

**DEPARTMENT OF WATER RESOURCES**

1416 NINTH STREET, P.O. BOX 942836  
SACRAMENTO, CA 94236-0001  
(916) 653-5791

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OCT 15 2015



September 24, 2015

Dear Agricultural Water Supplier,

**KERN-TULARE  
WATER DISTRICT**

In response to the Drought Emergency, Governor Brown issued Executive Order (EO) B-29-15 on April 1, 2015. Directive 13 of the EO requires water suppliers who supply water to 10,000 to 25,000 acres of irrigated lands (mid-sized agricultural water suppliers) to develop and submit Agricultural Water Management Plans (AWMP) to the Department of Water Resources (DWR) by July 1, 2016.

In order to help mid-sized agricultural water suppliers meet these new requirements, DWR is offering planning grants to assist in preparing an AWMP. Through a non-competitive grant application, DWR is providing AWMP grants for:

- Developing a new AWMP or a new Regional AWMP: up to \$50,000 per mid-sized agricultural water supplier. Regional applications comprising more than one mid-sized agricultural water supplier are encouraged. The grant award cap for regional applications will be \$50,000 for the first mid-sized agricultural water supplier plus \$40,000 for each additional collaborating mid-sized agricultural water supplier.
- Updating an existing AWMP: up to \$10,000 per mid-sized agricultural water supplier.
- Developing addendums to a Federal Plan: up to \$5,000 per mid-sized agricultural water supplier.

Eligible Applicants

- Non-Federal agricultural water suppliers providing water supplies to 10,000 to 25,000 acres of irrigated land are eligible to apply for funding to develop a new AWMP or a new Regional AWMP or update an existing AWMP.
- Federal agricultural water suppliers providing water supplies to 10,000 to 25,000 acres of irrigated land are eligible to apply for funding for Federal Plan Addendums.

Application Process

Our records indicate the new planning requirement may apply to your agency. If your agency supplies water to less than 10,000 acres of irrigated land, please contact us.

To apply for an AWMP 2015 Grant, complete the accompanying application in the Application Package and submit it to the address listed. For a Regional AWMP, each applicant must submit an individual application that includes a combined Statement of Work and Project Cost indicating the individual applicant's responsibilities. An electronic version is available at: [www.water.ca.gov/wuegrants](http://www.water.ca.gov/wuegrants).

If you have questions about this grant program, contact Fethi BenJemaa at 916-651-7025 or [WUEGrants@water.ca.gov](mailto:WUEGrants@water.ca.gov).

A handwritten signature in cursive script that reads "Diana S. Brooks".

Diana S. Brooks, Chief  
Water Use and Efficiency Branch

# **Water Allocation Policies & Drought Management Plan**

Kern-Tulare Water District

August 29, 2016

## **Introduction**

Executive Order B-29-15 requires the Kern-Tulare Water District (District) to submit an Agricultural Water Management Plan (AWMP). Use of a USBR approved Water Management Plan (WMP) with the addition of a Water Allocation Policy and a Drought Management Plan completes the requirements for the AWMP.

## **Water Allocation Policies**

District water allocation policies adopted by the District's Board of Directors are provided in Attachment B "Amended Rules and Regulations for Sale and Distribution of Water" in the Water Management Plan.

## **Drought Management Plan**

- a) What hydraulic levels or conditions (reservoir levels, streamflows, groundwater, snowpack, etc) are monitored and measured to determine the water supply available and level of drought severity?**

The District General Manager monitors snow and groundwater levels. Snow levels are monitored from a monthly meeting with the Friant Water Authority and Bureau of Water Reclamation. Additional information is obtained by receiving periodic email updates on precipitation and snow pack from various sources.

Groundwater levels within the District are measured as described in the District's Groundwater Monitoring Plan attached at the end of this document. All water conditions are summarized and presented.

- b) The District's policy and process for declaring a water shortage and implementing the water shortage allocation and drought management plan.**

If the District's anticipated water supply for the year will not be sufficient to meet the anticipated water demands of the District, the District will allocate such supply among all water users pro rata on the basis of the gross assessable acreage of each water user within the District's service area. The District's Board of Directors makes this determination and District staff send a letter to all landowners and water users in the District informing them of the Board of Director's decision.

- c) Operational Adjustments - changes in District water management and District operations to respond to drought, including canal and reservoir operations and groundwater management.**

The District has made the following adjustments in response to the drought.

1. Installed reverse flow pumps in the Friant-Kern Canal to physically deliver water from banking programs in Kern County to the District.

2. Provided landowners with the option to transfer water from one account to another.
3. Allowed landowners to connect private wells to the District's distribution system.
4. Provided water account balances with the billing each month.
5. Maintained a list of those buying and selling water and made it available to all water users in the District.

**d) Demand Management- policies and incentives in addition to the water shortage allocation plan to lower on farm water use.**

The District only charges for water used. In a drought year, the price of water increases which incentivizes demand management.

**e) Alternative Water Supplies- discuss the potential if possible for the district to obtain or utilize additional water supplies. These supplies could include transfers from another water agency or district, the use of recycled water and desalination of brackish groundwater or drainage water.**

The District is involved in extensive transfer and banking programs. The District also receives recycled water from nearby oil processing facilities and is currently expanding this recycling.

**f) Stages of Actions - include the stages of action and corresponding levels of drought severity that the District will implement in response to the drought.**

In response to a drought the District determines if water supplies need to be limited and informs its water users as described in Section (b) above. Subsequent letters are sent as conditions change.

**g) Coordination and Collaboration- include a description on how coordination and collaboration with other local districts and water agencies or regional groups will be used in drought response.**

Coordination and collaboration with other districts and water agencies is accomplished through the District's membership and participation in the following organizations which meet regularly.

- Friant Water Authority (FWA) – Discuss water supplies regarding Central Valley Project.
- Poso Creek Integrated Regional Water Management Plan (IRWMP) – Maintain or update groundwater sustainability strategies.
- CVC Advisory Committee – Discuss available water supplies.
- Water Association of Kern County – Obtain/give information regarding water shortage and conservation.

**h) Revenues and Expenditures - describe how the drought and lower water allocations will affect the Districts revenues and expenditures.**

Every year the District's Board of Directors adopt a budget to cover the District's costs. As a result of reduced supply and competing uses of water in dry years the cost to obtain water is more expensive than in wet years. This cost increase is passed on to water users.

**KERN-TULARE WATER DISTRICT**



***Groundwater Monitoring Plan***

**CASGEM**

**(California Statewide Groundwater Elevation Monitoring)**

June 12, 2015

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## **MONITORING NETWORK**

### **Description of Monitoring Network**

Kern-Tulare Water District (District) has 26 irrigation wells associated with the District's CASGEM notification. Of the 26 wells, 14 wells will no longer be measured as part of the monitoring program, because they were eliminated as part of a change in monitoring. Of the 26 wells, 12 irrigation wells are being measured within the Kern Basin (5-22.14) and Tule Basin (5-22.13), of the 12 wells six are CASGEM wells and six are Voluntary wells. Each well is spaced approximately two miles apart. Appendix A. is a list of CASGEM wells and Appendix B. is a list of Voluntary wells, both list include; well type, CASGEM well number, local well number, basin, location coordinates, ground surface elevation, and reference point elevation. The determination for the 12 well locations is described later in the Groundwater Monitoring Plan (GMP). Figure 1 map shows all 26 well locations; six CASGEM wells identified by a red circle, six Voluntary wells identified by a red triangle, and 14 Non-Measured wells identified by a red square.

### **Well Network Map**

The distribution of well locations in the Kern Basin (5-22.14) and Tule Basin (5-22.13) within the District are shown in Figure 1.

## **MONITORING PLAN RATIONAL**

Groundwater monitoring is an essential part of the District's Groundwater Management Plan (GWMP), adopted in December 2012. Ongoing groundwater monitoring provides information needed to document current conditions, assess long-term trends, and to support development and to guide implementation of the GWMP.

## **History of Groundwater Monitoring in the District**

The District has not historically measured ground water levels. Groundwater level monitoring in the District has historically been performed by the Department of Water Resources (DWR) on a semiannual basis, in the months of March and October. The District volunteered to be a Monitoring Entity for the Kern Basin (5-22.14) and Tule Basin (5-22.13), in 2011.

## **Description of Aquifers in the District**

Wells drilled on the west side of the District tap into the continental deposits. Continental deposits comprise an unconfined aquifer and are the most commonly tapped aquifer in the region. The top of this aquifer is the water table and the bottom is the base of freshwater, which is believed to occur at a depth of 2,000 feet.

Wells drilled on the east side of the District tap into the confined aquifers of the Santa Margarita formation and Olcese sand deposits. The Santa Margarita formation begins from 1,000 to 1,700 feet below the surface, ranging in thickness from 150 to 200 feet. Underlying the Santa Margarita formation by about 150 to 200 feet is the Olcese sand aquifer, ranging in thickness from 300 to 450 feet.

The Santa Margarita formation and the Olcese sand deposits are shallow to the east and deepen to the west. These deposits contain useable groundwater and are located beneath fine-grained deposits that limit the natural recharge from the land surface. In the easterly parts of the District, a number of wells drilled to depths of 1,400 to 2,500 feet tap highly permeable deposits of the Santa Margarita and/or the Olcese Formation. These formations are considered to be a separate aquifer from the continental deposits. Fresh groundwater is present in some areas of the Santa Margarita formation and the Olcese sand deposits to depths exceeding 3,000 feet.

The District plans on conducting a detailed geologic study as part of preparing a Groundwater Sustainability Plan. The results of this study will be reflected in future GMP.

### **Groundwater Conditions in the District**

A hydrograph of groundwater elevations near the center of the District from 1960 to date is presented in Figure 2, these measurements represent the top of the static groundwater level. Prior to 1977, groundwater levels throughout the District were falling at a rate of approximately 10 feet per year. As a result of these declining groundwater levels, groundwater quality was degrading and subsidence of the land surface was occurring.

The District measures irrigation well (357944N1190845W001) in the Tule Basin (5-22.13) two times per month, to best determine the seasonal highs and lows. (Figure 3) displays groundwater elevation from August 2013 to May 1, 2015.

### **Selection of Wells for CASGEM Program**

The District selected wells based on wells measured by DWR, verified which of the wells could be consistently measured using the District's well level measuring equipment. The District then reviewed the records for wells in DWR's CASGEM system to determine which wells in the Kern Basin (5.22-14) and the Tule Basin (5-22.13), within District had the longest and most consistent data. The District collected copies of Drillers Logs for wells within the District from KCWA. Based upon readability of the well and data available, wells were selected to provide an even distribution in the Kern Basin (5.22-14) and the Tule Basin (5-22.13), throughout the District with approximately two miles spacing between well sites.

The District obtained permission from the landowners for each selected well Appendix E. If the well is no longer in use, the District will work with the landowner and associated County Environmental Health Division, to redesignate the non-operational well at a monitoring well. The permission letters are kept on file and will be provided if requested.

## **Selection of Monitoring Schedule**

Monitoring will be conducted at each of the 12 well locations for the yearly high and low for the Kern Basin (5-22-14) and the Tule Basin (5-22.13). The District will continue taking spring measurements in March and fall measurements in October. In addition, the District intends to measure Voluntary well (CASGEM well number 357944N1190845W001) within the first week of each month, for a two year period to verify the best time of year for future spring and fall measurements.

## **MONITORING PROTOCOL**

### **Monitoring Schedule**

The District will monitor wells on the schedule established by DWR monitoring program. The District will monitor levels at the 12 well sites in the Kern Basin (5-22.14) and Tule Basin (5-22.13) two times per year, once in the spring (March), and once in the fall (October). All wells will be measured within one week of each other. The goal of March and October measurements is to capture groundwater levels the at their highest and near lowest each year.

The District's objective is to create a well network with a regular monitoring schedule which will provide data that can be used for analysis of long-term water level trends. Groundwater pumping typically peaks during the summer growing season, and slows in the winter. Comparisons of groundwater levels in specific wells from spring of one year to spring of other years can indicate groundwater trends, such as lowering of the groundwater table during a drought period.

## **Description of Field Methods**

In 2011, District staff accompanied DWR personnel on both spring and fall measurement runs in the Kern Basin (5-22.14) and Tule Basin (5-22.13), within the District. The District observed the equipment, procedures, and locations used for the DWR monitoring program. The District also obtained copies of forms used to record measurements from DWR. The District maintains the field methods used by DWR.

The District collects measurements with an acoustic sounder to determine distance from the reference point to the water surface. The District utilizes this instrument because the first depth to water beneath the District is deep (500+feet), that no other measuring device for water levels in irrigation wells is appropriate for use, since many of these wells are currently active and in-service. As requested by DWR, the groundwater level readings collected with the acoustic sounder will be labeled as “questionable” when uploaded to CASGEM database. The District created forms for recording groundwater levels in the same format used by DWR. A sample Groundwater Level Measurement form is provided in Appendix C. The District will pursue the use of electronic devices to read, store, and analyze well measurements.

The District retained a Professional Land Surveyor to establish horizontal and vertical locations of each selected well locations. The latitude and longitude of the wells are referenced to the North American Datum System of 1903 (NAD83) and the vertical elevation of the ground surface is referenced to the North American Vertical Datum of 1988 (NAVD88). The distance from the measuring point to the ground surface was measured with a tape measure from the measuring point to where the well casing intercepts the ground surface.

To assure that the same well is being measured each time and the same reference point is being used, the District created a Well Identification Sheet for each well site. Each Well Identification Sheet includes; well number, CASGEM well number, groundwater basin, date of the District’s survey, latitude and longitude, groundwater surface (GS) elevation, reference point (RP) elevation, distance between GS to RP, location description and map, well type, well completion

type, total depth if applicable, screened intervals if applicable, well completion report number if applicable, well use, description of RP, landowner information, and picture of RP location. A sample Well Identification Sheet is provided in Appendix D.

## **CASGEM ONLINE SUBMITTALS**

### **Well Information**

Once measurements have been gathered, District staff will input the data into the CASGEM Online Submittal System ([http://www.water.ca.gov/groundwater/casgem/submittal\\_system.cfm](http://www.water.ca.gov/groundwater/casgem/submittal_system.cfm)) utilizing the direct online data entry method.

### **Groundwater Elevation Information**

District staff will input groundwater elevation information for each groundwater level measurement submitted to the CASGEM Online Submittal System.

### **Location and Reason for Data Gaps**

The District covers approximately 32 square miles and currently has six CASGEM wells assigned for monitoring, which doubles the requirement for 10 CASGEM wells for every 100 square miles in high priority basins, so there is no density data gaps for CASGEM well coverage. Furthermore, the six CASGEM wells are fairly evenly distributed along the north-south axis of the District service area so there is no horizontal coverage data gap within the District.

However, two types of data gaps were identified while assembling the monitoring plan and determining which wells would be selected for the CASGEM program. Both data gaps are interrelated so they consist of only having irrigation wells for use which are not ideal for CASGEM (measuring seasonal highs and lows), and those same irrigation wells are constructed

with screen intervals which cover multiple aquifer zones, creating a vertical data gap in the District's service area.

The District will attempt to resolve the two data gaps over time by completing the following actions:

- Finding cooperative well owners in the District that either have shallower wells or have screens intervals which are perforated in a single aquifer.
- Converting existing out of service irrigation wells to a nested monitoring wells system with multiple wells and depth-discrete screens, and/or installing stand-alone monitoring wells that have depth-discrete screens.

