & 25 \\ \hline Column Totals: & 85 & (A) & 331 & (B) \\ \hline Prevalence Index = B/A & = & 3.8941 \\ \hline \end{array}$
1 Helann 2 Lacser	Helianthus annuus  Lactuca serriola	20	YES	FACU	FACU species $73$ x 4 = $292$ UPL species $5$ x 5 = $25$ Column Totals: $85$ (A) $331$ (B)
1 Helann 2 Lacser 3 Unk 4 Erican	Helianthus annuus  Lactuca serriola Unknown Erigeron canadensis	20 10 8	YES NO NO	FACU FACU	FACU species $ 73 $ x 4 = $ 292 $ UPL species $ 5 $ x 5 = $ 25 $ Column Totals: $ 85 $ (A) $ 331 $ (B) Prevalence Index = B/A = $ 3.8941 $ Hydrophytic Vegetation Indicators:
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum	20 10 8 5 5	YES NO NO NO NO	FACU FACU FACU FACU	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus	20 10 8 5	YES NO NO NO	FACU FACU FACU	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times 6 = 331 \times 6$ Prevalence Index = B/A = $3.8941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\leq 3.0^{1}$
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera	Helianthus annuus  Lactuca serriola Unknown Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis	20 10 8 5 5 5	YES NO NO NO NO	FACU FACU FACU FACU FACU	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar	Helianthus annuus  Lactuca serriola Unknown Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum	20 10 8 5 5 5 5 5	YES NO NO NO NO NO NO NO NO	FACU FACU FACU FACU FACU UPL	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times 6 = 331 \times 6$ Prevalence Index = B/A = $38941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\leq 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown	20 10 8 5 5 5 5 5	YES NO NO NO NO NO NO NO NO	FACU 0 FACU FACU FACU FACU O	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times 6 = 331 \times 6$ Prevalence Index = B/A = $38941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\leq 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown	20 10 8 5 5 5 5 5 2	YES NO NO NO NO NO NO NO NO	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times 6 = 331$ Prevalence Index = B/A = $38941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\leq 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants <sup>1</sup>
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 5 2	YES NO	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times 6 = 25$ Prevalence Index = B/A = $331 \times 6$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\le 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants <sup>1</sup> 6 - Problematic Hydrophytic Vegetation (Explain)
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 5 2	YES NO	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times (A) = 331 \times (B)$ Prevalence Index = B/A = $38941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\le 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants <sup>1</sup> 6 - Problematic Hydrophytic Vegetation (Explain)
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 5 2	YES NO	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times (A) = 331 \times (B)$ Prevalence Index = B/A = $38941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\le 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants <sup>1</sup> 6 - Problematic Hydrophytic Vegetation (Explain)
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11  Woody Vine Stra	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 2 100 =	YES NO Total Cove	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times (A) = 331 \times (B)$ Prevalence Index = B/A = $38941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\le 3.0^1$ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants <sup>1</sup> 6 - Problematic Hydrophytic Vegetation (Explain)
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11  Woody Vine Stra	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 2 100 =	YES NO	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species 73 x 4 = 292  UPL species 5 x 5 = 25  Column Totals: 85 (A) 331 (B)  Prevalence Index = B/A = 3.8941  Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants¹  6 - Problematic Hydrophytic Vegetation¹ (Explain)  ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11  Woody Vine Stra	Helianthus annuus  Lactuca serriola Unknown Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 2 100 =	YES NO NO NO NO NO NO NO NO Total Cove	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species $73 \times 4 = 292$ UPL species $5 \times 5 = 25$ Column Totals: $85 \times (A) = 331 \times (B)$ Prevalence Index = B/A = $3.8941$ Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is $\le 3.0^{\circ}$ 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants 6 - Problematic Hydrophytic Vegetation (Explain)
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11  Woody Vine Stra	Helianthus annuus  Lactuca serriola Unknown  Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 2 100 =	YES NO NO NO NO NO NO NO NO Total Cove	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species 73 x 4 = 292  UPL species 5 x 5 = 25  Column Totals: 85 (A) 331 (B)  Prevalence Index = B/A = 3.8941  Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants¹  6 - Problematic Hydrophytic Vegetation¹ (Explain)  ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11  Woody Vine Stra	Helianthus annuus  Lactuca serriola Unknown Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 2 100 =	YES NO NO NO NO NO NO NO NO Total Cove	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species 73 x 4 = 292  UPL species 5 x 5 = 25  Column Totals: 85 (A) 331 (B)  Prevalence Index = B/A = 3.8941  Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants¹  6 - Problematic Hydrophytic Vegetation¹ (Explain)  ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
1 Helann 2 Lacser 3 Unk 4 Erican 5 Brohor 6 Hormur 7 Cypera 8 Epibar 9 Unk 10 Perlap 11  Woody Vine Stra	Helianthus annuus  Lactuca serriola Unknown Erigeron canadensis Bromus hordeaceus Hordeum murinum Cyperus eragrostis Epilobium brachycarpum Unknown Persicaria lapathifolia	20 10 8 5 5 5 5 2 100 =	YES NO NO NO NO NO NO NO NO Total Cove	FACU 0 FACU FACU FACU FACW UPL 0 FACW	FACU species 73 x 4 = 292  UPL species 5 x 5 = 25  Column Totals: 85 (A) 331 (B)  Prevalence Index = B/A = 3,8941  Hydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation  No 2 - Dominance Test is >50%  No 3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  5 - Wetland Non-Vascular Plants¹  6 - Problematic Hydrophytic Vegetation¹ (Explain)  ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

OIL							Samp	oling Point 13
Profile Descr	ription: (Describe to	the deptl	n needed to docum	ent the in	dicator or	confirm	the absence of in	dicators.)
Depth	Matrix		Re	dox Featur	es			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
1-14	7.5YR 4/2	95	5YR4/6	5	C	PL	Sand	
	-ti D. Da-latia D	N <del>A D</del> .		- <del></del>	<del>-4   O</del> -	<del>One in a</del>	6L ti DI	Dana Linia a M Ma
	ration, D=Depletion, R				ated Sand	Grains.	Location: PL=	=Pore Lining, M=Ma
	tors: (Applicable to	all LRRs		•				
Histosol (A1)			Sandy Redox (S5)					roblematic Hydric
Histic Epipedo			Stripped Matrix (Se					(A9) ( <b>LRR C</b> )
Black Histic (A	•		Loamy Mucky Mine					(A10) ( <b>LKK B</b> )
Hydrogen Sul			Loamy Gleyed Ma	trix (F2)			Reduced Ve	ertic (F18)
	ers (A5) ( <b>LRR C</b> )	X	Depleted Matrix (F	3)			Red Parent	Material (TF2)
1 cm Muck (A	(9) ( <b>LRR D</b> )		Redox Dark Surface	ce (F6)			Other (Expla	ain in Remarks)
Depleted Belo	ow Dark Surface (A11	)	Depleted Dark Sur	face (F7)				
Thick Dark Su	urface (A12)		Redox Depression	s (F8)				
Sandy Mucky	Mineral (S1)		Vernal Pools (F9)	` ,	3India	atore of h	drophytic vogotati	on and wetland hyd
Sandy Gleyed	, ,		_ ` ′					urbed or problemation
strictive Layer	, ,					iust be pi	Hydric Soil Pr	
Type:	(ii present).						Tiyano con Ti	Journ .
Depth (inches	s):						Yes X No	
DROLOGY								
	rology Indicators:					Se	condary Indicators	(2 or more required
-	(minimum of one requ	iired: che	ck all that apply)					s (B1) (Riverine)
Surface Wate			Salt Crust (B11)				Sediment D	eposits (B2) (Riveri
-	` ,		_ ` ′					ts (B3) (Riverine)
High Water Ta	, ,		Biotic Crust (B12)	(5.10)				, , ,
Saturation (A3			Aquatic Invertebrat	, ,			•	atterns (B10)
	(B1) ( <b>Nonriverine</b> ) Dosits (B2) ( <b>Nonriveri</b>	ne\	Hydrogen Sulfide (	, ,	Livina Da	ata (C2)		Water Table (C2)
	(B3) (Nonriverine)	——————————————————————————————————————	Oxidized Rhizosph Presence of Reduce	·	0	ots (C3)	Crayfish Bu	rrows (C8) /isible on Aerial Ima
Surface Soil C			Recent Iron Reduc	,	,	6)	Shallow Aqu	
_	sible on Aerial Imager	v (B7)	Thin Muck Surface		.a 00113 (0	0)	FAC-Neutra	
Water-Stained	ŭ	, (= : /	Other (Explain in F	` '				(= 0)
Water Stames	a Leaves (Bo)		Other (Explain in 1	(ciriarito)	1			
d Observation			D (1 (1 )				Watlan III.	D
face Water Pres		No X	Depth (inches):		. [	V	Vetland Hydrolog	y Present?
ter Table Prese uration Present		No X	Depth (inches):		. [		Yes No	X
includes capi)		1			· [			
	ed Data (stream gaug	e. monit	oring well, aerial n	hotos, pre	vious insi	ections	, if available:	
	a.a. (e.a. oann gaat	, =,•	world! pi	, p.0			.,	
narks: No indic	cators of wetland hyd	łrology w	ere observed.					
	•	-*						

	TION DATA FORM -Arid West Region
v.110918 Project/Site: Friant-Kern Canal	City/County: Tulare County Sampling Date: 12/11/2019
Applicant/Owner: Friant State: California	Sampling Point 14 Feature ID: RW1
Investigator(s): Gabe Youngblood, Chariss Femino	Section, Township, Range: Sec. 31, T22S, R27E
, , ,	Local Relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR): Mediterranean California (ILat: 35.978458	Long: -119.10523 Datum: NAD83
Soil Map Unit Name: Nord fine sandy loam, 0-2% slopes (130)	NWI classification None
Are climatic / hydrologic conditions on the site typical for this time of	
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$ significantly of	
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$ naturally prob	
SUMMARY OF FINDINGS – Attach site map showing sampling	g point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes x No	Is the Sampled Area
Hydric Soil Present? Yes x No	within a Wetland?
Wetland Hydrology Present? Yes x No	
Evaluation of features designated "Other Waters"	
*·	/idth: Substrate:
Indicators: Defined bed and bank: Feature Designation: Perennial In	Scour OHWM Mapped ntermittent Ephemeral
	Drainage Navigable Water
Remarks: Data point documents wetland conditions in an presu	cgamer
Remarks. Data point documents wetland conditions in an presu	umed old borrow site adjacent to Deer Creek.
VEGETATION – Use scientific names of plants. List all species	s in the plot. MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev. Species Name Absolute Domina	ant Indicator Dominance Test worksheet:
Tree Stratum (Plot size:) % Cover Species	
1	That Are OBL, FACW, or FAC: (A)
2	
3	Total Number of Dominant
4	Species Across All Strata: 1 (B)
<u>0</u> = Total C	Cover
Sapling/Shrub Stratum (Plot size:)	Percent of Dominant Species
1	That Are OBL, FACW, or FAC: 1 (A/B)
2	Prevalence Index worksheet:
3	Total % Cover of: Multiply by:
4	OBL species $50 \times 1 = 50$
5	FACW species 15 x 2 = 30
0 = Total C	Cover FAC species 0 x 3 = 0
Herb Stratum (Plot size: 5-foot radius )	FACU species $5 \times 4 = 20$
1 Elemac Eleocharis macrostachya 50 YES	S OBL UPL species 0 x 5 = 0
2 Cypera Cyperus eragrostis 10 NO	
3 Polmon Polypogon monspeliensis 5 NO	
4 Helann Helianthus annuus 5 NO	
5	1 - Rapid Test for Hydrophytic Vegetation
6	Yes 2 - Dominance Test is >50%
7	Yes 3 - Prevalence Index is ≤3.0 <sup>1</sup>
8	4 - Morphological Adaptations (Provide supporting
9	data in Remarks or on a separate sheet)
10	5 - Wetland Non-Vascular Plants <sup>1</sup>
	6 - Problematic Hydrophytic Vegetation (Explain)
$\underline{70}$ = Total C	maleutere of flyane con and wettaria flyarelegy much
Woody Vine Stratum (Plot size:)	be present unless disturbed or problematic.
1	
2	
0 = Total C	
	Hydrophytic Vegetation Present?
% Bare Ground in Hert 0 % Cover of Biotic 30	
	Yes X No
Remarks: Hydrophytic vegetation is dominant.	

Sandy Gleyed Matrix (S4)  partictive Layer (if present): Type: Depth (inches):  pararks: Soil meets the requirments for indicator F3 depleted matrix.  PAPOLOGY Wetland Hydrology Indicators: imary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Loc² Texture  PL Sand	Remarks  =Pore Lining, M=Matri
(inches) Color (moist) % Color (moist) % Type    1-14 7.5YR 4/2 95 5YR4/6 5 C  1-14 7.5YR 4/2 95 5YR4/6 5 C   Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators (F9)  Sandy Gleyed Matrix (S4) Indicators (F9) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Indicators (F9)  Setrictive Layer (If present):  Type: Depth (inches):  Pemarks: Soil meets the requirments for indicator F3 depleted matrix.  **PROROLOGY**  Wetland Hydrology Indicators:  imary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Valer Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1)  Segument Deposits (B2) (Nonriverine) Segument Deposits (B2) (Nonriverine) Tilled Soils (C4)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C4)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C4)	PL Sand  Grains. *Location: PL  Indicators for P	=Pore Lining, M=Matri
pe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand dric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Black Histic (A3) Loamy Mucky Mineral (F1) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) 3Indicators (Strictive Layer (If present): Type: Depth (Inches): Imarks: Soil meets the requirments for indicator F3 depleted matrix.    DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)	PL Sand  Grains. *Location: PL  Indicators for P	=Pore Lining, M=Matri
rpe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand dric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Black Histic (A3) Loamy Mucky Mineral (F1) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators Strictive Layer (if present): Type: Depth (inches): marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) X Biotic Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Seament Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Grains. *Location: PL	<u> </u>
pe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand dric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Black Histic (A3) Loamy Mucky Mineral (F1) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators Strictive Layer (if present): Type: Depth (inches): marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) X Biotic Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Segment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Grains. *Location: PL	<u> </u>
Histosol (A1)  Histosol (A2)  Black Histic (A3)  Hydrogen Sulfide (A4)  Stratified Layers (A5) (LRR C)  Thick Dark Surface (A12)  Sandy Redox (S5)  Loamy Mucky Mineral (F1)  Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C)  Thick Dark Surface (A11)  Sandy Redox (S5)  Loamy Mucky Mineral (F1)  Loamy Gleyed Matrix (F2)  Edward Dark Surface (F6)  Depleted Below Dark Surface (A11)  Depleted Dark Surface (F7)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Strictive Layer (if present):  Type:  Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  mary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  DITIT Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Histosol (A1)  Histosol (A2)  Black Histic (A3)  Hydrogen Sulfide (A4)  Stripped Matrix (F2)  Stratified Layers (A5) (LRR C)  Tom Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Sandy Redox (S5)  Loamy Mucky Mineral (F1)  Horn Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Redox Dark Surface (F6)  Depleted Dark Surface (F7)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Strictive Layer (if present):  Type:  Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  mary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Duritt Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Aric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Black Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) (LRR C) 1 cm Muck (A9) (LRR D) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (F3) Redox Dark Surface (F7) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Strictive Layer (if present): Type: Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators (Indicator Layer (If present):  Type: Depth (Inches):  Depth (Inches):  Darks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  Dary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators (Indicator Layer (If present):  Type: Depth (Inches):  Depth (Inches):  Darks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  Dary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators (Indicator Layer (If present):  Type: Depth (Inches):  Depth (Inches):  Darks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  Dary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Fic Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  Tom Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) ³Indicator Standy Gleyed Matrix (S4)  **Trictive Layer (if present): Type: Depth (Inches):  **DROLOGY**  Wetland Hydrology Indicators: nary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicator Strictive Layer (if present):  Type: Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Fescinent Deposits (B3) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Fescinent Tiple Soils (C4)  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicator Strictive Layer (if present):  Type: Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Fescinent Deposits (B3) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Fescinent Tiple Soils (C4)  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
ric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Black Histic (A3) Loamy Mucky Mineral (F1) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Tom Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicator Sandy Gleyed Matrix (S4)  trictive Layer (if present): Type: Depth (Inches):  DROLOGY Wetland Hydrology Indicators: hary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) X Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Deciment Deposits (B3) (Nonriverine) Drift Deposits (B3) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
ric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Sandy Redox (S5) Histic Epipedon (A2) Stripped Matrix (S6) Black Histic (A3) Loamy Mucky Mineral (F1) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Tom Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicator Sandy Gleyed Matrix (S4)  trictive Layer (if present): Type: Depth (Inches):  DROLOGY Wetland Hydrology Indicators: hary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) X Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Deciment Deposits (B3) (Nonriverine) Drift Deposits (B3) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicator Strictive Layer (if present):  Type: Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Fescinent Deposits (B3) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Fescinent Tiple Soils (C4)  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Iric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histosol (A1) Sandy Redox (S5)  Black Histic Epipedon (A2) Stripped Matrix (S6)  Black Histic (A3) Loamy Mucky Mineral (F1)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)  Stratified Layers (A5) (LRR C) X Depleted Matrix (F3)  1 cm Muck (A9) (LRR D) Redox Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Depressions (F8)  Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators (Indicator Layer (If present):  Type: Depth (Inches):  Depth (Inches):  Darks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  Dary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11)  High Water Table (A2) X Biotic Crust (B12)  Saturation (A3) Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Histosol (A1)  Histosol (A2)  Black Histic (A3)  Hydrogen Sulfide (A4)  Stripped Matrix (F2)  Stratified Layers (A5) (LRR C)  Tom Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Sandy Redox (S5)  Loamy Mucky Mineral (F1)  Horn Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Redox Dark Surface (F6)  Depleted Dark Surface (F7)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Strictive Layer (if present):  Type:  Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  mary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Duritt Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C	Indicators for P	<u> </u>
Histosol (A1)  Histic Epipedon (A2)  Black Histic (A3)  Hydrogen Sulfide (A4)  Stratified Layers (A5) (LRR C)  Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F2)  Perpleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Brictive Layer (if present):  Type:  Depth (inches):  Depth (inches):  Depth (inches):  Depth (inches):  Depth (Matrix (F3)  Frequency Frequency (F9)  Frequency Frequency (F1)  Frequency Frequency (F1		roblematic Hudric Ca
Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) (LRR C) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4)  Strictive Layer (if present): Type: Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Durit Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)  Stripped Matrix (S6) Loamy Mucky Mineral (F1) Loamy Gleyed Matrix (F2)  Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8) Vernal Pools (F9)  3 Indicators (F3) Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8)  Selfic Cust (B1)  Salt Crust (B11)  X Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C		
Black Histic (A3)  Hydrogen Sulfide (A4)  Stratified Layers (A5) (LRR C)  Tom Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Trictive Layer (if present):  Type:  Depth (inches):  Depth (inches):  Depth (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Surface Soil Cracks (B6)  Loamy Mucky Mineral (F1)  Loamy Gleyed Matrix (F2)  X Depleted Matrix (F3)  Redox Dark Surface (F6)  Depleted Dark Surface (F7)  Redox Depressions (F8)  Vernal Pools (F9)  3Indicators (F3)  Redox Dark Surface (F7)  Redox Depressions (F8)  Vernal Pools (F9)  3Indicators (F3)  Redox Dark Surface (F6)  Depleted Matrix (F2)  Redox Dark Surface (F6)  Depleted Matrix (F2)  Redox Dark Surface (F6)  Seld Crust (B1)  Loamy Mucky Mineral (F1)  Adoptic Matrix (F2)  Salt Crust (B11)  X Biotic Crust (B12)  Aquatic Invertebrates (B13)  Hydrogen Sulfide Odor (C1)  Oxidized Rhizospheres along Living Ro  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C		•
Hydrogen Sulfide (A4)  Stratified Layers (A5) (LRR C)  1 cm Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  trictive Layer (if present):  Type:  Depth (inches):  Depth (inches):  Depth (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Surface Soil Cracks (B6)  Loamy Gleyed Matrix (F2)  X Depleted Matrix (F3)  Redox Dark Surface (F7)  Redox Depressions (F8)  Vernal Pools (F9)  3Indicator from the pools (F9)  Saluration (F2)  X Depleted Matrix (F2)  X Depleted Matrix (F2)  X Depleted Matrix (F2)  Redox Dark Surface (F7)  Redox Dark Surface (F7)  Fedox Depressions (F8)  Vernal Pools (F9)  3Indicator F3 depleted matrix.  Salt Crust (B11)  X Biotic Crust (B11)  Aquatic Invertebrates (B13)  Hydrogen Sulfide Odor (C1)  Oxidized Rhizospheres along Living Role Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C		(A10) ( <b>LKK B</b> )
Stratified Layers (A5) (LRR C)  1 cm Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Trictive Layer (if present):  Type: Depth (Inches):  Depth (Inches):  Depth (Inches):  Depth (Inches):  Depth (Inches):  Darks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators:  Dary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Dented Matrix (F3)  Redox Dark Surface (F6)  Depleted Matrix (F3)  Redox Dark Surface (F7)  Redox Depressions (F8)  Vernal Pools (F9)  3Indicators (F9)  Seph (F9)  Seph (F9)  Surfacter Layer (F9)  Sall Crust (B1)  Aquatic Invertebrates (B13)  Hydrogen Sulfide Odor (C1)  Oxidized Rhizospheres along Living Role Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C	Reduced V	. , . ,
Tom Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Trictive Layer (if present):  Type: Depth (Inches):  Depth (Inches):  Depth (Inches):  Depth (Inches):  Depth (A1)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Surface Soil Cracks (B6)  Redox Dark Surface (F6)  Depleted Dark Surface (F7)  Redox Depressions (F8)  Vernal Pools (F9)  3Indicator F3  Redox Dark Surface (F6)  Depleted Dark Surface (F7)  Redox Dark Surface (F7)  Redox Dark Surface (F6)  Depleted Dark Surface (F6)  Depleted Dark Surface (F6)  Redox Dark Surface (F6)  Peleted Dark Surface (F6)  Redox Dark Surface (F6)  Peleted Dark Surface (F7)  Redox Dark Surface (F6)  Peleted Dark Surface (F6)  Peleted Dark Surface (F7)  Redox Dark Surface (F6)  Redox Dark Surface (F7)  Redox Dark Surface (F1)  Redox Dark		t Material (TF2)
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Trictive Layer (if present): Type: Depth (inches):  Depth (inches):  Depth (mineral (S1)  Depth (inches):  Depth (inch		lain in Remarks)
Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4)  Vernal Pools (F9)  Indicator F3 depleted matrix.  RROLOGY Wetland Hydrology Indicators:  Pary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soil Cracks (B6)  Redox Depressions (F8)  Vernal Pools (F9)  3Indicators (F8)  Vernal Pools (F9)  3Indicators (F8)  Vernal Pools (F8)  Appleted matrix.  Salt Crust (B11)  X Biotic Crust (B12)  Aquatic Invertebrates (B13)  Hydrogen Sulfide Odor (C1)  Oxidized Rhizospheres along Living Ro  Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C	Other (Expr	all ill Remarks)
Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Vernal Pools (F9)  **Indicator Intrictive Layer (if present):  Type:  Depth (inches):  **Narks: Soil meets the requirments for indicator F3 depleted matrix.  **OROLOGY  Wetland Hydrology Indicators:  **nary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Sediment Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Vernal Pools (F9)  **Indicator  **Indi		
Sandy Gleyed Matrix (S4)  Intrictive Layer (if present): Type: Depth (inches):  Inarks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY  Wetland Hydrology Indicators: Inary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) DITIT Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C		e 1 d 11 1
DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Segiment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Saturation (R4) Surface Soil Cracks (B6)  Drift Deposits (B3) (Nonriverine) Second Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C	ators of hydrophytic vegetat nust be present, unless dist	•
Type: Depth (inches):  marks: Soil meets the requirments for indicator F3 depleted matrix.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Segiment Deposits (B2) (Nonriverine) DITIT Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C	Hydric Soil Pr	
PROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Segiment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)  Presence of Reduced Iron (C4) Surface Soil Cracks (B6)  Presence of Reduction in Tilled Soils (C	Tiyanic 30ii Fi	esent:
DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Segiment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)  DROLOGY Water Applyobal (B1) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro	Yes X No	<b>)</b>
Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Unitt Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)  Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C		
Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Segiment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Surface Water (A1)  A Biotic Crust (B12)  Aquatic Invertebrates (B13)  Hydrogen Sulfide Odor (C1)  Oxidized Rhizospheres along Living Ro  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C	Secondary Indicators	s (2 or more required)
High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Segiment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  X Biotic Crust (B12)  Aquatic Invertebrates (B13)  Hydrogen Sulfide Odor (C1)  Oxidized Rhizospheres along Living Ro  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C	Water Mark	ks (B1) (Riverine)
Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C	Sediment D	Deposits (B2) (Riverine
Saturation (A3) Water Marks (B1) (Nonriverine) Segiment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C	Drift Depos	sits (B3) (Riverine)
Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C	Drainage P	Patterns (B10)
Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Presence of Reduced Iron (C4)  Recent Iron Reduction in Tilled Soils (C	•	n Water Table (C2)
Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C	· / ·	` '
		Visible on Aerial Image
	,	. , ,
	X FAC-Neutra	ai rest (D5)
Water-Stained Leaves (B9) Other (Explain in Remarks)		
Id Observations:	Watland Hodgalaa	D
face Water Present? Yes No X Depth (inches): ter Table Present? Yes No X Depth (inches):	Wetland Hydrolog	ly Present?
ter Table Present? Yes No X Depth (inches):		o 🗀
(includes capillary fringe)	Yesi X INd	
scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous insp	Yes X No	
marks: Biotic crust and water stained leaves indicate wetland hydrology.		

	WETLA	ND DETER	MINATIO	N DATA F	ORM -Arid West Region
v.111618					Sampling Point 16 Feature ID: RW/FEW1
Project/Site: Fri	ant Kern Canal		City	County:	Tulare County Sampling Date: 10/3/2019
Applicant/Owne				State:	
Investigator(s):	BC				Section, Township, Range: Sec. 31, T23S, R27E
Local relief (hills	side, terrace, etc.): Ch	annel	Loca	al Relief (co	oncave, convex, none): Concave Slope (%): 1
Subregion (LRF	R): Mediterranean California	(lLat: 35.97	77744		Long: -119.106625 Datum: NAD 83
Soil Map Unit N	ame: Riverwash (134)				NWI classification PFOA
Are climatic / hy	drologic conditions on the site t	ypical for th	is time of	yea Yes	
Are Vegetation	No , Soil No , or Hydrology	No signif	ficantly dis	turbed?	Are "Normal Circumstances" present? Yes X No
Are Vegetation	$\underline{\mathrm{No}}$ , Soil $\underline{\mathrm{Yes}}$ , or Hydrology	No natur	ally proble	matic?	(If needed, explain any answers in Remarks.)
	- <del></del>			_	
		showing sa	ampling p	oint locati	ons, transects, important features, etc.
	getation Present? Yes	xNo			
Hydric Soil Pres	sent? Yes	x No	Is	the Sampl	ed Area
Wetland Hydrol	ogy Present? Yes	x No	\	within a We	etland? Yes x No
prob	lematic and assumed hydric, s	ee soil rem	arks for m	nore details	
VEGETATION -	<ul> <li>Use scientific names of plar</li> </ul>	nts. List all	species i	n the plot.	MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	(Plot size:	% Cover	Species?	Status	Number of Dominant Species
1					That Are OBL, FACW, or FAC: 1 (A)
2					<u> </u>
3					Total Number of Dominant
4					Species Across All Strata: 1 (B)
0 1:/01	Distriction (Distriction	0 =	= Total Co	ver	
	Stratum (Plot size:	)			Percent of Dominant Species
1	-				That Are OBL, FACW, or FAC: 100% (A/B)
2					Prevalence Index worksheet:
3					Total % Cover of: Multiply by:
4					OBL species <u>42</u> x 1 = <u>42</u>
5					FACW species 0 x 2 = 0
		0 =	= Total Co	ver	FAC species 0 x 3 = 0
Herb Stratum	(Plot size:	)			FACU species x 4 = 0
1 Typlat	Typha latifolia	35	YES	OBL	UPL species0 x 5 =0
2 Alitri	Alisma triviale	7	NO	OBL	Column Totals: 42 (A) 42 (B)
3					Prevalence Index = B/A = 1
4					Hydrophytic Vegetation Indicators:
5					1 - Rapid Test for Hydrophytic Vegetation
6					$\overline{\mathrm{Yes}}$ 2 - Dominance Test is >50%
7					Yes 3 - Prevalence Index is ≤3.0¹
8					4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9					data in Remarks or on a separate sheet)
10					5 - Wetland Non-Vascular Plants 6 - Problematic Hydrophytic Vegetation (Explain)
11		40	Total Co.		<del>-</del>
\\/\\\\	(Dist size)	42 =	= Total Co	ver	Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Woody Vine Str	atum (Plot size:				be present unless disturbed of problematic.
1					
2		0 =	= Total Co		
			= Total Co	ver	
%Bare Grour	nd in Herb % Co Stratum: 64	over of Bioti Crust		-	Hydrophytic Vegetation Present?  Yes X No
Remarks: Area	dominated by hydrophytic vege	etation			
iveillai ks. Alea	dominated by Hydrophytic vege	station.			

Texture Remarks Some pure sand Loamy sand pockets in soil  Texture Remarks Some pure sand pockets in soil  Texture Remarks Some pure sand pockets in soil  PL=Pore Lining, M=Matrix.  Indicators for Problematic Hydric Soils 1 cm Muck (A9) (LRR C) 2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Material (TF2) x Other (Explain in Remarks)
Texture Remarks Some pure sand pockets in soil  Loamy sand Pockets in soil  *Location: PL=Pore Lining, M=Matrix.  Indicators for Problematic Hydric Soil: 1 cm Muck (A9) (LRR C) 2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Material (TF2)
Some pure sand pockets in soil  *Loamy sand PL=Pore Lining, M=Matrix.  Indicators for Problematic Hydric Soil:  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Some pure sand pockets in soil  *Loamy sand PL=Pore Lining, M=Matrix.  Indicators for Problematic Hydric Soil:  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Loamy sand pockets in soil  "Location: PL=Pore Lining, M=Matrix."  Indicators for Problematic Hydric Soil:  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Ins. *Location: PL=Pore Lining, M=Matrix.  Indicators for Problematic Hydric Soil:  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Indicators for Problematic Hydric Soils  1 cm Muck (A9) (LRR C)  2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
1 cm Muck (A9) (LRR C) 2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Material (TF2)
1 cm Muck (A9) (LRR C) 2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Material (TF2)
2 cm Muck (A10) (LRR B)  Reduced Vertic (F18)  Red Parent Material (TF2)
Reduced Vertic (F18) Red Parent Material (TF2)
Red Parent Material (TF2)
` ` ´
x Other (Explain in Remarks)
<del></del>
hydrophytic vegetation and wetland hydrolog
present, unless disturbed or problematic.
resent?
Yes X No
ors washed out.
Secondary Indicators (2 or more required)
Water Marks (B1) (Riverine)
Sediment Deposits (B2) (Riverine)
Drift Deposits (B3) (Riverine)
Drainage Patterns (B10)
Dry-Season Water Table (C2)
C3) Crayfish Burrows (C8)
Saturation Visible on Aerial Imagery
Shallow Aquitard (D3)
FAC-Neutral Test (D5)
Watland Diductions Bearing 10
Wetland Hydrology Present?
wetiand Hydrology Present?
Yes X No
<u> </u>
<u> </u>
Yes X No
_

	WETLA	ND DETERMIN	IATION DATA F	ORM -Arid West Region	
v.111618				Sampling Point 17	Feature ID: Upland
Project/Site: Fri			City/County:	Tulare County	Sampling Date: 10/3/2019
Applicant/Owne			_ State:		
Investigator(s):				Section, Township, Range:	
		bank slope	,	oncave, convex, none): Convex	
	): Mediterranean California	(ILat: <u>35.97773</u>	51	Long: -119.106617	Datum: NAD 83
-	ame: Riverwash (134)			NWI classific	
	drologic conditions on the site t				
	No , Soil No , or Hydrology			Are "Normal Circumstance	· — —
Are Vegetation	No , Soil No , or Hydrology	No naturally	problematic?	(If needed, explain any an	swers in Remarks.)
SUMMARY OF	FINDINGS – Attach site map	showing samp	ling point locat	ons, transects, important fea	tures. etc.
	getation Present? Yes	No x	T	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Hydric Soil Pres		x No	Is the Samp	od Aroa	
Wetland Hydrold		x No	within a W		X
,	<u></u>				
Remarks: Sam	ple showed hydric soil and hyd	lrology indicato	ors but is domin	ated by upland vegetation.	
VEGETATION -	- Use scientific names of plar	nts. List all spe	cies in the plot	MUST LIST COVER IN DESE	CENDING ORDER
3/3 Abbrev.	Species Name	Absolute Don	ninant Indicator	Dominance Test workshee	t:
Tree Stratum	(Plot size:	% Cover Spe	cies? Status	Number of Dominant Spec	
1				That Are OBL, FACW, or I	FAC: 0 (A)
	•			T. 101 1 (D. 1)	
3	•			Total Number of Dominant Species Across All Strata:	
4			tal Cover	Species Across Air Strata.	(B)
Sapling/Shrub S	Stratum (Plot size:	<del></del>	0010.	Percent of Dominant Spec	ies
1				That Are OBL, FACW, or I	
2				Prevalence Index workshe	
3				Total % Cover of:	Multiply by:
4				OBL species 0 x	1 = 0
5				FACW species 12	2 = 24
		0 = To	tal Cover	FAC species 0 x	(3 = 0
Herb Stratum	(Plot size: 5-foot radius	)		FACU species 33 x	4 = 132
1 Citcol	Citrullus colocynthis	30 Y	ES UPL	UPL species 30 x	35 = 150
2 Fesbro	Festuca bromoides	18 Y	ES FACU	Column Totals: 75 (	A) 306 (B)
3 Conmac	Conium maculatum	12 N	IO FACW	Prevalence Index = B	/A = 4.08
4 Erican	Erigeron canadensis	10 N	IO FACU	Hydrophytic Vegetation Inc	dicators:
5 Lacser	Lactuca serriola	5 N	IO FACU	1 - Rapid Test for Hydro	phytic Vegetation
6				No 2 - Dominance Test is >	
7				No 3 - Prevalence Index is:	
8				4 - Morphological Adapt data in Remarks or on a	ations <sup>1</sup> (Provide supporting
10				5 - Wetland Non-Vascul	, , , , , , , , , , , , , , , , , , , ,
11					nytic vegetation (Explain)
		75 = To	tal Cover	1 Indicators of hydric soil and	d wetland hydrology must
Woody Vine Stra	atum (Plot size:	)		be present unless disturbed	
1					
2					
		0 = To	tal Cover		
%Bare Groun	nd in Herb % Co	over of Biotic		Hydrophytic	
	Stratum: 25	Crust:		Vegetation	
				Present? Yes	No X
Dame 1 . 1	and denotes at the control of				
<b>kemarks:</b> Area	not dominated by hydrophytic v	regetation.			