### **Local Issues that Prevent Monitoring**

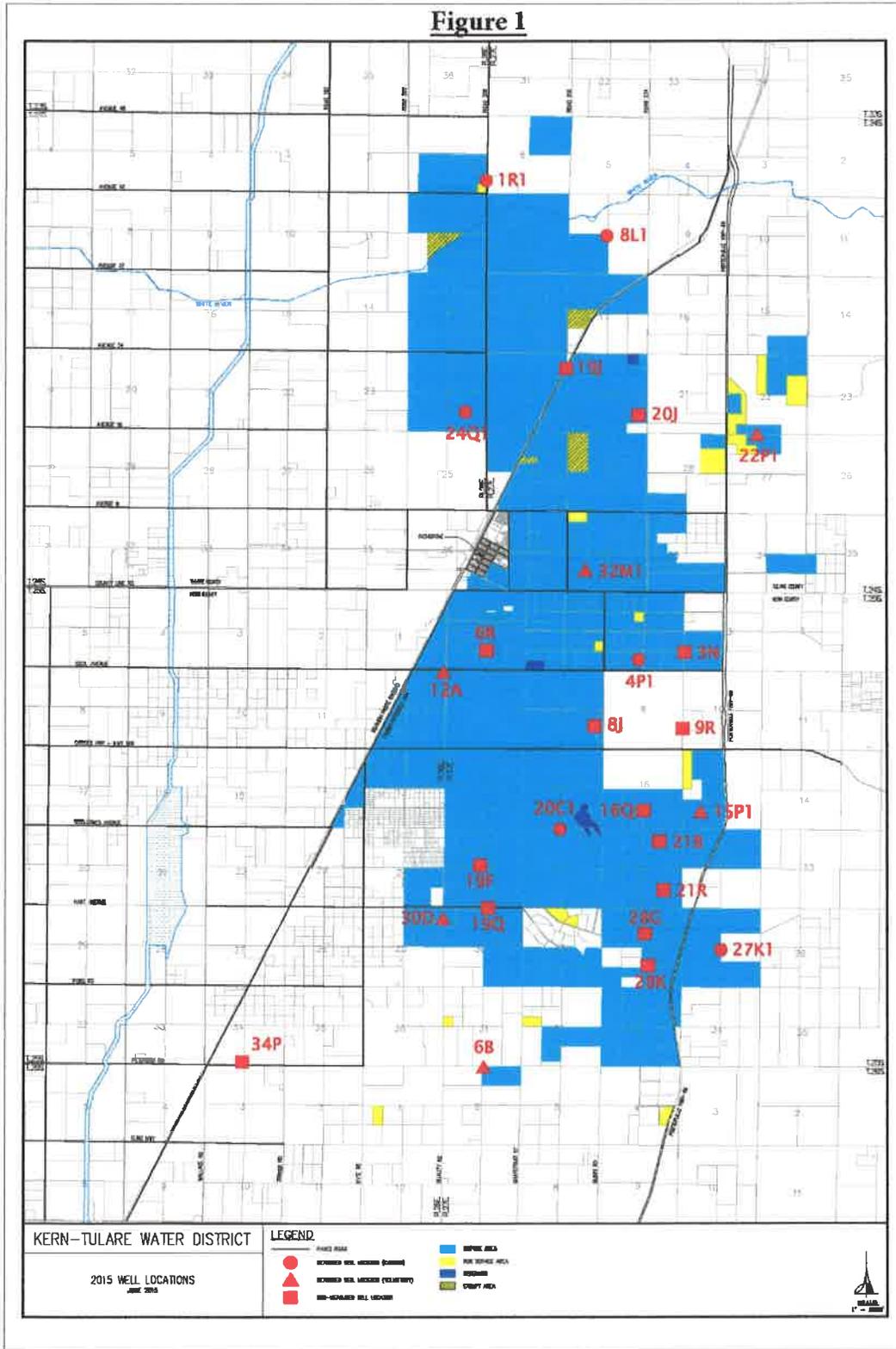
If a well becomes unreadable, the District will attempt to remedy the situation if possible, including possible modifications to the discharge piping to provide monitoring access. Four issues were identified that may prevent monitoring:

- Changes in well discharge configuration which makes the well unmeasurable
- A collapsed well
- A well for some unknown reason no longer can produce a consistent sonic measurement.
- A landowner revoked or refused to supply permission to collect a water level from their well

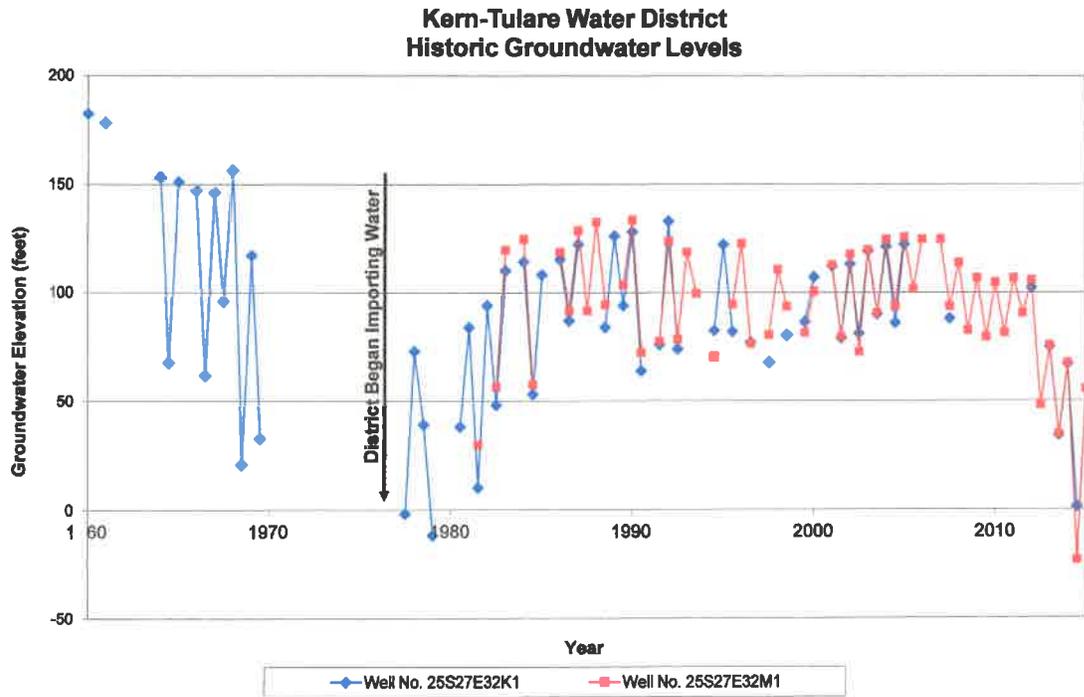
### **Recommendations for Future Monitoring Locations**

The District will continue to look for opportunities to replace existing CASGEM (irrigation) wells with depth-discrete monitoring wells and/or rehabilitate out-of-service irrigation wells converting them to nested monitoring wells.

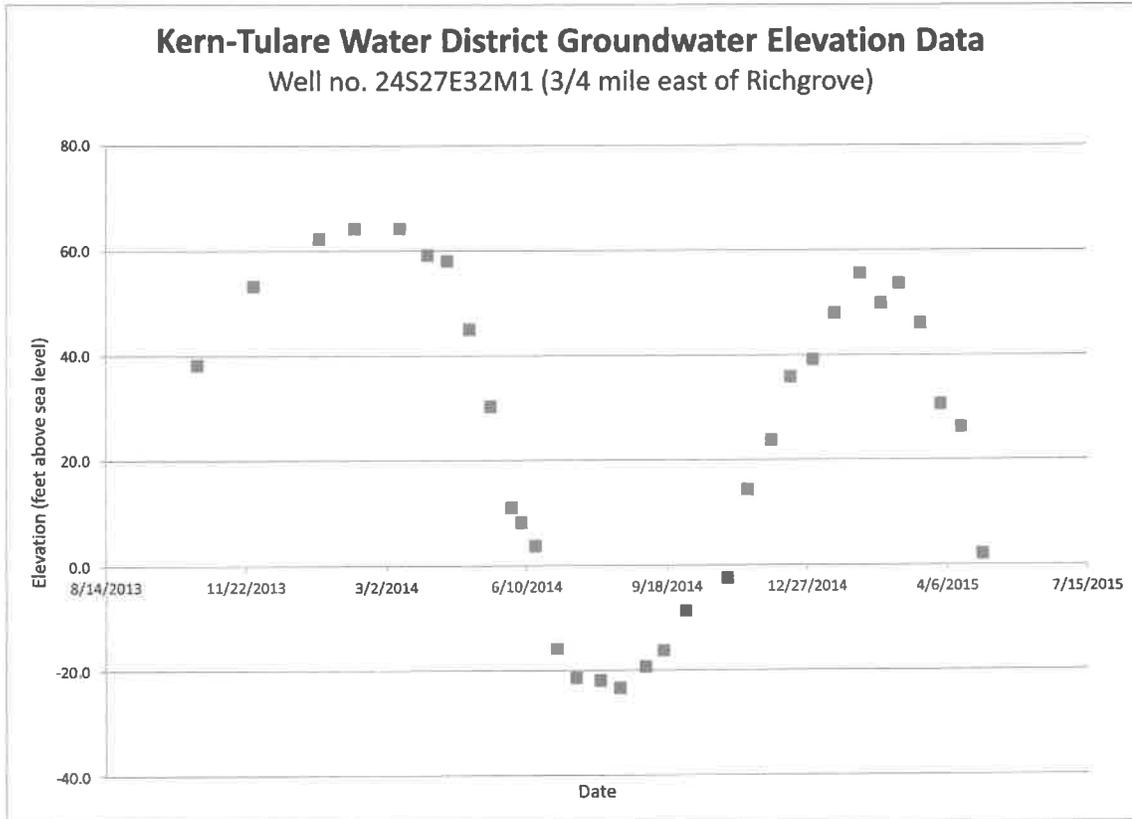
**Figure 1**



**Figure 2**



**Figure 3**



## Appendix A

### CASGEM WELL INFORMATION

Groundwater Area Kern-Tulare Water District

Monitoring Agency Kern-Tulare Water District

WELL TYPE	CASGEM WELL NUMBER	LOCAL WELL ID NUMBER	BASIN	SURVEY INFORMATION				GS to RP	RP ELEV	Screened Intervals	WELL ACRONYM
				DATE OF SURVEY	LAT.	LONG.	GS ELEV				
CASGEM	358658N1191081W001	24S26E1R1M	Tule	10/28/2013	35.86574	-119.108118	466.6	0.0	466.6	402-1200	1R1
CASGEM	358281N1191126W001	24S26E24Q1	Tule	10/28/2013	35.82327	-119.112198	471.9	0.0	471.9	504-1,224	24Q
CASGEM	358561N1190806W001	24S27E8L1M	Tule	10/28/2013	35.85577	-119.080681	503.7	13.0	516.7	522-1,747	8L1
CASGEM	357781N1190720W001	25S27E4P1M	Kern	10/28/2013	35.7783	-119.0726	580.7	0.0	580.7	506-1,954	4P1
CASGEM	357464N1190898W001	25S27E20C1M	Kern	10/28/2013	35.7471	-119.089885	592.4	39.0	631.4	500-2,000	20C1
CASGEM	357250N1190506W001	25S27E27K1M	Kern	10/28/2013	35.7252	-119.053505	768.5	4.5	773.3	996-2,000	27K1

## Appendix B

### VOLUNTARY WELL INFORMATION

Groundwater Area Kern-Tulare Water District  
 Monitoring Agency Kern-Tulare Water District

WELL TYPE	CASGEM WELL NUMBER	LOCAL WELL ID NUMBER	BASIN	SURVEY INFORMATION				RP ELEV	GS to RP	WELL ACRONYM
				DATE OF SURVEY	LAT.	LONG.	GS ELEV			
Voluntary	358200N1190473W001	24S27E22P1M	Tule	10/28/2013	35.819695	-119.046436	593.3	596.8	3.5	22P1
Voluntary	357944N1190845W001	24S27E32M1M	Tule	10/28/2013	35.794573	-119.084745	536.3	536.3	0.0	32M
Voluntary	354635N1190659W001	25S26E12A	Kern	10/1/2012	35.776516	-119.116495	513.7	517.2	3.5	12A
Voluntary	357503N1190578W001	25S27E15P1M	Kern	10/1/2012	35.750538	-119.058344	679.6	689.1	9.5	15P1
Voluntary	354350N1190657W001	25S27E30D	Kern	10/1/2012	35.730565	-119.11597	531.5	531.5	0.0	30D
Voluntary	357035N1191065W001	26S27E6B	Kern	10/1/2012	35.703491	-119.106547	590.6	590.6	0.0	6B

NON-MEASURED WELL TYPE	CASGEM WELL NUMBER	LOCAL WELL ID NUMBER	BASIN	SURVEY INFORMATION				RP ELEV	GS to RP	WELL ACRONYM
				DATE OF SURVEY	LAT.	LONG.	GS ELEV			
Voluntary	357039N1191606W001	25S26E34P001M	Kern	2/14/2012	35.7039	-119.1606	462.0	466.0	4.0	34P
Voluntary	357797N1191068W001	25S27E06R001M	Kern	2/14/2012	35.7797	-119.1068	546.0	546.0	0.0	6R
Voluntary	357222N1190698W001	25S27E28K001M	Kern	2/14/2012	35.72221	-119.0698	0.0	0.0	0.0	28K
Voluntary	357506N1190712W001	25S27E16Q001M	Kern	2/14/2012	35.7506	-119.0712	0.0	0.0	0.0	16Q
Voluntary	357403N1191078W001	25S27E19F001M	Kern	2/14/2012	35.7403	-119.1078	534.0	530.0	4.0	19F
Voluntary	357364N1190640W001	25S27E21R001M	Kern	2/14/2012	35.73640	-119.0640	0.0	0.0	0.0	21R
Voluntary	358314N1190895W001	24S27E19J001M	Kern	11/10/2011	35.8314	-119.0895	502.0	502.0	0.0	19J
Voluntary	358231N1190731W001	24S27E20J001M	Tule	11/10/2011	35.8231	-119.0731	441.0	441.0	0.0	20J
Voluntary	357797N1190623W001	25S27E03N001M	Kern	2/14/2012	35.77970	-119.0623	603.0	600.0	3.0	3N
Voluntary	357661N1190823W001	25S27E08J001M	Kern	2/14/2012	35.7661	-119.0823	441.0	441.0	0.0	8J
Voluntary	357658N1190626W001	25S27E09R001M	Kern	2/14/2012	35.7658	-119.0626	0.0	0.0	0.0	9R
Voluntary	357450N1190676W001	25S27E21R001M	Kern	2/14/2012	35.74500	-119.7450	638.0	637.0	1.0	21B
Voluntary	357251N1190706W001	25S27E28G002M	Kern	2/14/2012	35.72810	-119.0706	0.0	0.0	0.0	28G
Voluntary	357325N1191059W001	25S27E19Q001M	Kern	2/14/2012	35.7325	-119.1059	543.0	540.0	3.0	19Q

## Appendix C

### GROUNDWATER LEVEL MEASUREMENTS

Measured by

Groundwater Area Kern-Tulare Water District

Tabulated by

Measuring Agency Kern-Tulare Water District

Season/Year

STATE WELL NO.	RP ELEV	GS ELEV	DATE			TIME	WHY		REF. POINT TO WATER SURFACE	GROUND TO WATER SURFACE	WATER SURFACE ELEVATION
			MO	DA	YR		HR:MIN	NM			
24S27E32M1	536.3	536.3	10	28	2013	9:35			498.0	498.0	38.3
24S27E32M1	536.3	536.3	11	27	2013	11:00			483.0	483.0	53.3
24S27E32M1	536.3	536.3	1	13	2014	10:30			474.1	474.1	62.2
24S27E32M1	536.3	536.3	2	7	2014	9:26			472.2	472.2	64.1
24S27E32M1	536.3	536.3	3	11	2014	1:15			472.2	472.2	64.1
24S27E32M1	536.3	536.3	3	31	2014	11:06			477.1	477.1	59.2
24S27E32M1	536.3	536.3	4	14	2014	9:30			478.2	478.2	58.1
24S27E32M1	536.3	536.3	4	30	2014	11:20			491.3	491.3	45.0
24S27E32M1	536.3	536.3	5	15	2014	10:30			505.9	505.9	30.4
24S27E32M1	536.3	536.3	5	30	2014	11:25			525.2	525.2	11.1
24S27E32M1	536.3	536.3	6	6	2014	11:00			528.0	528.0	8.3
24S27E32M1	536.3	536.3	6	16	2014	11:10			532.5	532.5	3.8
24S27E32M1	536.3	536.3	7	1	2014	11:40			552.0	552.0	-15.7
24S27E32M1	536.3	536.3	7	15	2014	11:45			557.7	557.7	-21.4
24S27E32M1	536.3	536.3	8	1	2014	11:30			558.2	558.2	-21.9
24S27E32M1	536.3	536.3	8	15	2014	10:45			559.6	559.6	-23.3
24S27E32M1	536.3	536.3	9	2	2014	10:00			555.6	555.6	-19.3
24S27E32M1	536.3	536.3	9	15	2014	10:00			552.5	552.5	-16.2
24S27E32M1	536.3	536.3	10	1	2014	10:15			544.9	544.9	-8.6
24S27E32M1	536.3	536.3	10	31	2014	9:25			538.7	538.7	-2.39
24S27E32M1	536.3	536.3	11	14	14	1:15			521.9	521.9	14.4
24S27E32M1	536.3	536.3	12	1	14	9:30			512.5	512.5	23.81
24S27E32M1	536.3	536.3	12	15	14	10:30			500.4	500.4	35.9
24S27E32M1	536.3	536.3	12	31	14	12:00			497.1	497.1	39.21

**NO MEASUREMENT**

- 0. Meas. Discontinued
- 1. Pumping
- 2. Pump house locked
- 3. Tape hung up
- 4. Can't get tape in

- 5. Unable to locate
- 6. Well Destroyed
- 7. Special
- 8. Casing leaking or wet
- 9. Temp. inaccessible
- D. Dry

**QUESTIONABLE MEASUREMENT**

- 0. Caved or deepened
- 1. Pumping
- 2. Nearby pump operating
- 3. Casing leaking or wet
- 4. Pumped recently
- 5. Air gauge meas.
- 6. Other
- 7. Recharge operation near
- 8. Oil in casing
- 9. Acoustic sounder meas.

**Appendix D**  
**Kern-Tulare Water District**  
**Well Identification Sheet**

Well Number: 25S27E27K1M	Well Type: CASGEM
CASGEM Well Number: 357250N1190506W001	Well Completion Type: Single
Groundwater Basin: Kern	Total Depth: 2000 feet
Date of Survey: 10/28/2013	Screened Intervals: 996-2000 feet
Latitude: 35.725201 North	Well Completion Report: 118723
Longitude: 119.053505 West	Use: Active irrigation well
Ground Surface (GS) Elevation: 768.5	Description of RP: Air Vent
Reference Point (RP) Elevation: 773.3	Landowner: Kern Ranch
RP to GS: 4.5 feet	Water User: Kern Ranch
Location Description: South side of Turnout CL-9 reservoir.	
Well Location	Reference Point Location
	

Notes:

DWR also reads this well.

# KERN-TULARE Water District



**BOARD OF DIRECTORS**

KENT H. STEPHENS, PRESIDENT  
ANDREW PANDOL, VICE PRESIDENT/TREASURER  
JOHN ZANINOVICH, SECRETARY  
BRUCE KELSEY, DIRECTOR  
CURT HOLMES, DIRECTOR

## Appendix E

STEVEN C. DALKE, GENERAL MANAGER  
SKYE GRASS, RESOURCES MANAGER  
DAN ANTONINI, SUPERINTENDENT

Date

Landowner Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City and State: \_\_\_\_\_

**RE: Letter Agreement Providing Permission to Measure Well**

The undersigned Landowner hereby grants permission to Kern-Tulare Water District (“the District”), its employees, and agents, access to conduct water level measurements utilizing the well identified as well number \_\_\_\_\_. The water level data will be collected as part of the District’s groundwater monitoring program, and facilitate compliance with the California Statewide Groundwater Elevation Monitoring Program. The District will not make any modifications to the Landowners property without prior approval from the Landowner. The Landowner may revoke permission granted by this Letter Agreement at any time by providing the District written notice.

KERN-TULARE WATER DISTRICT

By \_\_\_\_\_

Steven C. Dalke, General Manager

Acknowledged and Accepted this \_\_\_\_ day of \_\_\_, 201\_\_

LANDOWNER

By \_\_\_\_\_

**KERN-TULARE WATER DISTRICT**

A decorative graphic consisting of a series of blue, wavy lines that resemble water or a stylized underline, positioned directly beneath the district name.