OIL						oling Point 17
Profile Description: (Describe to the d				or confirr	n the absence of i	indicators.)
Depth Matrix		edox Featu		. 2	<b>-</b> .	Б
(inches) Color (moist) %	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-5 10 YR 3/2 10	0				Loamy sand	
5-9 10 YR 3/1 80	2.5YR 4/8	20	С	M	Loamy sand	
9-16 10 YR 3/1 10	0					
						_
- <u></u>						
				<del></del>		
ype: C=Concentration, D=Depletion, RM=R rdric Soil Indicators: (Applicable to all LF	· · · · · · · · · · · · · · · · · · ·		oated Sa	nd Grains	. Location: PL=	Pore Lining, M=Matrix.
Histosol (A1)	X Sandy Redox (S	,			Indicators for Pr	roblematic Hydric Soil
Histic Epipedon (A2)	Stripped Matrix (	•			1 cm Muck (	(A9) ( <b>LRR C</b> )
Black Histic (A3)	Loamy Mucky M	,			2 cm Muck (	(A10) ( <b>LRR B</b> )
Hydrogen Sulfide (A4)	Loamy Gleyed M				Reduced Ve	ertic (F18)
Stratified Layers (A5) (LRR C)	Depleted Matrix				Red Parent	Material (TF2)
1 cm Muck (A9) ( <b>LRR D</b> )	Redox Dark Surf	` '				ain in Remarks)
Depleted Below Dark Surface (A11)	Depleted Dark S	urface (F7)				
Thick Dark Surface (A12)	Redox Depression					
Sandy Mucky Mineral (S1)	Vernal Pools (F9	9)	<sup>3</sup> Indic	ators of h	ydrophytic vegetati	on and wetland hydrolo
Sandy Gleyed Matrix (S4)			r	nust be pi	resent, unless distu	urbed or problematic.
estrictive Layer (if present):			Hydric	Soil Pre	sent?	
Type:					v <del>- v -</del> v	
Depth (inches): emarks: Indicator S5 met by a 4 inch thick					Yes X No	
and more than 2 percent promine	nt redox concentration	ons in the r	natrix.			
Wetland Hydrology Indicators:				Se		(2 or more required)
imary Indicators (minimum of one required;	117/					s (B1) (Riverine)
Surface Water (A1)	Salt Crust (B11)					eposits (B2) (Riverine)
K High Water Table (A2)	Biotic Crust (B12	,				ts (B3) (Riverine)
Saturation (A3)	Aquatic Inverteb					atterns (B10)
Water Marks (B1) (Nonriverine)	Hydrogen Sulfide	e Odor (C1)	)		Dry-Season	Water Table (C2)
Sediment Deposits (B2) (Nonriverine)	Oxidized Rhizos	pheres alor	ng Living F	Roots (C3	Crayfish Bui	rrows (C8)
Drift Deposits (B3) (Nonriverine)	Presence of Rec	duced Iron (	C4)		Saturation V	isible on Aerial Imager
Surface Soil Cracks (B6)	Recent Iron Red	uction in Ti	lled Soils	(C6)	Shallow Aqu	uitard (D3)
Inundation Visible on Aerial Imagery (B7)	Thin Muck Surfa	ce (C7)			FAC-Neutra	l Test (D5)
Water-Stained Leaves (B9)	Other (Explain in	Remarks)				
eld Observations:	v B # # + +				V-41	
urface Water Present? Yes No 2 ater Table Present? Yes X No	X Depth (inches): Depth (inches):	10	. [	v	Vetland Hydrology	y rresent?
aturation Present? Yes X No	Depth (inches):	0	· [		Yes X No	
(includes capillary fringe)		~	• [			
escribe Recorded Data (stream gauge, mo	onitoring well, aerial	photos, pi	evious ir	spection	s), if available:	
3 <b>.</b>	. 3,	, , p.	••		,,	
emarks: Hydrology evidenced by saturatio	n and water table	thin 19 inc	has of the	coil and	200	
silial ks. Hydrology evidenced by saturatio	n and water table wi	ынн 12 1nc	nes or the	son surf	ace.	

	WETLA	ND DETER	RMINATIO		ORM -Arid West Region	E / ID DWO
v.111618	W . O . 1		Cit.		Sampling Point 18	Feature ID: RW3
Project/Site: Fri				/County:	Tulare County	Sampling Date: 10/3/2019
Investigator(s):				State:	Section, Township, Rang	— — — — — — — — — — — — — — — — — — —
-		oank slope		al Poliof (oc	oncave, convex, none): Con	
•	R): Mediterranean California			•	Long: -119.106524	vex Slope (%): 7 Datum: NAD 83
-	lame: Riverwash (134)	(1Lat. 55.5	11104		NWI class	
•	/drologic conditions on the site t	mical for th	nia tima af	voo: Voo		
				_		· ·
Are Vegetation	No , Soil No , or Hydrology			_		inces" present? Yes X No
Are vegetation	10, Soil 10, of Hydrology	1es natu	rally proble	-	(If needed, explain any	answers in Remarks.)
SUMMARY OF	FINDINGS - Attach site map	showing s	ampling p	oint location	ons, transects, important	features, etc.
		x No	<u> </u>		•	•
Hydric Soil Pres		No	Is	the Sample	ed Area	
Wetland Hydrol		No —		within a We		No
,	<u> </u>					
surv	ey was conducted during the d	ry season.				s. Hydrology is problematic as the
LULIATION	230 Coloniano names oi piai	<u>-</u> 13t all	. Species II	o piot.		January VIII
3/3 Abbrev.	Species Name	Absolute	Dominant	Indicator	Dominance Test worksh	neet:
Tree Stratum	(Plot size:	% Cover	Species?	Status	Number of Dominant S	·
1 Sallae 2	Salix laevigata	80	YES	FACW	That Are OBL, FACW,	or FAC: 2 (A)
					1	
3					Total Number of Domin	
4		80	= Total Co	ver	Species Across All Stra	ata: <u>2</u> (B)
Sapling/Shrub S	Stratum (Plot size:	<del></del>	_ 10ta100	VOI	Percent of Dominant S	necies
1	<del></del> `				That Are OBL, FACW,	•
2					Prevalence Index works	· ,
3					Total % Cover of:	Multiply by:
4					OBL species 0	$\overline{x} = 0$
5					FACW species 85	$x = \frac{0}{170}$
		0	= Total Co	ver	FAC species 0	x = 3 = 0
Herb Stratum	(Plot size:				FACU species 0	x = 4 = 0
1 Conmac	Conium maculatum	5	YES	FACW	UPL species 0	x 5 = 0
2					Column Totals: 85	(A) 170 (B)
3					Prevalence Index :	_ ` <i>'</i> ` <i>'</i>
4					Hydrophytic Vegetation	Indicators:
5						drophytic Vegetation
6					Yes 2 - Dominance Test i	1 , 0
7					$\frac{1}{1}$ $\frac{1}$	
8					4 - Morphological Ad	laptations <sup>1</sup> (Provide supporting
9					data in Remarks or o	on a separate sheet)
10					5 - Wetland Non-Vas	
11					6 - Problematic Hydr	opnytic vegetation (Explain)
			= Total Co	ver		and wetland hydrology must
Woody Vine Str	ratum (Plot size:	)			be present unless disturb	ed or problematic.
1						
2			<del></del>			
		0	= Total Co	ver		
0/10 0		( D: .				
%Bare Grour		ver of Biot			Hydrophytic	
	Stratum:	Crus	ST:	_	Vegetation Present? Yes	V No.
					rieseit: res	X No
Romarke: Araa	dominated by hydrophytic years	tation			<u>I</u>	
iveillai <b>ks:</b> Alea 	dominated by hydrophytic vege	iauUII.				

Histos (A1) X Sandy Redox (S5) Indicators for Problematic Hydric Sol Histos (A1) X Sandy Redox (S5) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) 2 cm Muck (A10) (LRR B) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Reduced Vertic (F18) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Red Problematic (F18) Traified Layers (A5) (LRR D) Redox Dark Surface (F6) Thick Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Vernal Pools (F9) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Gleyed Matrix (S4) Strictive Layer (if present): Type: Depth (inches):  marks: Indicators 55 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) Sediment Deposits (B2) (Riverine) High Water Table (A2) Biotic Crust (B12) Drainage Patterns (B10) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Sediment Deposits (B2) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imager (B7) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Water Present? Yes No X Depth (inches): Iter Table	Drofile Deceri	stion. (Deceribe to	the dept	a pandad ta daarii	mant tha	ndicator	or confirm	n the cheenee of	indicators \		
Color (moist)   %   Color (moist)   %   Color (moist)   %   Type   Loc   Texture   Remarks			tne depti				or confir	n the absence of	indicators.)		
6-11 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent redox  11-16 10 YR 4/1 80 2 C PIM Loamy sand Prominent Play sand more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  11-16 10 YR 4/1 80 2 PIM Loamy sand Prominent Play sand Marks (B1) (Roamy sand	•		%				Loc <sup>2</sup>	Texture	Remarks		
11-16 10 YR 4/1 80 2.5 YR 3/6 20 C PI/M Loamy sand Prominent redox    Prominent redox   Prominent redo	0-6	10 YR 2/2	100					Loamy sand			
ppe: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered of Costed Sand Grains.    **Location: PL=Pore Lining, M=Matrix dric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  Histics Epipedon (A2)   Stripped Matrix (S6)   Slack Histic (A3)   Loamy Mucky Mineral (F1)   2 cm Muck (A9) (LRR C)   2 cm Muck (A10) (LRR B)  Hydrogen Sulfide (A4)   Stratified Layers (A5) (LRR C)   Depleted Matrix (F2)   Reduced Vertic (F18)  Stratified Layers (A5) (LRR C)   Depleted Balow Dark Surface (A11)   Depleted Balow Dark Surface (A11)   Depleted Balow Dark Surface (A11)   Sandy Mucky Mineral (S1)   Vernal Pools (F9)    **Other (Explain in Remarks)**  **Joint Carlot (A12)   Sandy Mucky Mineral (S1)   Vernal Pools (F9)    **Joint Carlot (A12)   Sandy Mucky Mineral (S1)   Other (Explain in Remarks)    **Joint Carlot (A12)   Sandy Gleyed Matrix (S4)    **Strictive Layer (if present):    **Type:   Depth (inches):    **Depth (inches):    **Depth (inches):    **Pes X No    **No    **Depth (inches):    **Depth (inches):    **Secondary Indicators (2 or more required)   **Water Marks (B1) (Riverine)    **Drict Layer (if present):    **Type:   **Depth (inches):    **Secondary Indicators (2 or more required)   **Water Marks (B1) (Riverine)    **Drict Layer (if present):    **Type:   **Depth (inches):    **Secondary Indicators (2 or more required)   **Water Marks (B1) (Riverine)    **Drict Layers (A1)   Salit Crust (B11)   Sediment Deposits (B2) (Riverine)   **Drit Leposits (B3) (Nonriverine)   **Drit Leposits (B3) (Nonr	6-11	10 YR 2/2	97	2.5YR 4/8	3	C	M	Loamy sand	Prominent redox		
Histosol (A1)  Histosol (A1)  A Sandy Redox (S5)  Black Histic (A3)  Black Histic (A3)  Black Histic (A3)  Coamy Mucky Mineral (F1)  Coamy Gleyed Matrix (F2)  Depleted Matrix (F3)  Depleted Black Histic (A3)  Depleted Black Histic (A4)  Depleted Black Histic (A3)  Depleted Black Histic (A4)  Depleted Black Black Histic (A4)  Depleted Black Blac	11-16	10 YR 4/1	80	2.5 YR 3/6	20	C	Pl/M	Loamy sand	Prominent redox		
Histosol (A1)  Histosol (A1)  X Sandy Redox (S5)  Black Histic (A3)  Loamy Mucky Mineral (F1)  Loamy Mucky Mineral (F1)  Depleted Matrix (F2)  Thick Dark Surface (A1)  Depleted Matrix (F3)  Depleted Black Histic (A3)  Loamy Mucky Mineral (F1)  Thick Dark Surface (A1)  Depleted Matrix (F3)  Depleted Black Histic (A3)  Depleted Dark Surface (F6)  Depleted Black Histic (A3)  Depleted Black Histic (A3)  Depleted Black Histic (A3)  Depleted Black Dark Surface (A11)  Depleted Black Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Depleted Black Dark Surface (A11)  Depleted Black Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Strictive Layer (if present):  Type:  Type:  Warral Fall (Carbon)  Type:  Wetland Hydrology Indicators S met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  Wetland Hydrology Indicators:  Surface Matrix (B1)  Surface Water (A1)  Salt Crust (B11)  High Water Table (A2)  Saturation (A3)  Aquatic Invertebrates (B13)  Drainage Patterns (B10)  Secondary Indicators (C2 or more required)  Water Marks (B1) (Nonriverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B2) (Nonriverine)  Presence of Reduced Iron (C4)  Saturation Visible on Aerial Imagery (B7)  Thin Muck C3 Surface (A1)  Water Marks (B1) (Nonriverine)  Presence of Reduction in Tilled Soils (C6)  Shallow Aquiard (D3)  Inundation Visible on Aerial Imagery (B7)  Thin Muck C3 Surface (B1)  Wetland Hydrology Present?  Yes No X Depth (inches):  Ves X No S Depth (inches):  Ves X No							<u> </u>				
Histosol (A1)  Histosol (A1)  X Sandy Redox (S5)  Black Histic (A3)  Loamy Mucky Mineral (F1)  Loamy Mucky Mineral (F1)  Depleted Matrix (F2)  Thick Dark Surface (A1)  Depleted Matrix (F3)  Depleted Black Histic (A3)  Loamy Mucky Mineral (F1)  Thick Dark Surface (A1)  Depleted Matrix (F3)  Depleted Black Histic (A3)  Depleted Dark Surface (F6)  Depleted Black Histic (A3)  Depleted Black Histic (A3)  Depleted Black Histic (A3)  Depleted Black Dark Surface (A11)  Depleted Black Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (F3)  Depleted Black Dark Surface (A11)  Depleted Black Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Strictive Layer (if present):  Type:  Type:  Warral Fall (Carbon)  Type:  Wetland Hydrology Indicators S met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  Wetland Hydrology Indicators:  Surface Matrix (B1)  Surface Water (A1)  Salt Crust (B11)  High Water Table (A2)  Saturation (A3)  Aquatic Invertebrates (B13)  Drainage Patterns (B10)  Secondary Indicators (C2 or more required)  Water Marks (B1) (Nonriverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B2) (Nonriverine)  Presence of Reduced Iron (C4)  Saturation Visible on Aerial Imagery (B7)  Thin Muck C3 Surface (A1)  Water Marks (B1) (Nonriverine)  Presence of Reduction in Tilled Soils (C6)  Shallow Aquiard (D3)  Inundation Visible on Aerial Imagery (B7)  Thin Muck C3 Surface (B1)  Wetland Hydrology Present?  Yes No X Depth (inches):  Ves X No S Depth (inches):  Ves X No											
Histosol (A1) X Sandy Redox (S5) Indicators for Problematic Hydric Sol Istiped Matrix (S6) I camy Muck (A9) (LRR C)  Black Histic (A3) Loamy Mucky Mineral (F1) 2 cm Muck (A10) (LRR B)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Reduced Vertic (F18)  Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Reduced Vertic (F18)  Thick Dark Surface (A11) Depleted Dark Surface (F6)  Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Redox Dark Surface (F8)  Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Tyernal Pools (F9)  Sandy Gleyed Matrix (S4) Tyernal Pools (F9)  **Indicators of hydrophytic vegetation and wetland hydrology and must be present, unless disturbed or problematic.**  **Indicator S5 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  **PORLOGY**  Wetland Hydrology Indicators:**  **Wetland Hydrology Indicators:**  Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)  Surface Water (A1) Salt Crust (B11) Sediment Deposits (B2) (Riverine)  Sediment Deposits (B2) (Riverine) Oxidized Rhizospheres along Living Roots (C3) Crayfish Burrows (C8)  Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) X FAC-Neutral Test (D5)  Water Marks (B1) (Nonriverine) Presence of Reduction in Tilled Soils (C6) Shallow Adquiard (D3) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) X FAC-Neutral Test (D5)  Water Stained Leaves (B9) Other (Explain in Remarks)  ### Wetland Hydrology Present?  **Yes** No X Depth (inches): Wetland Hydrology Present?  **Yes** Yes** No X Depth (inches): Wetland Hydrology Present?  **Yes** Yes** No X Depth (inches): We	/ne: C-Concentra	tion D-Depletion F	N <del>I-Red</del> u	ced Matrix CS-Co	wered or	Coated Sai	nd Grains	1 ocation: PI	-Pore Lining M-Matrix		
Histosol (A1)    Histosol (A2)   Stripped Matrix (S5)   Indicators for Problematic Hydric Solar Histic Epipedon (A2)   Stripped Matrix (F5)   1 cm Muck (A9) (LRR C)     Hydrogen Sulfide (A4)   Loamy Gleyed Matrix (F2)   Reduced Vertic (F18)     Hydrogen Sulfide (A4)   Loamy Gleyed Matrix (F2)   Reduced Vertic (F18)     Stratified Layers (A5) (LRR C)   Depleted Matrix (F2)   Reduced Vertic (F18)     Tom Muck (A9) (LRR D)   Redox Dark Surface (F6)   Other (Explain in Remarks)     Depleted Below Dark Surface (A12)   Redox Depressions (F8)     Depleted Below Dark Surface (A12)   Redox Depressions (F8)     Sandy Mucky Mineral (S1)   Redox Depressions (F8)     Sandy Gleyed Matrix (S4)   Wernal Pools (F9)   Indicators of hydrophytic vegetation and wetland hydrol must be present, unless disturbed or problematic.    Strictive Layer (if present):	•	•				Joaled Sai	iu Grains	Location. F L	Fore Litting, M-Matrix.		
Black Histic (A3)		от (тършашия та			,			Indicators for F	Problematic Hydric Soil		
Hydrogen Sulfide (A4)  Stratified Layers (A5) (LRR C)  Depleted Matrix (F2)  1 cm Muck (A9) (LRR D)  Depleted Below Dark Surface (A11)  Depleted Dark Surface (F6)  Depleted Below Dark Surface (A12)  Redox Depressions (F8)  Vernal Pools (F9)  3 Indicators of hydrophytic vegetation and wetland hydrol must be present, unless disturbed or problematic.  Strictive Layer (if present):  Type:  Depth (inches):  Person Depth (inches):  Barks: Indicators 55 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  Barks: Indicators (minimum of one required; check all that apply)  Surface Water (A1)  Sufface Water (A1)  Sufface Water (A1)  Sufface Water (A1)  Sufface Water (A1)  Saturation (A3)  Aquatic Invertebrates (B13)  Drainage Patterns (B10)  Water Marks (B1) (Monriverine)  Drainage Patterns (B10)  Water Marks (B1) (Monriverine)  Drainage Patterns (C2)  Sodiment Deposits (B2) (Nonriverine)  Presence of Reduced Iron (C4)  Sufface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C6)  Shallow Aquatirad (D3)  Inundation Visible on Aerial Imagery (B7)  Thirk Deposits (B3) (Tresent?  Yes No X Depth (inches):  Water Table Present?  Yes No X Depth (inches):  Uration Present?  Yes No X Depth (inches):  U	_		_	_ '' `	,				` , ` ,		
Stratified Layers (A5) (LRR C) 1 cm Muck (A9) (LRR D) 2 cm Muck (A9) (LRR D) 2 cm Muck (A9) (LRR D) 3 cm Muck (A9) (LRR D) 3 cm Muck (A9) (LRR D) 4 cm Muck (A9) (LRR D) 4 cm Muck (A9) (LRR D) 5 cm Muck (A9) (LRR D) 5 cm Muck (A9) (LRR D) 5 cm Muck (A9) (LRR D) 6 cm Muck (A9) (LRR D) 7 cm Muck (A9) (LRR D) 8 cm Muck (A9) (LRR D) 8 cm Muck (A12) 8 cm Muck (A13) 8 cm Muck (A14) 8 cm Muck (A13) 8 cm Muck (A14) 8 cm Muck (A13) 8 cm Muck (A14) 8 cm Muck	_ `	,		_ ′ ′	` '				` ,` ,		
Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Depleted Below Dark Surface (A12) Depleted Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Redox Depressions (F8) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Persent:  Type: Hydric Soil Present:  Type: Pepth (inches):  Marks: Indicator S5 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  mary Indicators (S2 or more required):  High Water Table (A2) Biotic Crust (B12) Drift Deposits (B2) (Riverine)  Surface Water (A1) Salt Crust (B12) Drift Deposits (B2) (Riverine)  Surface Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)  Sediment Deposits (B2) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Image (S2)  Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Shallow Aquitard (D3)  Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) X FAC-Neutral Test (D5)  Water Present? Yes No X Depth (inches):  Vernal Pools (S4) Surface (C7) A Startal Deposits (B2) No Inches):  Vernal Pools (F8) Thydrogen substance (F6) Thydrogen Sulfide Odor (C1) Secretary (F6) Thydrogen Sulfide Odor (C1) Shallow Aquitard (D3)  Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) X FAC-Neutral Test (D5)  Water Present? Yes No X Depth (inches):  Vernal Pools (F7) Thydrogy Fesent?  Yes No X Depth (inches):  Vernal Pools (F8) Thydrogy Fesent?  Yes No X Depth (inches):  Vernal Pools (F8)  Wetland Hydrology Present?  Yes X No C (includes capillary fringe)  Scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	_ , ,	` '		_ ′ ′	` ,				` '		
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Vernal Pools (F9)  Sindicators of hydrophytic vegetation and wetland hydrol must be present, unless disturbed or problematic.  Strictive Layer (if present): Type: Depth (inches):  Marks: Indicator S5 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  Secondary Indicators (2 or more required) Mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11) Suffunce Water Table (A2) Biotic Crust (B12) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Water-Stained Leaves (B9)  Other (Explain in Remarks)  Wetland Hydrology Present? Yes No X Depth (inches): Ves X No Wetland Hydrology Present? Yes No X Depth (inches): Ves X No Wetland Hydrology Present? Yes No X Depth (inches): Ves X No Wetland Hydrology Present? Yes No X Depth (inches): Ves X No Wetland Hydrology Present? Yes No X Depth (inches): Ves X No Wetland Hydrology is problematic due to delineation bein marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation bein	•	` , ` ,	_	_ ' '	,				, ,		
Thick Dark Surface (A12) Redox Depressions (F8) Vernal Pools (F9) Sandy Mucky Mineral (S1) Vernal Pools (F8) Sandy Mucky Mineral (S1) (Riverine) Surface Water (A1) Salt Crust (B11) Sediment Deposits (B2) (Riverine) Surface Water (A1) Salt Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drainage Patterns (B10) Water Marks (B1) (Monriverine) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Crayfish Burrows (C8) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) X FAC-Neutral Test (D5) Water-Stained Leaves (B9) Other (Explain in Remarks) (d Observations:  If ace Water Present? Yes No X Depth (inches): Ves No X Depth	_ `	, ,	, –		, ,	١		Other (Exp	iain in Remarks)		
Sandy Mucky Mineral (S1)		,	, <u> </u>		•	)					
Sandy Gleyed Matrix (S4)  must be present, unless disturbed or problematic.  strictive Layer (if present):  Type:  Depth (inches):  marks: Indicator S5 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  mary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Saturation (A3)  Drainage Patterns (B10)  Water Marks (B1) (Nonriverine)  Oxidized Rhizospheres along Living Roots (C3)  Drift Deposits (B3) (Riverine)  Dry-Season Water Table (C2)  Sediment Deposits (B3) (Nonriverine)  Oxidized Rhizospheres along Living Roots (C3)  Dry-Season Water Table (C2)  Saturation Visible on Aerial Imager  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C6)  Shallow Aquitard (D3)  Inundation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Id Observations:  Idoc Water Present? Yes No X Depth (inches):  Ves No X			_			3Indic	ators of h	vdronhytic vegeta	tion and wetland hydrolo		
Secondary Indicators (2 or more required)  Marks: Indicator (35 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY  Wetland Hydrology Indicators:  mary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B2) (Nonriverine)  Drainage Patterns (B10)  Water Marks (B1) (Nonriverine)  Oxidized Rhizospheres along Living Roots (C3)  Drift Deposits (B3) (Nonriverine)  Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Recent Iron Reduction in Tilled Soils (C6)  Inundation Visible on Aerial Imagery (B7)  Water Saturation (B9)  Other (Explain in Remarks)  Ind Observations:  frace Water Present?  Yes No X Depth (inches):  turation Present?  Yes No X Depth (inches):  turation Present?  Yes No X Depth (inches):  (includes capillary fringe)  scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  water-Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being and the proper indicator of the soil surface due to delineation being and the property of the delineation being the property of the		, ,		_ ` `	,						
Type: Depth (inches):  marks: Indicator S5 met by a 4 inch thick layer starting within 6 inches of the soil surface that has a matrix chroma of less than 2 and more than 2 percent prominent redox concentrations in the matrix and pore linings. Soil also meets indicator A11.  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply)  Surface Water (A1) Salt Crust (B11) Sediment Deposits (B2) (Riverine) Saturation (A3) Mater Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B2) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water Marks (B9) Other (Explain in Remarks)  Mod Observations: frace Water Present? Ves No X Depth (inches): turation Present? Ves No X Depth (inches): turation Present? Ves No X Depth (inches): (includes capillary fringe)  scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being and the proper indicator A11.  Yes No Mater Table (20 or more required) Water Marks (B1) (Riverine) Water Marks (B1) (Riverine) Water Marks (B1) (Riverine) Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Water Marks (B1) (Riverine) Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Water Marks (B1) (Riverine) Drift Deposits (B2) (Riverine) Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Secondary Indicators (2 or more required) Water Marks (B1) (Propentions (B2) (Riverine) Water M								•	, , , , , , , , , , , , , , , , , , ,		
DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drift Deposits (B2) (Nonriverine) Drift Deposits (B2) (Nonriverine) Drift Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Other (Explain in Remarks)  Wetland Hydrology Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Sediment Deposits (B3) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Drainage	Type:								• <b>-</b>		
Wetland Hydrology Indicators:       Secondary Indicators (2 or more required)         mary Indicators (minimum of one required; check all that apply)       Water Marks (B1) (Riverine)         Surface Water (A1)       Salt Crust (B11)       Sediment Deposits (B2) (Riverine)         High Water Table (A2)       Biotic Crust (B12)       Drift Deposits (B3) (Riverine)         Saturation (A3)       Aquatic Invertebrates (B13)       Drainage Patterns (B10)         Water Marks (B1) (Nonriverine)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Sediment Deposits (B2) (Nonriverine)       Oxidized Rhizospheres along Living Roots (C3)       Crayfish Burrows (C8)         Drift Deposits (B3) (Nonriverine)       Presence of Reduced Iron (C4)       Saturation Visible on Aerial Image         Surface Soil Cracks (B6)       Recent Iron Reduction in Tilled Soils (C6)       Shallow Aquitard (D3)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       X FAC-Neutral Test (D5)         Water-Stained Leaves (B9)       Other (Explain in Remarks)         Ind Observations:       Wetland Hydrology Present?         Idea Observations:       Yes No X Depth (inches):       Yes X No Yes X N											
mary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B3) (Riverine)  Progression Water Marks (B1) (Nonriverine)  Sediment Deposits (B3) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water Marks (B9)  Other (Explain in Remarks)  Wetland Hydrology Present?  Yes No X Depth (inches):  (includes capillary fringe)  Scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  water Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being the progress of the progressing sediment Deposits (B1) (Riverine)  Sediment Deposits (B2) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B2) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B2) (Riverine)  Drift Deposits (B2) (Riverine)  Drift Deposits (B2) (Riverine)  Drift Deposits (B3) (Riverine)  Drift Deposits (B2) (Riverine)  Drift Deposits (B1) (Riverine)  Drift Deposits (B1) (Riverine)  Drift Deposits		plogy Indicators:					Se	condary Indicator	s (2 or more required)		
Surface Water (A1)  Sulface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Riverine)  Sediment Deposits (B3) (Riverine)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Oxidized Rhizospheres along Living Roots (C3)  Drift Deposits (B3) (Nonriverine)  Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Recent Present?  Water Table Present?  Yes  No  X  Depth (inches):  Surface Water Present?  Yes  No  X  Depth (inches):  Yes  X  No  Surface Water Present?  Yes  No  X  Depth (inches):  Yes  X  No  Surface (C7)  Yes  X  No  Surface (C7)  X  FAC-Neutral Test (D5)  Water Table Present?  Yes  No  X  Depth (inches):  Yes  X  No  Surface (C7)  Yes  X  No  Surface (C7)  X  FAC-Neutral Test (D5)  Yes  X  No  Surface (C7)  X  FAC-Neutral Test (D5)  Yes  X  No  Surface (C7)  X  FAC-Neutral Test (D5)  Yes  X  No  Surface (C7)  Yes  X  No  Surface (C7)  X  FAC-Neutral Test (D5)  Yes  X  No  Surface (C7)  Yes  X  No  Surface (C7)  Yes  Yes  No  X  No  Surface (C7)  Yes  No  Yes  X  No  Surface (C7)  Yes  Yes  No  Yes  X  No  Surface (C7)  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye	•	••	uired: che	ck all that apply)			00				
High Water Table (A2)  Saturation (A3)  Aquatic Invertebrates (B13)  Water Marks (B1) (Nonriverine)  Hydrogen Sulfide Odor (C1)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Dother (Explain in Remarks)  Id Observations: flace Water Present? Yes No X Depth (inches): flace Water Present? Yes No X Depth (inches): flace Under Grack (B2)  Surface Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being the following problematic due to delineation due to delineation due to del				117				Sediment [	Deposits (B2) (Riverine)		
Saturation (A3) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)  Id Observations: frace Water Present? Ves No X Depth (inches): Unration Present? Ves X No  Unration Pr	_				)						
Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Ind Observations:  face Water Present?  Test No X Depth (inches):  Journal of Present No X Depth (inches):  Jou	0	` '		_ ` `	•						
Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Presence of Reduced Iron (C4)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Id Observations: face Water Present? Yes No X Depth (inches): furnation Present? Yes N	Saturation (A3)			Aguatic Invertebr	ates (B13	)		Drainage F	allerns (BTU)		
Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Id Observations: face Water Present? Yes No X Depth (inches): ter Table Present? Yes No X Depth (inches): turation Present? Yes No X Depth (inches): (includes capillary fringe)  scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being a content of the conte	_ ` ′		_	_					, ,		
Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) X FAC-Neutral Test (D5)  Water-Stained Leaves (B9) Other (Explain in Remarks)  Id Observations: face Water Present? Yes No X Depth (inches): ter Table Present? Yes No X Depth (inches): furation Present? Yes No X Depth (inches): fincludes capillary fringe)  Scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being the same of	Water Marks (E	31) (Nonriverine)	ine)	Hydrogen Sulfide	Odor (C1	)	Roots (C3	Dry-Seaso	n Water Table (C2)		
Inundation Visible on Aerial Imagery (B7)  Thin Muck Surface (C7)  X FAC-Neutral Test (D5)  Water-Stained Leaves (B9)  Other (Explain in Remarks)  Id Observations: frace Water Present?  Yes  No  X Depth (inches): ter Table Present?  Yes  No  X Depth (inches): truration Present?  Yes  No  X Depth (inches):     (includes capillary fringe)  scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being the same of the s	Water Marks (E Sediment Depo	B1) (Nonriverine) esits (B2) (Nonriver	ine)	Hydrogen Sulfide Oxidized Rhizosp	Odor (C1 oheres alo	) ng Living F	Roots (C3	Dry-Seaso Crayfish B	n Water Table (C2) urrows (C8)		
And Observations:  If ace Water Present? Yes No X Depth (inches):  Inter Table Present? Yes No X Depth (inches):  Ituration Present? Yes No X Depth (inches)	Water Marks (E Sediment Depo Drift Deposits (	B1) (Nonriverine) osits (B2) (Nonriverine) B3) (Nonriverine)	ine)	Hydrogen Sulfide Oxidized Rhizosp Presence of Red	Odor (C1 oheres alo uced Iron	) ng Living F (C4)	•	Dry-Seaso Crayfish Bo	n Water Table (C2) urrows (C8) Visible on Aerial Imager		
rface Water Present? Yes No X Depth (inches): ter Table Present? Yes No X Depth (inches): turation Present? Yes No X Depth (inches): (includes capillary fringe)  scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr	81) (Nonriverine) osits (B2) (Nonriveri B3) (Nonriverine) acks (B6)		Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu	Odor (C1 oheres alo uced Iron uction in T	) ng Living F (C4)	•	Dry-Seaso Crayfish Bu Saturation Shallow Ac	n Water Table (C2) urrows (C8) Visible on Aerial Imager uitard (D3)		
ther Table Present? Yes No X Depth (inches):  (uncludes capillary fringe)  Scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being the saturated of	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visi	31) (Nonriverine) osits (B2) (Nonriveri B3) (Nonriverine) acks (B6) ole on Aerial Imager		Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Thin Muck Surface	e Odor (C1 oheres alo uced Iron uction in T ce (C7)	) ng Living F (C4) illed Soils	•	Dry-Seaso Crayfish Bu Saturation Shallow Ac	n Water Table (C2) urrows (C8) Visible on Aerial Imager uitard (D3)		
turation Present? Yes No X Depth (inches): Yes X No (includes capillary fringe)  scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visit Water-Stained	31) (Nonriverine) sits (B2) (Nonriverine) B3) (Nonriverine) acks (B6) ble on Aerial Imager Leaves (B9)		Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Thin Muck Surfac Other (Explain in	e Odor (C1 oheres alo uced Iron uction in T ce (C7)	) ng Living F (C4) illed Soils	(C6)	Dry-Seaso Crayfish Bi Saturation Shallow Ac X FAC-Neutr	n Water Table (C2) urrows (C8) Visible on Aerial Imager uitard (D3) al Test (D5)		
(includes capillary fringe) scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visi Water-Stained eld Observations rface Water Preservations	81) (Nonriverine) sits (B2) (Nonriverine) B3) (Nonriverine) acks (B6) ble on Aerial Imager Leaves (B9) : ent? Yes	y (B7)	Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Red Thin Muck Surfac Other (Explain in	e Odor (C1 oheres alo uced Iron uction in T ce (C7)	) ng Living F (C4) illed Soils	(C6)	Dry-Seaso Crayfish Bi Saturation Shallow Ac X FAC-Neutr	n Water Table (C2) urrows (C8) Visible on Aerial Imager uitard (D3) al Test (D5)		
scribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  marks: Sample area is adjacent to Deer Creek and soil is damp but not saturated. Hydrology is problematic due to delineation being	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visi Water-Stained eld Observations rface Water Presenter Table Presen	31) (Nonriverine) sits (B2) (Nonriverine) B3) (Nonriverine) acks (B6) ble on Aerial Imager Leaves (B9) : ent? Yes t? Yes	y (B7)	Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Red Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	e Odor (C1 oheres alo uced Iron uction in T ce (C7)	) ng Living F (C4) illed Soils	(C6)	Dry-Seaso Crayfish Both Saturation Shallow Act X FAC-Neutr	n Water Table (C2) urrows (C8) Visible on Aerial Imager juitard (D3) al Test (D5)  gy Present?		
1 0 0 1	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visi Water-Stained eld Observations rface Water Presenter Table Present	81) (Nonriverine) sits (B2) (Nonriverine) B3) (Nonriverine) acks (B6) ble on Aerial Imager Leaves (B9) : ent? Yes Yes Yes Yes	y (B7)	Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Red Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	e Odor (C1 oheres alo uced Iron uction in T ce (C7)	) ng Living F (C4) illed Soils	(C6)	Dry-Seaso Crayfish Both Saturation Shallow Active FAC-Neutr	n Water Table (C2) urrows (C8) Visible on Aerial Imager juitard (D3) al Test (D5)  gy Present?		
	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visi Water-Stained eld Observations rface Water Presen turation Present? (includes capill	81) (Nonriverine) sits (B2) (Nonriverine) sacks (B6) ble on Aerial Imager Leaves (B9) : ent? Yes t? Yes Yes ary fringe)	y (B7)  No X No X No X	Hydrogen Sulfide Oxidized Rhizosp Presence of Rede Recent Iron Rede Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	e Odor (C1 oheres alo uced Iron uction in T ce (C7) Remarks	) ng Living F (C4) illed Soils (	(C6) V	Dry-Seaso Crayfish Both Saturation Shallow Act X FAC-Neutr  Vetland Hydrolog Yes X No	n Water Table (C2) urrows (C8) Visible on Aerial Imager juitard (D3) al Test (D5)  gy Present?		
	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visit Water-Stained eld Observations rface Water Presenter Table Presenturation Present? (includes capillescribe Recorded	31) (Nonriverine) sits (B2) (Nonriverine) B3) (Nonriverine) acks (B6) ble on Aerial Imager Leaves (B9) : ent? Yes Yes Yes ary fringe)  Data (stream gauge	y (B7)  No X No X No X O T	Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches): Depth (inches):	e Odor (C1 oheres alo uced Iron uction in T ce (C7) Remarks	) ng Living F (C4) illed Soils (	(C6) V	Dry-Seaso Crayfish Bi Saturation Shallow Ac X FAC-Neutr  Vetland Hydrolog Yes X No. s), if available:	n Water Table (C2) urrows (C8) Visible on Aerial Imager quitard (D3) al Test (D5)  gy Present?		
	Water Marks (E Sediment Depo Drift Deposits ( Surface Soil Cr Inundation Visit Water-Stained Id Observations If ace Water Presenter Table Present Ituration Present? (includes capilles Scribe Recorded  marks: Sample a	31) (Nonriverine) sits (B2) (Nonriverine) B3) (Nonriverine) acks (B6) ble on Aerial Imager Leaves (B9) : ent? Yes Yes Yes ary fringe)  Data (stream gauger	y (B7)  No X  No X  No X  Ge, monit	Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches): Depth (inches): Oring well, aerial	e Odor (C1 oheres alo uced Iron uction in T ce (C7) Remarks	) ng Living F (C4) illed Soils revious in	(C6) Variable of the control of the	Dry-Seaso Crayfish Bi Saturation Shallow Ac X FAC-Neutr Vetland Hydrolog Yes X No s), if available:	n Water Table (C2) urrows (C8) Visible on Aerial Imager quitard (D3) al Test (D5)  gy Present?  due to delineation bein		