***Groundwater Monitoring Plan***

**CASGEM**

**(California Statewide Groundwater Elevation Monitoring)**

June 12, 2015

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## **MONITORING NETWORK**

### **Description of Monitoring Network**

Kern-Tulare Water District (District) has 26 irrigation wells associated with the District's CASGEM notification. Of the 26 wells, 14 wells will no longer be measured as part of the monitoring program, because they were eliminated as part of a change in monitoring. Of the 26 wells, 12 irrigation wells are being measured within the Kern Basin (5-22.14) and Tule Basin (5-22.13), of the 12 wells six are CASGEM wells and six are Voluntary wells. Each well is spaced approximately two miles apart. Appendix A. is a list of CASGEM wells and Appendix B. is a list of Voluntary wells, both list include; well type, CASGEM well number, local well number, basin, location coordinates, ground surface elevation, and reference point elevation. The determination for the 12 well locations is described later in the Groundwater Monitoring Plan (GMP). Figure 1 map shows all 26 well locations; six CASGEM wells identified by a red circle, six Voluntary wells identified by a red triangle, and 14 Non-Measured wells identified by a red square.

### **Well Network Map**

The distribution of well locations in the Kern Basin (5-22.14) and Tule Basin (5-22.13) within the District are shown in Figure 1.

## **MONITORING PLAN RATIONAL**

Groundwater monitoring is an essential part of the District's Groundwater Management Plan (GWMP), adopted in December 2012. Ongoing groundwater monitoring provides information needed to document current conditions, assess long-term trends, and to support development and to guide implementation of the GWMP.

## **History of Groundwater Monitoring in the District**

The District has not historically measured ground water levels. Groundwater level monitoring in the District has historically been performed by the Department of Water Resources (DWR) on a semiannual basis, in the months of March and October. The District volunteered to be a Monitoring Entity for the Kern Basin (5-22.14) and Tule Basin (5-22.13), in 2011.

## **Description of Aquifers in the District**

Wells drilled on the west side of the District tap into the continental deposits. Continental deposits comprise an unconfined aquifer and are the most commonly tapped aquifer in the region. The top of this aquifer is the water table and the bottom is the base of freshwater, which is believed to occur at a depth of 2,000 feet.

Wells drilled on the east side of the District tap into the confined aquifers of the Santa Margarita formation and Olcese sand deposits. The Santa Margarita formation begins from 1,000 to 1,700 feet below the surface, ranging in thickness from 150 to 200 feet. Underlying the Santa Margarita formation by about 150 to 200 feet is the Olcese sand aquifer, ranging in thickness from 300 to 450 feet.

The Santa Margarita formation and the Olcese sand deposits are shallow to the east and deepen to the west. These deposits contain useable groundwater and are located beneath fine-grained deposits that limit the natural recharge from the land surface. In the easterly parts of the District, a number of wells drilled to depths of 1,400 to 2,500 feet tap highly permeable deposits of the Santa Margarita and/or the Olcese Formation. These formations are considered to be a separate aquifer from the continental deposits. Fresh groundwater is present in some areas of the Santa Margarita formation and the Olcese sand deposits to depths exceeding 3,000 feet.

The District plans on conducting a detailed geologic study as part of preparing a Groundwater Sustainability Plan. The results of this study will be reflected in future GMP.

## **Groundwater Conditions in the District**

A hydrograph of groundwater elevations near the center of the District from 1960 to date is presented in Figure 2, these measurements represent the top of the static groundwater level. Prior to 1977, groundwater levels throughout the District were falling at a rate of approximately 10 feet per year. As a result of these declining groundwater levels, groundwater quality was degrading and subsidence of the land surface was occurring.

The District measures irrigation well (357944N1190845W001) in the Tule Basin (5-22.13) two times per month, to best determine the seasonal highs and lows. (Figure 3) displays groundwater elevation from August 2013 to May 1, 2015.

## **Selection of Wells for CASGEM Program**

The District selected wells based on wells measured by DWR, verified which of the wells could be consistently measured using the District's well level measuring equipment. The District then reviewed the records for wells in DWR's CASGEM system to determine which wells in the Kern Basin (5.22-14) and the Tule Basin (5-22.13), within District had the longest and most consistent data. The District collected copies of Drillers Logs for wells within the District from KCWA. Based upon readability of the well and data available, wells were selected to provide an even distribution in the Kern Basin (5.22-14) and the Tule Basin (5-22.13), throughout the District with approximately two miles spacing between well sites.

The District obtained permission from the landowners for each selected well Appendix E. If the well is no longer in use, the District will work with the landowner and associated County Environmental Health Division, to redesignate the non-operational well at a monitoring well. The permission letters are kept on file and will be provided if requested.

## **Selection of Monitoring Schedule**

Monitoring will be conducted at each of the 12 well locations for the yearly high and low for the Kern Basin (5.22-14) and the Tule Basin (5-22.13). The District will continue taking spring measurements in March and fall measurements in October. In addition, the District intends to measure Voluntary well (CASGEM well number 357944N1190845W001) within the first week of each month, for a two year period to verify the best time of year for future spring and fall measurements.

## **MONITORING PROTOCOL**

### **Monitoring Schedule**

The District will monitor wells on the schedule established by DWR monitoring program. The District will monitor levels at the 12 well sites in the Kern Basin (5-22.14) and Tule Basin (5-22.13) two times per year, once in the spring (March), and once in the fall (October). All wells will be measured within one week of each other. The goal of March and October measurements is to capture groundwater levels the at their highest and near lowest each year.

The District's objective is to create a well network with a regular monitoring schedule which will provide data that can be used for analysis of long-term water level trends. Groundwater pumping typically peaks during the summer growing season, and slows in the winter. Comparisons of groundwater levels in specific wells from spring of one year to spring of other years can indicate groundwater trends, such as lowering of the groundwater table during a drought period.

## **Description of Field Methods**

In 2011, District staff accompanied DWR personnel on both spring and fall measurement runs in the Kern Basin (5-22.14) and Tule Basin (5-22.13), within the District. The District observed the equipment, procedures, and locations used for the DWR monitoring program. The District also obtained copies of forms used to record measurements from DWR. The District maintains the field methods used by DWR.

The District collects measurements with an acoustic sounder to determine distance from the reference point to the water surface. The District utilizes this instrument because the first depth to water beneath the District is deep (500+feet), that no other measuring device for water levels in irrigation wells is appropriate for use, since many of these wells are currently active and in-service. As requested by DWR, the groundwater level readings collected with the acoustic sounder will be labeled as “questionable” when uploaded to CASGEM database. The District created forms for recording groundwater levels in the same format used by DWR. A sample Groundwater Level Measurement form is provided in Appendix C. The District will pursue the use of electronic devices to read, store, and analyze well measurements.

The District retained a Professional Land Surveyor to establish horizontal and vertical locations of each selected well locations. The latitude and longitude of the wells are referenced to the North American Datum System of 1903 (NAD83) and the vertical elevation of the ground surface is referenced to the North American Vertical Datum of 1988 (NAVD88). The distance from the measuring point to the ground surface was measured with a tape measure from the measuring point to where the well casing intercepts the ground surface.

To assure that the same well is being measured each time and the same reference point is being used, the District created a Well Identification Sheet for each well site. Each Well Identification Sheet includes; well number, CASGEM well number, groundwater basin, date of the District’s survey, latitude and longitude, groundwater surface (GS) elevation, reference point (RP) elevation, distance between GS to RP, location description and map, well type, well completion type, total depth if applicable, screened intervals if applicable, well completion report number if

applicable, well use, description of RP, landowner information, and picture of RP location. A sample Well Identification Sheet is provided in Appendix D.

## **CASGEM ONLINE SUBMITTALS**

### **Well Information**

Once measurements have been gathered, District staff will input the data into the CASGEM Online Submittal System ([http://www.water.ca.gov/groundwater/casgem/submittal\\_system.cfm](http://www.water.ca.gov/groundwater/casgem/submittal_system.cfm)) utilizing the direct online data entry method.

### **Groundwater Elevation Information**

District staff will input groundwater elevation information for each groundwater level measurement submitted to the CASGEM Online Submittal System.

### **Location and Reason for Data Gaps**

The District covers approximately 32 square miles and currently has six CASGEM wells assigned for monitoring, which doubles the requirement for 10 CASGEM wells for every 100 square miles in high priority basins, so there is no density data gaps for CASGEM well coverage. Furthermore, the six CASGEM wells are fairly evenly distributed along the north-south axis of the District service area so there is no horizontal coverage data gap with in the District.

However, two types of data gaps were identified while assembling the monitoring plan and determining which wells would be selected for the CASGEM program. Both data gaps are interrelated so they consist of only having irrigation wells for use which are not ideal for CASGEM (measuring seasonal highs and lows), and those same irrigations wells are constructed with screen intervals which cover multiple aquifer zones, creating a vertical data gap in the District's service area.

The District will attempt to resolve the two data gaps over time by completing the following actions:

- Finding cooperative well owners in the District that either have shallower wells or have screens intervals which are perforated in a single aquifer.
- Converting existing out of service irrigation wells to a nested monitoring wells system with multiple wells and depth-discrete screens, and/or installing stand-alone monitoring wells that have depth-discrete screens.

### **Local Issues that Prevent Monitoring**

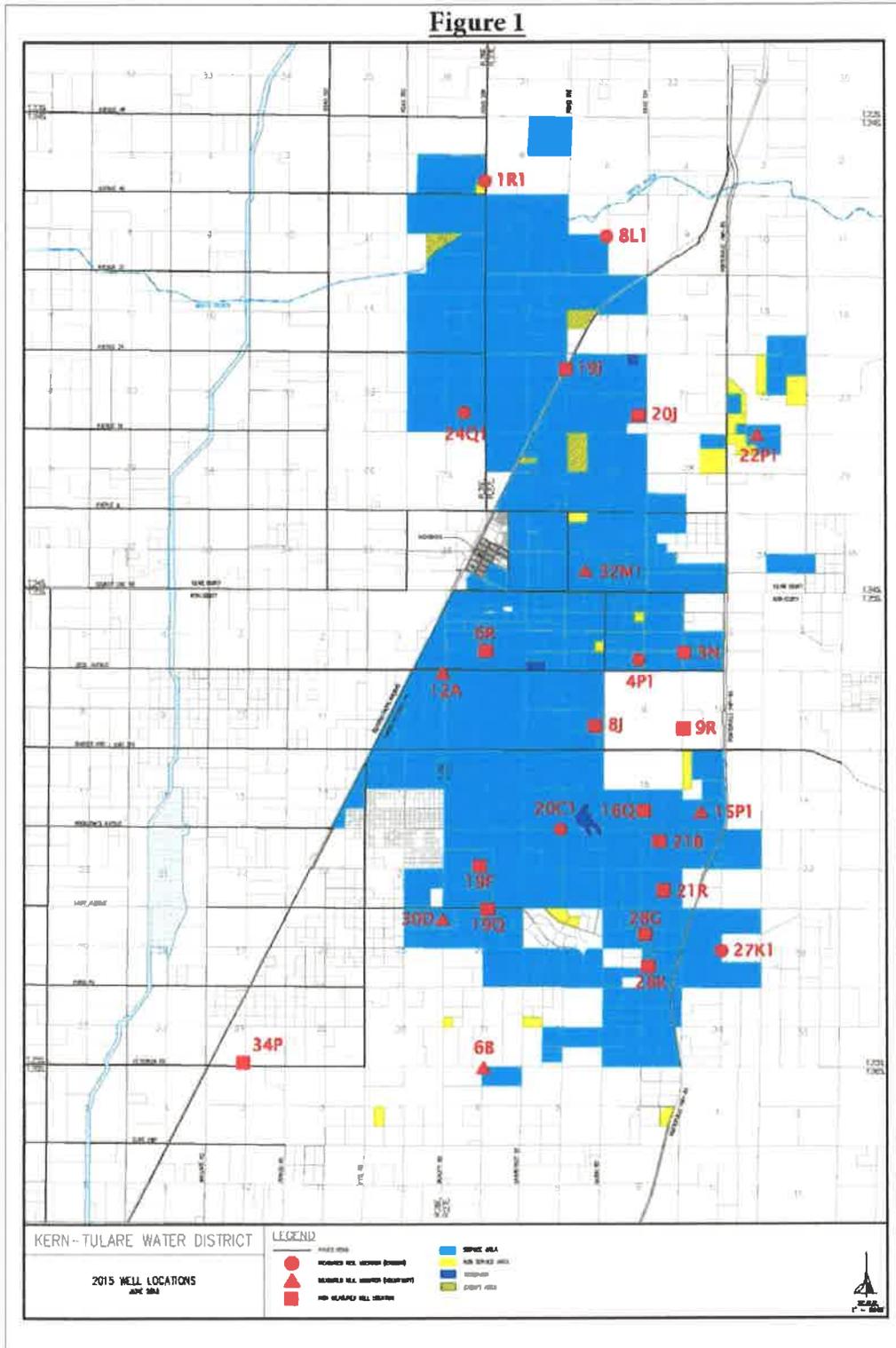
If a well becomes unreadable, the District will attempt to remedy the situation if possible, including possible modifications to the discharge piping to provide monitoring access. Four issues were identified that may prevent monitoring:

- Changes in well discharge configuration which makes the well unmeasurable
- A collapsed well
- A well for some unknown reason no longer can produce a consistent sonic measurement.
- A landowner revoked or refused to supply permission to collect a water level from their well

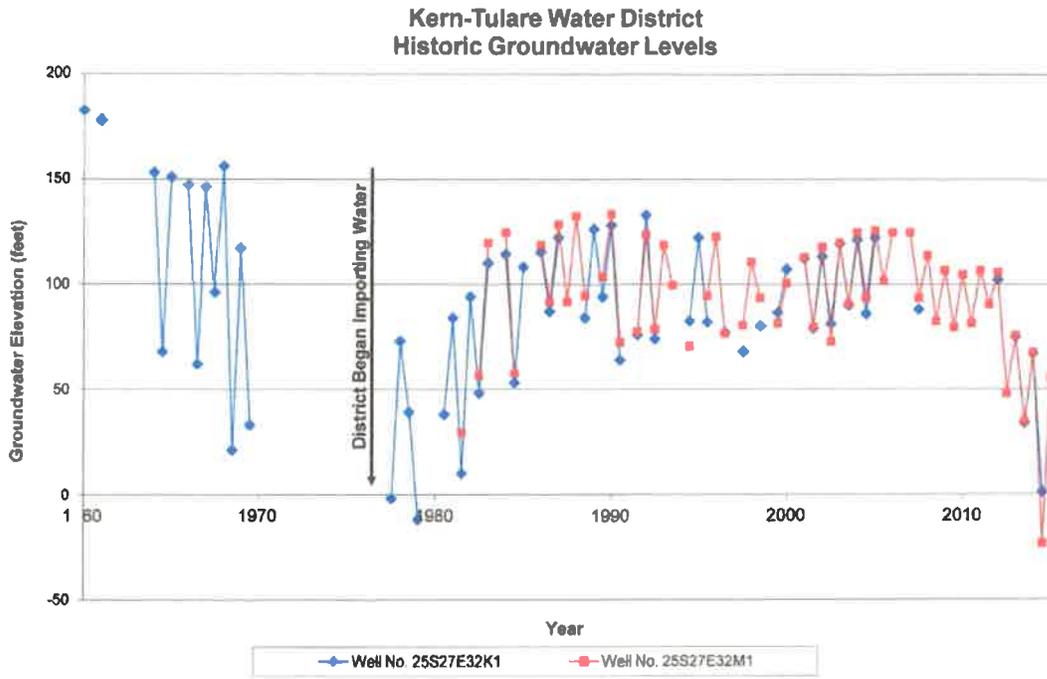
### **Recommendations for Future Monitoring Locations**

The District will continue to look for opportunities to replace existing CASGEM (irrigation) wells with depth-discrete monitoring wells and/or rehabilitate out-of-service irrigation wells converting them to nested monitoring wells.