	WETLA	ND DETERMIN	ATION DATA F	ORM -Arid West Region	
v.111618				Sampling Point 19	Feature ID: Upland
Project/Site: Fri	ant-Kern Canal		City/County:	Tulare county	Sampling Date: 10/3/2019
Applicant/Owne			State:		
Investigator(s):	BC, YS			Section, Township, Rar	nge: Sec. 31, T23S, R27E
	· · · · · ·	odplain		oncave, convex, none): $\underline{\mathrm{Co}}$	Slope (%): 4
Subregion (LRR	2): Mediterranean California	(lLat: 35.97771	5	Long: -119.10655	Datum: NAD 83
Soil Map Unit Na	ame: Riverwash (134)	-		NWI cla	assification None
Are climatic / hy	drologic conditions on the site t	ypical for this tin	ne of year Yes	X No (If no, explai	in in Remarks.)
Are Vegetation	No , Soil No , or Hydrology	No significan	tly disturbed?	Are "Normal Circums	tances" present? Yes X No
Are Vegetation	No , Soil No , or Hydrology	No naturally	oroblematic?	(If needed, explain ar	ny answers in Remarks.)
	FINDINGS – Attach site map	showing samp	ing point locati	ons, transects, importar	nt features, etc.
	getation Present? Yes	No x			
Hydric Soil Pres		No x	Is the Samp		
Wetland Hydrolo	ogy Present? Yes	No x	within a We	etland? Yes	No x
	and indicators not observed.				
VEGETATION -	<ul> <li>Use scientific names of plan</li> </ul>	its. List all spe	cies in the plot.	MUST LIST COVER IN D	DESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute Dom	inant Indicator	Dominance Test work	sheet:
Tree Stratum	(Plot size:)		cies? Status	Number of Dominant	Species
1				That Are OBL, FACW	/, or FAC: (A)
2					
3				Total Number of Dom	
4			-10	Species Across All S	trata: 1 (B)
Sanling/Shrub S	Stratum (Plot size:	0 = Tot	al Cover	Demonstrat Demoissant	Orașia
1	(Flot Size.	<del></del> ′		Percent of Dominant That Are OBL, FACW	
				Prevalence Index wor	
2					
3				Total % Cover of	- <u>- · · · · · · · · · · · · · · · · · ·</u>
4				OBL species 0	<del></del>
5			-1.0	FACW species 5	
	(DL + -:	<u>0</u> = Tot	al Cover	FAC species 0	
Herb Stratum	(Plot size:)			FACU species 0	
1 Citcol	Citrullus colocynthis		ES UPL	UPL species 80	
2 Conmac	Conium maculatum	_ <u>5</u> N	O FACW	Column Totals: 85	<u> </u>
3				Prevalence Inde	-10-00
4				Hydrophytic Vegetation	
5				· ·	Hydrophytic Vegetation
6				No 2 - Dominance Tes	
7				No 3 - Prevalence Inde	
8					Adaptations <sup>1</sup> (Provide supporting
9				data in Remarks of 5 - Wetland Non-Va	on a separate sheet)
10					ascular Flants aropnytic vegetation (Explain)
''		85 = Tot	al Cover	<del></del>	il and wetland hydrology must
Woody Vine Str	atum (Plot size:		ai covei	be present unless distu	, 0,
1	(1 101 0120.			Do procent annoce dieta	. Dod or problemation
2					
		0 = Tot	al Cover		
			a. 00701		
%Bare Groun	nd in Herb % Co	over of Biotic		Hydrophytic	
70Da10 010a11	Stratum:	Crust:		Vegetation	
		01431.		Present? Ye	s No X
				1,000	NO A
Remarks: Area	not dominated by hydrophytic v	regetation			
	usatod by Hydrophytic v	- 30			

SOIL							Sar	mpling Point 19
Profile Descr	ription: (Describe to	the dept	h needed to docu	ment the	indicator o	or confirm	n the absence o	of indicators.)
	Matrix	ino dopi		edox Feat				i maioatoroiy
Depth (inches)		%		%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
(inches)	Color (moist)	70	Color (moist)	70	туре	LOC	rexture	Remarks
0-9	10 YR 2/2	100					Loamy sand	
0.10	10 VD 9/9	0.5	F X/D F (0	-	a	M	т 1	D ' 1
9-16	10 YR 2/2	95	5 YR 5/8	5	C	M	Loamy sand	Prominent redox
'Type: C=Concent	ration, D=Depletion, F	RM=Redu	ced Matrix. CS=Co	vered or (	Coated Sar	nd Grains	. Location: P	L=Pore Lining, M=Matrix.
· ·	tors: (Applicable to							
Histosol (A1)	itoroi (rippiioabio to	u =:\.\o	Sandy Redox (St	,			Indicators for	Problematic Hydric Soils <sup>3</sup> :
Histic Epipede	on (A2)		Stripped Matrix (				1 cm Muc	k (A9) ( <b>LRR C</b> )
Black Histic (/			Loamy Mucky Mi	neral (F1)			2 cm Muc	k (A10) ( <b>LRR B</b> )
Hydrogen Sul	fide (A4)		Loamy Gleyed M	, ,			Reduced \	Vertic (F18)
Stratified Laye	ers (A5) ( <b>LRR C</b> )		Depleted Matrix (	F3)			Red Parer	nt Material (TF2)
1 cm Muck (A			Redox Dark Surfa	. ,			Other (Exp	plain in Remarks)
	ow Dark Surface (A11	)	Depleted Dark St	•	)			
Thick Dark Su Sandy Mucky	` '		Redox Depression Vernal Pools (F9)	. ,	3			
Sandy Gleyed	` ,			,				ation and wetland hydrology sturbed or problematic.
Restrictive Layer	, ,					Soil Pre	•	starbed or problematic.
Type:	(ii processi).				,	00		
Depth (inches	s):						Yes	lo X
Remarks: Does no	t meet indicator S5	because r	edox is not presen	t until 9 i	nches belo	w soil su	rface.	
HYDROLOGY Wetland Hyd	rology Indicators:					Se	condary Indicator	rs (2 or more required)
	(minimum of one requ	uired: che	ck all that apply)			00		rks (B1) ( <b>Riverine</b> )
Surface Wate	•	aou, oo	Salt Crust (B11)				Sediment	Deposits (B2) (Riverine)
High Water Ta	` ,		Biotic Crust (B12	)			Drift Depo	sits (B3) (Riverine)
Saturation (A	3)		Aquatic Invertebr	ates (B13	)		Drainage	Patterns (B10)
Water Marks	(B1) (Nonriverine)		Hydrogen Sulfide	Odor (C1	1)		Dry-Seaso	on Water Table (C2)
Sediment Dep	oosits (B2) (Nonriver	ine)	Oxidized Rhizosp	heres alo	ng Living F	Roots (C3	Crayfish E	Burrows (C8)
Drift Deposits	(B3) (Nonriverine)		Presence of Red	uced Iron	(C4)		Saturation	Visible on Aerial Imagery (C
Surface Soil 0	Cracks (B6)		Recent Iron Redu	uction in T	illed Soils (	(C6)	Shallow A	quitard (D3)
Inundation Vis	sible on Aerial Imagei	y (B7)	Thin Muck Surface	ce (C7)			FAC-Neut	ral Test (D5)
Water-Stained	d Leaves (B9)	'	Other (Explain in	Remarks	)			
Field Observation		NI- 37	Don'th (in alcon)				Vetlend Hudrele	any Bracont?
Surface Water Pre Water Table Prese		No X No X	Depth (inches):		-	v	Vetland Hydrolo	gy Fresent?
Saturation Present		No X	Depth (inches):		-		Yes	lo X
(includes capi					_			
Describe Recorde	ed Data (stream gau	ge, monit	oring well, aerial	photos, p	revious in	spection	s), if available:	
Pomarke: Udl.	ogy indicators not ob	nomica						
Nemaiks: Hydroid	ogy muicators not ob	servea.						

	WETLA	ND DETER	RMINATION DATA	FORM -Arid West Region
v.111618				Sampling Point 23 Feature ID: RW5
Project/Site: Fri			City/County:	
Applicant/Owne			State	e: CA
Investigator(s):				Section, Township, Range: Sec. 16, T24S, R26E
,	· · · · ·	odplain		(concave, convex, none): Concave Slope (%): 2
-	A): Mediterranean California	_		Long: <u>-119.162217</u> Datum: NAD 83
-	ame: Nord fine sandy loam, 0			NWI classification: R4SBCx
	drologic conditions on the site ty			
Are Vegetation	$\underline{\text{No}}$ , Soil $\underline{\text{No}}$ , or Hydrology			
Are Vegetation	$\underline{\text{No}}$ , Soil $\underline{\text{Yes}}$ , or Hydrology	No natu	rally problematic?	(If needed, explain any answers in Remarks.)
			ampling point loca	tions, transects, important features, etc.
	getation Present? Yes			
Hydric Soil Pres			Is the Sam	
Wetland Hydrold	ogy Present? Yes	x No _	within a \	Vetland? Yes x No
				c vegetation and contains problematic hydric soils, see soil a Xanthium strumarium and Cyperus sp. farther west.
VEGETATION -	- Use scientific names of plan	ts. List all	species in the plo	t. MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute	Dominant Indicato	
Tree Stratum	(Plot size:	% Cover	Species? Status	
1				That Are OBL, FACW, or FAC: 2 (A)
2				_
3				Total Number of Dominant
4			Total Cayor	Species Across All Strata: 2 (B)
Sanling/Shrub S	Stratum (Plot size:	0	= Total Cover	D. control Description of Control
5apiirig/Srirub S	oliatum (Fibi size.			Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
	-			
2				Prevalence Index worksheet:
3				Total % Cover of: Multiply by:
4				OBL species 75 x 1 = 75
5				FACW species 0 x 2 = 0
		0	= Total Cover	FAC species $25 \times 3 = 75$
Herb Stratum	(Plot size:	)		FACU species x 4 = 0
1 Staalb	Stachys albens	75	YES OBL	UPL species 0 x 5 = 0
2 Urtdio	Urtica dioica	25	YES FAC	Column Totals: 100 (A) 150 (B)
3				Prevalence Index = $B/A = 1.5$
4				Hydrophytic Vegetation Indicators:
5				Rapid Test for Hydrophytic Vegetation
6				Yes 2 - Dominance Test is >50%
7				$\overline{Y_{\rm es}}$ 3 - Prevalence Index is $\leq 3.0^{1}$
8				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9				data in Remarks or on a separate sheet)
10				5 - Wetland Non-Vascular Plants 6 - Problematic Hydrophytic Vegetation (Explain)
11		100	<del></del>	<del>-  </del>
		100	= Total Cover	Indicators of hydric soil and wetland hydrology must
Woody Vine Str	atum (Plot size:	)		be present unless disturbed or problematic.
1				_
2			<del></del>	_
		0	= Total Cover	
0/5 0		(5)		
%Bare Groun		over of Biot		Hydrophytic
	Stratum:	Crus	t:	Vegetation
				Present? Yes X No
Damerka, Area	densire at a di bui b due a buitie un anti	-ti		
Remarks: Area	dominated by hdrophytic vegeta	ation.		

SOIL							Samp	ling Point 23
Profile Descr	iption: (Describe to tl	ne depth	needed to docum	nent the i	ndicator o	r confirm	the absence of ir	dicators.)
Depth	Matrix		Re	dox Featu	ıres			,
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-16	7.5 YR 3/2	100					Loamy sand	
*.	ation, D=Depletion, RN		·		oated San	d Grains.	Location: PL=	Pore Lining, M=Matrix.
ydric Soil Indicat Histosol (A1)	tors: (Applicable to a	II LRRs,	unless otherwise Sandy Redox (S5	,			Indicators for Pr	oblematic Hydric Soils
Histic Epipedo	on (A2)		Stripped Matrix (S					A9) ( <b>LRR C</b> )
Black Histic (A	, ,		Loamy Mucky Mir	,				A10) ( <b>LRR B</b> )
Hydrogen Sulf	,		Loamy Gleyed Ma	` '			Reduced Ve	rtic (F18)
,	ers (A5) ( <b>LRR C</b> )		Depleted Matrix (I	` ,				Material (TF2)
1 cm Muck (As			Redox Dark Surfa	,				in in Remarks)
Depleted Belo	w Dark Surface (A11)		Depleted Dark Su	, ,	)			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Thick Dark Su			Redox Depression					
Sandy Mucky	Mineral (S1)		Vernal Pools (F9)	. ,	<sup>3</sup> Indica	ators of h	ydrophytic vegetation	on and wetland hydrolog
Sandy Gleyed	Matrix (S4)		_					rbed or problematic.
lestrictive Layer (	if present):				Hydric	Soil Pre	sent?	
Туре:							<del></del>	
Depth (inches							Yes X No	
compose	roblematic and assumed of sand directly beli deposition of new soil	ow the O	HWM of an interr	nittent st	ream. Indi	icators m	ay not be present	lue to seasonal or
YDROLOGY								
-	rology Indicators:					Se		(2 or more required) s (B1) ( <b>Riverine</b> )
	minimum of one requi	rea; cnec	1177					, , ,
Surface Water			Salt Crust (B11)					eposits (B2) (Riverine)
High Water Ta	, ,		Biotic Crust (B12)					s (B3) (Riverine)
X Saturation (A3	,		Aquatic Invertebra	` ,			Drainage Pa	
	B1) (Nonriverine)		Hydrogen Sulfide	, ,				Water Table (C2)
	osits (B2) ( <b>Nonriverin</b>	e)	Oxidized Rhizosp	heres alor	ng Living R	Roots (C3)		` '
Drift Deposits	(B3) (Nonriverine)		Presence of Redu	ıced Iron (	(C4)		Saturation V	isible on Aerial Imagery
Surface Soil C	racks (B6)		Recent Iron Redu	ction in Ti	lled Soils (	C6)	Shallow Aqu	itard (D3)
Inundation Vis	ible on Aerial Imagery	(B7)	Thin Muck Surfac	e (C7)			FAC-Neutra	Test (D5)
Water-Stained	Leaves (B9)		Other (Explain in	Remarks)				
ield Observation								
urface Water Pres			Depth (inches):		-	'	Wetland Hydrology	Present?
Vater Table Preser aturation Present?		o <u>X</u>	Depth (inches):	0	-		Yes X No	
(includes capil	lary fringe)		_					
escribe Recorde	d Data (stream gauge	, monito	oring well, aerial p	hotos, pr	evious ins	spections	s), if available:	
emarks: Hydrolo	gy evidenced by satur	ation wi	thin 12 inches of t	he soil su	rface.			

L

	WETLA	ND DETERMIN	IATION DATA F	ORM -Arid West Region
v.111618				Sampling Point 24 Feature ID: Upland
Project/Site: Fri			City/County:	Tulare County Sampling Date: 10/2/2019
Applicant/Owne			_ State:	
Investigator(s):				Section, Township, Range: Sec. 16, T24S, R26E
`	· · · · · · · · · · · · · · · · · · ·	odplain	•	oncave, convex, none): Concave Slope (%): 2
-	A): Mediterranean California			Long: <u>-119.16222</u> Datum: <u>NAD 83</u>
	ame: Nord fine sandy loam, 0			NWI classification: None
	drologic conditions on the site ty			
Are Vegetation	No , Soil No , or Hydrology			Are "Normal Circumstances" present? Yes X No
Are Vegetation	No , Soil No , or Hydrology	No naturally	problematic?	(If needed, explain any answers in Remarks.)
CUMMA DV OF	FINDINGS Attack site man		!! ! 4!	
			Ing point locati	ons, transects, important features, etc.
	getation Present? Yes	No x		
Hydric Soil Pres		No x	Is the Samp	
Wetland Hydrolo	ogy Present? Yes	No x	within a We	etland? Yes No x
Remarks: Upla	nd pair point to riparian wetla	nd documented	by data point 2	23. No wetland indicators observed.
VEGETATION -	- Use scientific names of plan	ts. List all spe	cies in the plot.	MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute Don	ninant Indicator	Dominance Test worksheet:
Tree Stratum	(Plot size:	% Cover Spe		Number of Dominant Species
1				That Are OBL, FACW, or FAC: 0 (A)
2				``
3				Total Number of Dominant
4				Species Across All Strata: 1 (B)
		<u>0</u> = To	tal Cover	<u></u>
	Stratum (Plot size:	)		Percent of Dominant Species
1				That Are OBL, FACW, or FAC: 0% (A/B)
2				Prevalence Index worksheet:
3				Total % Cover of: Multiply by:
4				OBL species 0 x 1 = 0
5				FACW species 0 x 2 = 0
		= To	tal Cover	FAC species $3 \times 3 = 9$
Herb Stratum	(Plot size:)			FACU species0x 4 =0
1 Hirinc	Hirschfeldia incana		ES UPL	UPL species 80 x 5 = 400
2 Urtdio	Urtica dioica	3 <u>N</u>	IO FAC	Column Totals: 83 (A) 409 (B)
3				Prevalence Index = B/A = 4.9277
4				Hydrophytic Vegetation Indicators:
5				1 - Rapid Test for Hydrophytic Vegetation
6				No 2 - Dominance Test is >50%
7				$N_0$ 3 - Prevalence Index is $\leq 3.0^1$
8				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9				data in Remarks or on a separate sheet)
10				5 - Wetland Non-Vascular Plants 6 - Problematic Hydrophytic Vegetation (Explain)
11			tal Cayor	
\\/   \ \ \/ \\/ \ Ot	(Dist size	= To	tal Cover	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Stra	atum (Plot size:	)	-	be present unless disturbed or problematic.
2				
<sup>2</sup> ——		0 = To	tal Cover	-
			iai Covei	
%Bare Groun	od in Horb	ver of Biotic		
%Bale Gloui				Hydrophytic Vegetation
	Stratum: 17	Crust:		
				Present? Yes No X
Pomarke: Area	not dominated by hydrophytic v	ogetation		1
Kemarks. Area	Thot dominated by flydropflytic v	egetation.		

SOIL						Sar	mpling Point	24
Profile Desci	ription: (Describe to	the depth	needed to document the ir	ndicator c	or confirm	the absence of	indicators.)	
Depth	Matrix	-	Redox Featu					
(inches)	Color (moist)	%	Color (moist) %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remar	ks
(1101100)	Color (molet)			Туро		TOXIGIO	rtoman	NO .
0-16	7.5 YR 3/2	100						
	****							
<u> </u>								
Type: C-Concent	ration D-Denletion R	M-Reduc	ced Matrix, CS=Covered or Co	oated Sar	od Grains	1 ocation: P	L=Pore Lining, N	M-Matrix
	•			Jaicu Jan	iu Granis.	LUCATION. 1	L=r ore Liming, i	VI=IVIALIIA.
•	itors: (Applicable to a	ali LKKS,	unless otherwise noted.)			Indicators for	Problematic Hy	'dria Saile <sup>3</sup> '
Histosol (A1)			Sandy Redox (S5)				-	/anc sons .
Histic Epipedo	, ,	_	Stripped Matrix (S6)				k (A9) (LRR C)	
Black Histic (A	,		Loamy Mucky Mineral (F1)				k (A10) ( <b>LRR B</b> )	)
Hydrogen Sul	` '		Loamy Gleyed Matrix (F2)				Vertic (F18)	
	ers (A5) ( <b>LRR C</b> )		Depleted Matrix (F3)				nt Material (TF2)	,
1 cm Muck (A			Redox Dark Surface (F6)			Other (Ex	plain in Remarks	s)
	ow Dark Surface (A11)		Depleted Dark Surface (F7)					
Thick Dark Su			Redox Depressions (F8)	o				
Sandy Mucky	, ,	_	Vernal Pools (F9)			ydrophytic vegeta		, ,,
Sandy Gleyed						resent, unless dis	sturbed or proble	ematic.
Restrictive Layer	(if present):			Hyarıc	Soil Pres	sent?		
Type: Depth (inches	2).					Yes	No X	
	soil indicators not obs	al				169 .	10 A	
Nemano. 11, arro	soli ilidicatoro not oc.	SEI VCu.						
l								
HYDROLOGY							10	
-	Irology Indicators:	بمطحاك	1 0.0 c ==1.0		Sec	condary Indicator	rs (2 or more red rks (B1) ( <b>Riveri</b> i	
	(minimum of one requ	ired; cnec					` , `	,
Surface Wate			Salt Crust (B11)				Deposits (B2) (	
High Water Ta	able (A2)		Biotic Crust (B12)			Drift Depo	osits (B3) ( <b>River</b> i	ine)
Saturation (A3	,		_Aquatic Invertebrates (B13)			Drainage	Patterns (B10)	
Water Marks	(B1) (Nonriverine)		Hydrogen Sulfide Odor (C1)	)		Dry-Seaso	on Water Table (	(C2)
Sediment Dep	posits (B2) (Nonriveri	ne)	Oxidized Rhizospheres alon	ng Living F	Roots (C3)	Crayfish E	Burrows (C8)	
Drift Deposits	(B3) (Nonriverine)		Presence of Reduced Iron (	C4)		Saturation	n Visible on Aeria	al Imagery (0
Surface Soil C	Cracks (B6)		Recent Iron Reduction in Til	,	(C6)		quitard (D3)	
	sible on Aerial Imagen	v (B7)	Thin Muck Surface (C7)		(4-)		tral Test (D5)	
Water-Stained	0 .	, (5.,	Other (Explain in Remarks)				idi 1001 (20)	
Field Observation	` ,		Other (Explain in Remaile,					
Surface Water Pres	·	No X	Depth (inches):		V	Wetland Hydrolo	gy Present?	
Water Table Prese	ent? Yes I	No X	Depth (inches):	<sup>-</sup>		<u></u>	_	
Saturation Present		No X	Depth (inches):	<u> </u>		Yes	No X	
(includes capi				<del></del>				
Describe Recorde	ed Data (stream gaug	je, monito	oring well, aerial photos, pro	evious in	spections	s), if available:		
		<del></del>						
Remarks: Hydrolo	ogy indicators not obs	served.						
I								

	WETLA	ND DETERMIN	ATION DATA F	ORM -Arid West Region	
v.111618				Sampling Point 25	Feature ID: RW6
Project/Site: Fria	ant-Kern Canal		City/County:	Tulare County	Sampling Date: 10/1/2019
Applicant/Owner		-	State:		
Investigator(s):	BC, YS			Section, Township, Rar	nge: Sec. 16, T24S, R26E
Local relief (hills	side, terrace, etc.): Str	eam	Local Relief (c	concave, convex, none): Co	` ` ` `
Subregion (LRR	): Mediterranean California (	1Lat: <u>35.84369</u>	7	Long: -119.162232	Datum: NAD 83
Soil Map Unit Na	ame: Nord fine sandy loam, 0	to 2 percent slo	pes (130)	NWI cla	assification R4SBCx
Are climatic / hy	drologic conditions on the site ty	pical for this tin	ne of yea⊨ Yes	X No (If no, explain	in in Remarks.)
Are Vegetation	$\underline{No}$ , Soil $\underline{No}$ , or Hydrology			Are "Normal Circums	tances" present? Yes X No
Are Vegetation	$\underline{No}$ , Soil $\underline{No}$ , or Hydrology	No naturally	oroblematic?	(If needed, explain ar	ny answers in Remarks.)
	FINDINGS – Attach site map s		ing point locat	ions, transects, importar	nt features, etc.
	getation Present? Yes x				
Hydric Soil Pres			Is the Samp		N
Wetland Hydrolo	ogy Present? Yes x	No	within a W	etland? Yes x	_No
Remarks: Area	has all 3 wetland indicators p	resent. It is wi	hin an intermi	ttent channel.	
VEGETATION -	- Use scientific names of plan	ts. List all spe	cies in the plot	. MUST LIST COVER IN D	DESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute Dom	inant Indicator	Dominance Test work	sheet:
Tree Stratum	(Plot size: 30 foot radius )		cies? Status	Number of Dominant	
1 Popfre	Populus fremontii		ES FAC	That Are OBL, FACW	/, or FAC: (A)
2 Sallae	Salix laevigata	35 Y	ES FACW		<del></del>
3				Total Number of Dom	
4		- <del>77 - Tal</del>	ol Cover	Species Across All S	trata: 5 (B)
Sanling/Shrub S	Stratum (Plot size: 15 foot rad		al Cover	Develop of Deminent	Charian
1 Sallae	Salix laevigata		ES FACW	Percent of Dominant That Are OBL, FACW	
2	Dalix laevigata		EB FACW	Prevalence Index wor	
3				.	
				Total % Cover of	<del></del>
5	-			OBL species 40 FACW species 45	<del></del>
<u> </u>		10 = Tot	al Cover	FACW species 45	<del></del>
Herb Stratum	(Plot size: 5 foot radius )		ai Covei	FACU species 0	
1 Cypery	Cyperus erythrorhizos	25 Y	ES OBL	UPL species 0	
2 Staalb	Stachys albens		ES OBL	Column Totals: 13	<del></del>
3 Urtdio	Urtica dioica		O FAC	Prevalence Inde	— ' ' —— ' '
4	- Crtica dioica		O FAC	Hydrophytic Vegetation	_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
5					Hydrophytic Vegetation
	-			Yes 2 - Dominance Tes	, , , ,
6	-			Yes 3 - Prevalence Inde	
8	-				Adaptations <sup>1</sup> (Provide supporting
9	-				r on a separate sheet)
10				5 - Wetland Non-Va	ascular Plants
11				6 - Problematic Hy	dropnytic vegetation (Explain)
		47 = Tot	al Cover	1 Indicators of hydric so	il and wetland hydrology must
Woody Vine Stra	atum (Plot size:	)	<u> </u>	be present unless distu	rbed or problematic.
1					
2					
		0 = Tot	al Cover		
%Bare Groun	nd in Herb % Co Stratum: 53	ver of Biotic Crust:		Hydrophytic Vegetation	
	ottatum. <u>55</u>	Orust.		Present? Ye	s X No
Remarks: Area	dominated by hydrophytic veget	tation.		<u>-</u>	

			or confirr	n the absence	of indicators.)
(inches) Color (moist)	RE				•
	0-1/!()	edox Features	12	T	Danada
0-6 2.5Y 4/2 9	% Color (moist)	% Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	93 5 YR 5/8	7 C	PL	Sand	Prominent redox
	<u> </u>				
pe: C=Concentration, D=Depletion, RM=F	Reduced Matrix, CS=Co	vered or Coated S	and Grains	Location: F	PL=Pore Lining, M=Matrix
dric Soil Indicators: (Applicable to all L	RRs, unless otherwise	noted.)			<u> </u>
Histosol (A1)	X Sandy Redox (S5	5)		Indicators for	Problematic Hydric Soi
_ Histic Epipedon (A2)	Stripped Matrix (S	•			ck (A9) (LRR C)
Black Histic (A3)	Loamy Mucky Mi	` ,			ck (A10) ( <b>LRR B</b> )
_ Hydrogen Sulfide (A4) Stratified Layers (A5) ( <b>LRR C</b> )	Loamy Gleyed M				Vertic (F18)
1 cm Muck (A9) (LRR D)	Depleted Matrix ( Redox Dark Surfa	,			ent Material (TF2) (plain in Remarks)
Depleted Below Dark Surface (A11)	Depleted Dark Sun	,		Other (Ex	piairi iri Kemarks)
Thick Dark Surface (A12)	Redox Depression	` ,			
	Vernal Pools (F9)	` '	antoro of b		ation and wetland hydrol
Sandy Mucky Mineral (S1)	VOITIGET 1 0010 (1 0)	' inai	Calois of II	/arobnytic vedet	alion and welland hydrol
Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4)		inai			sturbed or problematic.
Sandy Gleyed Matrix (S4) strictive Layer (if present):		mai		esent, unless di	
Sandy Gleyed Matrix (S4) strictive Layer (if present): Type: Rock		mai	must be pi	resent, unless di sent?	sturbed or problematic.
Sandy Gleyed Matrix (S4)  strictive Layer (if present):  Type:  Depth (inches):  Rock  6		Hydri	must be pi	esent, unless di sent?	sturbed or problematic.
Sandy Gleyed Matrix (S4)  strictive Layer (if present):  Type:  Depth (inches):  Rock  6	layer at least 4 inches	Hydri thick starting wit	must be plic Soil Pres	resent, unless disent?  Yes X  es of the soil sur	sturbed or problematic.
Sandy Gleyed Matrix (S4)  strictive Layer (if present):  Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage.	layer at least 4 inches	Hydri thick starting wit	must be price Soil Presentation of inches the price of th	Yes X es of the soil sur	sturbed or problematic.  No
Sandy Gleyed Matrix (S4)  strictive Layer (if present):  Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage of the series of th	layer at least 4 inches cent prominent redox c	Hydri thick starting wit	must be price Soil Presentation of inches the price of th	Yes X es of the soil surfit masss.	sturbed or problematic.
Sandy Gleyed Matrix (S4)  strictive Layer (if present):  Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage of the series of th	layer at least 4 inches cent prominent redox continues; check all that apply)	Hydri thick starting wit	must be price Soil Presentation of inches the price of th	Yes X es of the soil sure of the mass.  Condary Indicate Water Ma	No rface with a matrix chronous (2 or more required) arks (B1) (Riverine)
Sandy Gleyed Matrix (S4)  strictive Layer (if present):  Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage of the series of th	layer at least 4 inches cent prominent redox c	Hydri thick starting wit oncentrations occu	must be price Soil Presentation of inches the price of th	Yes X es of the soil surfit masss.  condary Indicate Water Ma Sediment	No rface with a matrix chromatic.  ors (2 or more required) arks (B1) (Riverine)
Sandy Gleyed Matrix (S4)  strictive Layer (if present): Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage of the second	layer at least 4 inches cent prominent redox continues; check all that apply)  Salt Crust (B11)	thick starting wit	must be price Soil Presentation of inches the price of th	Yes X I so of the soil sure of the soil	nsturbed or problematic.  No  reface with a matrix chronic process (2 or more required)  arks (B1) (Riverine)  to Deposits (B2) (Riverine)
Sandy Gleyed Matrix (S4)  strictive Layer (if present): Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage of the second surface of the second surface water (A1) High Water Table (A2)	layer at least 4 inches cent prominent redox control (control (con	thick starting wit	must be price Soil Presentation of inches the price of th	Yes X I so of the soil sure of the soil	ors (2 or more required) arks (B1) (Riverine) t Deposits (B2) (Riverine) cists (B3) (Riverine)
Sandy Gleyed Matrix (S4)  strictive Layer (if present): Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percentage of the series of the	; check all that apply)  Salt Crust (B11)  Biotic Crust (B12)  Aquatic Invertebr  Hydrogen Sulfide	thick starting wit	must be price Soil Presentation of inches the price of th	Yes X In the solution of the s	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) cosits (B3) (Riverine) Patterns (B10)
Sandy Gleyed Matrix (S4)  strictive Layer (if present): Type: Rock Depth (inches): 6  marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percent of the second of the se	; check all that apply)  Salt Crust (B11)  Biotic Crust (B12)  Aquatic Invertebr  Hydrogen Sulfide	thick starting wit oncentrations occur attended to the content of	must be price Soil Presentation of inches the price of th	resent, unless disent?  Yes X es of the soil sure of the	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) to Deposits (B3) (Riverine) to Deposits (B4) (Riverine) to Deposits (B4) (Riverine) to Deposits (B5) (Riverine) to Deposits (B6) (Riverine) to Deposits (B7) (Riverine) to Deposits (B8) (Riverine) to Deposits (B8) (Riverine) to Deposits (B10) to Deposit (B
Sandy Gleyed Matrix (S4)  Strictive Layer (if present): Type: Rock Depth (inches): 6  Marks: Indicator S5 evidenced by sandy less than 2 and more than 2 percent of the second of the se	; check all that apply)  Salt Crust (B11) Biotic Crust (B12 Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp	thick starting wit oncentrations occur attended to the content of	must be price Soil Present for Soil Pres	yes X es of the soil sure of the soil su	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) to Deposits (B3) (Riverine) to Deposits (B4) (Riverine) to Deposits (B4) (Riverine) to Deposits (B5) (Riverine) to Deposits (B6) (Riverine) to Deposits (B7) (Riverine) to Deposits (B8) (Riverine) to Deposits (B8) (Riverine) to Deposits (B10) to Deposit (B
Sandy Gleyed Matrix (S4)  strictive Layer (if present): Type: Depth (inches):  smarks: Indicator S5 evidenced by sandy less than 2 and more than 2 perconductors (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Drift Deposits (B3) (Nonriverine)	; check all that apply)  Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red	thick starting wit concentrations occur attentions occur attention occ	must be price Soil Present for Soil Pres	Yes X es of the soil sure of the soil su	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) posits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) n Visible on Aerial Imager
Sandy Gleyed Matrix (S4)  Strictive Layer (if present): Type: Performance Rock Depth (inches): Semarks: Indicator S5 evidenced by sandy less than 2 and more than 2 perconductors and more than 2 perconductors (Matrix Rock)  PROLOGY Wetland Hydrology Indicators: Mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	; check all that apply)  Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red	thick starting wittoncentrations occupates (B13) Odor (C1) Sheres along Living Juced Iron (C4) Juction in Tilled Soils are (C7)	must be price Soil Present for Soil Pres	Yes X es of the soil sure of the soil su	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) n Visible on Aerial Imager
Sandy Gleyed Matrix (S4)  Strictive Layer (if present):  Type: Rock Depth (inches): 6  Marks: Indicator S5 evidenced by sandy less than 2 and more than 2 perco  DROLOGY Wetland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B3) Water-Stained Leaves (B9)	; check all that apply)  Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac	thick starting wittoncentrations occupates (B13) Odor (C1) Sheres along Living Juced Iron (C4) Juction in Tilled Soils are (C7)	must be price Soil Present Soil	Yes X es of the soil sure of the soil su	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) Deposits (B3) (Riverine) Deposits (B4) (Riverine) Deposits (B5) (Riverine) Deposits (B6) (Riverine) Deposits (B7) (Riverine) Deposits (B8) (Riverine) Deposits (B8) (Riverine) Deposits (B9) (Riverine) Deposits (B10) De
Sandy Gleyed Matrix (S4)  Patrictive Layer (if present): Type: Petrope Rock Depth (inches):  Petrope Rock	; check all that apply)  Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redi Recent Iron Redu Thin Muck Surfac Other (Explain in	thick starting wittoncentrations occupates (B13) Odor (C1) Sheres along Living Juced Iron (C4) Juction in Tilled Soils are (C7)	must be price Soil Present Soil	Yes X es of the soil sure of the soil su	ors (2 or more required) arks (B1) (Riverine) to Deposits (B2) (Riverine) Deposits (B3) (Riverine) Deposits (B4) (Riverine) Deposits (B5) (Riverine) Deposits (B6) (Riverine) Deposits (B7) (Riverine) Deposits (B8) (Riverine) Deposits (B8) (Riverine) Deposits (B9) (Riverine) Deposits (B10) De
Sandy Gleyed Matrix (S4)  Patrictive Layer (if present): Type: Depth (inches): Semarks: Indicator S5 evidenced by sandy less than 2 and more than 2 perconditions of the semarks: Indicator S5 evidenced by sandy less than 2 and more than 2 perconditions of the semarks: Indicator S6 evidenced by sandy less than 2 and more than 2 perconditions of the semarks: Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B3) Water-Stained Leaves (B9)  Peld Observations: Uniform Marks (B1)  Provided Table (A2)  Reck Reck Reck Reck Reck Reck Reck Rec	; check all that apply)  Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac	thick starting wittoncentrations occupates (B13) Odor (C1) Sheres along Living Juced Iron (C4) Juction in Tilled Soils are (C7)	must be price Soil Present Soil	Yes X esent, unless disent? Yes X es of the soil sure of	ors (2 or more required) arks (B1) (Riverine) arks (B3) (Riverine) arks (B3) (Riverine) Deposits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) n Visible on Aerial Imager Aquitard (D3) tral Test (D5)

	WETLA	ND DETERMIN	NATION DATA	FORM -Arid West Region
v.111618				Sampling Point 26 Feature ID: RW6
Project/Site: Fria	ant-Kern Canal		City/County:	Tulare County Sampling Date: 10/1/2019
Applicant/Owner			State	e: CA
Investigator(s):	BC, YS			Section, Township, Range: Sec. 16, T24S, R26E
Local relief (hills	ide, terrace, etc.): Str	eam	Local Relief	(concave, convex, none): Concave Slope (%): 1
Subregion (LRR	): Mediterranean California (	1Lat: 35.84369	97	Long: -119.162232 Datum: NAD 83
Soil Map Unit Na	ame: Nord fine sandy loam, 0	to 2 percent sl	opes (130)	NWI classification R4SBCx
Are climatic / hyd	drologic conditions on the site ty	pical for this ti	me of yea⊨ Ye	s X No (If no, explain in Remarks.)
-	$\underline{No}$ , Soil $\underline{No}$ , or Hydrology			Are "Normal Circumstances" present? Yes X No
Are Vegetation	$\underline{No}$ , Soil $\underline{No}$ , or Hydrology	No naturally	problematic?	(If needed, explain any answers in Remarks.)
	FINIDINGS And I do		P	
			ling point loca	ations, transects, important features, etc.
	getation Present? Yes x			
Hydric Soil Pres			Is the Sam	•
Wetland Hydrolo	ogy Present? Yes x	No	within a \	Wetland? Yes x No
	has all 3 wetland indicators p			
VEGETATION -	- Use scientific names of plan	ts. List all spe	cies in the plo	ot. MUST LIST COVER IN DESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute Dor	ninant Indicato	Dominance Test worksheet:
Tree Stratum	(Plot size: 30 foot radius )		ecies? Status	Number of Dominant Species
1 Popfre	Populus fremontii		ES FAC	That Are OBL, FACW, or FAC:5 (A)
2 Sallae	Salix laevigata	35 Y	ES FACW	
3				Total Number of Dominant
4		75 = To	tal Cover	Species Across All Strata: 5 (B)
Sapling/Shrub S	stratum (Plot size: 15 foot rad		ital Covel	Percent of Dominant Species
1 Sallae	Salix laevigata		ES FACW	
2	Zaim iac (igata			Prevalence Index worksheet:
3				
4			<del></del>	OBL species $40 \times 1 = 40$
5			<del></del>	FACW species $45 \times 2 = 90$
		10 = To	tal Cover	FAC species 47 x 3 = 141
Herb Stratum	(Plot size: 5 foot radius )		5575.	FACU species $0 \times 4 = 0$
1 Cypery	Cyperus erythrorhizos	25 Y	ES OBL	UPL species $0 \times 5 = 0$
2 Staalb	Stachys albens		ES OBL	Column Totals: 132 (A) 271 (B)
3 Urtdio	Urtica dioica		NO FAC	Prevalence Index = B/A = 2.053
4			<del></del>	Hydrophytic Vegetation Indicators:
5	1	<del></del>		1 - Rapid Test for Hydrophytic Vegetation
6	1	<del></del>		Yes 2 - Dominance Test is >50%
7	1	<del></del>		$\frac{168}{\text{Yes}}$ 3 - Prevalence Index is $\le 3.0^{1}$
8				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9				data in Remarks or on a separate sheet)
10				5 - Wetland Non-Vascular Plants
11				6 - Problematic Hydrophytic Vegetation (Explain)
		47 = To	tal Cover	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Stra	atum (Plot size:	)		be present unless disturbed or problematic.
1				_
2				_
		0 = Tc	tal Cover	
%Bare Groun	d in Herb % Co Stratum: 53	ver of Biotic Crust:		Hydrophytic Vegetation Present? Yes X No
_				
Remarks: Area	dominated by hydrophytic veget	ation.		

OIL								41 11 4 3
	ion: (Describe to the Matrix	ne depth		<b>nent the ir</b> dox Featu		or confirm	n the absence of	of indicators.)
Depth — (inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-6	2.5Y 4/2	93	5 YR 5/8		C	PL	Sand	Prominent redox
						_		
						_		
pe: C=Concentrati	on, D=Depletion, RN	/I=Redu	ced Matrix, CS=Co	vered or C	oated Sar	nd Grains.	Location: F	PL=Pore Lining, M=Matrix
Iric Soil Indicator	s: (Applicable to a	II LRRs,	, unless otherwise	noted.)				-
Histosol (A1)		X	Sandy Redox (S5	-				Problematic Hydric So
Histic Epipedon		_	Stripped Matrix (S	,				ck (A9) (LRR C)
Black Histic (A3)			Loamy Mucky Min	, ,				ck (A10) ( <b>LRR B</b> )
Hydrogen Sulfide Stratified Layers	` '		Loamy Gleyed M					Vertic (F18)
1 cm Muck (A9)	` , ` ,		_ Depleted Matrix ( Redox Dark Surfa	,				nt Material (TF2) plain in Remarks)
	Dark Surface (A11)		Depleted Dark Sun	` ,			— Other (EX	piairi iri Nemarks)
Thick Dark Surfa	, ,		Redox Depressio	, ,				
	` '		<b>-</b> '	` ,				
Sandy Mucky Mi	neral (S1)		Vernal Pools (F9)		<sup>3</sup> Indica	ators of hy	drophytic veget	ation and wetland hydrol
Sandy Mucky Mi Sandy Gleyed M	, ,		_Vernal Pools (F9)					ation and wetland hydrolesturbed or problematic.
Sandy Gleyed M	atrix (S4) present):		_Vernal Pools (F9)	1	n		esent, unless di	
Sandy Gleyed M strictive Layer (if Type: Depth (inches):	present):  Rock	6			Hydric	nust be pr	esent, unless di sent?	No
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2	present):  Rock	6 idy layer	r at least 4 inches	thick star	Hydric	nust be pres	resent, unless disent?  Yes X I es of the soil sur	sturbed or problematic.
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2	atrix (S4)  present):  Rock  S5 evidenced by san 2 and more than 2 p	6 idy layer	r at least 4 inches	thick star	Hydric	nust be prosected from the second sec	Yes X I es of the soil sur	No face with a matrix chrosers (2 or more required)
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi	Rock S5 evidenced by sand and more than 2 p  ogy Indicators: inimum of one requii	6 dy layer ercent p	r at least 4 inches prominent redox co	thick star	Hydric	nust be prosected from the second sec	Yes X I es of the soil surfit masss.  Condary Indicate Water Ma	No face with a matrix chromatic with a matrix chromatic face with a matrix
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A	Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one required.	6 dy layer ercent p	r at least 4 inches prominent redox of ck all that apply)  Salt Crust (B11)	thick start	Hydric	nust be prosected from the second sec	Yes X I se of the soil surfit masss.  Condary Indicate Water Ma Sediment	No Trace with a matrix chromatic with a matrix with a matrix chromatic with a matrix with a matr
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A	Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one required.	6 dy layer ercent p	r at least 4 inches prominent redox of ck all that apply) Salt Crust (B11) Biotic Crust (B12)	thick startoncentration	Hydric	nust be prosected from the second sec	Yes X I se of the soil sure of the soil	No reface with a matrix chromatic with a matrix with a matrix chromatic with a matrix with a mat
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3)	Rock  Book	6 dy layer ercent p	r at least 4 inches prominent redox continent	thick start oncentration	Hydric ting with	nust be prosected from the second sec	Yes X I see of the soil sure of the soil	ors (2 or more required) orks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10)
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1	present):  Rock S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2) (Nonriverine)	6 dy layer ercent p	ck all that apply) Salt Crust (B12) Aquatic Invertebr	thick starroncentration	Hydric ting with	nust be prosected in 6 inches ring as so	resent, unless disent?  Yes X I es of the soil sur oft masss.  Condary Indicato Water Ma Sediment X Drift Depo X Drainage Dry-Seas	ors (2 or more required) orks (B1) (Riverine) Deposits (B2) (Riverine) Desits (B3) (Riverine) Patterns (B10) on Water Table (C2)
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depos	present):  Rock S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2) (Nonriverine) its (B2) (Nonriverine)	6 dy layer ercent p	ck all that apply) Salt Crust (B12) Aquatic Invertebr Hydrogen Sulfide	thick starroncentration ates (B13) Odor (C1)	ting with	nust be prosected in 6 inches ring as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) orks (B1) (Riverine) Deposits (B2) (Riverine) Deposits (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8)
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depos Drift Deposits (B	present):  Rock S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2) ) (Nonriverine) its (B2) (Nonriverine)	6 dy layer ercent p	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp	thick star oncentration ates (B13) Odor (C1) oheres alon uced Iron (	ting with ons occur	in 6 inchering as so	yes X I sent?  Yes X I ses of the soil surport masss.  Condary Indicate Water Mass Sediment X Drift Depo Dry-Seas Crayfish I Saturation	ors (2 or more required) orks (B1) (Riverine) ors (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depos Drift Deposits (B Surface Soil Cra	present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2)  (Nonriverine) its (B2) (Nonriverine) cks (B6)	6 dy layer ercent p	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu	thick star oncentration ates (B13) Odor (C1) wheres alon uced Iron (oution in Til	ting with ons occur	in 6 inchering as so	resent, unless disent?  Yes X I es of the soil sur of the soil	ors (2 or more required) ors (2 or more required) ors (81) (Riverine) ors (83) (Riverine) Patterns (810) on Water Table (C2) Burrows (C8) on Visible on Aerial Imager
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depos Drift Deposits (B Surface Soil Cra Inundation Visible	present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2)  (Nonriverine) its (B2) (Nonriverine) cks (B6) e on Aerial Imagery	6 dy layer ercent p	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surface	thick startoncentration ates (B13) Odor (C1) theres alon uced Iron (Contion in Till the (C7)	ting with ons occur	in 6 inchering as so	resent, unless disent?  Yes X I es of the soil sur of the soil	ors (2 or more required) orks (B1) (Riverine) ors (B3) (Riverine) Patterns (B10) on Water Table (C2) Burrows (C8) on Visible on Aerial Image
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depos Drift Deposits (B Surface Soil Cra Inundation Visibl Water-Stained L	present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2)  (Nonriverine) its (B2) (Nonriverine) cks (B6) e on Aerial Imagery	6 dy layer ercent p	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu	thick startoncentration ates (B13) Odor (C1) theres alon uced Iron (Contion in Till the (C7)	ting with ons occur	in 6 inchering as so	resent, unless disent?  Yes X I es of the soil sur of the soil	ors (2 or more required) ors (2 or more required) ors (81) (Riverine) ors (83) (Riverine) Patterns (810) on Water Table (C2) Burrows (C8) on Visible on Aerial Imager
Sandy Gleyed M strictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  DROLOGY Wetland Hydrol mary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Led Id Observations: rface Water Preser	present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2)  (Nonriverine) itts (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  nt? Yes No	6 dy layer ercent p red; chec	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in	thick startoncentration ates (B13) Odor (C1) theres alon uced Iron (Contion in Till the (C7)	ting with ons occur	in 6 inchering as so	resent, unless disent?  Yes X I es of the soil sur of the soil	ors (2 or more required) ors (2 or more required) ors (81) (Riverine) ors (81) (Riverine) ors (83) (Riverine) Patterns (810) on Water Table (C2) Burrows (C8) on Visible on Aerial Image Aquitard (D3) tral Test (D5)
Sandy Gleyed M estrictive Layer (if Type: Depth (inches): marks: Indicator S less than 2  //DROLOGY Wetland Hydrol imary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Le eld Observations: arface Water Presenter Table Present?	ogy Indicators: inimum of one require (A1) e (A2) (Nonriverine) cits (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  ogy Indicators: inimum of one require (A1) e (A2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  of Yes No	6   dy layer   recent percent	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac	thick startoncentration ates (B13) Odor (C1) theres alon uced Iron (Contion in Till the (C7)	ting with ons occur	in 6 inchering as so	resent, unless disent?  Yes X es of the soil sure of the	ors (2 or more required) ors (2 or more required) ors (81) (Riverine) ors (81) (Riverine) ors (83) (Riverine) Patterns (810) on Water Table (C2) Burrows (C8) on Visible on Aerial Image Aquitard (D3) tral Test (D5)
Sandy Gleyed M estrictive Layer (if Type: Depth (inches): emarks: Indicator S less than 2  FOROLOGY Wetland Hydrol imary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1 Sediment Depose Drift Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Leeld Observations: urface Water Preser aturation Present? (includes capillar	ogy Indicators: inimum of one require (A1) e (A2) (Nonriverine) cits (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  ogy Indicators: inimum of one require (A1) e (A2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  of Yes No	6	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	thick starroncentration on the contraction of the contraction of the contraction of the contraction in Tile (C7)  Remarks)	g Living FC4)	Soil Presion 6 inchering as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) ors (2 or more required) ors (8 or more required) ors (9 or more required) ors (90 ors (90 ors) ors (90 or
Sandy Gleyed Mestrictive Layer (if Type: Depth (inches): Pemarks: Indicator Seless than 2 Period of the selection of the sele	present):  Rock S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2)  (Nonriverine) cits (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  or Yes North Yes	6	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	thick starroncentration on the contraction of the contraction of the contraction of the contraction in Tile (C7)  Remarks)	g Living FC4)	Soil Presion 6 inchering as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) ors (2 or more required) ors (8 or more required) ors (9 or more required) ors (90 ors (90 ors) ors (90 or
Sandy Gleyed M estrictive Layer (if Type: Depth (inches): emarks: Indicator S less than 2  YDROLOGY Wetland Hydrol imary Indicators (mi Surface Water (A High Water Table X Saturation (A3) Water Marks (B1 Sediment Depos Drift Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Leeld Observations: urface Water Present aturation Present? (includes capillar escribe Recorded I	atrix (S4)  present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one required  A1) e (A2)  1) (Nonriverine) its (B2) (Nonriverine) its (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  atr? Yes Nory Yes Nory Tyes No	6   dy layer   red; check   ch	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	thick starroncentration ates (B13) Odor (C1) wheres alon uced Iron (i uction in Til e (C7) Remarks)  4  Dhotos, pr	g Living FC4) led Soils (	Soil Presion 6 inchering as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) ors (2 or more required) ors (8 or more required) ors (9 or more required) ors (90 ors (90 ors) ors (90 or
Sandy Gleyed M Petrictive Layer (if Type: Depth (inches): Pemarks: Indicator Seless than 2  Period Wetland Hydrol Seless than 2  Period Wetland Hydrol Seless Water (And High Water Table Seless Seles	present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one require A1) e (A2)  (Nonriverine) cits (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  or Yes Nory ry fringe)	6   dy layer   red; check   ch	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	thick starroncentration ates (B13) Odor (C1) wheres alon uced Iron (i uction in Til e (C7) Remarks)  4  Dhotos, pr	g Living FC4) led Soils (	Soil Presion 6 inchering as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) ors (2 or more required) ors (8 or more required) ors (9 or more required) ors (90 ors (90 ors) ors (90 or
Sandy Gleyed M Pestrictive Layer (if Type: Depth (inches): Pemarks: Indicator Series than 2  Performance of the series of the se	atrix (S4)  present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one required  A1) e (A2)  1) (Nonriverine) its (B2) (Nonriverine) its (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  atr? Yes Nory Yes Nory Tyes No	6   dy layer   red; check   ch	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	thick starroncentration ates (B13) Odor (C1) wheres alon uced Iron (i uction in Til e (C7) Remarks)  4  Dhotos, pr	g Living FC4) led Soils (	Soil Presion 6 inchering as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) ors (2 or more required) ors (8 or more required) ors (9 or more required) ors (90 ors (90 ors) ors (90 or
Sandy Gleyed M estrictive Layer (if Type: Depth (inches): emarks: Indicator S less than 2  YDROLOGY Wetland Hydrol imary Indicators (mi Surface Water (A High Water Table X Saturation (A3) Water Marks (B1 Sediment Depos Drift Deposits (B Surface Soil Cra Inundation Visibl Water-Stained Leeld Observations: urface Water Present aturation Present? (includes capillar escribe Recorded I	atrix (S4)  present):  Rock  S5 evidenced by san 2 and more than 2 p  ogy Indicators: inimum of one required  A1) e (A2)  1) (Nonriverine) its (B2) (Nonriverine) its (B2) (Nonriverine) cks (B6) e on Aerial Imagery eaves (B9)  atr? Yes Nory Yes Nory Tyes No	6   dy layer   red; check   ch	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches):	thick starroncentration ates (B13) Odor (C1) wheres alon uced Iron (i uction in Til e (C7) Remarks)  4  Dhotos, pr	g Living FC4) led Soils (	Soil Presion 6 inchering as so	resent, unless disent?  Yes X I es of the soil sure of th	ors (2 or more required) ors (2 or more required) ors (8 or more required) ors (9 or more required) ors (90 ors (90 ors) ors (90 or

444040	WETLA	AND DETERMI	NATION DATA	FORM -Arid West Region	Frature ID. DONIA
v.111618	V C 1		City/County	Sampling Point 28  Kern County	Feature ID: PON14
Project/Site: Fria Applicant/Owner			City/County: State		Sampling Date: 9/30/2019
Investigator(s):					nge: Sec. 9, T25S, R26E
		ression	Local Relief (	concave, convex, none): Co	
	): Mediterranean California		•	Long: -119.177624	Datum: NAD 83
	ame: Exeter sandy loam, 0 to				assification: None
	drologic conditions on the site t				in in Remarks.)
	$N_{\rm O}$ , Soil $N_{\rm O}$ , or Hydrology				tances" present? Yes X No
	No , Soil No , or Hydrology				ny answers in Remarks.)
, as regulation	, co, oya.o.og.	, <u> </u>	p.co.ca.c.	(11.1100000, 07.110111 01.	, and the contraction of the con
SUMMARY OF	FINDINGS – Attach site map	showing samp	oling point locat	ions, transects, importan	t features, etc.
Hydrophytic Veg	getation Present? Yes	x No			
Hydric Soil Pres	ent? Yes	x No	Is the Sam	oled Area	
Wetland Hydrolo	ogy Present? Yes	x No	within a V	/etland? Yes x	No
	point documents seasonal po				
VEGETATION -	- Use scientific names of plai	its. List all spe	cies in the plot	. MUST LIST COVER IN DI	ESECENDING ORDER
3/3 Abbrev.	Species Name	Absolute Do	minant Indicator	Dominance Test work	sheet:
Tree Stratum	(Plot size:	) % Cover Sp	ecies? Status	Number of Dominant	•
1				That Are OBL, FACW	/, or FAC:(A)
2				-	
3				_ Total Number of Dom	
4		0 = T	otal Cover	Species Across All St	trata: 1 (B)
Sapling/Shrub S	Stratum (Plot size:		otal Covel	Percent of Dominant	Spacies
1	(			That Are OBL, FACW	
2	-			Prevalence Index worl	
3				Total % Cover of	
4				OBL species 85	
5				FACW species 0	<del></del>
	-	0 = T	otal Cover	FAC species 0	
Herb Stratum	(Plot size:	)	ota. 0010.	FACU species 0	
1 ammrob	Ammannia robusta	, 70 .	YES OBL	UPL species 0	<del></del>
2 cypdif	Cyperus difformis		NO OBL	Column Totals: 85	
3	- Cyperus umormis			Prevalence Index	
4				Hydrophytic Vegetation	
5				_   ' ' ' '	Hydrophytic Vegetation
6	-			Yes 2 - Dominance Tes	, , , ,
7	-			Yes 3 - Prevalence Inde	
8	-				Adaptations <sup>1</sup> (Provide supporting
9——			<del></del>		on a separate sheet)
10				5 - Wetland Non-Va	
11		=		6 - Problematic Hyd	drophytic Vegetation (Explain)
		85 = T	otal Cover	,	il and wetland hydrology must
Woody Vine Stra	atum (Plot size:	)		be present unless distur	rbed or problematic.
1				_	
2				_	
		<u>0</u> = T	otal Cover		
%Bare Groun		over of Biotic		Hydrophytic	
	Stratum:	Crust:		Vegetation	
				Present? Ye	esXNo
Domarka: Araa	dominated by hydrophytic :	atation			
Remarks: Area	dominated by hydrophytic vege	etation.			

SOIL							Sar	npling Point	28
Profile Descr	ription: (Describe to	the depth	n needed to docun	nent the i	ndicator o	r confirn	n the absence of	indicators.)	
Depth	Matrix		Re	dox Feat	ures				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remar	ks
0.0	0 % 4/1	<b>5</b> 0	<b>7</b> 4/0	90	a	DI	Sandy clay	D : /	1
0-3	2.5y 4/1	70	5yr 4/6	30	C	PL	loam	Prominent	redox
3-16	10yr 4/2	85	5yr 4/6	15	C	$\operatorname{PL}$	Loamy Sand		
	ration, D=Depletion, R				oated San	d Grains.	Location: Pl	_=Pore Lining, I	√l=Matrix.
•	tors: (Applicable to			•					3
Histosol (A1)	(4.0)	X	Sandy Redox (S5	•			Indicators for		/aric Solis*:
Histic Epipedo			Stripped Matrix (S	,				k (A9) ( <b>LRR C</b> ) k (A10) ( <b>LRR B</b>	١
Black Histic (A Hydrogen Sul	•		Loamy Mucky Mir Loamy Gleyed Ma	` '				/ertic (F18)	,
	ers (A5) ( <b>LRR C</b> )	X	Depleted Matrix (					nt Material (TF2	)
1 cm Muck (A			Redox Dark Surfa	,				olain in Remark	•
	ow Dark Surface (A11		Depleted Dark Su	` '	)				-,
Thick Dark Su			Redox Depressio						
Sandy Mucky			Vernal Pools (F9)				ydrophytic vegeta		, ,,
Sandy Gleyed Restrictive Layer						Soil Pre	resent, unless dis	turbea or proble	ematic.
Type:	(ii present).				пуштс	JUII FIE	Sentr		
Depth (inches	s):						Yes X N	lo	
Remarks: F3 is me	et by a layer with 60°	% or more	e chroma of 2 or les	ss, and va	alue of 4 or	more th	at is 2inches thic	k starting with	in the
upper 4	inches of the soil sur	face, And	d contains redox co	ncentrat	ions occurr	ring as po	ore linings.		
HYDROLOGY									
	rology Indicators:					Se	condary Indicator	s (2 or more re	quired)
	(minimum of one requ	ired; ched	ck all that apply)					ks (B1) (Riveri	
Surface Wate	r (A1)		Salt Crust (B11)				Sediment	Deposits (B2) (	Riverine)
High Water Ta	able (A2)	X	Biotic Crust (B12)	)			Drift Depo	sits (B3) (River	ine)
X Saturation (A3	,		_Aquatic Invertebra	`	,			Patterns (B10)	
	(B1) (Nonriverine)	, <u> </u>	_Hydrogen Sulfide		•			n Water Table	(C2)
	oosits (B2) (Nonriveri	ne)	Oxidized Rhizosp		-	Roots (C3)		urrows (C8)	
	(B3) (Nonriverine)		Presence of Redu		` '	(00)		Visible on Aeri	al Imagery (C
X Surface Soil C	` ,	. (DZ)	Recent Iron Redu		illed Solls (	C6)		quitard (D3)	
Water-Stained	sible on Aerial Imager	у (Б/)	Thin Muck Surfact Other (Explain in					ral Test (D5)	
Field Observation	` ,		Other (Explain III	ixemaiks,	1				
Surface Water Pres	sent? Yes	No X	Depth (inches):			1	Netland Hydrolo	gy Present?	
Water Table Prese		No X	Depth (inches):		_		Vac V N		
Saturation Present (includes capi		No	Depth (inches):	U	-		Yes X N		
	ed Data (stream gaug	je, monit	oring well, aerial p	hotos, p	revious ins	spections	s), if available:		
Remarks: Hydrolo	ogy evidenced by satu	ration, s	urface soil cracks,	and biotio	e crust.				

444040	WETLA	ND DETERMIN	IATION DATA F	ORM -Arid West Region	Fratura ID. III 1
v.111618	ant Warr Carrel		City/County	Sampling Point 29  Kern County	Feature ID: Upland Sampling Date: 9/30/2019
Project/Site: Fri			City/County: State:		Sampling Date. 9/30/2019
Investigator(s):			_ State.	Section, Township, Ran	OGO: Coo O TOEC DOCE
		ope	Local Daliat (a	• • •	* <del></del>
			•	oncave, convex, none): <u>Co</u> Long: -119.177646	ncave Slope (%): 15  Datum: NAD 83
	Mediterranean California				ssification None
7	ame: Exeter sandy loam, 0 to				
	drologic conditions on the site ty		-		n in Remarks.)
	No , Soil No , or Hydrology				tances" present? Yes X No
Are Vegetation	No , Soil No , or Hydrology	No naturally	problematic?	(If needed, explain an	y answers in Remarks.)
SUMMARY OF	FINDINGS – Attach site map s	howing samp	ling point locati	ons transects importan	t features etc
	getation Present? Yes	No x	Ing point locati	ons, transects, importan	it reatures, etc.
Hydric Soil Pres	· —	No x			
Wetland Hydrolo			Is the Samp within a We		No X
Welland Hydroid	ogy Present? Yes	Nox	within a vve	elialiu! Tes	_No _X
Remarks: Upla	nd pair point to pond documer	ted by data po	int 28.		
VEGETATION -	<ul> <li>Use scientific names of plan</li> </ul>	ts. List all spe	cies in the plot.	MUST LIST COVER IN D	ESECENDING ORDER
3/3 Abbrev.	Species Name	Abaabata Daa	Second Indicates	Dominance Test works	shoot
Tree Stratum	(Plot size:		ninant Indicator cies? Status	Number of Dominant	
1				That Are OBL, FACW	•
2	-		<del></del>		
3				Total Number of Dom	inant
4				Species Across All St	rata: 0 (B)
		0 = To	tal Cover		
_	Stratum (Plot size:	)		Percent of Dominant	
1					/, or FAC: ###### (A/B)
2				Prevalence Index work	
3				Total % Cover of	: Multiply by:
4				OBL species 0	x 1 =0
5				FACW species 0	x 2 =0
		0 = To	tal Cover	FAC species 0	x 3 = 0
Herb Stratum	(Plot size:)			FACU species 0	x 4 = 0
1				UPL species 0	x 5 = 0
2				Column Totals: 0	(A) 0 (B)
3				Prevalence Index	K = B/A =
4				Hydrophytic Vegetatio	on Indicators:
5				1 - Rapid Test for H	lydrophytic Vegetation
6				2 - Dominance Tes	t is >50%
7		<del></del>		No 3 - Prevalence Inde	ex is ≤3.0¹
8		<del></del>		4 - Morphological A	daptations <sup>1</sup> (Provide supporting
9		<del>-</del>			on a separate sheet)
10				5 - Wetland Non-Va	
11				6 - Problematic Hyd	dropnytic vegetation (Explain)
		<u>0</u> = To	tal Cover		il and wetland hydrology must
Woody Vine Str	atum (Plot size:	)		be present unless distur	rbed or problematic.
1					
2					
		0 = To	tal Cover		
%Bare Groun		ver of Biotic		Hydrophytic	
	Stratum: 100	Crust:		Vegetation	
				Present? Ye	sNo _X_
Damada Dam					
Remarks: Barre	en no vegetation present.				