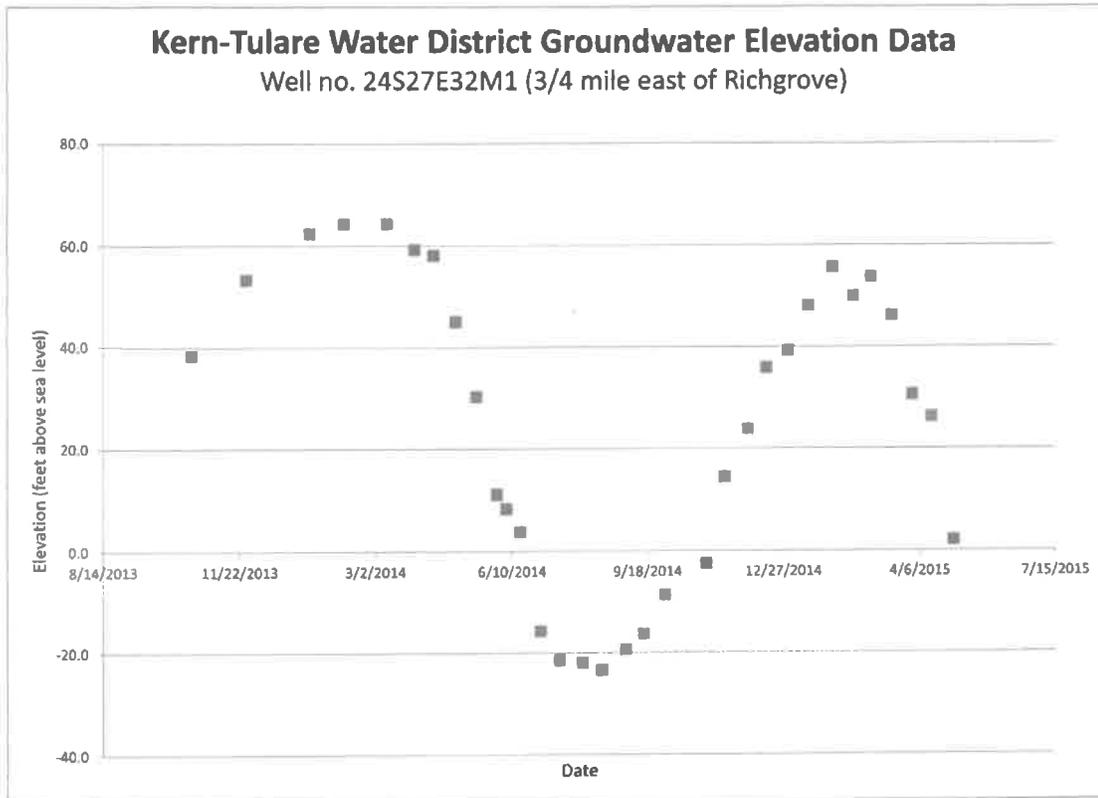
Figure 1



**Figure 2**



**Figure 3**



**Appendix A**

**CASGEM WELL INFORMATION**

Groundwater Area Kern-Tulare Water District

Monitoring Agency Kern-Tulare Water District

WELL TYPE	CASGEM WELL NUMBER	LOCAL WELL ID NUMBER	BASIN	SURVEY INFORMATION				GS to RP	RP ELEV	Screened Intervals	WELL ACRONYM
				DATE OF SURVEY	LAT	LONG.	GS ELEV				
CASGEM	358658N1191081W001	24S26E1R1M	Tule	10/28/2013	35.86574	-119.108118	466.6	0.0	466.6	402-1200	1R1
CASGEM	358261N1191126W001	24S26E24Q1	Tule	10/28/2013	35.82327	-119.112198	471.9	0.0	471.9	504-1,224	24Q
CASGEM	358561N1190806W001	24S27E8L1M	Tule	10/28/2013	35.85577	-119.080681	503.7	13.0	516.7	522-1,747	8L1
CASGEM	357781N1190720W001	25S27E4P1M	Kern	10/28/2013	35.7783	-119.0726	580.7	0.0	580.7	508-1,954	4P1
CASGEM	357464N1190898W001	25S27E20C1M	Kern	10/28/2013	35.7471	-119.089885	592.4	39.0	631.4	500-2,000	20C1
CASGEM	357250N1190506W001	25S27E27K1M	Kern	10/28/2013	35.7252	-119.053505	768.5	4.5	773.3	996-2,000	27K1

## Appendix B

### VOLUNTARY WELL INFORMATION

Groundwater Area Kern-Tulare Water District  
 Monitoring Agency Kern-Tulare Water District

WELL TYPE	CASGEM WELL NUMBER	LOCAL WELL ID NUMBER	BASIN	SURVEY INFORMATION				RP ELEV	GS to RP	WELL ACRONYM
				DATE OF SURVEY	LAT.	LONG.	GS ELEV			
Voluntary	358200N1190473W001	24S27E22P1M	Tule	10/28/2013	35.819695	-119.046436	593.3	596.8	3.5	22P1
Voluntary	357944N1190845W001	24S27E32M1M	Tule	10/28/2013	35.794573	-119.084745	536.3	536.3	0.0	32M
Voluntary	354635N1190659W001	25S26E12A	Kern	10/1/2012	35.776516	-119.116495	513.7	517.2	3.5	12A
Voluntary	357503N1190578W001	25S27E15P1M	Kern	10/1/2012	35.750538	-119.058344	679.6	689.1	9.5	15P1
Voluntary	354350N1190657W001	25S27E30D	Kern	10/1/2012	35.730565	-119.11597	531.5	531.5	0.0	30D
Voluntary	357035N1191065W001	26S27E6B	Kern	10/1/2012	35.703491	-119.106547	590.6	590.6	0.0	6B

NON-MEASURED WELL TYPE	CASGEM WELL NUMBER	LOCAL WELL ID NUMBER	BASIN	SURVEY INFORMATION				RP ELEV	GS to RP	WELL ACRONYM
				DATE OF SURVEY	LAT.	LONG.	GS ELEV			
Voluntary	357039N1191606W001	25S26E34P001M	Kern	2/14/2012	35.7039	-119.1606	462.0	466.0	4.0	34P
Voluntary	357797N1191068W001	25S27E06R001M	Kern	2/14/2012	35.7797	-119.1068	546.0	546.0	0.0	6R
Voluntary	357222N1190698W001	25S27E28K001M	Kern	2/14/2012	35.72221	-119.0698	0.0	0.0	0.0	28K
Voluntary	357506N1190712W001	25S27E16Q001M	Kern	2/14/2012	35.7506	-119.0712	0.0	0.0	0.0	16Q
Voluntary	357403N1191078W001	25S27E19F001M	Kern	2/14/2012	35.7403	-119.1078	534.0	530.0	4.0	19F
Voluntary	357364N1190640W001	25S27E21R001M	Kern	2/14/2012	35.73640	-119.0640	0.0	0.0	0.0	21R
Voluntary	358314N1190895W001	24S27E19J001M	Kern	11/10/2011	35.8314	-119.0895	502.0	502.0	0.0	19J
Voluntary	358231N1190731W001	24S27E20J001M	Tule	11/10/2011	35.8231	-119.0731	441.0	441.0	0.0	20J
Voluntary	357797N1190623W001	25S27E03N001M	Kern	2/14/2012	35.77970	-119.0623	603.0	600.0	3.0	3N
Voluntary	357661N1190823W001	25S27E08J001M	Kern	2/14/2012	35.7661	-119.0823	441.0	441.0	0.0	8J
Voluntary	357658N1190626W001	25S27E09R001M	Kern	2/14/2012	35.7658	-119.0626	0.0	0.0	0.0	9R
Voluntary	357450N1190676W001	25S27E21R001M	Kern	2/14/2012	35.74500	-119.7450	638.0	637.0	1.0	21B
Voluntary	357251N1190706W001	25S27E28G002M	Kern	2/14/2012	35.72810	-119.0706	0.0	0.0	0.0	28G
Voluntary	357325N1191059W001	25S27E19Q001M	Kern	2/14/2012	35.7325	-119.1059	543.0	540.0	3.0	19Q

## Appendix C

### GROUNDWATER LEVEL MEASUREMENTS

Measured by

Groundwater Area Kern-Tulare Water District

Tabulated by

Measuring Agency Kern-Tulare Water District

Season/Year

STATE WELL NO	RP ELEV	GS ELEV	DATE			TIME HR:MIN	WHY		REF. POINT TO WATER SURFACE	GROUND TO WATER SURFACE	WATER SURFACE ELEVATION
			MO	DA	YR		NM	QM			
24S27E32M1	536.3	536.3	10	28	2013	9:35			498.0	498.0	38.3
24S27E32M1	536.3	536.3	11	27	2013	11:00			483.0	483.0	53.3
24S27E32M1	536.3	536.3	1	13	2014	10:30			474.1	474.1	62.2
24S27E32M1	536.3	536.3	2	7	2014	9:26			472.2	472.2	64.1
24S27E32M1	536.3	536.3	3	11	2014	1:15			472.2	472.2	64.1
24S27E32M1	536.3	536.3	3	31	2014	11:06			477.1	477.1	59.2
24S27E32M1	536.3	536.3	4	14	2014	9:30			478.2	478.2	58.1
24S27E32M1	536.3	536.3	4	30	2014	11:20			491.3	491.3	45.0
24S27E32M1	536.3	536.3	5	15	2014	10:30			505.9	505.9	30.4
24S27E32M1	536.3	536.3	5	30	2014	11:25			525.2	525.2	11.1
24S27E32M1	536.3	536.3	6	6	2014	11:00			528.0	528.0	8.3
24S27E32M1	536.3	536.3	6	16	2014	11:10			532.5	532.5	3.8
24S27E32M1	536.3	536.3	7	1	2014	11:40			552.0	552.0	-15.7
24S27E32M1	536.3	536.3	7	15	2014	11:45			557.7	557.7	-21.4
24S27E32M1	536.3	536.3	8	1	2014	11:30			558.2	558.2	-21.9
24S27E32M1	536.3	536.3	8	15	2014	10:45			559.6	559.6	-23.3
24S27E32M1	536.3	536.3	9	2	2014	10:00			555.6	555.6	-19.3
24S27E32M1	536.3	536.3	9	15	2014	10:00			552.5	552.5	-16.2
24S27E32M1	536.3	536.3	10	1	2014	10:15			544.9	544.9	-8.6
24S27E32M1	536.3	536.3	10	31	2014	9:25			538.7	538.7	-2.39
24S27E32M1	536.3	536.3	11	14	14	1:15			521.9	521.9	14.4
24S27E32M1	536.3	536.3	12	1	14	9:30			512.5	512.5	23.81
24S27E32M1	536.3	536.3	12	15	14	10:30			500.4	500.4	35.9
24S27E32M1	536.3	536.3	12	31	14	12:00			497.1	497.1	39.21

**NO MEASUREMENT**

- 0. Meas. Discontinued
- 1. Pumping
- 2. Pump house locked
- 3. Tape hung up
- 4. Can't get tape in
- 5. Unable to locate
- 6. Well Destroyed
- 7. Special
- 8. Casing leaking or wet
- 9. Temp. inaccessible
- D. Dry

**QUESTIONABLE MEASUREMENT**

- 0. Caved or deepened
- 1. Pumping
- 2. Nearby pump operating
- 3. Casing leaking or wet
- 4. Pumped recently
- 5. Air gauge meas.
- 6. Other
- 7. Recharge operation near
- 8. Oil in casing
- 9. Acoustic sounder meas.

**Appendix D**  
**Kern-Tulare Water District**  
**Well Identification Sheet**

Well Number: 25S27E27K1M	Well Type: CASGEM
CASGEM Well Number: 357250N1190506W001	Well Completion Type: Single
Groundwater Basin: Kern	Total Depth: 2000 feet
Date of Survey: 10/28/2013	Screened Intervals: 996-2000 feet
Latitude: 35.725201 North	Well Completion Report: 118723
Longitude: 119.053505 West	Use: Active irrigation well
Ground Surface (GS) Elevation: 768.5	Description of RP: Air Vent
Reference Point (RP) Elevation: 773.3	Landowner: Kern Ranch
RP to GS: 4.5 feet	Water User: Kern Ranch
Location Description: South side of Turnout CL-9 reservoir.	
Well Location	Reference Point Location
	

Notes:

DWR also reads this well.

# KERN-TULARE Water District

BOARD OF DIRECTORS  
KENT H. STEPHENS, PRESIDENT  
ANDREW PANDOL, VICE PRESIDENT/TREASURER  
JOHN ZANNOVICH, SECRETARY  
BRUCE KELSEY, DIRECTOR  
CURT HOLMES, DIRECTOR

## Appendix E

STEVEN C. DALKE, GENERAL MANAGER  
SKYE GRASS, RESOURCES MANAGER  
DAN ANTONINI, SUPERINTENDENT

Date

Landowner Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City and State: \_\_\_\_\_

### RE: Letter Agreement Providing Permission to Measure Well

The undersigned Landowner hereby grants permission to Kern-Tulare Water District ("the District"), its employees, and agents, access to conduct water level measurements utilizing the well identified as well number \_\_\_\_\_. The water level data will be collected as part of the District's groundwater monitoring program, and facilitate compliance with the California Statewide Groundwater Elevation Monitoring Program. The District will not make any modifications to the Landowners property without prior approval from the Landowner. The Landowner may revoke permission granted by this Letter Agreement at any time by providing the District written notice.

KERN-TULARE WATER DISTRICT

By \_\_\_\_\_

Steven C. Dalke, General Manager

Acknowledged and Accepted this \_\_\_\_ day of \_\_\_\_, 201\_\_

LANDOWNER

By \_\_\_\_\_

---

DISTRICT OFFICE 5001 California Avenue, Suite 102 Bakersfield, CA 93309 Phone (661) 327-3132 Fax (661) 327-2724  
OPERATIONS 32750 Woollooms Avenue Delano, CA 93215 Phone (661) 725-0126 Fax (661) 725-8805

# **Water Budget Summary**

Kern-Tulare Water District

August 29, 2016

## Kern-Tulare Water District Water Budget

<b>Water Budget Summary (AF)</b>			
<b>Water Accounting</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Water Supplies (Worksheet 47)	58,306	59,624	59,782
Water Uses (Worksheet 44)	58,706	58,928	62,071

<b>Workseet 44. Quantify Water Use (AF)</b>			
<b>Water Use</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Crop Water Use (Worksheet 21)</b>			
Crop Evapotranspiration	52,749	53,086	56,304
Leaching	1,810	1,651	1,577
Cultural Practices	3,403	3,444	3,631
<b>Conveyance &amp; Storage System</b>			
Conveyance Seepage	0	0	0
Conveyance Evaporation	0	0	0
Conveyance Operational Spills	0	0	0
Reservoir Evaporation <sup>1</sup>	151	151	151
Reservoir Seepage <sup>2</sup>	406	406	406
<b>Environmental Use (Consumptive)</b>			
Environmental Use - Wetlands	0	0	0
Environmental Use - Other	0	0	0
Riparian Vegetation	0	0	0
Recreational Use	0	0	0
<b>Municipial and Industrial</b>			
Municipial	0	0	0
Industrial <sup>3</sup>	186	190	0
<b>Outside the District</b>			
Transfers or Exchanges out of the Service Area	0	0	0
<b>Conjunctive Use</b>			
Groundwater Recharge	0	0	0
<b>Other</b>	0	0	0
<b>Subtotal</b>	58,706	58,928	62,071

<b>Workseet 47. Quantify Water Supplies (AF)</b>			
<b>Water Supplies</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Surface Water	0	0	0
Groundwater <sup>4</sup>	16,631	34,826	39,914
Annual Effective Precipitation <sup>5</sup>	3,341	2,793	4,364
Water Purchases	38,334	22,005	15,504
<b>Subtotal</b>	58,306	59,624	59,782

Notes:

<sup>1</sup> Based upon Class "A" Pan Evaporation.

<sup>2</sup> Based upon a seepage rate constant of 0.85 AF/Ac per month.

<sup>3</sup> Water delivery to a Cogeneration Plant.

<sup>4</sup> The District currently has no measurement of groundwater pumping. Groundwater estimates are calculated based on estimated crop demands and District deliveries. The 2014 value is a correction from Table 2 in the Water Management Plan.

<sup>5</sup> Effective precipitation computed as all precipitation that satisfies monthly evapotranspiration during the growing season and 75% in the winter.

## Kern-Tulare Water District Water Budget

<b>Worksheet 21: Agricultural Crop Data - 2013</b>					
Crop	Total Acreage	ET Crop (AF/Ac) <sup>1</sup>	Cultural Practices (AF/Ac) <sup>2</sup>	Leaching Requirement (AF/Ac) <sup>3</sup>	Total Crop Water Needs (AF)
Vine	5,682.00	2.59	0.00	0.20	15,824.37
Nuts	5,062.00	3.67	0.00	0.20	19,579.82
Citrus	6,032.00	3.14	0.30	0.20	21,968.54
Other	240.00	2.25	0.00	0.20	588.96
<b>Total (AF)</b>		52,748.89	1,809.60	3,403.20	57,961.69

<b>Worksheet 21: Agricultural Crop Data - 2014</b>					
Crop	Total Acreage	ET Crop (AF/Ac) <sup>1</sup>	Cultural Practices (AF/Ac) <sup>2</sup>	Leaching Requirement (AF/Ac) <sup>3</sup>	Total Crop Water Needs (AF)
Vine	6,307.00	2.59	0.00	0.20	17,565.00
Nuts	5,164.00	3.67	0.00	0.20	19,974.35
Citrus	5,503.00	3.14	0.30	0.20	20,041.93
Other	244.00	2.25	0.00	0.20	598.78
<b>Total (AF)</b>		53,085.55	1,650.90	3,443.60	58,180.05

<b>Worksheet 21: Agricultural Crop Data - 2015</b>					
Crop	Total Acreage	ET Crop (AF/Ac) <sup>1</sup>	Cultural Practices (AF/Ac) <sup>2</sup>	Leaching Requirement (AF/Ac) <sup>3</sup>	Total Crop Water Needs (AF)
Vine	6,770.00	2.59	0.00	0.20	18,854.45
Nuts	5,989.00	3.67	0.00	0.20	23,165.45
Citrus	5,258.00	3.14	0.30	0.20	19,149.64
Other	140.00	2.25	0.00	0.20	343.56
<b>Total (AF)</b>		56,304.30	1,577.40	3,631.40	61,513.10

**Notes:**

<sup>1</sup> Updated values from Table 5 in the Water Management Plan

<sup>2</sup> Estimated at 0.3 AF/Ac for each citrus only: 0.1 AF/Ac for December-February: Updated from Table 5 in the Water Management Plan

<sup>3</sup> Estimated at 0.2 AF/Ac for each crop type: 0.1 AF/Ac for April-May: Updated from Table 5 in the Water Management Plan



# United States Department of the Interior

BUREAU OF RECLAMATION  
Mid-Pacific Regional Office  
2800 Cottage Way  
Sacramento, CA 95825-1898

IN REPLY REFER TO:

MP-410  
WTR-4.00

AUG 08 2016

RECEIVED

AUG 15 2016

KERN-TULARE  
WATER DISTRICT

Steve C. Dalke  
General Manager  
Kern-Tulare Water District  
5001 California Avenue, Suite 102  
Bakersfield, CA 93309

Subject: Water Management Plan—Kern-Tulare Water District

Dear Mr. Dalke:

The Bureau of Reclamation is pleased to inform you that Kern-Tulare Water District's updated Water Management Plan (Plan), including the latest submitted changes and supplements, meets the requirements contained in the 2014 Standard Criteria.

Your Plan was published in the *Federal Register*. Congress established the *Federal Register* publication system as a method of informing the public of the regulations affecting them. Actions published in the *Federal Register* are available to the public and are subject to the Freedom of Information Act. No comments were received for your Plan and the review process is officially completed.