SOIL							Samp	oling Point	29
Profile Descr	iption: (Describe to t	he depti	n needed to documen	t the in	dicator o	or confirm	n the absence of i	ndicators.)	
	Matrix	no dopin		Feature				indicator ci,	
Depth (inches)	Color (moist)	%			Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	<u> </u>
0-16	10YR 4/3	100					Sandy loam		
·									
'Type: C=Concentr	ation, D=Depletion, R	√=Redu	ced Matrix, CS=Covere	d or Co	ated Sar	nd Grains.	Location: PL=	Pore Lining, M	=Matrix.
Hydric Soil Indica	tors: (Applicable to a	II LRRs,	unless otherwise no	ted.)				-	
Histosol (A1)			Sandy Redox (S5)				Indicators for Pr	•	iric Soils
Histic Epipedo Black Histic (A		_	Stripped Matrix (S6) Loamy Mucky Minera	I (F1)				(A9) ( <b>LRR C</b> ) (A10) ( <b>LRR B</b> )	
Hydrogen Sulf	•		Loamy Gleyed Matrix				Reduced Ve	, , ,	
Stratified Laye	ers (A5) (LRR C)	_	Depleted Matrix (F3)					Material (TF2)	
1 cm Muck (A	. , .		Redox Dark Surface (	` '			Other (Expla	ain in Remarks)	
Thick Dark Su	w Dark Surface (A11) Irface (A12)		Depleted Dark Surfact Redox Depressions (	` '					
Sandy Mucky	Mineral (S1)	_	Vernal Pools (F9)	- /			drophytic vegetati		
Sandy Gleyed							esent, unless distu	irbed or problen	natic.
Restrictive Layer ( Type:	(if present):				Hydric	Soil Pres	sent?		
Depth (inches	):						Yes No	X	
HYDROLOGY Wetland Hydi	rology Indicators:					Sec	condary Indicators	(2 or more requ	uired)
	(minimum of one requi	red; che	11 77					s (B1) (Riverine	•
Surface Water	• •		Salt Crust (B11)					eposits (B2) ( <b>R</b> i ts (B3) ( <b>Riverin</b>	
High Water Ta Saturation (A3	` ,		Biotic Crust (B12) Aquatic Invertebrates	(B13)				atterns (B10)	ie)
	(B1) ( <b>Nonriverine</b> )		Hydrogen Sulfide Ode	,				Water Table (C	22)
	oosits (B2) (Nonriverin	ne)	Oxidized Rhizosphere	es along	Living F	Roots (C3)	Crayfish Bu	rows (C8)	
<del></del>	(B3) (Nonriverine)		Presence of Reduced	•	,	(0.0)		isible on Aerial	Imagery (
Surface Soil C	Cracks (B6) Sible on Aerial Imagery	(B7)	Recent Iron Reductio Thin Muck Surface (C		ed Soils (	(C6)	Shallow Aqu	, ,	
Water-Stained	٠,	(67)	Other (Explain in Ren	,			I AO-Neulla	i Test (D3)	
Field Observation		37	D # ("   )				V-41	. D	
Surface Water Prese Water Table Presel Saturation Present' (includes capi	nt? Yes N	o X o X o X	Depth (inches): Depth (inches):			v	Vetland Hydrolog		
		e, monit	oring well, aerial pho	tos, pre	vious in	spection	s), if available:		
Remarks: Hydrolo	gy indicators not obse	erved.							
ı									

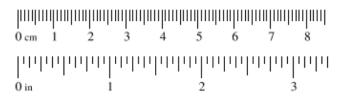
## Appendix C ORDINARY HIGH WATER MARK DATA FORMS

## Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Sampling Point: 15 Feature II	D: <u>IS1</u> Date: <u>10/3/2019</u>
Project: Friant-Kern Canal Middle Reach Capacity	Correction Project
Location: Tulare County, CA Pho	oto begin/end file#: See Field Photos
Investigator(s): BC, YS	
Y X / N Do normal circumstances exist on the site? Y N X Is the site significantly disturbed?	Canal syphon
	Projection: <u>Lambert</u> Datum: <u>NAD83</u>
	Coordinates:
Potential anthropogenic influences on the channel system	
Road crossings and water routinely released into st	
banks were also fortified with rip-rap in the vacinit	y of the canal.
Brief site description:	
Surface water present in western portion of the stu	idy area due to water released from canal the
channel is dry east of the canal.	
Checklist of resources (if available):	
Aerial photography Stream gage data	
Dates: Gage number:	
Topographic maps  Period of record:	
	nt effective discharges
IH THE	d frequency analysis
I⊟	nift-adjusted rating
	or 2-, 5-, 10-, and 25-year events and the
1 <del></del>	vent exceeding a 5-year event
Global positioning system (GPS)	
Other studies:  Hydrogeomorphic F	Floodplain   Inits
, Active Floodplain	
Low-Flow Channels	OHWM Paleo Channel
Procedure for identifying and characterizing the floodplai	n units to assist in identifying the OHWM:
1. Walk the channel and floodplain within the study area to get a present at the site.	in impression of the geomorphology and vegetation
2. Select a representative cross section across the channel. Draw	the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of	one of the hydrogeomorphic floodplain units.
a) Record the floodplain unit and GPS position.	
b) Describe the sediment texture (using the Wentworth class unit.	size) and the vegetation characteristics of the floodplain
c) Identify any indicators present at the location.	
4. Repeat for other points in different hydrogeomorphic floodpla	in units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHV	·
Mapping on aerial photograph	X GPS
Digitized on computer	Other:

## **Wentworth Size Classes**

1. Tit iid tii bille Cleaber								
Inches	s (in)			Mill	imeters (m	m)	Wentworth size class	s
1	0.08	_	_	_	256	_	Boulder	<u>-</u>
	2.56	-	_	_	64		Cobble — — -	Gravel
	0.157	-	_	_	4		Pebble — — — — Granule	O
	0.079	$\dashv$		_	2.00			
	0.039	-	_	-	1.00		Very coarse sand Coarse sand	
	0.020	-	_	_	0.50		<del> </del>	p
1/2	0.0098	-	_	_	0.25		Medium sand	Sand
1/4	0.005	-	_	_	0.125		Fine sand	
1/8 —	0.0025	_		_	0.0625		Very fine sand	
1/16	0.0012		_	_	0.031		Coarse silt	
1/32	0.00061	-	_	_	0.0156		Medium silt	Silt
1/64	0.00031	-	_	_	0.0078		Fine silt	
1/128 —	0.00015			_	0.0039		Very fine silt	
					2.0000		Clay	Mud



Feature ID:	Cross section ID:	Date:	Time:
Cross section drawing	<u>:</u> _		
	600 00 0 HW (		
		166	
Γ			
<u>OHWM</u>			
GPS point:		<u></u>	
Indicators:	Б	<b>—</b>	
1 <del>1 1</del>	<b>—</b>	X Break in bank slope	
X Change in vegeta	<b> </b>	X Other: <u>Drift dep</u>	osits
X Change in vegeta	tion cover	Other:	
Comments:			
Some an species in	channel or below OHWM s	uch as cockiebur.	
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
GPS point:			
G. 5 point.			
Characteristics of the f	loodnlain unit:		
Average sediment text			
_	% Tree: % Shrub:	% Herh	%
Community succession		70 1161.01	<b>-</b> ^~
NA		rbaceous, shrubs, saplir	ngs)
Early (herbaceou		rbaceous, shrubs, matu	
		i baceous, sili ubs, iliatt	ne trees,
Indicators:			
Mudcracks	Soil develop	mont	
	Surface relie		
Ripples	<b>⊢</b> .		
Drift and/or debris			
Presence of bed an	d bank Other:		
Benches	Uther:		
Comments:			

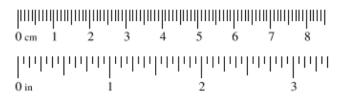
Feature ID:	Cross section ID:	Date:	Time:
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
GPS point:  Characteristics of the flo Average sediment texts	•	<u> </u>	
	_% Tree:% Shrub:	% Harb:	<u> </u>
Community succession	_ /0 11ee /0 3111ub		70
		baceous, shrubs, sapling	25)
Early (herbaceous		baceous, shrubs, matur	
Indicators:  Mudcracks	Soil developn		
Ripples	Surface relief		
Drift and/or debris Presence of bed and	Other:		
Benches	Other:		
Comments:			
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
GPS point:			
Characteristics of the flo	•		
Average sediment text		0/ Howley	
Community succession	_% Tree:% Shrub:	% Herb:	%
	_	baceous, shrubs, sapling	25)
Early (herbaceous		baceous, shrubs, matur	
Indicators:			
Mudcracks	Soil developn	nent	
Ripples	Surface relief		
Drift and/or debris			
Presence of bed and	<u> </u>		
Benches	Other:		
Comments:			

#### Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Sampling Point: 20	Feature ID:	PO	N4 D	Pate: 10/2/2019					
Project: Friant Kern Canal									
Location: Tulare County, CA Photo begin/end file#: See Field Photos									
Investigator(s): BC, YS									
YX/N Do normal circumstances exist or	the site?	Locat	ion Details:						
Y / N X Is the site significantly disturbed?									
		Projec	tion: Lambert	Datum: NAD83					
		Coordi	nates:						
Potential anthropogenic influences on the chan	nel system:								
Detention basin. Water is managed by agri-	iculture								
Brief site description:									
Large pond between canal and ag land									
Checklist of resources (if available):									
	gage data								
Dates: Gage nu									
	of record:								
	-		ve discharges						
	Its of flood fr	•	•						
I <del>-</del>	recent shift-	-	-						
	_		.0-, and 25-year eve						
	recent even	t excee	eding a 5-year event						
Global positioning system (GPS)									
Other studies:		de la la	11-24-						
, ,	omorphic Floo	apıaın	Units						
Active	Floodplain		—→  <del>Cow Terrace</del>						
			ats:						
* *****	<del></del>	-	4						
Low-Flow Cha	annels	O	/ HWM Paleo Channel						
Procedure for identifying and characterizing the				the OHWM:					
1. Walk the channel and floodplain within the study at	_			_					
present at the site.	rea to get an n	iipi cooi	on or the geomorphor	ogy and vegetation					
2. Select a representative cross section across the cha	nnel. Draw the	cross s	section and label the fl	loodplain units.					
3. Determine a point on the cross section that is chara				•					
a) Record the floodplain unit and GPS position.			,						
b) Describe the sediment texture (using the Wenty	worth class size	e) and t	he vegetation charact	eristics of the floodplain					
unit.									
c) Identify any indicators present at the location.	ا داده داداد								
4. Repeat for other points in different hydrogeomorph	•								
5. Identify the OHWM and record the indicators. Reco		positio	1						
Mapping on aerial pho			GPS						
Digitized on computer	-		Other:						

#### **Wentworth Size Classes**

CIII NILE CIRBSES								
Inches	Inches (in)			Mill	imeters (m	m)	Wentworth size clas	s
1	0.08	_	_	_	256		Boulder	<u>-</u>
	2.56	-	_	_	64		Cobble — — -	Gravel
	0.157	-	_	_	4		Pebble	O
	0.079	$\dashv$		_	2.00			
	0.039	-	_	-	1.00		Very coarse sand Coarse sand	
	0.020	-	_	_	0.50		<del> </del>	pu
1/2	0.0098	-	_	_	0.25		Medium sand	Sand
1/4	0.005	-	_	_	0.125		Fine sand	
1/8 —	0.0025	_		_	0.0625		Very fine sand	
1/16	0.0012		_	_	0.031		Coarse silt	
1/32	0.00061	-	_	_	0.0156		Medium silt	Silt
1/64	0.00031	-	_	_	0.0078		Fine silt	
1/128 —	0.00015			_	0.0039		Very fine silt	
					2.0000		Clay	Mud



Feature ID: Cross se	ection ID:	Date:	Time:
Cross section drawing:			
	270		
To. 11.12			
OHWM CRS we in the			
GPS point:			
Indicators:  Change in average sediment te	sytura [	X Break in bank slope	
X Change in average sediment te	kture	Other: Drift depo	saita
X Change in vegetation cover	<u> </u>	Other:	DSILS
Comments:	L	Other.	
Water is currently being pumped	linto the pond		
Water is currently being pumper	i iiito tiic poila	•	
Floodplain unit: Low-Flow	v Channel	Active Floodplain	Low Terrace
_		_	_
GPS point:			
Characteristics of the floodplain unit	:•		
Average sediment texture:			
Total veg cover:% Tree:	% Shrub:	% Herb:	_%
Community successional stage:	П <i>п</i>		
NA		rbaceous, shrubs, saplin	<i>-</i>
Early (herbaceous & seedlings)	Late (he	erbaceous, shrubs, matu	re trees)
l			
Indicators:	□ca:l dayalan		
Mudcracks	Soil develop Surface relie		
Ripples Drift and/or debris	H		
Presence of bed and bank	Other:		
Benches			
Comments:			
Commencs.			

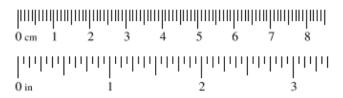
Feature ID:	Cross section ID:	Date:	Time:
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
GPS point:  Characteristics of the flo Average sediment texts	•	<u> </u>	
	_% Tree:% Shrub:	% Harb:	<u> </u>
Community succession	_ /0 11ee /0 3111ub		70
		baceous, shrubs, sapling	25)
Early (herbaceous		baceous, shrubs, matur	
Indicators:  Mudcracks	Soil developn		
Ripples	Surface relief		
Drift and/or debris Presence of bed and	Other:		
Benches	Other:		
Comments:			
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
GPS point:			
Characteristics of the flo	•		
Average sediment text		0/ Howley	
Community succession	_% Tree:% Shrub:	% Herb:	%
	_	baceous, shrubs, sapling	25)
Early (herbaceous		baceous, shrubs, matur	
Indicators:			
Mudcracks	Soil developn	nent	
Ripples	Surface relief		
Drift and/or debris			
Presence of bed and	<u> </u>		
Benches	Other:		
Comments:			

#### Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Sampling Point: 21 Featur	re ID: PON10 Date: 10/2/2019
Project: Friant kern canal	
Location: Tulare County, CA	Photo begin/end file#: See Field Photos
Investigator(s): BC, YS	
YX/N Do normal circumstances exist on the sit	te? Location Details:
Y / N X Is the site significantly disturbed?	
	Projection: Lambert Datum: NAD83
	Coordinates:
Potential anthropogenic influences on the channel sys	
Detention basin. Water is managed by agricultur	re
Brief site description:	
pond between canal and ag land	
Charlist of management (if available).	
Checklist of resources (if available): Aerial photography Stream gage of	Nata .
Dates: Gage number:	
Topographic maps Period of reco	
IH	ecent effective discharges
	lood frequency analysis
	t shift-adjusted rating
	ts for 2-, 5-, 10-, and 25-year events and the
	t event exceeding a 5-year event
Global positioning system (GPS)	t event exceeding a 3 year event
Other studies:	
	ic Floodplain Units
, Active Floodpla	
•	•
4 44 4 4 4	
Low-Flow Channels	OHWM Paleo Channel
Procedure for identifying and characterizing the floods	plain units to assist in identifying the OHWM:
1. Walk the channel and floodplain within the study area to g	et an impression of the geomorphology and vegetation
present at the site.	
2. Select a representative cross section across the channel. Dr	·
3. Determine a point on the cross section that is characteristic	c of one of the hydrogeomorphic floodplain units.
a) Record the floodplain unit and GPS position.	
b) Describe the sediment texture (using the Wentworth cl unit.	lass size) and the vegetation characteristics of the floodplain
c) Identify any indicators present at the location.	
4. Repeat for other points in different hydrogeomorphic flood	dplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the O	OHWM position via:
Mapping on aerial photograp	oh X GPS
Digitized on computer	Other:

#### **Wentworth Size Classes**

CIII NILE CIRBSES								
Inches	Inches (in)			Mill	imeters (m	m)	Wentworth size clas	s
1	0.08	_	_	_	256		Boulder	<u>-</u>
	2.56	-	_	_	64		Cobble — — -	Gravel
	0.157	-	_	_	4		Pebble	O
	0.079	$\dashv$		_	2.00			
	0.039	-	_	-	1.00		Very coarse sand Coarse sand	
	0.020	-	_	_	0.50		<del> </del>	pu
1/2	0.0098	-	_	_	0.25		Medium sand	Sand
1/4	0.005	-	_	_	0.125		Fine sand	
1/8 —	0.0025	_		_	0.0625		Very fine sand	
1/16	0.0012		_	_	0.031		Coarse silt	
1/32	0.00061	-	_	_	0.0156		Medium silt	Silt
1/64	0.00031	-	_	_	0.0078		Fine silt	
1/128 —	0.00015			_	0.0039		Very fine silt	
					2.0000		Clay	Mud



Feature ID: Cross se	ction ID:	Date:	Time:
Cross section drawing:			
	6 O		
F			
<u>OHWM</u>			
GPS point:		_	
Indicators:  Change in average sediment tex	turo Y	Proak in hank cle	200
X Change in vegetation species	ture X	Break in bank slo Other: Drift	
X Change in vegetation cover	Δ	Other: Drift	aeposits
Comments:	Ш	Otilei	
Water is managed by ag.			
Water is managed by ag.			
Floodplain unit: Low-Flow	Channel	Active Floodpla	in Low Terrace
_		_	<del>_</del>
GPS point:		_	
Characteristics of the floodplain unit:			
Average sediment texture:	o/ 61 h	or III. di	
Total veg cover: % Tree:	% Shrub:	% Herb:	%
Community successional stage:	Maid (borbs	saacia shruba s	!:\
Early (herbaceous & seedlings)		aceous, shrubs, s aceous, shrubs, r	, •
Leally (Herbaceous & securings)	Trate (Herbe	dceous, siii ubs, i	nature trees,
Indicators:			
Mudcracks	Soil developme	ent .	
Ripples	Surface relief		
Drift and/or debris	<b>—</b>		
Presence of bed and bank	Other:		
Benches	Other:		
Comments:	—		

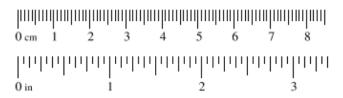
Feature ID:	Cross section ID:	Date:	Time:
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
	_	_	_
GPS point:			
Characteristics of the flo			
Average sediment textu	ıre: <u>Sandy loam</u>		
Total veg cover:	% Tree:% Shrub:	% Herb:%	
Community successions	_		
NA 	<b>—</b>	rbaceous, shrubs, saplings)	
Early (herbaceous	& seedlings) Late (he	erbaceous, shrubs, mature	trees)
1 - 12 1			
Indicators:			
Mudcracks	Soil develop		
Ripples Drift and/or debris	Surface relie		
Presence of bed and	t hank		
Benches	Other:		
Comments:			
Comments.			
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
	_	_	_
GPS point:			
Characteristics of the flo	•		
Average sediment textu			
	_% Tree:% Shrub:	% Herb:%	
Community successions	_		
NA 		rbaceous, shrubs, saplings)	
Early (herbaceous	& seedlings) Late (he	erbaceous, shrubs, mature	trees)
In diantana			
Indicators:			
Mudcracks	Soil develop Surface relie		
Ripples Drift and/or debris	Other:	:1	
Presence of bed and			
Benches	Other:		
Comments:			
Comments.			

#### Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Sampling Point: 22 Feature ID:	: IS2 Date: 10/1/2019								
Project: Friant-Kern Canal Middle Reach Capacity Co	orrection Project								
Location: Tulare County, CA Photo begin/end file#: See Field Photos									
Investigator(s): BC, YS									
Y X / N Do normal circumstances exist on the site? Y N X Is the site significantly disturbed?	Location Details: White River at Friant Kern Canal downstream								
	Projection: Lambert Datum: NAD83								
	<b>Coordinates:</b> 35.843901°, -119.162143°								
Potential anthropogenic influences on the channel system: Water is released from Friant-Kern Canal into the White River an intermittent stream.									
Brief site description:									
Intermittent stream flowing west.									
Checklist of resources (if available):  X Aerial photography  Stream gage data									
Dates: Gage number:									
X Topographic maps Period of record:									
IH	t effective discharges								
	frequency analysis								
	t-adjusted rating								
I⊟	<sup>-</sup> 2-, 5-, 10-, and 25-year events and the								
	nt exceeding a 5-year event								
X Global positioning system (GPS)	int exceeding a 5-year event								
Other studies:									
Hydrogeomorphic Flo	oodplain Units								
, Active Floodplain									
Low-Flow Channels	OHWM Paleo Channel								
Procedure for identifying and characterizing the floodplain	units to assist in identifying the OHWM:								
1. Walk the channel and floodplain within the study area to get an present at the site.	impression of the geomorphology and vegetation								
2. Select a representative cross section across the channel. Draw th	he cross section and label the floodplain units.								
3. Determine a point on the cross section that is characteristic of o	ne of the hydrogeomorphic floodplain units.								
a) Record the floodplain unit and GPS position.									
b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.									
c) Identify any indicators present at the location.									
4. Repeat for other points in different hydrogeomorphic floodplain	units across the cross section.								
5. Identify the OHWM and record the indicators. Record the OHWI	M position via:								
Mapping on aerial photograph	X GPS								
Digitized on computer	Other:								

#### **Wentworth Size Classes**

CIII NILE CIRBSES								
Inches	Inches (in)			Mill	imeters (m	m)	Wentworth size clas	s
1	0.08	_	_	_	256		Boulder	<u>-</u>
	2.56	-	_	_	64		Cobble — — -	Gravel
	0.157	-	_	_	4		Pebble	O
	0.079	$\dashv$		_	2.00			
	0.039	-	_	-	1.00		Very coarse sand Coarse sand	
	0.020	-	_	_	0.50		<del> </del>	pu
1/2	0.0098	-	_	_	0.25		Medium sand	Sand
1/4	0.005	-	_	_	0.125		Fine sand	
1/8 —	0.0025			_	0.0625		Very fine sand	
1/16	0.0012		_	_	0.031		Coarse silt	
1/32	0.00061	-	_	_	0.0156		Medium silt	Silt
1/64	0.00031	-	_	_	0.0078		Fine silt	
1/128 —	0.00015			_	0.0039		Very fine silt	
					2.0000		Clay	Mud



Feature ID:	Cross section ID:	Date:	Time:
Cross section drawing:		30-	- 6 H. W. 7 Z.
	+		
<u>онwм</u>			
GPS point:			
Indicators:  X Change in average s X Change in vegetatio Change in vegetatio	n species	X Break in bank slope Other: Other:	
Comments:			
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
riooupiaiii uiiit.	Low-Flow Channel		Low remace
GPS point:			
Characteristics of the floo	dplain unit:		
Average sediment texture			
	% Tree: $0$ % Shrub:	<u>0</u> % Herb: <u>0</u>	_%
Community successional	_		,
X NA	· · · · · · · · · · · · · · · · · · ·	nerbaceous, shrubs, sapli	<i>.</i>
Early (herbaceous &	seedlings) Late (	herbaceous, shrubs, mati	are trees)
Indicators:			
Mudcracks	Soil develo	opment	
Ripples	Surface re	·	
Drift and/or debris	X Other: Ch	nange in veg cover	
Presence of bed and b		eposition/sorting	
Benches	X Other: Ch	nange in sediment typ	е
Comments:	<u> </u>		
Some sandy material re	emains but low flow co	ntains water released	from canal with larger rocks
not in other portions of	the floodplain below t	he ohwm	

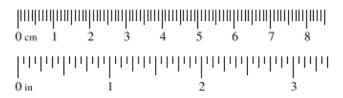
Feature ID:	Cross section	טו ווע:	Date:	Time:
Floodplain unit:	Low-Flow Cha	nnel	X Active Floodplain	Low Terrace
GPS point:			<u> </u>	
Characteristics of the	floodplain unit:			
Average sediment te	xture: Sandy l	oam		
Total veg cover:	% Tree:	% Shrub:	25 % Herb: 70	%
Community succession				
NA		X Mid (her	baceous, shrubs, saplin	gs)
Early (herbaceo	ous & seedlings)	Late (he	rbaceous, shrubs, matui	re trees)
_		<u> </u>		
Indicators:		-		
Mudcracks		Soil develop		
Ripples		Surface relie		
Drift and/or debri			nge in sediment type	
Presence of bed a		Other: Drift		
Benches	X	Other: Chai	nge in veg species	
Comments:				
Several indicators	observed consiste	ent with OH	WM and at change in	n floodplain.
Eloodalain unit:	Low Flow Cha	nnol	Active Floodalain	V Low Torraco
Floodplain unit:	Low-Flow Cha	nnel	Active Floodplain	x Low Terrace
	Low-Flow Cha	nnel	Active Floodplain	x Low Terrace
Floodplain unit:  GPS point:	Low-Flow Cha	nnel	Active Floodplain	x Low Terrace
GPS point:		nnel	Active Floodplain	x Low Terrace
GPS point:  Characteristics of the	floodplain unit:	nnel	Active Floodplain	x Low Terrace
GPS point:  Characteristics of the Average sediment te	floodplain unit: xture:		<u> </u>	
GPS point:  Characteristics of the Average sediment te Total veg cover:	floodplain unit: xture: % Tree:		Active Floodplain % Herb:	x Low Terrace
Characteristics of the Average sediment te Total veg cover: Community succession	floodplain unit: xture:% Tree:onal stage:	% Shrub:	% Herb:	<u>%</u>
Characteristics of the Average sediment te Total veg cover: Community succession	floodplain unit: xture:% Tree:onal stage:	% Shrub:	% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession	floodplain unit: xture:% Tree:onal stage:	% Shrub:	% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession	floodplain unit: xture:% Tree:onal stage:	% Shrub:	% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceo	floodplain unit: xture:% Tree:onal stage:	% Shrub:Mid (herLate (he	% Herb: baceous, shrubs, sapling rbaceous, shrubs, matur	% gs)
GPS point:  Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceo	floodplain unit: xture:% Tree:onal stage:	% Shrub:	% Herb:% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceo  Indicators: Mudcracks Ripples	floodplain unit: xture:% Tree:onal stage: ous & seedlings)	% Shrub:Mid (her Late (her Soil developi	% Herb:% Herb:	% gs)
GPS point:  Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceo	floodplain unit: xture:% Tree: onal stage: ous & seedlings)	% Shrub:Mid (herLate (he	% Herb:% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceo  Indicators: Mudcracks Ripples Drift and/or debri	floodplain unit: xture:% Tree: onal stage: ous & seedlings)	% Shrub:Mid (her Late (he Soil develope Surface relie Other:	% Herb:% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceon Indicators: Mudcracks Ripples Drift and/or debrice Presence of bed a	floodplain unit: xture:% Tree: onal stage: ous & seedlings)	% Shrub:Mid (her Late (her Soil develope Surface relie Other:Other:	% Herb:% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceon  Indicators: Mudcracks Ripples Drift and/or debrit Presence of bed at Benches Comments:	floodplain unit: xture:% Tree: onal stage: ous & seedlings)  is and bank	% Shrub: Mid (her Late (her Cother: Other:	% Herb:% Herb:% Herb:	% gs)
Characteristics of the Average sediment te Total veg cover: Community succession NA Early (herbaceo  Indicators: Mudcracks Ripples Drift and/or debrit Presence of bed at Benches	floodplain unit: xture:% Tree: onal stage: ous & seedlings)  is and bank	% Shrub: Mid (her Late (her Cother: Other:	% Herb:% Herb:% Herb:	% gs)

#### Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Sampling Point: 27 Fea	ature ID:	IS4	Date: 10/1/2019	
Project: Friant-Kern Canal Middle Reach Capacity Correction Project				
Location: Tulare County, CA Photo begin/end file#: See Field Photos				
Investigator(s): BC, YS				
			ion Details: White River at Friant Kern Canal upstream	
		-	tion: Lambert Datum: NAD83	
		oordi	nates: 35.843741°, -119.161311°	
Potential anthropogenic influences on the channel system: Paved road through channel and fortified banks around canal.				
Brief site description:				
White River upstream of Friant-Kern Canal s	yphon.			
Checklist of resources (if available):  X Aerial photography  Stream gag	re data			
Dates: Gage numb				
X Topographic maps Period of r				
		ffactiv	ve discharges	
	of flood free		_	
	cent shift-a	•	•	
		-	_	
	_		.0-, and 25-year events and the	
	cent event	excee	eding a 5-year event	
Global positioning system (GPS)				
Other studies:				
Hydrogeomo	rphic Flood	plain l	Units	
Active Floo	dplain		Low Terrace	
Low-Flow Channels OHWM Paleo Channel				
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:				
Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.				
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.				
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.				
a) Record the floodplain unit and GPS position.				
b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.				
c) Identify any indicators present at the location.				
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.				
5. Identify the OHWM and record the indicators. Record the OHWM position via:				
Mapping on aerial photograph X GPS				
Digitized on computer			Other:	

#### **Wentworth Size Classes**

Inches (in) Millimeters (mm)			Wentworth size class	s				
1	0.08	_	_	_	256	_	Boulder	<u>-</u>
	2.56	-	_	_	64		Cobble	Gravel
	0.157	-	_	_	4		Pebble — — — — Granule	O
	0.079	$\dashv$		_	2.00			
	0.039	-	_	-	1.00		Very coarse sand Coarse sand	
	0.020	-	_	_	0.50		+	p
1/2	0.0098	-	_	_	0.25		Medium sand	Sand
1/4	0.005	-	_	_	0.125		Fine sand	
1/8 —	0.0025			_	0.0625		Very fine sand	
1/16	0.0012		_	_	0.031		Coarse silt	
1/32	0.00061	-	_	_	0.0156		Medium silt	Silt
1/64	0.00031	-	_	_	0.0078		Fine silt	
1/128 —	0.00015			_	0.0039		Very fine silt	
					2.0000		Clay	Mud



Feature ID:	Cross section ID:	Date:	Time:
Cross section drawing:			
	12	0F+_	- - - - - - - - - - - - - - - - - - -
-			
<u>OHWM</u>			
GPS point:			
Indicators:	_	<b>¬</b>	
X Change in average		Break in bank slope	
X Change in vegetati	l <del></del>	Cother: Drift dep	posits
X Change in vegetati	on cover	Other:	
Comments:			
Sandy composition in	channel 		
	~, ,	<del> </del>	
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
GPS point:			
Characteristics of the flo	-		
Average sediment textu			
Total veg cover: 1		% Herb: <u>1</u>	%
Community successiona			
NA V		baceous, shrubs, sapl	• •
X Early (herbaceous	& seedlings) Late (ner	baceous, shrubs, mat	ure trees)
<u> </u>			
Indicators:	□cail davalann	. 1	
Mudcracks	Soil developn		
Ripples	Surface relief		
Drift and/or debris Presence of bed and		nge in veg cover	
Benches	bank Other: Other:		
			_
Comments:			

Feature ID:	Cross section ID:	Date:	Time:
Floodplain unit:	Low-Flow Channel	X Active Floodplain	Low Terrace
Characteristics of the floor Average sediment textor Total veg cover: 15 Community successions NA Early (herbaceous  Indicators: Mudcracks Ripples X Drift and/or debris Presence of bed and Benches	Dodplain unit:  ure: Sand  % Tree: % Shrub: al stage: X Mid (here) al seedlings)  Soil develope Surface relie X Other: Bread	40 % Herb: 40  rbaceous, shrubs, saplerbaceous, shrubs, matement of ak in slope	% ings) ure trees)
Comments:			
Floodplain unit:	Low-Flow Channel	Active Floodplain	Low Terrace
		П топто тто о артант	
GPS point:			
Characteristics of the flo Average sediment texto	ure:		
Total veg cover:Community successions		% Herb:	%
NA		rbaceous, shrubs, sapl	ings)
Early (herbaceous	<b>—</b>	rbaceous, shrubs, mat	
Indicators:	_		
Mudcracks Ripples Drift and/or debris	Soil developi Surface relie Other:	f	
Presence of bed and			
Benches	<del></del>		_
Comments:	<u> </u>		

## Appendix D PLANT LIST

## Friant-Kern Canal Middle Reach Capacity Correction Project Wetland Delineation

### **Appendix D. Plant List**

Scientific Name <sup>1</sup>	Common Name	Wetland Indicator Status <sup>2</sup>
Alisma triviale	northern water-plantain	Obligate
Amaranthus albus	tumbleweed	Facultative Upland
Amaranthus palmeri	Palmer's amaranth	Facultative Upland
Ammannia robusta	grand redstem	Obligate
Atriplex polycarpa	allscale saltbush	Facultative Upland
Avena barbata	slender oat	Upland
Baccharis salicifolia	mulefat	Facultative
Bromus diandrus	ripgut grass	Upland
Bromus hordeaceus	soft chess	Facultative Upland
Bromus madritensis	foxtail chess	Upland
Citrullus colocynthis	wild watermelon	Upland
Conium maculatum	poison hemlock	Facultative Wetland
Convolvulus arvensis	bindweed	Upland
Croton setiger	turkey-mullein	Upland
Cyperus difformis	variable flat sedge	Obligate
Cyperus eragrostis	tall flat sedge	Facultative Wetland
Cyperus erythrorhizos	red-root flat sedge	Obligate
Cyperus esculentus	chufa	Facultative Wetland
Echinochloa colona	jungle-rice	Facultative
Eleocharis macrostachya <sup>3</sup>	common spikerush	Obligate
Epilobium brachycarpum	annual fireweed	Upland
Epilobium ciliatum	fringed willowherb	Facultative Wetland
Erigeron canadensis	horseweed	Facultative Upland
Eriogonum fasciculatum	California buckwheat	Upland
Festuca bromoides <sup>4</sup>	brome fescue	Facultative Upland
Helianthus annuus	common sunflower	Facultative Upland
Hirschfeldia incana	short podded mustard	Upland
Hordeum murinum	wall barley	Facultative Upland
Lactuca serriola	prickly lettuce	Facultative Upland
Leersia oryzoides	rice cutgrass	Obligate
Leptochloa fusca <sup>5</sup>	sprangletop	Facultative Wetland
Malva parviflora	cheeseweed	Upland
Medicago sativa	alfalfa	Upland
Persicaria lapathifolia	willow weed	Facultative Wetland
Polypogon monspeliensis	rabbitfoot grass	Facultative Wetland

Scientific Name <sup>1</sup>	Common Name	Wetland Indicator Status <sup>2</sup>
Populus fremontii <sup>6</sup>	Fremont cottonwood	Facultative
Prunus dulcis	almond	Upland
Quercus lobata	valley oak	Facultative Upland
Rorippa curvipes	blunt-leaf yellowcress	Facultative Wetland
Rumex crispus	curly dock	Facultative
Salix laevigata	red willow	Facultative Wetland
Salsola tragus	Russian thistle	Facultative Upland
Stachys albens	white-stem hedge-nettle	Obligate
Tribulus terrestris	puncture vine	Upland
Typha latifolia	broad-leaved cattail	Obligate
Urtica dioica	stinging nettle	Facultative
Vitis vinifera	wine grape	Upland
Xanthium strumarium	cocklebur	Facultative

<sup>&</sup>lt;sup>1</sup> Taxonomic nomenclature for plant species followed: Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. *The Jepson manual: vascular plants of California, second edition.* University of California Press, Berkeley, California.

<sup>&</sup>lt;sup>2</sup> Wetland indicator status for plant species followed Lichvar, R. W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. *Phytoneuron* 2016-30: 1-17.

<sup>&</sup>lt;sup>3</sup> Eleocharis palustris in Lichvar et al. 2016.

<sup>&</sup>lt;sup>4</sup> Vulpia bromoides in Lichvar et al. 2016.

<sup>&</sup>lt;sup>5</sup> Diplachne fusca in Lichvar et al. 2016.

<sup>&</sup>lt;sup>6</sup> Populus deltoides in Lichvar et al. 2016.

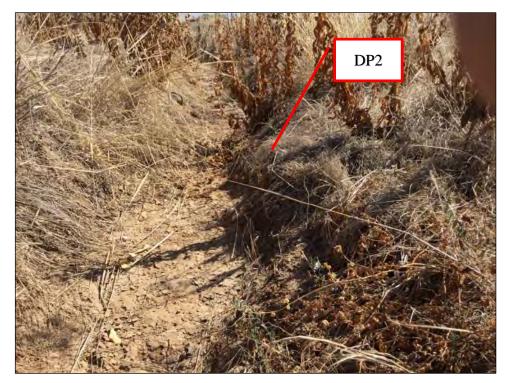
## Appendix E REPRESENTATIVE PHOTOGRAPHS

# Friant-Kern Canal Middle Reach Capacity Correction Project Delineation of Waters of the United States Appendix E. Photographs

Photographs Taken September 30, October 1, 2 and 3, and December 10 and 11, 2019



Photograph 1. Upland. Data Point 1 (DP1) documents upland conditions in a suspect area. Orientation: east.



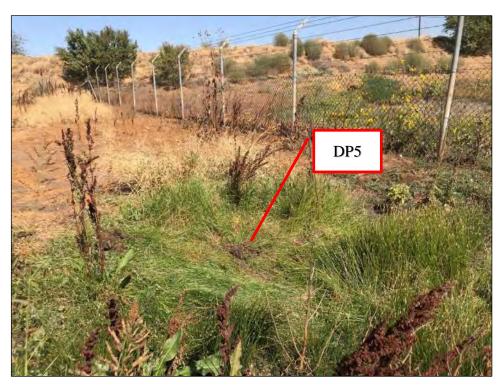
Photograph 2. Non-vegetated ditch (NVD1). DP2 documents the ordinary high water mark (OHWM) of a non-vegetated ditch. Orientation: east.



Photograph 3. Upland. DP3 documents upland conditions in a suspect area. Orientation: north.



Photograph 4. Pond (PON1). DP4 documents pond that appears to have formed from a leak from the canal, as water was observed coming up from the ground under the surface of the pond. Orientation: north.



Photograph 5. Seasonal Wetland (SW1). DP5 documents a seasonal wetland supporting dominant hydrophytic vegetation and wetland hydrology, with problematic seasonally ponded soils. Orientation: north.



wm app\_e\_photos\_final.docx E-3



Photograph 6. Pond (PON2). DP6 documents wetland vegetation around a pond in an excavation for a storm water siphon under the Friant-Kern Canal. Orientation: west.



Photograph 7. Upland. DP7 documents upland conditions adjacent to DP6. Orientation: southwest.



Photograph 8. Irrigation Canal (IC3). DP8 documents the OHWM and absence of hydric soil in an irrigation canal supporting dominant hydrophytic vegetation. Orientation: northwest.



Photograph 9. Groundwater Recharge Basin (GRB2). DP9 documents non-wetland conditions within a groundwater recharge basin. Orientation: east.



Photograph 10. Pond (PON6). DP10 documents non-wetland conditions within a pond supporting hydrophytic vegetation. Orientation: southeast.



Photograph 11. Groundwater Recharge Basin (GRB4). DP11 documents wetland conditions within a groundwater recharge basin. Orientation: east.



Photograph 12. Upland. DP12 documents upland condition adjacent to wetlands within a groundwater recharge basin. Orientation: northeast.



Photograph 13. Upland. DP13 documents upland conditions associated with a slight rise within a depression adjacent to Deer Creek. Orientation: southwest.



Photograph 14. Riparian Wetland (RW1). DP14 documents wetland conditions within a depression adjacent to Deer Creek. Orientation: southwest.



Photograph 15. Intermittent Stream (IS3). DP15 documents the OHWM of Deer Creek. Orientation: southwest



Photograph 16. Riparian/fresh emergent wetland complex (RW/FEW1). DP16 documents a riparian/fresh emergent wetland complex along the margins of Deer Creek. Orientation: northeast.



Photograph 17. Upland. DP17 documents upland conditions adjacent to a riparian wetland/fresh emergent wetland documented by DP16. Orientation: south.



Photograph 18. Riparian wetland (RW3). DP18 documents riparian wetland adjacent to Deer Creek. Orientation: northeast.



Photograph 19. Upland. DP19 documents upland conditions adjacent to a riparian wetland documented by DP18. Orientation: south.

n app\_e\_photos\_final.docx E-10



Photograph 20. Pond (PON9). DP20 documents the OHWM of an irrigation pond. Orientation: northeast.



Photograph 21. Pond (PON10). DP21 documents the OHWM of an irrigation pond. Orientation: south.



Photograph 22. Intermittent stream (IS2). DP22 documents the OHWM of the White River where water is released into the intermittent stream from the Friant-Kern Canal. Orientation: southeast.



Photograph 23. Intermittent stream (IS2). Looking downstream at fortified banks of the White River downstream of the Friant-Kern Canal. Orientation: southwest.



Photograph 24. Riparian wetland (RW4). DP23 documents a riparian wetland associated with the White River downstream of the Friant-Kern Canal. Orientation: northeast.



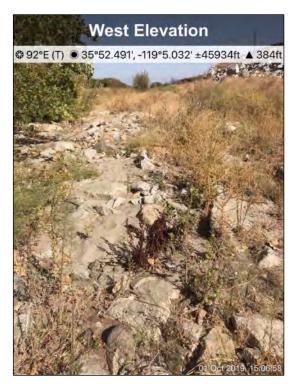
Photograph 25. Riparian wetland (RW4). DP23 documents a riparian wetland associated with the White River downstream of the Friant-Kern Canal. Orientation: west.



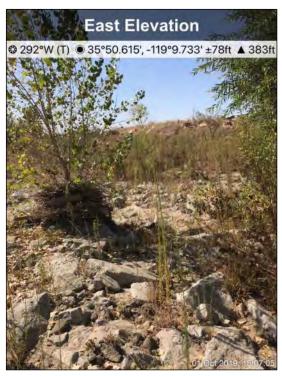
Photograph 26. Upland. DP24 documents upland conditions adjacent to riparian wetlands associated with the White River downstream of the Friant-Kern Canal documented by DP23. Orientation: northeast.



Photograph 27. Upland. DP24 documents upland conditions adjacent to riparian wetlands associated with the White River downstream of the Friant-Kern Canal documented by DP23. Orientation: east.



Photograph 28. Intermittent stream (IS4). DP25 documents non-wetland conditions in the White River adjacent to riparian wetlands documented by DP26. Orientation: east.



Photograph 29. Intermittent stream (IS4). DP25 documents non-wetland conditions in the White River adjacent to riparian wetlands documented by DP26. Orientation: west.

E-15



Photograph 30. Riparian wetland (RW6). DP26 documents a riparian wetland associated with the White River. Orientation: northwest.

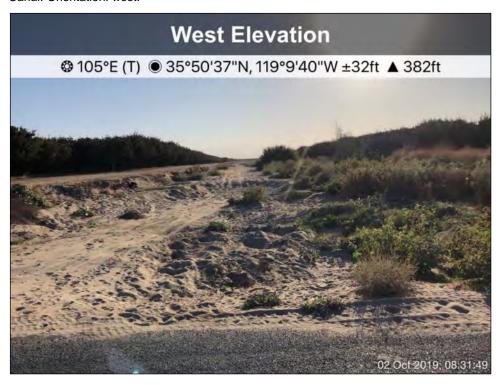


Photograph 31. Riparian wetland (RW6). DP26 documents a riparian wetland associated with the White River. Orientation: north.

E-16



Photograph 32. Intermittent stream (IS4). DP27 documents OHWM of the White River upstream of the Friant-Kern Canal. Orientation: west.



Photograph 33. Intermittent Stream (IS4). White River upstream of DP27. Orientation: east.

E-17



Photograph 34. Pond (PON14). DP28 documents a seasonal pond that supports wetland vegetation and hydric soils. Orientation: northeast.



Photograph 35. Upland. DP29 documents upland conditions adjacent to the pond documented by DP28. Orientation: southwest.

pp e photos final.docx E-18



Photograph 36. Pond (PON3). Photograph shows pond in excavation for a siphon underneath the Friant-Kern Canal. Orientation: west.



Photograph 37. Pond (PON6). Irrigation pond with hydrophytic vegetation. Orientation: east.

app e photos final.docx



Photograph 38. Groundwater recharge Basin (GRB4). Groundwater recharge basin that supports dominant hydrophytic vegetation, mostly cocklebur (*Xanthium strumarium*). Orientation: east.



Photograph 39. Groundwater recharge Basin (GRB2). Groundwater recharge basin that does not support dominant hydrophytic vegetation. Orientation: north.

pp\_e\_photos\_final.docx E-20



Photograph 40. Irrigation canal (IC10). Photograph shows water being delivered from Friant-Kern Canal into Tipton Ditch. Orientation: west.

E-21

## Appendix F APPROVED JURISDICTIONAL DETERMINATION FORMS

## APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

### **SECTION I: BACKGROUND INFORMATION**

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): October 17, 2014

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District, Poso Creek Jurisdictional Determination, SPK-2003-00265 C. PROJECT LOCATION AND BACKGROUND INFORMATION: State: California County/parish/borough: Kern City: N/A Center coordinates of site (lat/long in degree decimal format): Lat. 35.63298°, Long. -119.33298° Universal Transverse Mercator: 11 288745.18 3945748.47 Name of nearest waterbody: Poso Creek Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A Name of watershed or Hydrologic Unit Code (HUC): Tulare-Buena Vista Lakes. California., 18030012 Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form: D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): ☐ Office (Desk) Determination. Date: October 17, 2014 ☐ Field Determination. Date(s): SECTION II: SUMMARY OF FINDINGS A. RHA SECTION 10 DETERMINATION OF JURISDICTION. There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required] ☐ Waters subject to the ebb and flow of the tide. Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: B. CWA SECTION 404 DETERMINATION OF JURISDICTION. There Are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required] 1. Waters of the U.S. a. Indicate presence of waters of U.S. in review area (check all that apply): 1 ☐ TNWs, including territorial seas ☐ Wetlands adjacent to TNWs Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs ☐ Non-RPWs that flow directly or indirectly into TNWs Wetlands directly abutting RPWs that flow directly or indirectly into TNWs Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs ☐ Impoundments of jurisdictional waters ☐ Isolated (interstate or intrastate) waters, including isolated wetlands b. Identify (estimate) size of waters of the U.S. in the review area: Non-wetland waters: linear feet. wide, and/or acres. Wetlands: acres. c. Limits (boundaries) of jurisdiction based on: Pick List Elevation of established OHWM (if known): 2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup> Describing Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: The review area consists of the 32.6 miles of Poso Creek from Highway 65 (Latitude 35.71770°, Longitude -119.57936°) to the terminus at the Kern National Wildlife Refuge (NWR) (Latitude 35.55135°, Longitude -119.08744°), as shown in the attached map. Poso Creek, within the review area, was determined to be an intrastate, non-navigable, isolated water on April 26, 2004. The creek was reviewed for a nexus with interstate commerce due to potential recreation along the waterway

and at the Kern NWR. It was determined through coordination with USACE HQ in 2004, that the portion

<sup>&</sup>lt;sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>&</sup>lt;sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

Supporting documentation is presented in Section III.F.

of Poso Creek west of Highway 65 is not jurisdictional under Section 404 of the Clean Water Act. Poso Creek originates in the Sequoia National Forest in Tulare and Kern Counties and terminates at the Kern NWR. At approximately Highway 65 Poso Creek leaves the undeveloped foothills and enters the agricultural lands of the Central Valley. The natural channel of Poso Creek terminates approximately 19.22 miles downstream of Highway 65, approximately 2.09 miles west of Highway 43. The creek historically ended at this point with any flood flows spreading out onto the surrounding valley floor. An approximately 13.38-mile artificial channel was constructed in the early 1960's to prevent flooding of county roads by redirecting flood flows to the Kern NWR. The NWR receives regular water deliveries from the California Aqueduct and does not use the Poso Creek flood waters as part of its waterfowl management. The Cawelo Water District provided flow data stating that the creek only contained enough flows to reach the NWR for 20 days in the 35 years between 1960 and 1995. Sixteen of the 20 days are from two flood years. Water within Poso Creek is lost through water diversions, eveporation, or percolation. Poso Creek does not have a hydrologic connection to a traditional navigable water of the U.S. and does not have a nexus to interstate commerce.

### **SECTION III: CWA ANALYSIS**

### A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

#### 1. TNW

Identify TNW:

Summarize rationale supporting determination:

### 2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

### B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody<sup>4</sup> is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

### (i) General Area Conditions:

Watershed size: Pick List
Drainage area: Pick List
Average annual rainfall: inches
Average annual snowfall: inches

<sup>4</sup> Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

	ysical Characteristics: <u>Relationship with TNW:</u> ☐ Tributary flows directly into TNW.  ☐ Tributary flows through <b>Pick List</b> tributaries before entering TNW.
	Project waters are Project List river miles from RPW. Project waters are Project waters are Project List river miles from TNW. Project waters are Project waters are Project List river miles from RPW. Project waters are Project waters are Project List river miles from RPW. Project waters are Project List river miles from RPW. Project waters are Project List a aerial (straight) miles from RPW. Project waters are Project List a aerial (straight) miles from RPW. Project waters are Project List a aerial (straight) miles from RPW. Project waters are
	Identify flow route to TNW <sup>5</sup> : Tributary stream order, if known:
(b)	General Tributary Characteristics (check all that apply):  Tributary is:
	Tributary properties with respect to top of bank (estimate):  Average width: feet  Average depth: feet  Average side slopes: Pick List.
	Primary tributary substrate composition (check all that apply):  Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Other. Explain:
	Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope): %
(c)	Flow: Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
	Surface flow is: Pick List. Characteristics:
	Subsurface flow: Pick List. Explain findings:  Dye (or other) test performed:
	Tributary has (check all that apply):  Bed and banks  OHWM <sup>6</sup> (check all indicators that apply):  clear, natural line impressed on the bank the presence of litter and debris destruction of terrestrial vegetation shelving the presence of wrack line vegetation matted down, bent, or absent sediment sorting leaf litter disturbed or washed away scour sediment deposition multiple observed or predicted flow events water staining abrupt change in plant community other (list):  Discontinuous OHWM. Explain:

(ii)

<sup>&</sup>lt;sup>5</sup> Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

6A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows

underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. <sup>7</sup>Ibid.

		If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that
apply):		<ul> <li>☐ High Tide Line indicated by:</li> <li>☐ oil or scum line along shore objects</li> <li>☐ survey to available datum;</li> <li>☐ fine shell or debris deposits (foreshore)</li> <li>☐ physical markings;</li> <li>☐ physical markings/characteristics</li> <li>☐ tidal gauges</li> <li>☐ other (list):</li> </ul>
	(iii)	Chemical Characteristics: Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: Identify specific pollutants, if known:
	(iv)	Biological Characteristics. Channel supports (check all that apply):  Riparian corridor. Characteristics (type, average width):  Wetland fringe. Characteristics:  Habitat for:  Federally Listed species. Explain findings:  Fish/spawn areas. Explain findings:  Other environmentally-sensitive species. Explain findings:  Aquatic/wildlife diversity. Explain findings:
2.	Cha	racteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW
	(i)	Physical Characteristics:  (a) General Wetland Characteristics: Properties: Wetland size: acres Wetland type. Explain: Wetland quality. Explain: Project wetlands cross or serve as state boundaries. Explain:
		(b) General Flow Relationship with Non-TNW: Flow is: Pick List. Explain:
		Surface flow is: Pick List Characteristics:
		Subsurface flow: <b>Pick List</b> . Explain findings:  Dye (or other) test performed:
		(c) Wetland Adjacency Determination with Non-TNW:  ☐ Directly abutting ☐ Discrete wetland hydrologic connection. Explain: ☐ Ecological connection. Explain: ☐ Separated by berm/barrier. Explain:
		(d) Proximity (Relationship) to TNW Project wetlands are Pick List river miles from TNW. Project waters are Pick List aerial (straight) miles from TNW. Flow is from: Pick List. Estimate approximate location of wetland as within the Pick List floodplain.
	(ii)	Chemical Characteristics: Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Identify specific pollutants, if known:
	(iii)	Biological Characteristics. Wetland supports (check all that apply):  Riparian buffer. Characteristics (type, average width): Vegetation type/percent cover. Explain: Habitat for: Federally Listed species. Explain findings:

		explain findings: Ily-sensitive species. E rsity. Explain findings:	explain findings:			
3.	3. Characteristics of all wetlands adjacent to the tributary (if any)  All wetland(s) being considered in the cumulative analysis: Pick List  Approximately acres in total are being considered in the cumulative analysis.					
	For each wetland, specify the following:					
	Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)		

Summarize overall biological, chemical and physical functions being performed:

### C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- 2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- 3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D.	DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT
	APPLY):

١.	TNWs and Ad	jacent Wetlands.	Check all that	apply and pro	ovide size estimates in review area:
	☐ TNWs:	linear feet,	wide, Or	acres.	
	☐ Wetlands a	djacent to TNWs:	acres.		

2. RPWs that flow directly or indirectly into TNWs.

	<ul> <li>☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:</li> <li>☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:</li> </ul>
	Provide estimates for jurisdictional waters in the review area (check all that apply):  Tributary waters: linear feet wide.  Other non-wetland waters: acres.  Identify type(s) of waters:
3.	Non-RPWs <sup>8</sup> that flow directly or indirectly into TNWs.  Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.
	Provide estimates for jurisdictional waters within the review area (check all that apply):  Tributary waters: linear feet, wide.  Other non-wetland waters: acres. Identify type(s) of waters:
4.	Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.  ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.  ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
	☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
	Provide acreage estimates for jurisdictional wetlands in the review area: acres.
5.	Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.  ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.
	Provide acreage estimates for jurisdictional wetlands in the review area: acres.
6.	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.  Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.
	Provide estimates for jurisdictional wetlands in the review area: acres.
7.	Impoundments of jurisdictional waters.  As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.  Demonstrate that impoundment was created from "waters of the U.S.," or  Demonstrate that water meets the criteria for one of the categories presented above (1-6), or  Demonstrate that water is isolated with a nexus to commerce (see E below).
DE(	PLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, GRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH ITERS (CHECK ALL THAT APPLY): <sup>10</sup>
	which are or could be used by interstate or foreign travelers for recreational or other purposes. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce. which are or could be used for industrial purposes by industries in interstate commerce. Interstate isolated waters. Explain:

E.

<sup>&</sup>lt;sup>8</sup>See Footnote # 3.

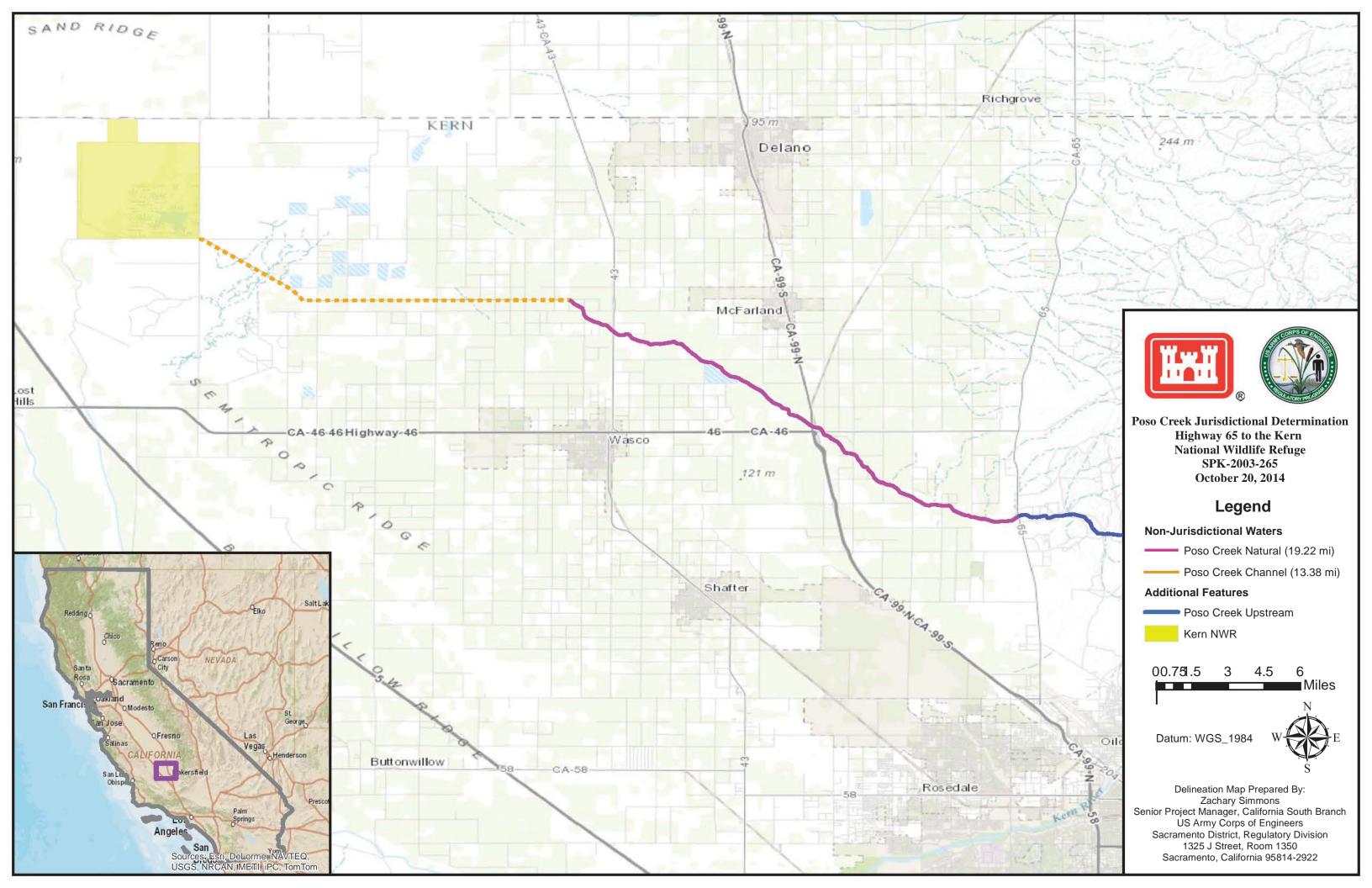
<sup>9</sup> To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

<sup>10</sup> Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following

	Other factors. Explain:
	Identify water body and summarize rationale supporting determination:
	Provide estimates for jurisdictional waters in the review area (check all that apply):  Tributary waters: linear feet, wide.  Other non-wetland waters: acres.  Identify type(s) of waters:  Wetlands: acres.
F.	NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):  ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.  ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.  ☐ Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).  ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:  ☐ Other: (explain, if not covered above):
	Provide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):  Non-wetland waters (i.e., rivers, streams): 32.60 linear miles, ranging between 25 to 250 feet wide.  Lakes/ponds: acres.  Other non-wetland waters: acres. List type of aquatic resource:  Wetlands: acres.
	Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard where such a finding is required for jurisdiction (check all that apply):  Non-wetland waters (i.e., rivers, streams): linear feet, wide.  Lakes/ponds: acres.  Other non-wetland waters: acres. List type of aquatic resource:  Wetlands: acres.
SE	CTION IV: DATA SOURCES.
A.	SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):  Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Poso Creek Jurisdictional Determination, Highway 65 to the Kern National Wildlife Refuge, SPK-2003-265, Dated October 20, 2014  Data sheets prepared/submitted by or on behalf of the applicant/consultant.  Office concurs with data sheets/delineation report.  Office does not concur with data sheets/delineation report.  Data sheets prepared by the Corps:  Corps navigable waters' study:  U.S. Geological Survey Hydrologic Atlas:
	<ul> <li>USGS NHD data.</li> <li>USGS 8 and 12 digit HUC maps.</li> <li>U.S. Geological Survey map(s). Cite scale &amp; quad name: 1:24K; CA-Lost Hills NE, Wasco NW, Pond, McFarland, Famoso, North of Oildale</li> <li>USDA Natural Resources Conservation Service Soil Survey. Citation:</li> <li>National wetlands inventory map(s). Cite name:</li> <li>State/Local wetland inventory map(s):</li> <li>FEMA/FIRM maps:</li> <li>100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)</li> <li>Photographs: ☐ Aerial (Name &amp; Date):</li> <li>or ☐ Other (Name &amp; Date):</li> </ul>
	or ☐ Other (Name & Date):  Previous determination(s). File no. and date of response letter:  Applicable/supporting case law:  Applicable/supporting scientific literature:  Other information (please specify):

### B. ADDITIONAL COMMENTS TO SUPPORT JD:

The 32.6-mile portion of Poso Creek within the review area, was determined to be an intrastate, non-navigable, isolated water on April 26, 2004. The creek was reviewed for a nexus with interstate commerce due to potential recreation along the waterway and at the Kern NWR. It was determined through coordination with USACE HQ in 2004, that the portion of Poso Creek west of Highway 65 is not jurisdictional under Section 404 of the Clean Water Act. Poso Creek originates in the Sequoia National Forest in Tulare and Kern Counties and terminates at the Kern NWR. At approximately Highwy 65 Poso Creek leaves the undeveloped foothills and enters the agricultural lands of the Central Valley. The natural channel of Poso Creek terminates approximately 19.22 miles downstream of Highway 65, approximately 2.09 miles west of Highway 43. The creek historically ended at this point with any flood flows spreading out onto the surrounding valley floor. An approximately 13.38-mile artificial channel was constructed in the early 1960's to prevent flooding of county roads by redirecting flood flows to the Kern NWR. The NWR receives regular water deliveries from the California Aqueduct and does not use the Poso Creek flood waters as part of its waterfowl management. The Cawelo Water District provided flow data stating that the creek only contained enough flows to reach the NWR for 20 days in the 35 years between 1960 and 1995. Sixteen of the 20 days are from two flood years. Water within Poso Creek is lost through water diversions, eveporation, or percolation. Poso Creek does not have a hydrologic connection to a traditional navigable water of the U.S. and does not have a nexus to interstate commerce.



### APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

### **SECTION I: BACKGROUND INFORMATION**

A.	REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): May 1, 2015
В.	DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District, Pixley Groundwater Bank, SPK-2015-00265
C.	PROJECT LOCATION AND BACKGROUND INFORMATION: State: California County/parish/borough: Tulare City: Center coordinates of site (lat/long in degree decimal format): Lat. 35.934199°, Long119.195345° Universal Transverse Mercator: 11 301959.29 3978877.41  Name of nearest waterbody: Deer Creek Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A Name of watershed or Hydrologic Unit Code (HUC): Tulare-Buena Vista Lakes. California., 18030012  ☐ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc) are associated with this action and are recorded on a different JD form: Approved JD Form for Friant-Kern Canal within project boundary.
D.	REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):  Office (Desk) Determination. Date: May 1, 2015  Field Determination. Date(s):
	CTION II: SUMMARY OF FINDINGS RHA SECTION 10 DETERMINATION OF JURISDICTION.
	ere Are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) ne review area. [Required]  Waters subject to the ebb and flow of the tide.  Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:
В.	CWA SECTION 404 DETERMINATION OF JURISDICTION.
	ere Are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. equired
	1. Waters of the U.S.  a. Indicate presence of waters of U.S. in review area (check all that apply):  TNWs, including territorial seas Wetlands adjacent to TNWs Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs Non-RPWs that flow directly or indirectly into TNWs Wetlands directly abutting RPWs that flow directly or indirectly into TNWs Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs Impoundments of jurisdictional waters Isolated (interstate or intrastate) waters, including isolated wetlands
	<ul> <li>b. Identify (estimate) size of waters of the U.S. in the review area:         Non-wetland waters: linear feet, wide, and/or acres.     </li> <li>Wetlands: acres.</li> </ul>
	c. Limits (boundaries) of jurisdiction based on: Pick List Elevation of established OHWM (if known):
	<ul> <li>Non-regulated waters/wetlands (check if applicable):<sup>3</sup></li></ul>
	Alpaugh (Latitude 35.934784, Longitude -119.473127. Within the study area, the channel is bracketed by

<sup>&</sup>lt;sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>&</sup>lt;sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.

levees and also contains a weir structure with wing walls. Water flows within Deer Creek at the project location during times of heavy rainfall or substantial runoff from within Sequoia National Forest. The width of Deer Creek within the project location ranges between approximately 10 and 100 feet. Deer creek does not have a hydrologic connection to a traditional navigable water of the U.S. and does not have a nexus to interstate commerce.

Within the review area, there are 14 irrigation holding ponds totaling 9.568 acres. Water is pumped into these irrigation holding ponds from water wells and then distributed into the farm fields encompassing the study area for the purpose of irrigation. There is also one tail water pond and small ditch totaling 1.122 acres. The approximately 0.25 mile ditch runs north and south adjacent to Road 160, on the western side of the study area. Some of the irrigation run-off flows into this ditch and pond, and is re-circulated back onto the fields. These irrigation features do not receive or discharge water into any drainage or channel that could be considered a Water of the United States. The preamble to the Corps of Engineers' regulations (33CFR Parts 320 through 330, Regulatory Programs of the Corps of Engineers; Final Rule, November 13, 1986) states that the Corps generally does not consider artificial ponds created by excavating or diking dry land to collect and retain water which is used exclusively for irrigation, waters of the United States.

### SECTION III: CWA ANALYSIS

### A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

### 1. TNW

Identify TNW:

Summarize rationale supporting determination:

### 2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

### B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody<sup>4</sup> is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

### (i) General Area Conditions:

Watershed size: Pick List Drainage area: Pick List

4

<sup>&</sup>lt;sup>4</sup> Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Average annual rainfall: inches Average annual snowfall: inches (ii) Physical Characteristics: (a) Relationship with TNW: ☐ Tributary flows directly into TNW. ☐ Tributary flows through **Pick List** tributaries before entering TNW. Project waters are **Pick List** river miles from TNW. Project waters are Pick List river miles from RPW. Project waters are Pick List aerial (straight) miles from TNW. Project waters are Pick List aerial (straight) miles from RPW. Project waters cross or serve as state boundaries. Explain: Identify flow route to TNW<sup>5</sup>: Tributary stream order, if known: General Tributary Characteristics (check all that apply): □ Natural Tributary is: Artificial (man-made). Explain: ☐ Manipulated (man-altered). Explain: **Tributary** properties with respect to top of bank (estimate): Average width: feet Average depth: feet Average side slopes: Pick List. Primary tributary substrate composition (check all that apply): ☐ Silts ☐ Sands ☐ Concrete ☐ Cobbles ☐ Muck ☐ Gravel Bedrock ☐ Vegetation. Type/% cover: Other. Explain: Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope): % (c) Flow: Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume: Surface flow is: Pick List. Characteristics: Subsurface flow: Pick List. Explain findings: Dye (or other) test performed: Tributary has (check all that apply): ☐ Bed and banks OHWM<sup>6</sup> (check all indicators that apply): ☐ clear, natural line impressed on the bank ☐ the presence of litter and debris changes in the character of soil destruction of terrestrial vegetation the presence of wrack line shelving vegetation matted down, bent, or absent sediment sorting ☐ leaf litter disturbed or washed away □ scour sediment deposition multiple observed or predicted flow events

<sup>5</sup> Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

abrupt change in plant community

water staining

other (list):

<sup>&</sup>lt;sup>6</sup>A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

		☐ Discontinuous OHWM. TExplain:
		If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that
apply):		<ul> <li>☐ High Tide Line indicated by:</li> <li>☐ oil or scum line along shore objects</li> <li>☐ fine shell or debris deposits (foreshore)</li> <li>☐ physical markings;</li> <li>☐ physical markings/characteristics</li> <li>☐ tidal gauges</li> <li>☐ other (list):</li> </ul>
	(iii)	Chemical Characteristics: Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: Identify specific pollutants, if known:
	(iv)	Biological Characteristics. Channel supports (check all that apply):  Riparian corridor. Characteristics (type, average width):  Wetland fringe. Characteristics:  Habitat for:  Federally Listed species. Explain findings:  Fish/spawn areas. Explain findings:  Other environmentally-sensitive species. Explain findings:  Aquatic/wildlife diversity. Explain findings:
2.	Cha	racteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW
	(i)	Physical Characteristics:  (a) General Wetland Characteristics: Properties: Wetland size: acres Wetland type. Explain: Wetland quality. Explain: Project wetlands cross or serve as state boundaries. Explain:  (b) General Flow Relationship with Non-TNW: Flow is: Pick List. Explain: Surface flow is: Pick List
		Characteristics:  Subsurface flow: Pick List. Explain findings:  Dye (or other) test performed:  (c) Wetland Adjacency Determination with Non-TNW:  Directly abutting  Not directly abutting  Discrete wetland hydrologic connection. Explain:  Ecological connection. Explain:
		□ Separated by berm/barrier. Explain:  (d) Proximity (Relationship) to TNW Project wetlands are Pick List river miles from TNW. Project waters are Pick List aerial (straight) miles from TNW. Flow is from: Pick List. Estimate approximate location of wetland as within the Pick List floodplain.
	(ii)	Chemical Characteristics: Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Identify specific pollutants, if known:
	(iii)	Biological Characteristics. Wetland supports (check all that apply):  Riparian buffer. Characteristics (type, average width):

<sup>7</sup>lbid.