Reclamation appreciates the effort committed to preparing the Plan. In addition to completing your Plan, Annual Updates must be submitted to remain in compliance with your contract. These are to be completed at the following Web sites: [www.agwatercouncil.org](http://www.agwatercouncil.org). If you have any questions, please contact Gene Lee, Water Conservation Specialist, (916) 978-5219 or [glee@usbr.gov](mailto:glee@usbr.gov).

Sincerely,

Richard J. Woodley  
Regional Resources Manager

# **Kern-Tulare Water Management Plan 2014 Criteria**

**Created – July 30, 2015  
Revised – November 21, 2015  
Revised – December 29, 2015  
Final – February 11, 2016**

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# SECTION 1: DESCRIPTION OF THE DISTRICT

District Name:	Kern-Tulare Water District
Contact Name:	Steven C. Dalke
Title:	General Manager
Telephone:	661-327-3132
Email:	<a href="mailto:Sdalke@Kern-Tulare.com">Sdalke@Kern-Tulare.com</a>
Web Address:	NONE

## A. History

Kern-Tulare

1. Date district formed: 1974 Date of first Reclamation contract: 1976  
 Original size (acres): 30,800 Current year (last complete calendar year): 2014

2. Current size, population, and irrigated acres

	2014
size (acres)	20,256.40
population served	0
irrigated acres	17,406.47

3. Water supplies received in current year

Water Source	2014 AF
Federal urban water (Tbl 1)	0
Federal agricultural water (Tbl 1)	15,320
State water (Tbl 1)	0
Other Wholesaler (define) (Tbl 1)	0
Local surface water (Tbl 1)	6,685
Upslope drain water (Tbl 1)	0
District ground water (Tbl 2)	0
Banked water (Tbl 1)	0
Transferred water (Tbl 6)	0
Recycled water (Tbl 3)	0
Other (define) (Tbl 1)	0
<b>Total</b>	<b>57,051</b>

4. Annual entitlement under each right and/or contract

	AF	Source	Contract #	Availability Period
BOR Agriculture	40,000	CVP-CV	14-06-200-8601A	July, August, September
BOR Agriculture	13,300	CVP-CV	14-06-200-8367A	July, August, September
BOR Agriculture	5,000	CVP- Class2	I1R-1460A	March - June

The District has two Cross Valley Contracts (14-06-200-8601A and 14-06-200-8367A) with the United States Bureau of Reclamation (Reclamation) for a combined

total of up to 53,300 acre-feet per year of Central Valley Project (CVP) water and a Friant Class 2 Contract (IIR-1460A) for up to 5,000 acre-feet per year of CVP water. The District also enters into annual contracts for 215 water from Reclamation, purchases Class 1 and Class 2 water supplies from Friant Contractors, purchases supplemental State Water Project (SWP) water from Kern County Water Agency (Agency), and purchases Kern River Water from the City of Bakersfield. If the District's anticipated water supply for the year will not be sufficient to meet the anticipated water demands of the District, the District will allocate such supply among all Water Users pro rata on the basis of the gross assessable acreage of each Water User within the Service Area.

5. *Anticipated land-use changes*

No land use changes are anticipated in the near term future. However, the District contains 370 acres of lands within the District's boundary that are outside of the Service Area of the District. It is the District's policy to allow these lands to be detached from the District if the landowner so requests. There are also areas of land within the District's boundaries that are developed agriculture, not included within the Districts, and reliant upon wells for their water supply.

6. *Cropping patterns*

*List of current crops (crops with 5% or less of total acreage can be combined in the 'Other' category).*

Original Plan (1994)		2008		2014	
Crop Name	Acres	Crop Name	Acres	Crop Name	Acres
Alfalfa	N/A	Alfalfa	321	Alfalfa	100
Almonds	N/A	Almonds	1,814	Almonds	1,024.50
Asparagus	N/A	Asparagus	0	Asparagus	0
Blue Berries	N/A	Blue Berries	279	Blue Berries	144.10
Cherries	N/A	Cherries	70	Cherries	160
Grapes	N/A	Grapes	5600	Grapes	6,286.47
Grapefruit	N/A	Grapefruit	0	Grapefruit	100
Kiwi	N/A	Kiwi	199	Kiwi	198.98
Lemon	N/A	Lemon	138	Lemon	50.30
Olives	N/A	Olives	204	Olives	0
Oranges	N/A	Oranges	7,163	Oranges	5,153.84
Persimmons	N/A	Persimmons	0	Persimmons	20.46
Pistachios	N/A	Pistachios	3,093	Pistachios	3,958.92
Pomegranates	N/A	Pomegranates	153	Pomegranates	0
Prunes	N/A	Prunes	32	Prunes	0
Tangelo	N/A	Tangelo	0	Tangelo	208.90
Walnuts	N/A	Walnuts	0	Walnuts	0
misc. (<5%)	N/A	misc. (<5%)		misc. (<5%)	
TOTAL		TOTAL	19,066	TOTAL	17,406.47

7. *Major irrigation methods (by acreage) (Agricultural only)*

Original Plan 1994		Previous Plan 2008		Current Plan 2014	
Irrigation Method	Acres	Irrigation Method	Acres	Irrigation Method	Acres
Level Basin	N/A	Level Basin	0	Level Basin	0
Furrow	N/A	Furrow	0	Furrow	0
Sprinkler	N/A	Sprinkler	0	Sprinkler	0
Low-Volume	N/A	Low-Volume	18,832	Low-Volume	17,406.47
Multiple	N/A	Multiple	0	Multiple	0
Other		Other: Border	234	Other	0
Total		Total	19,066	Total	17,406.47

## B. Location and Facilities

See Attachment A for points of delivery, turnouts (internal flow), and outflow (spill) points, measurement locations, conveyance system, storage facilities, operational loss recovery system, wells, and water quality monitoring locations

### 1. Incoming flow locations and measurement methods (include on the District Map):

Location Name	Physical Location	Type of Measurement Device	Accuracy
Avenue 40	Pumping Plant	Propeller	±5 %
Avenue 36	Pumping Plant	Propeller	±5 %
Avenue 24	Pumping Plant	Propeller	±5 %
Avenue 4	DEID Reservoir	Propeller	±5 %
Cecil	Pumping Plant	Propeller	±5 %
Woollomes	Friant-Kern Canal	Propeller	±5 %

### 2. Current year Agricultural Conveyance System - Included on the District Map-See Attachment A

Miles Unlined - Canal	Miles Lined - Canal	Miles Piped	Miles - Other
0	0	50	0

### 3. Current year Urban Distribution System - NONE

### 4. Storage facilities (tanks, reservoirs, regulating reservoirs) - Included on the District Map - See Attachment A

Name	Type	Capacity	Distribution or Spill
Big 4 Reservoir	Compacted Earth	350	Distribution
Cecil Reservoir	Compacted Earth	80	Distribution
Avenue 24 Reservoir	Compacted Earth	60	Distribution

<b>TOTAL</b>	490	
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Note: Kern Tulare Water District has reorganized the previously owned Section 7 Reservoir into the Southern San Joaquin Municipal Utility District.

5. *Description of the agricultural spill recovery system* – NONE, piped system – no spill

6. *Agricultural delivery system operation (check all that apply)*

<i>Scheduled</i>	<i>Rotation</i>	<i>Other (Describe)</i>
X		

Note: The District now allows water users to operate their own turnouts, provided they keep the District informed through water orders. Water orders are due by 9:00 am on the day prior to the day they desire to have water turned on, turned off, or the flow rate changed. Water users can make water orders via phone, email or fax. Refer to Attachment B, section 4.02.

7. *Restrictions on water source(s)*

<i>Source</i>	<i>Restriction</i>	<i>Cause of Restriction</i>	<i>Effect on Operations</i>
USBR AG	Reduction in water supply	Environmental and regulatory restrictions in the Delta	Lost opportunity to manager water
USBR AG	Reduction in water supply	San Joaquin River Restoration	Uncertain Future
City of Bakersfield	Reduction in water supply	Contract Terms	Uncertain Future

8. *Proposed changes or additions to facilities and operations for the next 5 years*

1. Construct pipelines and facilities to import reclaimed oil field water for delivery to landowners. This will increase surface water deliveries and save groundwater resources for future years.
2. Design and construct two new reservoirs to maximize the delivery capability of surface water when it is available to save groundwater resources for future years.

### **C. Topography and Soils**

1. *Topography of the district and its impact on water operations and management*

The land in the District is sloping, with an average slope of 40 feet per mile, dropping from east to west. The District's distribution system consists entirely of pressure pipelines. Therefore, there is little impact on District water management attributable to topography. There are no soil limitations such as salinity, high water tables, or adverse infiltration rates that affect the use of water within the district. Below is a summary of soils in the District.

2. *District soil association map* – See Attachment, A

3. *Agricultural limitations resulting from soil problems (Agricultural only)*

<b>Soil Problem</b>	<b>Estimated Acres</b>	<b>Effect on Water Operations and Management</b>
<i>Salinity</i>	0	
<i>High Water Tables</i>	0	
<i>High or Low infiltration rates</i>	0	
<i>Other (define)</i>	0	

**D. Climate**

1. *General climate of the district service area*

The District is located in a climate characteristic of the southern San Joaquin Valley foothills. The summer climate is hot and dry while winters are cooler with somewhat more rainfall than adjacent valley areas. The District is located within a thermal zone with favorable air movement where citrus, deciduous trees and other frost sensitive crops are successfully grown. The average length of the growing season in the area is from 250 to 300 days per year. Wind is out of the Northwest at 5-15 mph. There are 350 frost free days. Monthly temperature data is provided in the table below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Precip	.12	.32	1.21	.53	.04	.00	.00	.00	.00	.64	.66	2.02	5.54
Avg. Temp	54	57	62	67	74	82	87	85	81	71	59	54	69.42
Max Temp	67	68	75	80	87	96	100	98	93	84	70	62	81.67
Min. Temp	41	46	50	54	60	67	75	72	68	59	49	45	57.17
ETo	.05	.08	.12	.17	.22	.25	.25	.22	.2	.14	.07	.04	

Weather station ID Shafter (049452) Data period: Year 1948 to Year 2014

ET Station ID Shafter(05) Average annual frost-free days: 315

2. *Impact of microclimates on water management within the service area*

The District does not have any microclimates which impact water management.

**E. Natural and Cultural Resources**

1. *Natural resource areas within the service area*

<b>Name</b>	<b>Estimated Acres</b>	<b>Description</b>
White River	N/A	intermittent stream

Rag Gulch	N/A	intermittent stream
-----------	-----	---------------------

- Description of district management of these resources in the past or present*  
 The only known natural resource within the boundaries is White River and Rag Gulch. Both of these are intermittent streams that the District does not own or control. The District considered developing a groundwater banking program along the White River near the western border of the District. However, it was found that the saturated depth of the unconfined aquifer was not adequate to sustain groundwater banking. There are no recreational or cultural resources within the District. There are no known recreational or cultural resources within the District.

- Recreational and/or cultural resources areas within the service area*

<i>Name</i>	<i>Estimated Acres</i>	<i>Description</i>
NONE		

## **F. Operating Rules and Regulations**

- Operating rules and regulations - See Attachment B, District Rules and Regulations*
- Water allocation policy*  
 See Attachment B, Page 3  
 If capacity of water supplies are limited, then deliveries are prorated based upon acres in the service area.
- Official and actual lead times necessary for water orders and shut-off*  
 See Attachment B, Page 5  
 Summary – The District has historically required a minimum of 24-hours notice for water orders and shutoffs with changes only available at 7 a.m. Monday through Saturday. Manual operation of the distribution system and limited distribution system capacity made these requirements necessary. However, improvements to the distribution system within the past 15 years have increased the Districts flexibility. The District now allows water users to operate their own turnouts, provided they keep the District informed through water orders, which are due by 9:00 am on the day prior to the day they desire to have water turned on, turned off, or the flow rate changed.
- Policies regarding return flows (surface and subsurface drainage from farms) and outflow*  
 See Attachment B, Page 9  
 Summary – no surface or subsurface drainage allowed
- Policies on water transfers by the district and its customers*  
 See Attachment B, Page 4  
 Summary – no customer transfers allowed without approval from District Board

## G. Water Measurement, Pricing, and Billing

### 1. Agricultural Customers

Refer to BMP A.1. Information on water measurements for agricultural contractors is complete under BMP A.1 on page 17

### 2. Urban Customers

- a. Total number of connections 0
- b. Total number of metered connections 0
- c. Total number of connections not billed by quantity 0
- d. Percentage of water that was measured at delivery point N/A
- e. Percentage of delivered water that was billed by quantity N/A
- f. Measurement device table – N/A

### 3. Agriculture and Urban Rates

- a. Current year agriculture charges - including rate structures and billing frequency  
See Attachment B, for current year rate ordinance
- b. Annual charges collected from customers (current year data)

<b>Fixed Charges (2014)</b>			
	<i>\$ per ac</i>	<i>Acres</i>	<i>\$ collected per year</i>
Standby charge	74	19,589	\$1,449,574
Developed lands	27	19,662	\$530,865
Undeveloped lands	20	368	\$7,350
		TOTAL	\$1,987,789

Note: Non-Service areas are still required to pay development charges. Non-Service areas are not required to pay standby charges. Some land within the district are developed but do not receive water and some lands may be fallowed or out of production but still receive standby and development charges. Due to afore mentioned causes, the listed acreage will not match the irrigated land previous tables.

<b>Volumetric Charges (2014)</b>			
<i>Charges Location</i>	<i>Charge units \$/AF</i>	<i>Units billed during year AF</i>	<i>\$ collected (\$ times units)</i>
North	\$227	5,593	\$1,269,522
Avenue 4	\$244	285	\$69,491
Woollomes/Cecil	\$232	7,788	\$1,840,592
Rag Gulch	\$244	1,783	\$435,030
Twin Pipes	\$248	1,425	\$353,446

Cameo	\$263	2,876	\$756,506
South	\$246	157	\$38,728
	Total	19,907	\$4,763,315

*\*Please refer to guidebook for information when completing the table*

Volumetric charges are based on volume of water delivered to each turn-out monthly. Fixed charges are a fixed rate billed annually.

See Attachment D, District Sample Bills

*c. Describe the contractor's record Management system*

All turn-out meters are read at the end of the month and landowners are billed for the water they used that month. This monthly water bill also includes water use to date for the year. Historic monthly deliveries to each water user are distributed at monthly board meetings and records are kept on file at the district office. These records are available for review by the water users and the District's staff.

Attached D is a sample monthly water bill and assessment and standby statement.

**H. Water Shortage Allocation Policies**

*1. Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated*

A copy of the District's "Rules and Regulations for Distribution of Water" is attached as Attachment B. If the District's anticipated supply of water for the year will not be sufficient to meet the anticipated demands, the District will allocate the water supply pro rata on the basis of gross assessable acres within the Service Area.

*2. Current year policies that address wasteful use of water and enforcement methods*

The cost of water within the District is significant, water users pay only for the water they use, and over irrigating crops does not increase yield. Therefore, wasteful use of water is not an issue for this District

The District Rules and Regulations state that the District will suspend the delivery of water to any water user who reaches the prorated allotment by locking their turn out. When a water user gets close to their allotted water allocation, the District watches the use of water closely to eliminate excess water use.

**I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good water Management**

*Discuss possible modifications to policies and solutions for improved water management.*  
The District has significant concerns with regard to future water supplies. Below is a description of these concerns.

1. Federal and state regulatory actions in Delta have severely limited the ability of the District to receive its CVP water supplies. Over time, these regulatory actions have continued to reduce water supplies available to the District.
2. The initial term of the contract with the City of Bakersfield ended on December 31, 2011. The ability of the District to receive a reliable supply of Kern River is uncertain.
3. A coalition of environmental groups filed a lawsuit against the Federal government related to water supply contracts in the Friant Division of the CVP. The settlement which resulted from this lawsuit reduced the ability of the District to purchase Friant Class 1, Class 2, and Section 215 water supplies.

As a result of these concerns, the District is pursuing opportunities to improve its water supply, reduce its reliance upon the delta, and maximize irrigation efficiency. Some of these opportunities include:

1. Expansion of groundwater banking capabilities
2. Extension of Kern River supplies from the City of Bakersfield
3. Use of recycled oil field water
4. Expansion of water management programs with other water districts

## SECTION 2: INVENTORY OF WATER RESOURCES

### A. Surface Water Supply

1. *Surface Water in acre feet, imported and originating within the service area, by month.*  
See Water Inventory Tables, Table 1
2. *Amount of water delivered to the district by each of the district sources for the last 10 years*  
See Water Inventory Tables, Table 8

### B. Ground Water Supply

1. *Groundwater extracted by the district and delivered by month (Table 2)*  
NONE - See Water Inventory Tables, Table 2.
2. *Ground water basin(s) that underlies the service area*

<i>Name</i>	<i>Size (Sq. Miles)</i>	<i>Usable Capacity (AF)</i>	<i>Safe Yield (AF/Y)</i>
Kern Basin	60.57	Unknown	28,500

3. *Map of district-operated wells and managed ground water recharge areas*  
NONE - The District has no District owned or operated wells or managed groundwater recharge areas. The depth to groundwater varies from about 200 feet to over 600 feet and averages approximately 450 feet throughout the Districts. There are static groundwater levels taken in the spring and do not include the temporary drawdown of 50 to 100 feet caused by pumping. Sources of groundwater replenishment include underflow into the Districts from both the east and west.
4. *Description of conjunctive use of surface and ground water*  
The district has groundwater banking programs with Rosedale-Rio Bravo Water Storage District and North Kern Water Storage District, where recharge occurs. Since 2005 the District has spread over 200,000 acre-feet of water into its groundwater banking programs and extracted about 118,000 acre-feet during the same time frame. This spreading and extracting has given the District the ability to store water in the wet years and use it in the dry years.
5. *Ground Water Management Plan*  
See Attachment C, Ground Water Management Plan  
In December of 2012, the Districts adopted a Groundwater Management Plan. A copy of this plan is included as attachment D. This Groundwater Management Plan includes a detailed description of groundwater conditions underlying the District.
6. *Ground Water Banking Plan*  
NONE

### C. Other Water Supplies

1. "Other" water used as part of the water supply

See the Water Inventory Tables, Table 1

Several landowners within the district use reclaimed oil field water that is obtained through private agreements and regulated by the Regional Water Quality Control Board under order no. 98-205. District staff investigated the availability of using reclaimed oil field water as an additional source of water. It was determined that the amount of reclaimed oil field water available within 15 miles of the District's facilities is useable, but facilities would need to be built to accommodate the additional water. The District is now investigating using reclaimed oil field water up to 15 miles from the District. This project includes two new reservoirs and up to 15 miles of pipeline.