	Fish/spawn areas. E Other environmental	cies. Explain findings:	explain findings:		
3.	All wetland(s) being considered in the cumulative analysis: Pick List Approximately acres in total are being considered in the cumulative analysis.				
	For each wetland, specify th	e following:			
	Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)	

Summarize overall biological, chemical and physical functions being performed:

### C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- 2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- 3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D.	DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT
	APPLY):

۱.	TNWs and Adjacent Wetlands	. Check all that	apply and provide size estimates in review area:	
	☐ TNWs: linear feet, ☐ Wetlands adjacent to TNWs:	wide, Or acres.	acres.	

2.	<ul> <li>RPWs that flow directly or indirectly into TNWs.</li> <li>☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:</li> <li>☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:</li> </ul>
	Provide estimates for jurisdictional waters in the review area (check all that apply):  Tributary waters: linear feet wide.  Other non-wetland waters: acres.  Identify type(s) of waters:
3.	Non-RPWs <sup>8</sup> that flow directly or indirectly into TNWs.  ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.
	Provide estimates for jurisdictional waters within the review area (check all that apply):  Tributary waters: linear feet, wide.  Other non-wetland waters: acres.  Identify type(s) of waters:
4.	Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.  ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.  ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
	☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
	Provide acreage estimates for jurisdictional wetlands in the review area: acres.
5.	Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.  Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.
	Provide acreage estimates for jurisdictional wetlands in the review area: acres.
6.	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.  Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.
	Provide estimates for jurisdictional wetlands in the review area: acres.
7.	Impoundments of jurisdictional waters.  As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.  Demonstrate that impoundment was created from "waters of the U.S.," or  Demonstrate that water meets the criteria for one of the categories presented above (1-6), or  Demonstrate that water is isolated with a nexus to commerce (see E below).
DE WA	DLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, GRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH ATERS (CHECK ALL THAT APPLY): 10 which are or could be used by interstate or foreign travelers for recreational or other purposes. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

E.

<sup>&</sup>lt;sup>8</sup>See Footnote # 3.

<sup>9</sup> To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

<sup>10</sup> Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

	<ul> <li>☐ which are or could be used for industrial purposes by industries in interstate commerce.</li> <li>☐ Interstate isolated waters. Explain:</li> <li>☐ Other factors. Explain:</li> </ul>
	Identify water body and summarize rationale supporting determination:
	Provide estimates for jurisdictional waters in the review area (check all that apply):  Tributary waters: linear feet, wide.  Other non-wetland waters: acres. Identify type(s) of waters:  Wetlands: acres.
F.	NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):  ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.  ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.  ☐ Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).  ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:  ☐ Other: (explain, if not covered above):  Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
	<ul> <li>Non-wetland waters (i.e., rivers, streams): 2,830 linear feet, ranging between 10 and 100 feet wide.</li> <li>Lakes/ponds: 10.690 acres.</li> <li>Other non-wetland waters: acres. List type of aquatic resource:</li> <li>Wetlands: acres.</li> </ul>
	Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):  Non-wetland waters (i.e., rivers, streams): linear feet, wide.  Lakes/ponds: acres.  Other non-wetland waters: acres. List type of aquatic resource:  Wetlands: acres.
SE	CTION IV: DATA SOURCES.
Α.	SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):  Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Jurisdictional Delineation Pixley Groundwater Bank, Tulare County, California, February 2015, Revised April 2015, Prepared by M. Hirkala.  Data sheets prepared/submitted by or on behalf of the applicant/consultant.  Office concurs with data sheets/delineation report.  Office does not concur with data sheets/delineation report.  Data sheets prepared by the Corps:  Corps navigable waters' study:  U.S. Geological Survey Hydrologic Atlas:  USGS NHD data.  USGS 8 and 12 digit HUC maps.  U.S. Geological Survey map(s). Cite scale & quad name: 1:24K; CA-SAUSALITO SCHOOL  USDA Natural Resources Conservation Service Soil Survey. Citation:  National wetlands inventory map(s). Cite name:  State/Local wetland inventory map(s):  FEMA/FIRM maps:  100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)  Photographs: Aerial (Name & Date): Google Earth, Imagery Date: February 20, 2014  or Other (Name & Date):  Previous determination(s). File no. and date of response letter:
	Applicable/supporting case law:  Applicable/supporting scientific literature:  Other information (please specify):

### B. ADDITIONAL COMMENTS TO SUPPORT JD:

Deer Creek originates in the Sequoia National Forest in the southern portion of Tulare County and terminates at the bank of Homeland Canal approximately 49 miles to the west, just north of the town of Alpaugh (Latitude 35.934784, Longitude -119.473127). About 18 miles from its origin, Deer Creek passes under Deer Creek Drive and transitions into the Central Valley's developed agricultural lands. It meanders west until it runs through the project location, approximately 15 miles from its terminus, where it became a straightened channel prior to 1994. Deer Creek abruptly ends at the east bank of Homeland Canal. During storm events, the canal bank can be breached at Deer Creek's terminus to allow excess water to flow into Homeland Canal. Homeland Canal is an irrigation channel which flows to the southwest from its juncture and terminates at Gates-Jones Canal. Deer creek does not have a hydrologic connection to a traditional navigable water of the U.S. and does not have a nexus to interstate commerce.

The irrigation holding ponds and tail water return pond do not receive or discharge water into any drainage or channel that could be considered a Water of the United States. The preamble to the Corps of Engineers' regulations (33CFR Parts 320 through 330, Regulatory Programs of the Corps of Engineers; Final Rule, November 13, 1986) states that the Corps generally does not consider artificial ponds created by excavating or diking dry land to collect and retain water which is used exclusively for irrigation, waters of the United States.

# ATTACHMENT D BOTANTICAL SURVEY REPORT



## Friant-Kern Canal Middle Reach Capacity Correction Project

**Botanical Survey Report** 

March 25, 2020

Prepared for:

Friant Water Authority 854 N. Harvard Ave. Lindsay, CA 93247

Prepared by:

Stantec Consulting Services Inc. 5000 Bechelli Lane, Suite 203 Redding, CA 96002

March 25, 2020

This document entitled *Friant-Kern Canal Middle Reach Capacity Correction Project Botanical Survey Report* was prepared by Stantec Consulting Services Inc. (Stantec) for the account of Friant-Water Authority (client). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the client. The opinions in the document are based on conditions and information existing at the time the document was published and do not consider any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by Jarah Jona

(signature)

Sarah Tona, Biologist, Stantec

Reviewed by

(signature)

Chariss Femino, Biologist, Stantec

Approved by

(signature)

and Whestehule

Mark Wuestehube, Principal, Stantec

March 25, 2020

## **Table of Contents**

ACR	ONYMS AND ABBREVIATIONS	II
EXEC	CUTIVE SUMMARY	iii
1.0	INTRODUCTION	1
2.0	PROJECT LOCATION	1
3.0	METHODS	
3.1	RESOURCES REVIEW	
3.2	BOTANTICAL FIELD SURVEY	
3.3	INVASIVE SPECIES DOCUMENTATION	3
4.0	RESULTS	
4.1	HABITATS AND SITE CONDITIONS	
4.2	SPECIAL-STATUS SPECIES	
4.3	REFERENCE POPULATIONS	
4.4	INVASIVE SPECIES	
5.0	REFERENCES	11
TABL	_ES	
Table	e 1: Project Ranges, Townships, and Sections	1
	2: Alkaline Soil Map Units in the Study Area	
	3: Special-Status Plant Species with the Potential to Occur in the Study Area	
APPE	ENDICES	
Appe	ndix A Plant Species Observed in The Study Area (March 16-18, 2020)	

March 25, 2020

## **Executive Summary**

The Friant Water Authority, in coordination with Bureau of Reclamation, proposes to implement the Friant-Kern Canal Middle Reach Capacity Project (Project) in Tulare and Kern counties, California. Stantec Consulting Services Inc. (Stantec) prepared this botanical survey report to document the results of a botanical survey conducted for the Project during March 2020. Based on a desktop resource review and field surveys, the study area contains suitable habitat for 10 special-status plant species. The botanical survey documented 25 invasive plant species in the study area and did not document any special-status plant species.



March 25, 2020

## **Acronyms and Abbreviations**

Cal-IPC California Invasive Plant Council

CDFW California Department of Fish and Wildlife

CNDDB California Natural Diversity Database

CNPS California Native Plant Society

CRPR California Rare Plant Rank

FKC Friant Kern Canal

Project Friant-Kern Canal Middle Reach Capacity Correction Project

Stantec Stantec Consulting Services Inc.

USFWS United States Fish and Wildlife Service



## 1.0 INTRODUCTION

On behalf of Friant Water Authority, Stantec Consulting Services Inc. (Stantec) conducted a single-visit botanical survey for the Friant-Kern Canal (FKC) Middle Reach Capacity Correction Project (Project) study area located in Tulare and Kern counties, California. The project would consist of restoring the capacity of the 33-mile long Middle Reach canal to store and deliver water. The botanical survey was conducted when many special-status plant species having the potential to occur in the study area were identifiable. This report documents the methods and results of the botanical survey conducted in March 2020.

### 2.0 PROJECT LOCATION

The study area includes the section of the FKC beginning at Avenue 208 just north of the community of Strathmore in Tulare County, stretching approximately 33 miles south-southwest to Lake Woollomes, approximately 0.5 mile north of Pond Road and to the southeast of the city of Delano in Kern County. The study area is located within the following sections, townships, and ranges (Table 1) of the Mount Diablo Base and Meridian in the *Lindsay, Porterville, Ducor, Sausalito School, Delano East*, and *McFarland* California, U.S. Geological Survey 7.5-minute series topographic quadrangles.

Table 1: Project Ranges, Townships, and Sections

Range	Township	Sections
27 East	20 South	28, 33
	21 South	3, 4, 9, 16, 20, 21, 29, 30, 31
	22 South	6, 7, 18, 19, 30, 31
	23 South	6
26 East	23 South	1, 11, 12, 14, 15, 22, 23, 26, 27, 34
	24 South	3, 9, 10, 15, 16, 21, 22, 28, 33
	25 South	4, 9, 16, 21, 28



## 3.0 METHODS

Methods used in preparation of this report comprised a review of resource databases, publications, and vegetation community information gathered by Stantec during its preparation of a biological resources assessment for the project. These reviews were followed by a spring-visit, protocol-level field survey for special-status plant species and an assessment of invasive and noxious weed species observed in the study area.

### 3.1 RESOURCES REVIEW

Prior to conducting field work, Stantec botanists prepared a list of special-status plant species having the potential to occur in the study area using a combination of database searches, resource review, and vegetation mapping review. For the purpose of this evaluation, special-status plant species include plants that are: 1) listed as threatened or endangered under the California Endangered Species Act or the federal Endangered Species Act; 2) proposed for listing as endangered or threatened by the United States Fish and Wildlife Service (USFWS); 3) designated as rare by the California Department of Fish and Wildlife (CDFW); 4) a state or federal candidate species for listing as threatened or endangered; and/or 5) have a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4. Resources reviewed include:

- California Natural Diversity Database (CNDDB) records of the project quadrangles (*Lindsay*,
   *Porterville*, *Ducor*, *Sausalito School*, *Delano East*, and *McFarland*, *California*) and surrounding
   quadrangles (CDFW 2019a);
- The California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants (California Native Plant Society 2019) records for the *Lindsay, Porterville, Ducor, Sausalito School, Delano East*, and *McFarland, California* and surrounding quadrangles;
- USFWS list of federally protected species that may occur in the vicinity of the Project (United States Fish and Wildlife Service 2019);
- CDFW publications, including State and Federally Listed Endangered, Threatened, and Rare Plants
  of California (CDFW 2020a) and Special Vascular Plants, Bryophytes, and Lichens (CDFW 2020b);
- California floras, including *The Jepson Manual, 2<sup>nd</sup> Edition* (Baldwin et al. 2012), the Jepson Eflora (University of California 2020);
- The Consortium of California Herbaria records (Consortium of California Herbaria 2020);
- Vegetation community mapping conducted for the Project's biological resources assessment (Stantec 2020); and
- Publications on specific special-status plant species, including Jepson (1892), Keck (1935), Mason (1945), Mathias (1936), Scribner (1899), Standley (1916), Stutz and Chu (1997), Stutz et al. (1997), USFWS (2010), and USFWS (2013).



### 3.2 BOTANTICAL FIELD SURVEY

The botanical field survey was conducted in general accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). This report includes the results of the spring field visit; a survey will be conducted in August 2020 to identify late-season plants and complete the botanical survey. Sarah Tona, Stantec botanist, served as the lead investigator for the botanical survey. Courtney Chaney, Stantec botanist, provided additional field assistance.

Before conducting the survey, Stantec botanists visited several reference sites for special-status plant species with the potential to occur in the study area. For the purposes of this report, reference populations refer to special-status plant populations that were documented in the recent past and recorded in the CNDDB (CDFW 2020). These reference sites helped determine if the spring survey timing was correct and enhanced the botanists' knowledge of each species and their habitat type.

The field survey in the study area was floristic in nature and consisted of identifying each species observed to the taxonomic level necessary to determine whether the plant is a special-status species. Plant taxonomy followed Baldwin et al. (2012), including applicable errata and supplements (Jepson Flora Project 2020). Stantec botanists performed the survey by walking meandering transects through microhabitats with the potential to support special-status plants. Survey intensity was heightened in areas corresponding to habitats with the potential support the special-status plants identified in the pre-field resource review and reference site visits.

### 3.3 INVASIVE SPECIES DOCUMENTATION

The botanical survey included documenting invasive plant species (i.e., noxious weeds). For the purpose of this survey, invasive plant species are those included on the California Invasive Plant Inventory (Cal-IPC) with ratings of High, Moderate, Limited, or Watch List (Cal-IPC 2020) or considered a noxious weed under the California Department of Food and Agriculture (3 CCR Section 4500).

### 4.0 RESULTS

The spring-visit botanical field survey was conducted March 16–19, 2020. The field survey was conducted at a time when the early season special-status plant species could be identified if they were present. A complete list of plant species observed in the study area during the botanical survey is provided as Appendix A.

### 4.1 HABITATS AND SITE CONDITIONS

Stantec botanists identified several habitat communities in the study area, including non-native annual grassland, California buckwheat scrub, allscale saltbush scrub, Fremont cottonwood forest, mulefat thickets, red willow thickets, shining willow groves, smartweed-cocklebur patches, and valley oak woodland. Additional land uses in the study area include urban (residential housing), ruderal (recently and/or regularly disturbed areas), barren (unvegetated or nearly unvegetated areas including canal



embankment roads), and open water. Due to the presence of the canal, access roads, and agricultural use, the majority of the study area is altered by human use, disturbed, and contains ruderal and weedy vegetation. Small areas of native microhabitat, including the vegetation communities listed above, occur throughout the study area. Comprehensive descriptions of each habitat type and land use and their location in the study area is provided in the Project's biological resources assessment (Stantec 2020).

Many special-status plant species that have the potential to occur in the study area occur exclusively on or are generally associated with alkaline soils. Stantec identified several soil types in the study area that are slightly or moderately alkaline, according to the region's soil resources report (Natural Resources Conservation Service 2020) and the Natural Resource Conservation Service's soil quality information sheet on pH (Natural Resources Conservation Service 1998). Soil map units in the study area that may be alkaline, or high pH, are provided in Table 2. All other soil map units in the study area have a neutral pH and would not support special-status plant species that require alkaline soils. Based on the soil resources report and soil characteristics observed during the field survey, the soil texture ranges from sandy to sandy loam to loam, with no clay soils present.

Table 2: Alkaline Soil Map Units in the Study Area

Map Unit Name Taxonomy	Map Unit Reference Code	рН	Alkaline
Akers-Akers, saline- Sodic, complex, 0 to 2 percent slopes Calcic Haploxerepts	101	7.9	Moderately Alkaline
Calgro-Calgro, saline- Sodic, complex, 0 to 2 percent slopes Typic Durixerepts	105	7.9	Moderately Alkaline
Centerville clay, 0 to 2 percent slopes Aridic Calcixererts	106	7.5	Slightly Alkaline
Colpien loam, 0 to 2 percent slopes Calcic Pachic Haploxerolls	108	7.5	Slightly Alkaline
Nord fine sandy loam, 0 to 2 percent slopes Cumulic Haploxerolls	130	7.5	Slightly Alkaline
Tagus loam, 0 to 2 percent slopes Calcic Haploxerolls	137	7.6	Slightly Alkaline



Map Unit Name Taxonomy	Map Unit Reference Code	рН	Alkaline
Nord fine sandy loam, 0 to 2 percent slopes Cumulic Haploxerolls	130tw	Well drained	Slightly Alkaline

According to the United States Drought Monitor, the study area region was in a moderate drought at the time of the survey (The National Drought Mitigation Center 2020). This rating is the second lowest of five ratings of drought, meaning it is not considered a severe drought. Reference site visits indicated that several special-status plant species were still present in the region despite the drought, and that the survey timing was correct to identify the species in the study area (see section 4.3).

### 4.2 SPECIAL-STATUS SPECIES

Based on the review of existing information, species habitat requirements, and habitat characteristics present in the study area, Stantec determined that 10 special-status plant species have the potential to occur in the study area (Table 3). An additional eight regionally occurring federally or state listed species are included in the table; these species do not have the potential to occur in the study area. Each species' characteristics and habitat requirements are described further in the Project's biological resources assessment (Stantec 2020).

No special-status plant species were observed during the botanical survey conducted during March 2020.

Table 3: Special-Status Plant Species with the Potential to Occur in the Study Area

Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	General Habitat Description	Potential for Occurrence <sup>2</sup>
Earlimart orache Atriplex cordulata var. erecticaulis	—/—/1B.2	Found in valley and foothill grasslands.  Blooms: Aug–Sep  Elevation: 235 to 330 feet	Low. The study area is within the known range of this species, and there is a reported CNDDB occurrence within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Lost Hills crownscale Atriplex coronata var. vallicola	—/—/1B.2	Found in chenopod scrub, valley and foothill grassland, and vernal pools. Prefers alkaline soils.  Blooms: Apr–Sep Elevation: 160–2,080 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.



Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	General Habitat Description	Potential for Occurrence <sup>2</sup>
Brittlescale Atriplex depressa	—/—/1B.2	Found in chenopod scrub, meadows, seeps, playas, and valley and foothill grasslands. Found in alkaline and clay soils.  Blooms: Apr–Oct Elevation: 1–1,050 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Lesser saltscale Atriplex minuscula	—/—/1B.1	Found in chenopod scrub, playas, and valley and foothill grasslands, as well as alkaline or sandy soils.  Blooms: May–Oct Elevation: 50–656 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Subtle orache Atriplex subtilis	—/—/1B.2	Found in alkaline soils in valley and foothill grasslands.  Blooms: Jun–Oct  Elevation: 130–325 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Kaweah brodiaea Brodiaea insignis	—/E/1B.2	Found in openings in foothill woodland and in granitic or clay soils.  Blooms: Apr–Jun Elevation: 490–4,600 feet	None. The study area is outside of the ecological range of this species, and the study area lacks suitable habitat. This species has not been documented to occur on the floor of the San Joaquin Valley. It is known only from the Kaweah and Tule River drainages. There are no reported CNDDB occurrences within 5 miles of the study area.
California jewelflower Caulanthus californicus	E/E/1B.1	Found in flat, gentle slopes generally in non–alkaline grassland. Also found in open juniper woodland. Blooms: Feb–May Elevation: 200–328 feet	None. As of 1996, all of the natural occurrences of this species have been extirpated within the San Joaquin Valley. There are historic CNDDB occurrences within 5 miles of the study area dating from the 1930s.



Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	General Habitat Description	Potential for Occurrence <sup>2</sup>
Springville clarkia Clarkia springvillensis	T/E/1B.2	Found on granitic substrates in chaparral, cismontane woodlands, and valley and foothill grasslands.  Blooms: Mar–Jul  Elevation: 800–4,000 feet	None. The study area is outside of the ecological range of this species, and the study area lacks suitable habitat. This species has never been documented to occur on the floor of the San Joaquin Valley. There is one CNDDB reported occurrence within 5 miles of the study area in the foothills east of the northern portion of the study area.
Recurved larkspur Delphinium recurvatum	—/—/1B.2	Found in chenopod scrub, valley and foothill grassland, and cismontane woodland. Alkaline soils.  Blooms: Mar–Jun Elevation:10–2,600 feet	Low. The study area is within the known range of this species, and there is a reported CNDDB occurrence within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Kern mallow Eremalche parryi ssp. kernensis	E/—/1B.2	Found in southern San Joaquin Valley and adjacent areas growing on eroded hillsides and alkali flats. Typically found in these habitats growing under and around saltbush ( <i>Atriplex spinifera</i> or <i>A. polycarpa</i> ) or desert tea ( <i>Ephedra californica</i> ) where shrub cover is less than 25 percent (USFWS 2013).  Blooms: Mar–May Elevation: 230–4,230 feet	None. The study area is within the known range of this species. However, based on the field surveys, no suitable habitat is present within the study area. In addition, there are no reported CNDDB occurrences within 5 miles of the study area.
Hoover's eriastrum <i>Eriastrum hooveri</i>	<i>—/—/</i> 4.2	Found in chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland.  Blooms: Mar–Jul  Elevation: 165 to 3,000 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
Spiny-sepaled button-celery <i>Eryngium</i> <i>spinosepalum</i>	—/—/1B.2	Found in vernal pools, swales, and roadside ditches in valley and foothill grasslands.  Blooms: Apr–Jun Elevation: 260–3,200 feet	Low. Suitable habitat occurs in the study area in the form of roadside ditches, however the ditches in the study area have a high cover of upland species and there is a low potential for occurrence. There is one reported CNDDB occurrences within 5 miles of the study area.



Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	General Habitat Description	Potential for Occurrence <sup>2</sup>
Striped adobe-lily Fritillaria striata	—/T/1B.1	Found in cismontane woodland and valley and foothill grasslands. Usually found on clay soils. Blooms: Feb–Apr Elevation:440–4,800 feet	None. The study area occurs outside of the contemporarily recognized ecological range of this species, and the study area lacks suitable habitat; there are no adobe clay soils within the study area. Although there are two historic collections of this plant species from the San Joaquin Valley floor dating from the 1920s, these occurrences have been extirpated via agricultural land conversion. There are no reported CNDDB occurrences within 5 miles of the study area.
Munz's tidy-tips Layia munzii	—/—/1B.2	Found in chenopod scrub and valley and foothill grasslands. Usually found on alkaline clay soils.  Blooms: Mar–Apr Elevation:490–2,300 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.
San Joaquin woollythreads <i>Monolopia</i> <i>congdonii</i>	E/—/1B.2	Found in valley and foothill grassland and chenopod scrub. Sandy soils.  Blooms: Feb–May Elevation: 200–2,600 feet	None. The study area is not within the current known range of this species. USFWS considers the species extirpated from Tulare County, and the extant populations in Kern County are over 20 miles south of the study area (USFWS 2010). There are reported CNDDB occurrences within 5 miles of the study area. However, those records are considered extirpated.
Bakersfield cactus  Opuntia basilaris var. treleasei	E/E/1B.1	Found in chenopod scrub, cismontane woodland, and valley and foothill grasslands. Found in sandy or gravelly soils.  Blooms: Apr–May Elevation: 390–4,760 feet	None. The study area is outside of the recognized range of this species. There are no reported CNDDB occurrences within 5 miles of the study area. The closest CNDDB reported occurrences are greater than 20 air miles south of the southernmost portion of the study area. In addition, a survey was conducted in October 2019 with negative results.



Common Name Scientific Name	Listing Status <sup>1</sup> (Fed/State/CRPR)	General Habitat Description	Potential for Occurrence <sup>2</sup>
San Joaquin adobe sunburst Pseudobahia peirsonii	T/E/1B.1	Found in cismontane woodland and valley and foothill grasslands. Found in adobe clay soils.  Blooms: Feb–Apr  Elevation: 295–2,625 feet	None. The study area is within the known range of this species, and there are reported CNDDB occurrences within 5 miles of the study area. However, there is no suitable habitat (i.e., adobe clay soils) within the study area.
California alkali grass Puccinellia simplex	—/—/1B.2	Found in chenopod scrub, meadows and seeps, vernal pools, and valley and foothill grassland. Also found in alkaline soils, vernally mesic soils, sinks, flats, and lake margins.  Blooms: Mar–May  Elevation: 7–3,050 feet	Low. The study area is within the known range of this species, but there are no reported CNDDB occurrences within 5 miles of the study area. Potential suitable habitat occurs within the study area. However, this habitat is isolated, limited, and of marginal ecological quality.

<sup>&</sup>lt;sup>1</sup> Federal and State Status Codes: E = Endangered, T = Threatened;

Low – The Project is located within the range of the species, and low-quality habitat is present in the study area.

None - The Project is located outside the range of the species, or no habitat is present in the study area.

#### 4.3 REFERENCE POPULATIONS

Stantec botanists visited several reference populations for regionally occurring special-status plants before conducting the botanical survey.

On March 4, 2020, Stantec botanists located more than 100 Kern mallow (*Eremalche parryi* ssp. *kernensis*) individuals in full flower at a reference site near Taft, California. The vegetation community consisted of saltbrush scrub and was dominated by spinescale saltbrush (*Atriplex spinifera*) and cattle spinach (*Atriplex polycarpa*) with an understory of red brome (*Bromus madritensis* ssp. *rubens*) and redstemmed filaree (*Erodium cicutarium*). The cover of shrubs and herbaceous species was sparse. The area was nearly level (0–1 percent slope) and the substrate was alkaline sandy to sandy loam soils.

On March 16, 2020, Stantec botanists visited a reference site located on the Pixley Preserve that had observations for several special-status plants, including Earlimart orache (*Atriplex cordulata* var. *erecticaulis*), Lost Hills crownscale (*Atriplex coronata* var. *vallicola*), brittlescale (*Atriplex depressa*), subtle orache (*Atriplex subtilis*), recurved larkspur (*Delphinium recurvatum*), and California jewelflower (*Caulanthus californicus*). Stantec botanists located several *Atriplex* species at this site; however, the species would not be identifiable until later in the season when the plants are larger and in flower. They did not re-locate the recurved larkspur or California jewelflower at the site. The habitat consisted of a vernal swale system interspersed with upland hummocks and alkaline loamy soils. The vegetation was dominated by herbaceous cover, including *Atriplex* species subshrubs, long beaked stork's bill (*Erodium* 



<sup>&</sup>lt;u>CRPR Codes:</u> List 1B – Plants rare, threatened, or endangered in California and elsewhere. List 2B – Rare or endangered in California, common elsewhere; List 4 – Limited distribution in California.

Extensions: x.1 – Seriously endangered in California, x.2 – Fairly endangered in California.

<sup>&</sup>lt;sup>2</sup> Potential for Occurrence

botrys), red-stemmed filaree, blue dicks (*Dichelostemma capitatum* ssp. *capitatum*), and Italian ryegrass (*Festuca perennis*).

On March 16, 2020, Stantec botanists visited a reference site approximately 10 miles west of Strathmore that had observations for several special-status plants, including Earlimart orache, subtle orache, California alkali grass (*Puccinellia simplex*), and recurved larkspur. The site was on private property, so the botanists could not access it beyond observations from the road shoulder adjacent to the site. They observed what appeared to be *Delphinium* basal leaves but could not positively identify the species from their viewpoint. Based on the basal leaves observed at the site, it was apparent that the genus *Delphinium* would have been recognizable during the March botanical survey. The vegetation community was dominated by scattered *Atriplex* shrubs on sandy to loamy alkaline soils. The herbaceous cover included scattered foxtail barley (*Hordeum murinum*), and fiddleneck (*Amsinckia* sp.).

On March 17, 2020, Stantec botanists visited a reference site for spiny-sepaled button celery (*Eryngium spinosepalum*) located approximately 4.5 miles northeast of Porterville, California in the Kincade Cove Wildlife Management Area. They did not re-locate the species at the site. The occurrence was located at the toe of a slope in a narrow wet swale in heavy clay soils. The swale was dominated by Italian rye grass, while the adjacent upland habitat was dominated by vetch (*Vicia* sp.), barbed oat grass (*Avena barbata*), and black mustard (*Brassica* sp.).

#### 4.4 INVASIVE SPECIES

Stantec documented 25 invasive plant species in the study area during the botanical survey. These invasive species have a Cal-IPC status of Limited, Moderate, or High or are considered a noxious weed by the California Department of Food and Agriculture (Appendix A). The invasive species were mostly continuous and evenly distributed in the study area, except for certain species that occurred singly or in small patches in microhabitats such as water features. Three of the invasive species documented in the study area have a Cal-IPC rating of High, including Arundo (*Arundo donax*), red brome (*Bromus madritensis* ssp. *rubens*), and tamarix (*Tamarix chinensis*).



## 5.0 REFERENCES

- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley, California.
- California Department of Fish and Wildlife (CDFW). 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. California Natural Resources Agency Department of Fish and Wildlife.
- \_\_\_\_\_. 2019a. Rarefind 5. California natural diversity database (CNDDB). Available: <a href="https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data">https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data</a>. Accessed September 10, 2019.
- \_\_\_\_. 2019b. State and Federally Listed Endangered, Threatened, and Rare Plants of California.

  Quarterly publication. 140 pp. Updated March 2019. Available:

  https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.
- \_\_\_\_\_. 2019c. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 140 pp. Updated March 2019. Available online at https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.
  - . 2020a. State and Federally Listed Endangered, Threatened and Rare Plants of California. California Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database. Updated January 2020. Available: <a href="https://www.dfg.ca.gov/wildlife/nongame/list.html">https://www.dfg.ca.gov/wildlife/nongame/list.html</a>. Accessed March 25, 2020.
- \_\_\_\_\_. 2020b. Special Vascular Plants, Bryophytes, and Lichens List. California Department of Fish and Wildlife, Natural Diversity Database. Periodic publication. 140 pp. Updated January 2020. Available: https://www.dfg.ca.gov/wildlife/nongame/list.html. Accessed March 25, 2020.
- \_\_\_\_\_. 2020c. Rarefind 5. California natural diversity database (CNDDB). Available: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed March 13, 2020.
- California Invasive Plant Council (Cal-IPC). 2020. The Cal-IPC Inventory. https://www.cal-ipc.org/plants/inventory/. Accessed March 25, 2020.
- California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California, online edition, v8-03 0.39. [Online]. http://www.rareplants.cnps.org. Accessed September 10, 2019.
- Consortium of California Herbaria. 2020. Consortium of California Herbaria Portal (CCH2). [Internet]. http://www.ucjeps.berkeley.edu/consortium/. Accessed March 13, 2020.
- Jepson, Willis L. 1892. Atriplex depressa (CHENOPODIACEAE). Pittonia, 2: p 304.
- Keck, David D. 1935. Layia munzii (ASTERACEAE). Madroño, 3: 16.



- Mason, Herbert L. 1945. Eriastrum hooveri (POLEMONIACEAE). Madroño, 8: p 89.
- Mathias, Mildred E. 1936. *Eryngium spinosepalum* (APIACEAE). <u>Brittonia</u>, 2: p 245.
- Natural Resources Conservation Service. 1998. Soil Quality Information Sheet. Soil Quality Indicators: pH. United States Department of Agriculture.
- Natural Resources Conservation Service. 2020. Web Soil Survey. National Cooperative Soil Survey for Kern and Tulare Counties, California. United States Department of Agriculture. Available: https://websoilsurvey.sc.egov.usda.gov/. Accessed: March 24, 2020.
- Scribner, Frank L. 1899. Puccinellia simplex (POACEAE). Circular, USDA, Division of Agrostology 16:1.
- Standley, Paul C. 1916. Atriplex minuscula (CHENOPODIACEAE). North American Flora 21(1): 51.
- Stantec Environmental Consulting Inc. (Stantec). 2020. Friant-Kern Canal Middle Reach Capacity Correction Project. Biological Resources Assessment. March 2020.
- Stutz, Howard C., Ge-Lin Chu. 1997. *Atriplex subtilis* (CHENOPODIACEAE): A New Species from South-Central California. Madroño: 44(2) pp 184-88.
- Stutz, Howard C., Ge-Lin Chu, and Stewart C. Sanderson. 1997. *Atriplex erecticaulis* (CHENOPODIACEAE): A New Species from South-Central California. Madroño: 44(1) pp 89-94.
- University of California. 2020. Jepson eFlora Project. Available: http://ucjeps.berkeley.edu/eflora/. Accessed March 13, 2020.
- The National Drought Mitigation Center. 2020. United States Drought Monitor. Data valid: March 17, 2020. Available at: <a href="https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA">https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA</a>. Accessed: March 24, 2020.
- United States Fish and Wildlife Service. 2010. *Monolopia* (=*Lembertia*) *congdonii* (San Joaquin woolly-threads) 5-Year Review: Summary and Evaluation. Sacramento, CA.
- \_\_\_\_\_. 2013. *Eremalche kernensis* (Kern mallow) 5-Year Review: Summary and Evaluation. Sacramento, CA.
- \_\_\_\_\_. 2019. Information for Planning and Consultation. Available: <a href="https://ecos.fws.gov/ipac/">https://ecos.fws.gov/ipac/</a>. Accessed: September 10, 2019.