### D. Source Water Quality Monitoring Practices

1. Agricultural water quality concerns: Yes \_\_\_\_\_ No  X

2. Description of the agricultural water quality testing program and the role of each participant, including the district, in the program

Friant Kern Canal Authority conducts the monitoring program 1 times a year and tests 5 separate locations along the Friant Kern Canal.

3.a. Current water quality monitoring programs for surface water by source

<i>Analyses Performed</i>	<i>Frequency</i>	<i>Concentration Range</i>	<i>Average</i>
NONE			

All of the Districts surface water supplies are pumped from the Friant-Kern Canal. Friant Water Users Authority monitors water quality in the Friant-Kern Canal annually. Water users can request monitoring data at anytime. The District will begin mailing a letter annually to inform water users that monitoring data is available. Surface water available from the Friant-Kern Canal typically has a TDS of less than 50 ppm. There are no water quality problems associated with surface water delivered from the Friant-Kern Canal.

3.b. Current water quality monitoring programs for groundwater by source

<i>Analysis Performed</i>	<i>Frequency</i>	<i>Concentration</i>	<i>Average</i>
NONE			

Groundwater quality varies throughout the District depending upon which aquifer each well is tapping. The District is currently developing a water quality monitoring program for groundwater. TDS in landowner wells within the District can range from 250 to 500 ppm.

## E. Water Uses within the District

### 1. Agricultural

See Water Inventory Tables, Table 5

### 2. Types of irrigation systems used for each crop in 2014.

<i>Crop name</i>	<i>Total Acres</i>	<i>Level Basin - acres</i>	<i>Furrow - acres</i>	<i>Sprinkler - acres</i>	<i>Low Volume - acres</i>	<i>Multiple methods - acres</i>
Alfalfa	100				100	
Almonds	1,024.50				1,024.50	
Blue Berries	144.10				144.10	
Cherries	160				160	
Grapefruit	100				100	
Grapes	6,286.47				6,286.47	
Kiwi	198.98				198.98	
Lemons	50.30				50.30	
Olives	0				0	
Oranges	5,153.84				5,153.84	
Persimmons	20.46				20.46	
Pistachios	3,958.92				3,958.92	
Tangelo	208.9				208.9	
misc. (<5%)						
<b>TOTAL</b>	<b>17,406.47</b>				<b>17,406.47</b>	

### 3. ~~Urban use by customer type in current year~~

### 4. ~~Urban Wastewater Collection/Treatment Systems serving the service area — current year~~

### 5. Ground water recharge/management in current year (Table 6)

<i>Recharge Area</i>	<i>Method of Recharge</i>	<i>AF</i>	<i>Method of Retrieval</i>
None			
	<i>Total</i>		

As a result of increasing environmental actions in the delta, the District's CVP water supply is only a fraction of what it once was. This reduced water supply to the District leads to inadequate water supplies to permanent crops and will cause a reduction in groundwater levels. This reduction in the District's CVP water supply has caused the District to pursue groundwater banking programs. Below is a description of three such programs.

#### a. North-Kern Water Storage District

The District has developed a long-term groundwater banking program with North Kern Water Storage District (North Kern) to deliver water to North Kern for later withdrawal and use by the District. The project yields an annual dry year supply of up to 5,000 acre-feet and improves local groundwater supplies to North Kern. The agreement requires the District to bank water before it can be extracted and leave 10 percent of the water banked in North Kern to account for losses. Supplies available to the District for banking include the District's CVP contract supplies, Section 215 water, flood flows conveyed in the Friant-Kern Canal, purchases from Friant Contractors, and Kern River water

b. Rosedale-Rio Bravo Water Storage District

The District has developed a long-term groundwater banking program with the Rosedale- Rio Bravo Water Storage District (Rosedale-Rio Bravo). The project consists of the District recharging water in Rosedale-Rio Bravo when surface water supplies are available and extracting groundwater during years of inadequate surface water supplies. The project yields an estimated dry year annual supply of up to 9,000 acre-feet and improves local groundwater supplies to Rosedale-Rio Bravo. The agreement requires the District to bank approximately two acre-feet for each acre-foot extracted and bank water before it can be extracted. Supplies available to the District for banking include the District's CVP contract supplies, Section 215 water, flood flows conveyed in the Friant-Kern Canal, purchases from Friant Contractors, Kern River water, and SWP water.

d. West Kern Water Storage District

The District has developed a long-term groundwater banking program with the West Kern Water Storage District (West Kern). The project consists of the District recharging water in West Kern when surface water supplies are available and extracting groundwater during years of inadequate surface water supplies. The project yields an estimated dry year annual supply of up to 3,000 acre-feet and improves local groundwater supplies to West Kern. The agreement requires the District to bank two acre-feet for each acre-foot extracted and bank water before it can be extracted. Supplies available to the District for banking include the District's CVP contract supplies, Section 215 water, flood flows conveyed in the Friant-Kern Canal, purchases from Friant Contractors, Kern River water, and SWP water.

6. Transfers and exchanges into or out of the service area in current year (Table 6)

<i>From Whom</i>	<i>To Whom</i>	<i>AF</i>	<i>Use</i>
None			

7. Wheeling, or other transactions in and out of the district boundaries – (table 6)

<i>From Whom</i>	<i>To Whom</i>	<i>AF</i>	<i>Use</i>
None			

8. *Other uses of water in current year*

<i>Other Uses</i>	<i>AF</i>
None	

**F. Outflow from the District**

See Facilities Map, Attachment A, for the location of surface and subsurface outflow points, outflow measurement points, outflow water-quality testing locations

1. *Surface and subsurface drain/outflow in current year*  
NONE
2. *Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program*  
NONE
3. *Outflow (surface drainage & spill) Quality Testing Program*  
NONE
4. *Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.*  
The District is a member of Kern River Water Quality Coalition.

**G. Water Accounting (Inventory)**

1. *Water Supplies Quantified*
  - a. *Surface water supplies, imported and originating within the service area, by month (Table 1)*
  - b. *Ground water extracted by the district, by month (Table 2)*
  - c. *Effective precipitation by crop (Table 5)*
  - d. *Estimated annual ground water extracted by non-district parties (Table 2)*
  - e. ~~*Recycled urban wastewater, by month (Table 3)*~~
  - f. *Other supplies, by month (Table 1)*
2. *Water Used Quantified*
  - a. *Agricultural conveyance losses, including seepage, evaporation, and operational spills in canal systems (Table 4) or*
  - b. *Consumptive use by riparian vegetation or environmental use (Table 6)*
  - c. *Applied irrigation water - crop ET, water used for leaching/cultural practices (e.g., frost protection, soil reclamation, etc.) (Table 5)*

- ~~d. Urban water use (Table 6)~~
- e. Ground water recharge (Table 6)
- f. Water exchanges and transfers and out-of-district banking (Table 6)
- g. Estimated deep percolation within the service area (Table 6)
- h. Flows to perched water table or saline sink (Table 7)
- i. Outflow water leaving the district (Table 6)
- j. Other

3. Overall Water Inventory

- a. Table 6

## Section 3: Best Management Practices (BMPs) for Agricultural Contractors

### A. Critical Agricultural BMPs

1. Measure the volume of water delivered by the district to each turnout with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6%

Number of delivery points (turn-outs and connections): 114

Number of delivery points serving more than one farm: 2

Number of measured delivery points (meters and measurement devices): 114

Percentage of water delivered to the contractor that was measured at a delivery point:  
100%

Total number of delivery points not billed by quantity: 0

Delivery Point measurement device table:

Measurement Type	Number	Accuracy	Reading Frequency	Calibration Frequency (Months)	Maintenance Frequency (Months)
Orifices					
Propeller Meter	114	+/- 2%	Weekly	1	(12) As Needed
Weirs					
Flumes					
Venturi					
Metered Gates					
Acoustic Doppler					
Other (Define)					
Total					

\*Documentation verifying the accuracy of measurement – Attachment F

2. Designate a water conservation coordinator to develop and implement the Plan and develop progress reports

Name: Steven C. Dalke Title: General Manager

Address: 5001 California Avenue, Suite 102, Bakersfield, CA 93309

Telephone: (661) 327-3132 E-mail: Sdalke@Kern-tulare.com

Please provide a job description and minimum qualifications: Under administrative direction from the Board of Directors: responsible for the administration, public relations,

personnel, water supply, and general affairs of the District, represent the Board's policies and programs with employees, community organizations, and the general public.

3. *Provide or support the availability of water management services to water users*  
NONE

**a. On-Farm Evaluations**

- 1) *On farm irrigation and drainage system evaluations using a mobile lab type assessment*

	<i>Total in district</i>	<i># surveyed last year</i>	<i># surveyed in current year</i>	<i># projected for next year</i>	<i># projected 2<sup>nd</sup> yr in future</i>
<i>Irrigated acres</i>	17406.47	556	0	2	2
<i>Number of farms</i>	120	5	0	N/A	N/A

The Districts provide financial support to the North Kern Resource Conservation District for the Mobile Irrigation Lab, which provides on-farm irrigation evaluations.

- 2) *Timely field and crop-specific water delivery information to the water user*

The District provides monthly water delivery data to their water users on their billing statement to allow them to monitor their water use and irrigation efficiency. Water delivery data is delivered by mail to every water user. Data is also delivered via email or fax upon request. See Attachment D.

**b. Real-time and normal irrigation scheduling and crop ET information**

Normal year and real time ET data for 12 local CIMIS stations are provided to the Districts on a weekly basis from the Friant Water Users Authority (which the District financially supports). Crop coefficients, as developed by Kings River Conservation District, are also provided in the same report. Water users within the District are notified via mail from time to time that this information is on file at the District office. The District allows water users to operate their own turnouts, provided they keep the District informed through water orders. The District has installed VFD's and SCADA on pumping plants in order to maintain a constant pressure for all turnouts, real-time. Growers can operate water used based on the need of the crop.

**c. Surface, ground, and drainage water quantity and quality data provided to water users**

Surface water quality for water conveyed through the Friant-Kern Canal and Madera Canal is typically analyzed on an annual basis at eight locations. This data is available from Friant Water Authority upon request. Requests can be made via phone, email, mail or fax.

**d. Agricultural water management educational programs and materials for farmers, staff, and the public**

<i>Program</i>	<i>Co-Founders (If Any)</i>	<i>Yearly Targets</i>
Family Water Alliance, California Farm		Annual
Friant Water Authority		Semi-Annual
United Broadcasting "Conserve America"		Semi-Annual

The District financially support the Water Association of Kern County. This entity provides education and information to the general public. WAKC does not currently provide printed materials but gives educational seminars including "Water is Everyone's Business" and "Water and Real Estate- A critical relationship, Water 101". In addition, the district's general manager is a director of the Water Association of Kern County and participates in providing the local media and policy makers with information related to water management. Friant Water Authority also provides education material on their website (<http://www.friantwater.org/waterissues.html>) and access to workshops available to farmers and water users. Additionally Conserve America provides information on their website (<http://conservamerica.org>.) See attachment G.

**e. other**

None

**4. Pricing structure - based at least in part on quantity delivered**

District water is priced to provide incentive to use water conservatively while preserving groundwater resources. The incentive pricing program for Kern-Tulare includes three charges a special assessment (per acre), a standby charge (per acre), and a water toll (per acre-foot). These charges are reviewed annually by District staff and Board of Directors. The District provides monthly water delivery data to their water users to allow them to monitor their water use and irrigation efficiency. Sample water bills are presented as Attachment D.

**5. Evaluate and improve efficiencies of district pumps**

The District is very conscience about maintaining high efficiency at all pumping plants. This concern is driven by the high cost of electricity and large pumping lift from the Friant-Kern Canal to District turnouts. The District's personnel keep a close watch on discharge at all pumping plants. A reduction in delivery capability signals the beginning of a loss in efficiency. When this happens, the District staff repairs the problem as soon as practically possible. In addition, outside contractors are occasionally hired to perform pump tests at all district pumps.

	<i>Total on Districts</i>	<i># Surveyed Last Year</i>	<i># Surveyed in Current Year</i>	<i># Projected for Next Year</i>
Wells				
Lift Pumps	33	2	0	3

## B. Exemptible BMPs for Agricultural Contractors

### 1. Facilitate alternative land use - NA

<i>Drainage Characteristic</i>	<i>Acreage</i>	<i>Potential Alternative Uses</i>
High water table (<5 feet)	0	
Poor Drainage	0	
Groundwater Selenium concentration > 50 ppb	0	
Poor Productivity	0	

### 2. Facilitate use of available recycled urban wastewater that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils

<i>Sources of Recycled Urban Waste Water</i>	<i>AF/Y Available</i>	<i>AF/Y currently Used in District</i>
No Sources Available		

### 3. Facilitate the financing of capital improvements for on-farm irrigation systems

<i>Funding Source Programs</i>	<i>How Provide Assistance</i>
Resource Conservation District	Environmental Quality Incentive Program

The District supports the Resource Conservation District who provides assistance to the NRCS. In 2014 the NRCS processed 174 Environmental Quality Incentive Program applications, of which 88 were funded.

### 4. Incentive pricing

<i>Structure of Incentive Pricing</i>	<i>Related Goal</i>
Measure water delivered per acre-foot	Water users pay for water used

District water is priced to provide incentive to use water conservatively while preserving groundwater resources. The incentive pricing program for Kern-Tulare includes three charges - a special assessment (per acre), a standby charge (per acre), and a water toll (per acre-foot). These charges are reviewed annually. The District provides monthly water delivery data to their water users to allow them to monitor their water use and irrigation efficiency.

### 5. a) Line or pipe ditches and canals

<i>Canal/Lateral (Reach)</i>	<i>Type of Improvement</i>	<i>Number of Miles in Reach</i>	<i>Estimated Seepage</i>	<i>Accomplished Planed Date</i>
N/A- Piped System				

Over the past 15 years, the District has lined one of its reservoirs with diatomaceous earth and compacted the bottom of another to reduce seepage losses. District staff continues to monitor reservoir levels for indications of increased seepage.

*b) Construct regulatory reservoirs*

<i>Reservoir Name</i>	<i>Annual Spill in Section</i>	<i>Estimated Spill Recovery (AF/Y)</i>	<i>Accomplished Planned Date</i>
Avenue 24 Reservoir	N/A	N/A	N/A
Big Four Reservoir	N/A	N/A	N/A
Cecil Reservoir	N/A	N/A	N/A

\*Previously owned Section 7 reservoir has been reorganized into SSJMUD.

Over the past 10 years, the District has significantly expanded its reservoir capacity at two of its four reservoirs. All District reservoir levels are monitored with a SCADA system. The District has never spilled water from any of its reservoirs.

6. *Increase flexibility in water ordering by, and delivery to, water users*

The District added VFD's at the Avenue 4 Pumping Plant in 2010, the Woolmes Boost Pump in 2011 and the Cecil Boost Pump in 2012. These revisions will further increase landowner flexibility in water ordering because growers can irrigate in real time without loss of pressure.

7. *Construct and operate district spill and tailwater recovery systems*

NA - Nearly all crops within the District are irrigated using the drip or micro-sprinkler irrigation method. This high percentage of low volume irrigation practices results in a very high irrigation efficiency, which does not require spill or tailwater recovery systems.

8. Plan to measure outflow.

N/A – no outflow

9. *Optimize conjunctive use of surface and ground water*

Expansion of the District's conjunctive use program has become necessary due to the reduced reliability of the District's contract water supplies from the delta. This reduced water supply will lead to inadequate water supplies to permanent crops during dry years and degradation of groundwater resources. These concerns have prompted the need for the District to pursue groundwater banking programs to regulate District contract water supplies. The Districts continued with implementation of the North Kern Banking Program and the Rosedale-Rio Bravo Banking Program. The Districts also investigated implementation of a groundwater banking program along the White River within the boundaries of the Districts.

The District is partnering with local Oil Producers to acquire produced water for delivery to irrigated agriculture in the District. The project will deliver a sustainable and reliable water supply of approximately 5,000 AF per year to farmers within the District that currently rely upon water from the Delta and available groundwater. The

project includes the construction of two new reservoirs which will optimize the District conjunctive use and help to alleviate District capacity constraints. The District is pursuing funding to construct these facilities.

*10. Automate distribution and/or drainage system structures*

N/A - The District has no canals within its boundaries.

*11. Facilitate or promote water customer pump testing and evaluation*

The District Informs water users annually at public meetings of District pump tests and funding for efficiency improvements from Southern California Edison.

12. Mapping

	Estimated Cost in 1000's				
	2015	2016	2017	2018	2019
Layer 1- Distribution	1000	1000	1000	1000	1000
Layer 2 – Drainage System					
Suggested Layers					
Layer 3 – Ground Water information	500				
Layer 4 – Soils Maps					
Layer 5 – Natural & Cultural Resources					
Layer 6 – problem Areas		500	500	500	500

*Note: The District plans to continue mapping crop demands in our District. The District will also continue mapping for the Ground water Sustainability Act.*

**C. Provide a 5-Year Budget for Implementing BMPs**

*1. Amount actually spent during 2014*

Year 2014	BMP Name	Budgeted Expenditure not including staff time	Staff Hours
A1	Measurement	0	
A2	Conservation Staff	5,000	
A3	On-farm evaluation/water delivery info	750	
	Irrigation scheduling	400	
	Water quality	0	
	Agricultural Education Program	6,700	
A4	Quantity pricing	0	
A5	Contractor's Pumps	100,000	
B1	Alternative Land Use	0	
B2	Urban recycled water use	0	
B3	Financing of on-farm improvements	0	
B4	Incentive Pricing	0	
B5	Line or pipe canals/install reservoirs	0	
B6	Increase delivery flexibility	101,000	
B7	District Spill/tailwater recovery systems	0	
B8	Measure outflow	0	
B9	Optimize conjunctive use	1,051,000	
B10	Automate canal structures	0	
B11	Customer Pump testing	100	
B12	Mapping	3,000	

	<b>Total</b>	1,267,950	
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2. *Projected Budget Summary for the next year*

<b>Year 2015</b>	<b>BMP Name</b>	<b>Budgeted Expenditure not including staff time</b>	<b>Staff Hours</b>
<b>A1</b>	Measurement	0	
<b>A2</b>	Conservation Staff	5000	
<b>A3</b>	On-farm evaluation/water delivery info	750	
	Irrigation scheduling	425	
	Water quality	4,000	
	Agricultural Education Program	16,700	
<b>A4</b>	Quantity pricing	0	
<b>A5</b>	Contractor's Pumps	100,000	
<b>B1</b>	Alternative Land Use	0	
<b>B2</b>	Urban recycled water use	0	
<b>B3</b>	Financing of on-farm improvements	0	
<b>B4</b>	Incentive Pricing	0	
<b>B5</b>	Line or pipe canals/install reservoirs	0	
<b>B6</b>	Increase delivery flexibility	16,000	
<b>B7</b>	District Spill/tailwater recovery systems	0	
<b>B8</b>	Measure outflow	0	
<b>B9</b>	Optimize conjunctive use	1,617,000	
<b>B10</b>	Automate canal structures	0	
<b>B11</b>	Customer Pump testing	100	
<b>B12</b>	Mapping	1,500	
	<b>Total</b>	<b>1,761,475</b>	

3. Projected budget summary for the 3<sup>rd</sup> year

<b>Year 2016</b>	<b>BMP Name</b>	<b>Budgeted Expenditure not including staff time</b>	<b>Staff Hours</b>
<b>A1</b>	Measurement	0	
<b>A2</b>	Conservation Staff	5,000	
<b>A3</b>	On-farm evaluation/water delivery info	800	
	Irrigation scheduling	450	
	Water quality	2,000	
	Agricultural Education Program	17,000	
<b>A4</b>	Quantity pricing	0	
<b>A5</b>	Contractor's Pumps	100,000	
<b>B1</b>	Alternative Land Use	0	
<b>B2</b>	Urban recycled water use	0	
<b>B3</b>	Financing of on-farm improvements	0	
<b>B4</b>	Incentive Pricing	0	
<b>B5</b>	Line or pipe canals/install reservoirs	0	
<b>B6</b>	Increase delivery flexibility	25,000	
<b>B7</b>	District Spill/tailwater recovery systems	0	
<b>B8</b>	Measure outflow	0	
<b>B9</b>	Optimize conjunctive use	1,650,000	
<b>B10</b>	Automate canal structures	0	
<b>B11</b>	Customer Pump testing	100	
<b>B12</b>	Mapping	1500	
	<b>Total</b>	<b>1,801,850</b>	

4. Projected Budget Summary for the 4<sup>th</sup> year

<b>Year 2017</b>	<b>BMP Name</b>	<b>Budgeted Expenditure not including staff time</b>	<b>Staff Hours</b>
<b>A1</b>	Measurement	0	
<b>A2</b>	Conservation Staff	5000	
<b>A3</b>	On-farm evaluation/water delivery info	825	
	Irrigation scheduling	475	
	Water quality	2,000	
	Agricultural Education Program	17,000	
<b>A4</b>	Quantity pricing	0	
<b>A5</b>	Contractor's Pumps	100,000	
<b>B1</b>	Alternative Land Use	0	
<b>B2</b>	Urban recycled water use	0	
<b>B3</b>	Financing of on-farm improvements	0	
<b>B4</b>	Incentive Pricing	0	
<b>B5</b>	Line or pipe canals/install reservoirs	4,000,000	
<b>B6</b>	Increase delivery flexibility	30,000	
<b>B7</b>	District Spill/tailwater recovery systems	0	
<b>B8</b>	Measure outflow	0	
<b>B9</b>	Optimize conjunctive use	2,000,000	
<b>B10</b>	Automate canal structures	0	
<b>B11</b>	Customer Pump testing	100	
<b>B12</b>	Mapping	1,500	
	<b>Total</b>	<b>6,426,900</b>	

5. Projected Budget Summary for the 5<sup>th</sup> year

<b>Year 2018</b>	<b>BMP Name</b>	<b>Budgeted Expenditure not including staff time</b>	<b>Staff Hours</b>
<b>A1</b>	Measurement	0	
<b>A2</b>	Conservation Staff	5,000	
<b>A3</b>	On-farm evaluation/water delivery info	850	
	Irrigation scheduling	500	
	Water quality	2,000	
	Agricultural Education Program	20,000	
<b>A4</b>	Quantity pricing	0	
<b>A5</b>	Contractor's Pumps	100,000	
<b>B1</b>	Alternative Land Use	0	
<b>B2</b>	Urban recycled water use	0	
<b>B3</b>	Financing of on-farm improvements	0	
<b>B4</b>	Incentive Pricing	0	
<b>B5</b>	Line or pipe canals/install reservoirs	0	
<b>B6</b>	Increase delivery flexibility	0	
<b>B7</b>	District Spill/tailwater recovery systems	0	
<b>B8</b>	Measure outflow	0	
<b>B9</b>	Optimize conjunctive use	2,500,000	
<b>B10</b>	Automate canal structures	0	
<b>B11</b>	Customer Pump testing	100	
<b>B12</b>	Mapping	1,500	
	<b>Total</b>	<b>2,629,950</b>	

#### **Section 4: ~~Best Management Practices for Urban Contractors~~**

## Surface Water Supply

2014 Month	Federal Ag Water (acre-feet)	Federal non- Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (Kern) (acre-feet)	Other Water (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method								
January	314	0	0	637	0	0	0	951
February	549	0	0	2,215	0	0	0	2,764
March	349	0	0	667	0	0	0	1,016
April	948	0	0	281	0	0	0	1,229
May	2,230	0	0	185	0	0	0	2,415
June	3,061	0	0	325	0	0	0	3,386
July	2,493	0	0	488	0	0	0	2,981
August	1,446	0	0	1,427	0	0	0	2,873
September	1,199	0	0	396	0	0	0	1,595
October	1,897	0	0	56	0	0	0	1,953
November	698	0	0	8	0	0	0	706
December	136	0	0	0	0	0	0	136
<b>TOTAL</b>	<b>15,320</b>	<b>0</b>	<b>0</b>	<b>6,685</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22,005</b>

**Table 2**  
**Ground Water Supply**

2014 Month	Method	District Groundwater (acre-feet)	Private Urban *(acre-feet)	Private Agric Groundwater *(acre-feet)
January		0	0	326
February		0	0	158
March		0	0	606
April		0	0	1,406
May		0	0	2,800
June		0	0	2,750
July		0	0	5,474
August		0	0	4,954
September		0	0	3,904
October		0	0	2,274
November		0	0	4
December		0	0	11
<b>TOTAL</b>		<b>0</b>	<b>0</b>	<b>24,667</b>

\*normally estimated

The District currently has no measurement of groundwater pumping. Groundwater estimates given in table 2 are calculated based on estimated crop demands and District deliveries.

Table 3

*Total Water Supply*

2014 Month	Surface Water Total (acre-feet)	District Groundwater (acre-feet)	Recycled M&I Wastewater (acre-feet)	Total District Water (acre-feet)
January	951	0	0	951
February	2,764	0	0	2,764
March	1,016	0	0	1,016
April	1,229	0	0	1,229
May	2,415	0	0	2,415
June	3,386	0	0	3,386
July	2,981	0	0	2,981
August	2,873	0	0	2,873
September	1,595	0	0	1,595
October	1,953	0	0	1,953
November	706	0	0	706
December	136	0	0	136
<b>TOTAL</b>	<b>22,005</b>	<b>0</b>	<b>0</b>	<b>22,005</b>

\*Recycled M&I Wastewater is treated urban wastewater that is used for agriculture.

2014 Precipitation Worksheet				2014 Evaporation Worksheet			
	inches precip	ft precip	acres	inches evap	ft evap	acres	
Jan	0.08	0.01	20.72	1.44	0.12	20.72	
Feb	0.44	0.04	6.89	2.25	0.19	6.89	
Mar	1.39	0.12	6.45	4.13	0.34	6.45	
Apr	0.53	0.04	0.00	5.95	0.50	0.00	
May	0.00	0.00	0.00	8.35	0.70	0.00	
Jun	0.00	0.00	0.00	9.58	0.80	0.00	
Jul	0.00	0.00	0.00	9.94	0.83	0.00	
Aug	0.00	0.00	0.00	8.85	0.74	0.00	
Sept	0.00	0.00	0.00	6.62	0.55	0.00	
Oct	0.00	0.00	0.00	4.47	0.37	0.00	
Nov	0.66	0.06	0.00	2.24	0.19	0.00	
Dec	2.18	0.18	0.00	1.35	0.11	0.00	
<b>TOTAL</b>	<b>5.28</b>	<b>0.44</b>		<b>65.17</b>	<b>5.43</b>		

**Table 4**

***Agricultural Distribution System***

2014

Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitation (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
Big 4 Res.	950	950	902,500	0.0	0.0	0	0	0
Cecil Res.	750	400	300,000	0.0	0.0	0	0	0
Avenue 24 Res.	530	530	280,900	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
<b>TOTAL</b>				0.0	0.0	0	0	0

***Urban Distribution System***

2014 Area or Line	Length (feet)	Leaks (acre-feet)	Breaks (acre-feet)	Flushing/Fire (acre-feet)	Total (acre-feet)
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
<b>TOTAL</b>	0	0	0	0	0

Table 5

*Crop Water Needs*

2014 Crop Name	Area (crop acres)	Crop ET (AF/Ac)	Leaching Requirement (AF/Ac)	Cultural Practices (AF/Ac)	Effective Precipitation (AF/Ac)	Appl. Crop Water Use (acre-feet)
Alfafa	100	4.0	0.3	0.0	0.3	398
Almonds	1,025	3.0	0.3	0.0	0.3	3,147
Blue Berries	144	2.0	0.3	0.0	0.3	282
Cherries	160	3.0	0.3	0.0	0.3	491
Grapes	6,286	2.1	0.3	0.0	0.2	13,703
Grapefruit	100	3.3	0.3	0.0	0.5	314
Kiwi	198	3.3	0.3	0.0	0.5	622
Lemon	50	3.3	0.3	0.0	0.5	157
Olives	0	3.0	0.3	0.0	0.3	0
Oranges	5,154	3.0	0.3	0.0	0.5	14,637
Persimmons	20	3.0	0.3	0.0	0.3	61
Pistachios	3,959	3.0	0.3	0.0	0.3	12,154
Tangelo	209	3.3	0.3	0.0	0.3	704
Crop Acres	17,405					46,672

Total Irrig. Acres      17,406      (If this number is larger than your known total, it may be due to double cropping)

Table 6

2014 District Water Inventory

Water Supply	Table 3	22,005
Environmental Consumptive Use (Distribution, Drain, etc.)	minus	0
Groundwater recharge (intentional - ponds, injection)	minus	0
Seepage	Table 4	0
Evaporation - Precipitation	Table 4	0
Spillage	Table 4	0
Leaks, Breaks, Flushing / Fire	Table 4	0
Transfers out of District	minus	0
Water Available for sale to customers		22,005
Actual Agricultural Water Sales 2014	From District Sales Records	22,005
Private Groundwater	Table 2 plus	24,667
Crop Water Needs	Table 5 minus	46,672
Drainwater outflow (tail and tile not recycled)	minus	0
Percolation from Agricultural Land	(calculated)	0
M&I Actual Water Sales 2014	From District Records	0
Inside Use	Feb urban use x 12	0
Landscape / Outside Use	(calculated)	0
Unaccounted for Water	(calculated)	0

**Table 7**  
**Influence on Groundwater and Saline Sink**  
**2014**

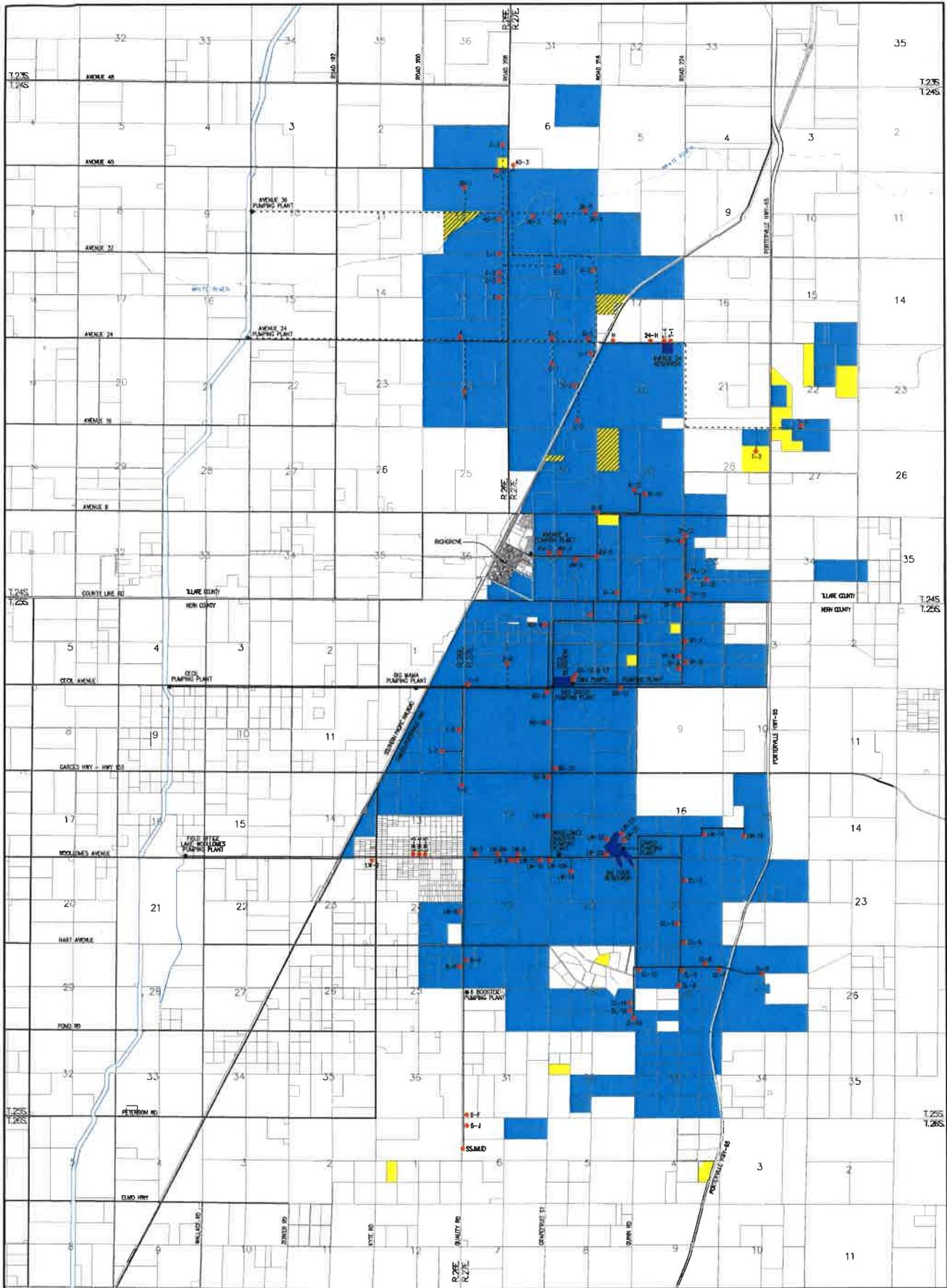
Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence on	0
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	17,405
Irrigated acres over a perched water table	0
Irrigated acres draining to a saline sink	0
Portion of percolation from agri seeping to a perched water table	0
Portion of percolation from agri seeping to a saline sink	0
Portion of On-Farm Drain water flowing to a perched water table/saline sink	0
Portion of Dist. Sys. seep/leaks/spills to perched water table/saline sink	0
Total (AF) flowing to a perched water table and saline sink	0

Table 8

*Annual Water Quantities Delivered Under Each Right or Contract*

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (Kern) (acre-feet)	Other Water (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2005	17,541	0	0	19,707	0	0	0	37,248
2006	20,715	0	0	16,095	0	0	0	36,810
2007	24,649	0	8,419	5,550	0	0	0	38,618
2008	22,528	0	0	17,824	0	0	0	40,352
2009	20,830	0	0	16,114	0	0	0	36,944
2010	26,488	0	0	6,319	0	0	0	32,807
2011	29,254	0	0	5,073	0	0	0	34,327
2012	27,645	0	0	8,792	0	0	0	36,437
2013	36,675	0	0	3,296	0	0	0	39,971
2014	15,320	0	0	6,685	0	0	0	22,005
Total	241,645	0	8,419	105,455	0	0	0	355,519
Average	24,165	0	842	10,546	0	0	0	35,552