## Appendix A PLANT SPECIES OBSERVED IN THE STUDY AREA (MARCH 16–18, 2020)

## Appendix A – Plant Species Observed in The Study Area (March 16–18, 2020)

Plant species observed during the March 16–18, 2020 field surveys for the Friant-Kern Canal Middle Reach Capacity Correction Project.

Scientific Name	Common Name	Family	Cal-IPC/CDFA <sup>1</sup>
Acmispon sp.	-	Fabaceae	-
Actinidia deliciosa	fuzzy kiwifruit	Fabaceae	-
Albizia julibrissin	silktree	Fabaceae	-
Amsinckia menziesii	fiddleneck	Boraginaceae	-
Amsinckia tessellata	devil's lettuce	Boraginaceae	-
Artemisia douglasiana	California mugwort	Asteraceae	
Arundo donax	giant reed	Poaceae	High/Noxious
Asclepias eriocarpa	Indian milkweed	Apocynaceae	-
Atriplex polycarpa	cattle spinach	Chenopodiaceae	-
Atriplex serenana var. serenana	saltscale	Chenopodiaceae	-
Avena barbata	slim oat	Poaceae	Moderate/-
Avena fatua	wildoats	Poaceae	Moderate/-
Baccharis salicifolia ssp. salicifolia	mule fat	Asteraceae	-
Bromus diandrus	ripgut brome	Poaceae	Moderate/-
Bromus hordeaceus	soft chess	Poaceae	Limited/-
Bromus madritensis ssp. rubens	foxtail chess	Poaceae	High/-
Camissonia campestris ssp. campestris	field sun cup	Onagraceae	-
Capsella bursa-pastoris	shepherd's purse	Brassicaceae	-
Castilleja exserta ssp. exserta	purple owl's clover	Orobanchaceae	-
Cercis sp.	redbud	Fabaceae	-
Chenopodium sp.	-	Chenopodiaceae	-
Citrus sp.	-	Rutaceae	
Conium maculatum	poison hemlock	Apiaceae	Moderate/-
Convolvulus arvensis	field bindweed	Convolvulaceae	-
Cynodon dactylon	Bermuda grass	Poaceae	Moderate/-
Cyperus eragrostis	tall cyperus	Cyperaceae	-
Dichelostemma capitatum ssp. capitatum	blue dicks	Themidaceae	-
Eleocharis macrostachya	spike rush	Cyperaceae	-
Epilobium sp.	willow herb	Onagraceae	-
Erigeron bonariensis	flax-leaved horseweed	Asteraceae	-
Erigeron sp.	-	Asteraceae	-
Eriogonum fasciculatum	California buckwheat	Polygonaceae	



## **Friant-Kern Canal Middle Reach Capacity Correction Project**

March 25, 2020

Scientific Name	Common Name	Family	Cal-IPC/CDFA <sup>1</sup>
Erodium botrys	big heron bill	Geraniaceae	-
Erodium cicutarium	coastal heron's bill	Geraniaceae	Limited/-
Erodium moschatum	whitestem filaree	Geraniaceae	-
Erythranthe guttata	yellow monkey flower	Phrymaceae	-
Eucalyptus sp.	-	Myrtaceae	-
Euphorbia sp.	spurge	Euphorbiaceae	-
Festuca bromoides	brome fescue	Poaceae	-
Festuca myuros	rattail sixweeks grass	Poaceae	-
Festuca perennis	Italian rye grass	Poaceae	-
Ficus carica	common fig	Moraceae	Moderate/-
Galium sp.	-	Rubiaceae	-
Grevillea robusta	silk oak	Proteaceae	-
Heterotheca sp.	-	Asteraceae	-
Hirschfeldia incana	mustard	Brassicaceae	Moderate/-
Hordeum murinum	foxtail barley	Poaceae	Moderate/-
Juglans hindsii	Northern California black walnut	Juglandaceae	-
Juglans regia	English walnut	Juglandaceae	-
Juncus effusus	common bog rush	Juncaceae	-
Lactuca serriola	prickly lettuce	Asteraceae	-
Lupinus microcarpus var. densiflorus	chick lupine	Fabaceae	-
Lupinus succulentus	arroyo lupine	Fabaceae	-
Lythrum hyssopifolia	hyssop loosestrife	Lythraceae	-
Malus sp.	-	Rosaceae	-
Malva parviflora	cheeseweed	Malvaceae	-
Marrubium vulgare	white horehound	Lamiaceae	Limited/-
Matricaria discoidea	pineapple weed	Asteraceae	-
Medicago polymorpha	California burclover	Fabaceae	Limited/-
Medicago sativa	alfalfa	Fabaceae	-
Melilotus indicus	annual yellow sweetclover	Fabaceae	-
Micropus californicus	q tips	Asteraceae	-
Nicotiana glauca	tree tobacco	Solanaceae	Moderate/-
Olea europaea	olive	Oleaceae	Limited/-
Opuntia ficus-indica	tuna	Cactaceae	-
Peritoma arborea	bladderpod	Cleomaceae	-
Persicaria sp.	-	Polygonaceae	-
Phalaris sp.	-	Poaceae	-



## **Friant-Kern Canal Middle Reach Capacity Correction Project**

March 25, 2020

Scientific Name	Common Name	Family	Cal-IPC/CDFA <sup>1</sup>
Phoradendron leucarpum ssp. macrophyllum	big leaf mistletoe	Viscaceae	-
Pistacia lentiscus	mastic	Anacardiaceae	-
Pistacia vera	pistachio	Anacardiaceae	-
Plagiobothrys canescens	valley popcorn	Boraginaceae	-
Plagiobothrys nothofulvus	rusty haired popcorn flower	Boraginaceae	-
Plantago coronopus	cut leaf plantain	Plantaginaceae	-
Poa compressa	Canada blue grass	Poaceae	-
Polygonum aviculare	prostrate knotweed	Polygonaceae	-
Polypogon monspeliensis	annual beard grass	Poaceae	Limited/-
Populus fremontii ssp. fremontii	cottonwood	Salicaceae	-
Prunus dulcis	almond	Rosaceae	-
Punica granatum	pomegranate	Lythraceae	-
Quercus lobata	valley oak	Fagaceae	-
Raphanus raphanistrum	jointed charlock	Brassicaceae	-
Rorippa sp.	yellow cress	Brassicaceae	-
Rumex crispus	curly dock	Polygonaceae	Limited/-
Rumex sp.	-	Polygonaceae	-
Salix babylonica	weeping willow	Salicaceae	-
Salix exigua	narrowleaf willow	Salicaceae	-
Salix laevigata	polished willow	Salicaceae	-
Salix lasiandra	pacific willow	Salicaceae	-
Sambucus nigra ssp. caerulea	blue elderberry	Adoxaceae	-
Schoenoplectus acutus var. occidentalis	tule	Cyperaceae	-
Senecio vulgaris	common groundsel	Asteraceae	-
Sinapis arvensis	charlock	Brassicaceae	Limited/-
Sisymbrium altissimum	tumble mustard	Brassicaceae	-
Sisymbrium irio	London rocket	Brassicaceae	Moderate/-
Sisymbrium orientale	Indian hedge mustard	Brassicaceae	-
Sonchus asper ssp. asper	sow thistle	Asteraceae	-
Sorghum halepense	Johnsongrass	Poaceae	-/Noxious
Spergularia rubra	purple sand spurry	Caryophyllaceae	-
Tamarix chinensis	Chinese tamarisk	Tamaricaceae	High/Noxious
Tribulus terrestris	puncture vine	Zygophyllaceae	Limited/Noxious
Urtica dioica	stinging nettle	Urticaceae	-
Verbascum thapsus	woolly mullein	Scrophulariaceae	Limited/-
Veronica anagallis- aquatica	water speedwell	Plantaginaceae	-



#### Friant-Kern Canal Middle Reach Capacity Correction Project

March 25, 2020

Scientific Name	Common Name	Family	Cal-IPC/CDFA <sup>1</sup>
Veronica peregrina ssp. xalapensis	speedwell	Plantaginaceae	-
Vitis vinifera	cultivated grape	Vitaceae	-
Washingtonia robusta	Washington fan palm	Arecaceae	-/Moderate
Xanthium strumarium	cocklebur	Asteraceae	-

#### Notes:

#### California Invasive Plant Council (Cal-IPC)

**High:** These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

**Moderate:** These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

**Limited:** These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

#### California Department of Food and Agriculture (CDFA)

Noxious: Listed as a noxious weed under Section 4500



<sup>&</sup>lt;sup>1</sup> Ratings

# ATTACHMENT E PLANT LIST



Plant species observed during the September 30–October 3, 2019 and March 16–18, 2020 field surveys for the Friant-Kern Canal Middle Reach Capacity Correction Project.

Scientific Name	Common Name
Acmispon sp.	-
Actinidia deliciosa	fuzzy kiwifruit
Albizia julibrissin	silktree
Alisma triviale	northern water plantain
Amaranthus albus	tumbleweed
Amaranthus palmeri	Palmer's amaranth
Ambrosia acanthicarpa	annual burrweed
Ammannia robusta	grand ammania
Amsinckia menziesii	fiddleneck
Amsinckia tessellata	devil's lettuce
Artemisia douglasiana	California mugwort
Arundo donax	giant reed
Asclepias eriocarpa	Indian milkweed
Atriplex polycarpa	cattle spinach
Atriplex serenana var. serenana	saltscale
Avena barbata	slim oat
Avena fatua	wildoats
Baccharis salicifolia ssp. salicifolia	mule fat
Bidens laevis	bur marigold
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Bromus madritensis ssp. rubens	foxtail chess
Camissonia campestris ssp. campestris	field sun cup
Capsella bursa-pastoris	shepherd's purse
Castilleja exserta ssp. exserta	purple owl's clover
Centromadia pungens ssp. pungens	common tarweed
Cercis sp.	redbud
Chenopodium sp.	-
Citrullus colocynthis	colocynth
Citrus sp.	
Conium maculatum	poison hemlock
Convolvulus arvensis	field bindweed
Croton setiger	turkey-mullein
Cynodon dactylon	Bermuda grass



Descurainia sophia Dichelosterma capitatum Dicheloster viillow herb Dicheloster viillow he	Scientific Name	Common Name
Cyperus erythrorhizos red rooted cyperus Cyperus esculentus Datura wrightii Descurainia sophia Dichelostemma capitatum Diudicatum Eclipta prostrata Eleocharis macrostachya Epilobium brachycarpum Willow herb Epilobium ciliatum Sender willow herb Erigeron bonariensis Erigeron bonariensis Erigeron canadensis Canada horseweed Erigeron canadensis California buckwheat Erodium botrys Dig heron bill Erodium cicutarium Coastal heron's bill Erodium moschatum Whitestem filaree Erythranthe guttata Eyellow monkey flower Eucalyptus sp Euphorbia ocellata ssp. ocellata Valley spurge Festuca bromoides Drome fescue Festuca perennis Italian rye grass Festuca perennis Italian rye grass Ficus carica Common fig Galium sp Grevillea robusta Helianthus annuus Hairy leaved sunflower Helerotheca grandiflora Helerotheca grandiflora Helerotheca grandiflora Heroreum murinum Juglans hindsii Northern California black walnut Juglans regia Juncus effusus Lactuca serriola	Cyperus difformis	variable flatsedge
Cyperus esculentus         nut grass           Datura wrightii         jimsonweed           Descurainia sophia         herb sophia           Dichelosterma capitatum         blue dicks           Echinochloa colona         jungle rice           Eclipta prostrata         false daisy           Eleocharis macrostachya         spike rush           Epilobium brachycarpum         willow herb           Erigeron bonariensis         flax-leaved horseweed           Erigeron canadensis         Canada horseweed           Eriogonum fasciculatum         California buckwheat           Erodium botrys         big heron bill           Erodium cicutarium         coastal heron's bill           Erodium moschatum         whitestem filaree           Erythranthe guttata         yellow monkey flower           Euchybrus sp.         -           Euphorbia ocellata ssp. ocellata         valley spurge           Festuca bromoides         brome fescue           Festuca myuros         rattail sixweeks grass           Festuca perennis         Italian rye grass           Ficus carica         common fig           Galium sp.         -           Grevillea robusta         lik oak           Heliotropium curassavicum var. oculatum	Cyperus eragrostis	tall cyperus
Datura wrightii jimsonweed  Descurainia sophia herb sophia  Dichelostemma capitatum blue dicks  Echinochloa colona jungle rice  Eclipta prostrata false daisy  Ejelochiam brachycarpum willow herb  Epilobium ciliatum slender willow herb  Erigeron bonariensis flax-leaved horseweed  Erigeron canadensis Canada horseweed  Eriogonum fasciculatum coastal heron's bill  Erodium botrys big heron bill  Erodium moschatum whitestem filaree  Erythranthe guttata yellow monkey flower  Eucalyptus sp.  Euphorbia ocellata ssp. ocellata valley spurge  Festuca prennis ltalian rye grass  Fiesus carica common fig  Galium sp.  Grevillea robusta lik oak  Helianthus annuus hairy leaved sunflower  Helerotheca grandiflora telegraph weed  Hirschfeldia incana mustus  Juglans regia English walnut  Juglans regia  Jungle rice  Islae vs.  Jungle rice  Islae disky  Jungle rice  Islae daisy  Islae disky  Islae vs.  Jungle robe  Jungle rice  Islae daisy  Jungle rice  Islae daisy  Jimsonweed  Jungle rice  Islae daisy  Jungle rice  Jungle rice	Cyperus erythrorhizos	red rooted cyperus
Descurainia sophia Dichelosterma capitatum Dicheloster viillow herb Dicheloster viillow he	Cyperus esculentus	nut grass
Dichelostemma capitatum  Echinochloa colona  Eclipta prostrata  Eleocharis macrostachya  Epilobium brachycarpum  Epilobium ciliatum  Erigeron bonariensis  Erodium botrys  Erodium tocutarium  Erodium moschatum  Erythranthe guttata  Eucalyptus sp.  Euphorbia ocellata ssp. ocellata  Festuca perennis  Ficus carica  Galium sp.  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Erodium murinum  Juglans regia  Juglans regia  English walnut  English wal	Datura wrightii	jimsonweed
Echinochloa colona Eclipta prostrata Eclipta prostrata Eleocharis macrostachya Epilobium brachycarpum Willow herb Epilobium ciliatum Eliageron bonariensis Erigeron canadensis Canada horseweed Eriogonum fasciculatum Erodium botrys Erodium ciutarium Erodium moschatum Erodium moschatum Erodium moschatum Eliageron canadensis Canada horseweed Erodium botrys Erodium botrys Erodium ciutarium Erodium moschatum Whitestem filaree Erythranthe guttata Yellow monkey flower Eucalyptus sp Euphorbia ocellata ssp. ocellata Valley spurge Festuca bromoides Festuca perennis Italian rye grass Ficus carica Galium sp. Grevillea robusta Helianthus annuus Heliotropium curassavicum var. oculatum Leerorum murinum Inschfeldia incana Hordeum murinum Inschfeldia incana Hordeum murinum Inschfeldia incana Hordeum murinum Inscus effusus Lactuca serriola Fickly lettuce	Descurainia sophia	herb sophia
Eclipta prostrata false daisy  Eleocharis macrostachya spike rush  Epilobium brachycarpum willow herb  Epilobium ciliatum slender willow herb  Erigeron bonariensis flax-leaved horseweed  Erigeron canadensis Canada horseweed  Eriogonum fasciculatum coastal heron's bill  Erodium botrys big heron bill  Erodium cicutarium coastal heron's bill  Erodium moschatum whitestem filaree  Erythranthe guttata yellow monkey flower  Eucalyptus sp  Euphorbia ocellata ssp. ocellata valley spurge  Festuca bromoides brome fescue  Festuca myuros rattail sixweeks grass  Ficus carica common fig  Galium sp  Grevillea robusta hiary leaved sunflower  Hellanthus annuus hairy leaved sunflower  Hellotropium curassavicum var. oculatum seaside heliotrope  Heterotheca grandiflora telegraph weed  Hirschfeldia incana mustard  Hordeum murinum foxtail barley  Juglans hindsii Northern California black walnut  Juglans regia English walnut  Juglans regia prickly lettuce	Dichelostemma capitatum	blue dicks
Eleocharis macrostachya spike rush  Epilobium brachycarpum willow herb  Epilobium ciliatum slender willow herb  Erigeron bonariensis flax-leaved horseweed  Erigeron canadensis Canada horseweed  Eriogonum fasciculatum California buckwheat  Erodium botrys big heron bill  Erodium cicutarium coastal heron's bill  Erodium moschatum whitestem filaree  Erythnathe guttata yellow monkey flower  Eucalyptus sp  Euphorbia ocellata ssp. ocellata valley spurge  Festuca myuros rattail sixweeks grass  Festuca perennis Italian rye grass  Ficus carica common fig  Galium sp  Grevillea robusta lik oak  Hellanthus annuus hairy leaved sunflower  Heltoropium curassavicum var. oculatum seaside heliotrope  Heterotheca grandiflora telegraph weed  Hirschfeldia incana mustard  Hordeum murinum foxtail barley  Juglans hindsii Northern California black walnut  Juglans regia English walnut  Juncus effusus common bog rush  Lactuca serriola	Echinochloa colona	jungle rice
Epilobium brachycarpum willow herb  Epilobium ciliatum slender willow herb  Erigeron bonariensis flax-leaved horseweed  Erigeron canadensis Canada horseweed  Eriogonum fasciculatum California buckwheat  Erodium botrys big heron bill  Erodium cicutarium coastal heron's bill  Erodium moschatum whitestem filaree  Erythranthe guttata yellow monkey flower  Eucalyptus sp  Euphorbia ocellata ssp. ocellata valley spurge  Festuca bromoides brome fescue  Festuca perennis Italian rye grass  Ficus carica common fig  Galium sp  Grevillea robusta lik oak  Helianthus annuus hairy leaved sunflower  Heltoropium curassavicum var. oculatum seaside heliotrope  Heterotheca grandiflora telegraph weed  Hirschfeldia incana mustard  Hordeum murinum foxtail barley  Juglans regia English walnut  Juncus effusus  Lactuca serriola  Pickly lettuce	Eclipta prostrata	false daisy
Epilobium ciliatum slender willow herb Erigeron bonariensis flax-leaved horseweed Erigeron canadensis Canada horseweed Erigeron canadensis California buckwheat Erodium botrys big heron bill Erodium cicutarium coastal heron's bill Erodium moschatum whitestem filaree Erythranthe guttata yellow monkey flower Eucalyptus sp Euphorbia ocellata ssp. ocellata valley spurge Festuca bromoides brome fescue Festuca perennis Italian rye grass Ficus carica common fig Galium sp Grevillea robusta ilk oak Helianthus annuus hairy leaved sunflower Heltoropium curassavicum var. oculatum seaside heliotrope Heterotheca grandiflora telegraph weed Hirschfeldia incana mustard Hordeum murinum foxtail barley Juglans regia English walnut Juncus effusus Lactuca serriola	Eleocharis macrostachya	spike rush
Erigeron bonariensis Erigeron canadensis Canada horseweed Erigeron canadensis California buckwheat Erodium botrys big heron bill Erodium cicutarium coastal heron's bill Erodium moschatum whitestem filaree Erythranthe guttata yellow monkey flower Eucalyptus sp Euphorbia ocellata ssp. ocellata Festuca bromoides Festuca myuros restuca perennis Italian rye grass Ficus carica common fig Galium sp Grevillea robusta Helianthus annuus Heliotropium curassavicum var. oculatum Heterotheca grandiflora Heterotheca grandiflora Hurschfeldia incana Hordeum murinum Juglans regia English walnut Juglans regia Lactuca serriola  California bluckwheat Erodada horseweed California black walnut California black walnut Juglans effusus Lactuca serriola  California blockwheat Lactuca serriola  California blockwheat  Erigeron canadenosis Canada horseweed Whitseledia incana Hordeum murinum Lactuca serriola  Tanada horseweed Whitseledia incana Pordeum elegraph weed Portent California black walnut Uncus effusus Lactuca serriola	Epilobium brachycarpum	willow herb
Erigeron canadensis  Eriogonum fasciculatum  California buckwheat  Erodium botrys  big heron bill  Erodium cicutarium  coastal heron's bill  Erodium moschatum  whitestem filaree  Erythranthe guttata  yellow monkey flower  Eucalyptus sp.  -  Euphorbia ocellata ssp. ocellata  Festuca bromoides  Festuca myuros  rattail sixweeks grass  Festuca perennis  Italian rye grass  Ficus carica  common fig  Galium sp.  -  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Heterotheca grandiflora  Heterotheca grandiflora  Herodeum murinum  foxtail barley  Juglans hindsii  Northern California black walnut  Juglans regia  Lactuca serriola  prickly lettuce	Epilobium ciliatum	slender willow herb
Eriogonum fasciculatum  Erodium botrys  big heron bill  Erodium cicutarium  coastal heron's bill  Erodium moschatum  whitestem filaree  Erythranthe guttata  Eucalyptus sp.  Euphorbia ocellata ssp. ocellata  Festuca bromoides  Festuca myuros  Festuca perennis  Italian rye grass  Ficus carica  Galium sp.  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Herotheca grandiflora  Hirschfeldia incana  Hordeum murinum  Juglans regia  Juncus effusus  Lactuca serriola  Coastal heron's bill  coastal hero	Erigeron bonariensis	flax-leaved horseweed
Erodium botrys Erodium cicutarium Coastal heron's bill Erodium moschatum Whitestem filaree Erythranthe guttata Yellow monkey flower Eucalyptus sp Euphorbia ocellata ssp. ocellata Festuca bromoides Festuca myuros Festuca perennis Italian rye grass Ficus carica Common fig Galium sp Grevillea robusta Helianthus annuus Heliotropium curassavicum var. oculatum Heterotheca grandiflora Heterotheca grandiflora Hirschfeldia incana Hurdeum murinum Juglans hindsii Northern California black walnut Juglans regia Juncus effusus Lactuca serriola Whitestem filaree Coastal heron's bill Valley spurge Valley spurge Festuca yellower Festuca grass Ficus carica Common fig Galium sp Grevillea robusta Hairy leaved sunflower Heterotheca grandiflora Lelegraph weed Foxtail barley Northern California black walnut Unglans regia English walnut Common bog rush Lactuca serriola	Erigeron canadensis	Canada horseweed
Erodium cicutarium  Erodium moschatum  Whitestem filaree  Erythranthe guttata  Eucalyptus sp.  Euphorbia ocellata ssp. ocellata  Festuca bromoides  Festuca myuros  Festuca perennis  Italian rye grass  Ficus carica  Galium sp.  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Heterotheca grandiflora  Hiterotheca grandiflora  Hiterotheca grandiflora  Hordeum murinum  Juglans regia  Lactuca serriola  whitestem filaree  whitestem filaree  yellow monkey flower  Lalley spurge  brome fescue  rattail sixweeks grass  Italian rye grass  italian rye grass   Common fig   Grevillea robusta  Hik oak  Helianthus annuus  hairy leaved sunflower  telegraph weed  Hirschfeldia incana  mustard  Hordeum murinum  foxtail barley  Juglans hindsii  Northern California black walnut  Juglans regia  English walnut  Juncus effusus  Lactuca serriola	Eriogonum fasciculatum	California buckwheat
Erodium moschatum  Erythranthe guttata  Eucalyptus sp.  Euphorbia ocellata ssp. ocellata  Festuca bromoides  Festuca myuros  Festuca perennis  Ficus carica  Galium sp.  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Heterotheca grandiflora  Hirschfeldia incana  Hordeum murinum  Juglans hindsii  Juglans regia  Lactuca serriola  yellow monkey flower  -  Crevillea robusta  Whitestem filaree  yellow monkey flower  -  Latlius spurge  Festuca perennis  Italian rye grass  Ficus carica  common fig  -  Common fig  -  Lik oak  Helianthus annuus  hairy leaved sunflower  telegraph weed  Hirschfeldia incana  mustard  Hordeum murinum  foxtail barley  Juglans hindsii  Northern California black walnut  Lactuca serriola  prickly lettuce	Erodium botrys	big heron bill
Erythranthe guttata  Eucalyptus sp.  Euphorbia ocellata ssp. ocellata  Festuca bromoides  Festuca myuros  Festuca perennis  Italian rye grass  Ficus carica  Galium sp.  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Heterotheca grandiflora  Hordeum murinum  foxtail barley  Juglans hindsii  Juglans regia  Juncus effusus  Lactuca serriola  valley spurge  -  calley spurge  Festuca perennis  Italian rye grass  Italian rye grass  Italian rye grass  ilk oak  Helianthus arve grass  ilk oak  Helianthus annuus  hairy leaved sunflower  seaside heliotrope  telegraph weed  Hirschfeldia incana  mustard  Hordeum murinum  foxtail barley  Juglans hindsii  Northern California black walnut  Juglans regia  English walnut  common bog rush  Lactuca serriola	Erodium cicutarium	coastal heron's bill
Eucalyptus sp.  Euphorbia ocellata ssp. ocellata  Festuca bromoides  Festuca myuros  Festuca perennis  Ficus carica  Galium sp.  Grevillea robusta  Helianthus annuus  Heliotropium curassavicum var. oculatum  Heterotheca grandiflora  Hirschfeldia incana  Hordeum murinum  Juglans hindsii  Juglans regia  Lactuca serriola  Valley spurge  rattail sixweeks grass  Italian rye grass  common fig  common fig  -  Common fig  litalian rye grass  rattail sixweeks grass  Festuca sprias  Lactuca serrioa	Erodium moschatum	whitestem filaree
Euphorbia ocellata ssp. ocellata  Festuca bromoides  brome fescue  Festuca myuros  rattail sixweeks grass  Festuca perennis  ltalian rye grass  Ficus carica  Common fig  Galium sp.  -  Grevillea robusta  Helianthus annuus  hairy leaved sunflower  Heliotropium curassavicum var. oculatum  Heterotheca grandiflora  Hirschfeldia incana  Hordeum murinum  foxtail barley  Juglans hindsii  Northern California black walnut  Juglans regia  Juncus effusus  Lactuca serriola  prickly lettuce	Erythranthe guttata	yellow monkey flower
Festuca bromoides Festuca myuros rattail sixweeks grass Festuca perennis Italian rye grass Ficus carica common fig  Galium sp Grevillea robusta Helianthus annuus hairy leaved sunflower Heliotropium curassavicum var. oculatum seaside heliotrope Heterotheca grandiflora Hirschfeldia incana Hordeum murinum foxtail barley Juglans hindsii Northern California black walnut Juglans regia English walnut Juncus effusus Lactuca serriola  prickly lettuce	Eucalyptus sp.	-
Festuca myuros Festuca perennis Italian rye grass Ficus carica common fig  Galium sp Grevillea robusta Helianthus annuus Heliotropium curassavicum var. oculatum Heterotheca grandiflora Hirschfeldia incana Hordeum murinum Juglans hindsii Northern California black walnut Juglans regia Festuca pyrans Italian rye grass Italian rye gras	Euphorbia ocellata ssp. ocellata	valley spurge
Festuca perennis Italian rye grass  Ficus carica common fig  Galium sp Grevillea robusta ilk oak  Helianthus annuus hairy leaved sunflower  Heliotropium curassavicum var. oculatum seaside heliotrope  Heterotheca grandiflora telegraph weed  Hirschfeldia incana mustard  Hordeum murinum foxtail barley  Juglans hindsii Northern California black walnut  Juglans regia English walnut  Juncus effusus common bog rush  Lactuca serriola prickly lettuce	Festuca bromoides	brome fescue
Ficus carica common fig  Galium sp  Grevillea robusta ilk oak  Helianthus annuus hairy leaved sunflower  Heliotropium curassavicum var. oculatum seaside heliotrope  Heterotheca grandiflora telegraph weed  Hirschfeldia incana mustard  Hordeum murinum foxtail barley  Juglans hindsii Northern California black walnut  Juglans regia English walnut  Juncus effusus common bog rush  Lactuca serriola prickly lettuce	Festuca myuros	rattail sixweeks grass
Galium sp Grevillea robusta ilk oak Helianthus annuus hairy leaved sunflower Heliotropium curassavicum var. oculatum seaside heliotrope Heterotheca grandiflora telegraph weed Hirschfeldia incana mustard Hordeum murinum foxtail barley Juglans hindsii Northern California black walnut Juglans regia English walnut Juncus effusus common bog rush Lactuca serriola prickly lettuce	Festuca perennis	Italian rye grass
ilk oak Helianthus annuus hairy leaved sunflower Heliotropium curassavicum var. oculatum seaside heliotrope Heterotheca grandiflora telegraph weed Hirschfeldia incana mustard Hordeum murinum foxtail barley Juglans hindsii Northern California black walnut Juglans regia English walnut Juncus effusus common bog rush Lactuca serriola	Ficus carica	common fig
Helianthus annuus Heliotropium curassavicum var. oculatum seaside heliotrope Heterotheca grandiflora Hirschfeldia incana mustard Hordeum murinum foxtail barley Juglans hindsii Northern California black walnut Juglans regia English walnut Juncus effusus Lactuca serriola hairy leaved sunflower seaside heliotrope telegraph weed mustard foxtail barley English walnut prickly lettuce	Galium sp.	-
Heliotropium curassavicum var. oculatum seaside heliotrope Heterotheca grandiflora telegraph weed Hirschfeldia incana mustard Hordeum murinum foxtail barley Juglans hindsii Northern California black walnut Juglans regia English walnut Juncus effusus common bog rush Lactuca serriola prickly lettuce	Grevillea robusta	ilk oak
Heterotheca grandiflora telegraph weed  Hirschfeldia incana mustard  Hordeum murinum foxtail barley  Juglans hindsii Northern California black walnut  Juglans regia English walnut  Juncus effusus common bog rush  Lactuca serriola prickly lettuce	Helianthus annuus	hairy leaved sunflower
Hirschfeldia incana mustard Hordeum murinum foxtail barley Juglans hindsii Northern California black walnut Juglans regia English walnut Juncus effusus common bog rush Lactuca serriola prickly lettuce	Heliotropium curassavicum var. oculatum	seaside heliotrope
Hordeum murinum foxtail barley  Juglans hindsii Northern California black walnut  Juglans regia English walnut  Juncus effusus common bog rush  Lactuca serriola prickly lettuce	Heterotheca grandiflora	telegraph weed
Juglans hindsii       Northern California black walnut         Juglans regia       English walnut         Juncus effusus       common bog rush         Lactuca serriola       prickly lettuce	Hirschfeldia incana	mustard
Juglans regia       English walnut         Juncus effusus       common bog rush         Lactuca serriola       prickly lettuce	Hordeum murinum	foxtail barley
Juncus effusus common bog rush  Lactuca serriola prickly lettuce	Juglans hindsii	Northern California black walnut
Lactuca serriola prickly lettuce	Juglans regia	English walnut
	Juncus effusus	common bog rush
Leersia oryzoides rice cutorass	Lactuca serriola	prickly lettuce
1100 04191400	Leersia oryzoides	rice cutgrass



Scientific Name	Common Name
Leptochloa fusca ssp. uninervia	Mexican sprangletop
Lupinus microcarpus var. densiflorus	chick lupine
Lupinus succulentus	arroyo lupine
Lythrum hyssopifolia	hyssop loosestrife
Malus sp.	-
Malva parviflora	cheeseweed
Marrubium vulgare	white horehound
Matricaria discoidea	pineapple weed
Medicago polymorpha	California burclover
Medicago sativa	alfalfa
Melilotus indicus	annual yellow sweetclover
Micropus californicus	q tips
Nicotiana glauca	tree tobacco
Nuttallanthus texanus	blue toadflax
Oenothera elata	evening primrose
Olea europaea	olive
Opuntia ficus-indica	tuna
Panicum capillare	old witch grass
Peritoma arborea	bladderpod
Persicaria lapathifolia	common knotweed
Persicaria sp.	-
Phalaris aquatica	harding grass
Phoradendron leucarpum ssp. macrophyllum	big leaf mistletoe
Pistacia lentiscus	mastic
Pistacia vera	pistachio
Plagiobothrys canescens	valley popcorn
Plagiobothrys nothofulvus	rusty haired popcorn flower
Plantago coronopus	cut leaf plantain
Poa compressa	Canada blue grass
Polygonum aviculare	prostrate knotweed
Polypogon monspeliensis	annual beard grass
Populus fremontii ssp. fremontii	cottonwood
Prunus dulcis	almond
Punica granatum	pomegranate
Quercus lobata	valley oak
Raphanus raphanistrum	jointed charlock
Rorippa curvipes	bluntleaf yellow cress



Scientific Name	Common Name
Rorippa curvisiliqua	curvepod yellow cress
Rumex crispus	curly dock
Rumex sp.	-
Sagittaria sp.	-
Salix babylonica	weeping willow
Salix exigua	narrowleaf willow
Salix laevigata	polished willow
Salix lasiandra	pacific willow
Salsola tragus	Russian thistle
Sambucus nigra ssp. caerulea	blue elderberry
Schoenoplectus acutus var. occidentalis	tule
Senecio vulgaris	common groundsel
Sinapis arvensis	charlock
Sisymbrium altissimum	tumble mustard
Sisymbrium irio	London rocket
Sisymbrium orientale	Indian hedge mustard
Solanum americanum	American black nightshade
Solanum elaeagnifolium	horse nettle
Sonchus asper ssp. asper	sow thistle
Sorghum halepense	Johnsongrass
Spergularia rubra	purple sand spurry
Stachys albens	cobwebby hedge nettle
Stephanomeria virgata	twiggy wreath plant
Tamarix chinensis	Chinese tamarisk
Tribulus terrestris	puncture vine
Trichostema lanceolatum	vinegarweed
Typha latifolia	boradleaf cattail
Urtica dioica	stinging nettle
Verbascum thapsus	woolly mullein
Veronica anagallis-aquatica	water speedwell
Veronica peregrina ssp. xalapensis	speedwell
Vitis vinifera	cultivated grape
Washingtonia robusta	Washington fan palm
Xanthium strumarium	cocklebur