# Attachment A



KERN-TULARE WATER DISTRICT

2014 DISTRIBUTION FACILITIES  
AND SERVICE AREA  
AUGUST 2014

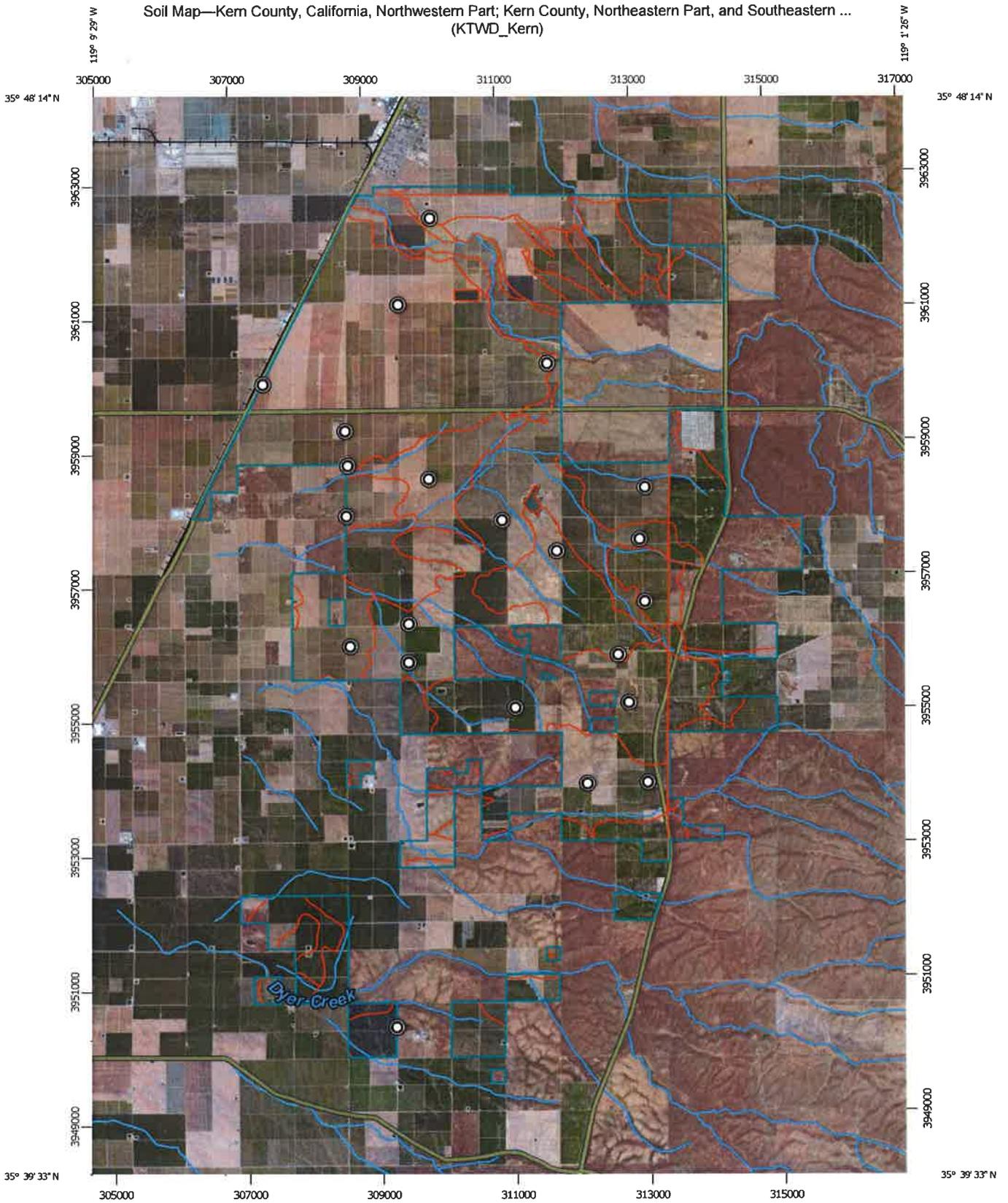
LEGEND

- DISTRICT PIPELINE
- PRIVATE PIPELINE
- TURNOUT
- DISTRICT PUMPING PLANT
- PAVED ROAD

- SERVICE AREA - 18,500 AC
- NON SERVICE AREA - 370 AC
- RESERVOIR
- EXEMPT AREA - 300 AC



Soil Map—Kern County, California, Northwestern Part; Kern County, Northeastern Part, and Southeastern ...  
(KTWD\_Kern)



Map Scale: 1:78,300 if printed on A portrait (8.5" x 11") sheet



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

8/6/2015  
Page 1 of 4

## MAP LEGEND

-  Area of Interest (AOI)
- Soils**
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
- Special Line Features**
- Water Features**
-  Streams and Canals
- Transportation**
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
- Background**
-  Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kern County, California, Northwestern Part  
 Survey Area Data: Version 7, Sep 18, 2014

Soil Survey Area: Kern County, Northeastern Part, and Southeastern Part of Tulare County, California  
 Survey Area Data: Version 8, Sep 18, 2014

Soil Survey Area: Tulare County, Western Part, California  
 Survey Area Data: Version 8, Sep 30, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 5, 2010—May 7, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

<b>Kern County, California, Northwestern Part (CA666)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
111tw	Delvar clay loam, 2 to 9 percent slopes	30.0	0.2%
114tw	Exeter loam, 0 to 2 percent slopes	249.7	1.9%
130	Chanac clay loam, 2 to 9 percent slopes	2,105.4	16.0%
130tw	Nord fine sandy loam, 0 to 2 percent slopes	358.1	2.7%
131	Chanac clay loam, 9 to 15 percent slopes	1,845.2	14.0%
132	Chanac clay loam, 15 to 30 percent slopes	1,301.1	9.9%
138	Delano sandy loam, 0 to 2 percent slopes	874.5	6.6%
139	Delano sandy loam, 2 to 5 percent slopes	133.3	1.0%
140	Delano sandy loam, 5 to 9 percent slopes	207.2	1.6%
143	Delano variant clay loam, 0 to 9 percent slopes	295.3	2.2%
154	Exeter sandy loam, 0 to 2 percent slopes	3,135.8	23.8%
155	Exeter sandy loam, 2 to 9 percent slopes	217.7	1.7%
192ne	Chanac-Pleito complex, 5 to 30 percent slopes	303.0	2.3%
194ne	Pleito-Delvar complex, 2 to 15 percent slopes	14.5	0.1%
197ne	Nord fine sandy loam, 0 to 2 percent slopes, rarely flooded	10.9	0.1%
243	Wasco sandy loam	7.2	0.1%
254	Zerker loam, 2 to 5 percent slopes	325.3	2.5%
257	Water	30.0	0.2%
<b>Subtotals for Soil Survey Area</b>		<b>11,444.4</b>	<b>86.8%</b>
<b>Totals for Area of Interest</b>		<b>13,184.6</b>	<b>100.0%</b>

<b>Kern County, Northeastern Part, and Southeastern Part of Tulare County, California (CA668)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
115	Chanac clay loam, 15 to 30 percent slopes	186.5	1.4%
147	Chanac clay loam, 2 to 9 percent slopes	90.0	0.7%

<b>Kern County, Northeastern Part, and Southeastern Part of Tulare County, California (CA668)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
153	Chanac clay loam, 9 to 15 percent slopes	53.8	0.4%
192	Chanac-Pleito complex, 5 to 30 percent slopes	889.9	6.7%
193	Chanac-Pleito complex, 2 to 5 percent slopes	282.7	2.1%
194	Pleito-Delvar complex, 2 to 15 percent slopes	170.2	1.3%
196	Exeter sandy loam, 2 to 9 percent slopes	1.7	0.0%
407	Centerville clay, 2 to 5 percent slopes	1.1	0.0%
411	Delvar clay loam, 2 to 9 percent slopes	0.5	0.0%
<b>Subtotals for Soil Survey Area</b>		<b>1,676.4</b>	<b>12.7%</b>
<b>Totals for Area of Interest</b>		<b>13,184.6</b>	<b>100.0%</b>

<b>Tulare County, Western Part, California (CA659)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
107	Centerville clay, 2 to 5 percent slopes	0.5	0.0%
111	Delvar clay loam, 2 to 9 percent slopes	0.1	0.0%
114	Exeter loam, 0 to 2 percent slopes	50.5	0.4%
130	Nord fine sandy loam, 0 to 2 percent slopes	7.6	0.1%
143	Yettem sandy loam, 0 to 2 percent slopes	5.2	0.0%
<b>Subtotals for Soil Survey Area</b>		<b>63.8</b>	<b>0.5%</b>
<b>Totals for Area of Interest</b>		<b>13,184.6</b>	<b>100.0%</b>

## Attachment B

**KERN-TULARE WATER DISTRICT**  
AMENDED RULES AND REGULATIONS  
FOR  
SALE AND DISTRIBUTION OF WATER  
(Water Code §35423)

Adopted and Approved by the Board of Directors October 15, 2013

**ARTICLE I.  
DEFINITIONS**

1.00. Introduction.

The words and phrases defined in this article shall govern the interpretation of these rules and regulations for the sale and distribution of water unless the context otherwise requires. Words used herein in the masculine shall include the feminine or any entity.

1.01. Agricultural Use.

“Agricultural Use” means the use of water primarily for the production of plant crops or livestock for market, including any use incidental thereto for domestic or stock watering purposes.

1.02. Board.

“Board” means the Board of Directors of the District.

1.03. CVP Water.

“CVP Water” means water deliverable to the District under the terms of the contracts dated February 29, 1996 among the United States of America, the State of California and the District designated as Interim Contract No.’s 14-06-200-8601A-IR1 and 14-06-200-8367A-IR1 and any amendments, extensions, renewals or replacements thereto and any other water available to the District which is subject to Reclamation Law.

1.04. District.

“District” means Kern-Tulare Water District, a California water district.

1.05 Non-CVP Water.

“Non-CVP Water” means water deliverable to the District which is not subject to Reclamation Law, including supplies available from the City of Bakersfield.

1.06. Landowner.

“Landowner” means a holder of title to land within the District.

1.07. Reclamation Law.

“Reclamation Law” means the acreage limitation, full cost pricing and reporting requirements under the Act of June 17, 1902 (32 Stat. 388), all Acts amendatory or supplementary thereto, and all current rules implementing such Acts (43 CFR Part 426).

1.08. Service Area.

“Service Area” means the lands in the District which are subject to standby charges levied and assessed by the District, which is designated upon District records and maps.

1.09. Water User.

“Water User” means the holder of title to land within the Service Area or his authorized agent, who receives water service from the District.

1.10. Year.

“Year” means the calendar year beginning January 1 and ending December 31.

1.11. Billing Contact.

“Billing Contact” means an individual or entity that the Landowner has designated as responsible for receiving monthly water statements.

**ARTICLE II.  
ALLOCATION AND USE OF WATER**

2.00. Authorization.

A Landowner must file a Water Service Authorization with the District on forms provided by the District, prior to receiving water service from the District each year.

2.01. Allocation of Water.

(a) General.

If the District's anticipated water supply for the Year will not be sufficient to meet the anticipated water demands of the District, the District will allocate such supply among all Water Users pro rata on the basis of the gross assessable acreage of each Water User within the Service Area.

(b) Reallocation of Non-CVP Water.

To the extent that the District has a sufficient supply of Water, Non-CVP Water will be reallocated among Water Users with lands in the Service Area in the following order of priority: that (1) are not eligible to receive water service under Reclamation Law, (2) are eligible to receive water service under Reclamation Law but are subject to full cost charges, and (3) are eligible to receive water service under Reclamation Law at less than full cost charges. If the District is unable to acquire enough Non-CVP Water to satisfy the demands of lands which are unable to receive water service under Reclamation Law, then those lands will share equally in the Non-CVP Water available to the District, provided, however, that as a condition of such reallocation, each Water User who receives Non-CVP Water shall pay a surcharge established by the District to provide such water. The surcharge for lands designated as excess under Reclamation Law shall be the same rate as lands designated as the highest full cost rate under Reclamation Law. Municipal and Industrial ("M&I") rates, if any, will be set by the Board. Under no circumstances shall any lands receive more than their prorated share of water under 2.01 (a).

(c) Allocation Adjustments.

The allocations made under this section shall be subject to adjustment, either up or down, to reflect (1) the actual amount of CVP Water and Non-CVP Water that becomes available to the District in the Year in which such water is to be delivered and (2) any changes in the allocations of CVP Water to Water Users as a result of a change in the eligibility of a Water User to receive water service under Reclamation Law. Any adjustment will be made using the criteria set forth in this section.

(d) Allocation of Water in Groundwater Storage.

The District shall not be obligated to allocate any of its water held in groundwater storage unless the Board determines to extract water from groundwater storage and allocate such water to Water Users.

2.02. Use of Water.

Water delivered by the District to a Water User shall only be used by the Water User for an Agricultural Use in the Service Area unless the District first consents in writing to a different use or a different place of use. None of the water allocated to a Water User may be used in any Year other than the year for which the allocation has been made.

2.03 Assignment of Water.

A Water User may not assign his allocation of CVP Water or Non-CVP Water to any other person without the prior written consent of the Board of Directors.

**ARTICLE III.  
ALLOCATION OF CAPACITY IN DISTRICT FACILITIES**

3.00. Allocation of Capacity.

The General Manager shall determine the capacity of District water distribution facilities and, if required, allocate such capacity among the Water Users. If the General Manager is required to allocate the capacity of any District distribution facility, each Water User's share of the capacity of the facility shall be equal to the capacity of such facility multiplied by a fraction, the numerator of which is the gross assessable acreage of the lands owned by the Water User within the Service Area which can be served through such facility and the denominator of which is the gross assessable acreage of the lands of all Water Users in the Service Area which can be served through such facility.

3.01. Assignment of Capacity.

A Water User may not assign his right to the use of any District facility for the delivery of water in the Service Area without prior written consent of the Board of Directors.

**ARTICLE IV.  
DELIVERY OF WATER**

4.00. Metered Service at Turnouts.

District water service will be provided through a District approved structure which contains a meter.

4.01. Turnouts Which Serve Several Water Users.

If the District provides water service to more than one Water User through a turnout, all Water Users being served through the turnout will be required to designate one person or entity to be responsible for ordering and transferring water and person(s) or entity to be responsible for the receipt of water charges from the District through a written authorization in a form provided by the District. The District will suspend the delivery of water through such turnout, if any Water User served through such turnout becomes delinquent in the payment of water charges, standby charges, special assessments, filing Water Service Authorizations or compliance with Reclamation Law.

4.02. Delivery of Water.

Each Water User shall notify the District's operations office by 9:00 a.m. on the day prior to the day he desires to have water turned on, turned off, or the rate of flow changed.

4.03. Private Facilities on District Property.

Any privately owned facilities on District property shall be subject to a written agreement or a license to encroach with the District.

4.04. Suspension of Delivery of Water.

The District shall suspend the delivery of water to any Water User who (a) does not abide by these Rules and Regulations for the Sale and Distribution of Water, (b) becomes delinquent in the payment of his water charges, standby charges, or special assessments, (c) is not in compliance with applicable provisions of Reclamation Law, or (d) fails to file a Water Service Authorization.

**ARTICLE V.  
WATER CHARGES AND ASSESSMENTS**

5.00. Adoption of Budget.

The General Manager of the District will present a proposed budget for the ensuing Year to the Board for its review and consideration at the regular meeting of the Board in July of the Year prior to the Year in which water is to be delivered and the Board shall adopt a resolution declaring (a) its intent to adopt a budget for the ensuing Year, (b) its intent to fix and collect standby charges and water charges, and (c) the necessity to levy special assessments, if any, and noticing a public hearing if a public hearing is required by law. The budget for the ensuing Year shall be adopted at the next regular meeting of the Board unless the Board determines otherwise.

5.01. Establishment of Water Charges and Assessments.

(a) Water Charges.

The Board shall determine the proposed amount of the water charges under Water Code section 35470 at the regular meeting of the Board in July. The water charges shall be in an amount at least sufficient to cover the variable cost of purchasing CVP Water and Non-CVP Water and delivering such water to the Water Users. The amount of the water charges shall be fixed at the next regular meeting of the Board unless the Board determines otherwise.

(b) Standby Charges.

The Board shall determine the proposed amount of any standby charges to be levied and assessed under Water Code section 35470 at the regular meeting of the Board in July. Any standby charges shall be levied and assessed on all lands within the Service Area. The amount of any standby charges shall be fixed at the next regular meeting of the Board unless the Board determines otherwise.

(c) Special Assessments.

The Board shall determine the proposed amount of any special assessments to be levied during the Year under Article 3 (commencing with section 35539) of Chapter 2.5 of Part 5 of Division 13 of the Water Code at the regular meeting of the Board in July. The amount of any special assessments shall be fixed at the next regular meeting of the Board unless the Board determines otherwise.

5.02. Payment of Water Charges.

The water charges shall be payable in monthly installments and based on water usage. The District will send the Billing Contact a statement by the 5<sup>th</sup> day of each month for the water charges incurred by the Water User during the preceding month. The amount invoiced in the statement shall be due and payable as of the date of the statement and shall become delinquent if not paid to and received by the District on or before 5:00 p.m., local time on the 25<sup>th</sup> day of such month. If the amount invoiced becomes delinquent, a penalty of 10% of such amount shall immediately be due and payable to the District and interest on the amount invoiced shall accrue at the rate of 0.05% per day from the delinquency date.

5.03. Payment of Charges Under Reclamation Law.

The District will, to the extent possible, bill any full cost charges under Reclamation Law to the Water User in the Water User's monthly statement of water charges. At the end of each Year the District will reconcile all water charges, including any surcharges due as a result of reallocation of Non-CVP Water in the manner provided in section 2.01 (b) hereof, and send each Billing Contact a supplemental billing by February 5<sup>th</sup> of the ensuing Year showing the

amount of any additional water charges. The amount billed shall be due and payable on the date of billing and shall become delinquent on February 25<sup>th</sup> next following. If the amount becomes delinquent, such amount shall be subject to a penalty and shall accrue interest like delinquent water charges under section 5.02 hereof.

5.04. Payment of Assessments.

(a) Standby Charges.

Any standby charges levied and assessed under Water Code section 35470 shall be due and payable by the Landowner, and shall become delinquent in the manner provided in the Board's resolution which fixes the standby charges. If the standby charges become delinquent, a penalty of 10% of the amount of the standby charges shall immediately be due and payable to the District. Interest on the amount of the standby charges and the penalty shall accrue after the date of the sale of the delinquent land to the District at the rate of 18% per annum, but not less than 1.5% for any portion of a month.

(b) Special Assessments.

Any special assessment levied and assessed under Water Code section 35539.1 shall be due and payable by the Landowner, and shall become delinquent in the manner provided in the Board's resolution which fixes the special assessment. If a special assessment becomes delinquent, a penalty of 5% of the amount of the special assessment shall immediately become due and payable. Interest on the amount of the special assessment and the penalty shall accrue after the date of sale of the delinquent land to the District at the rate of 9% per annum, but not less than three-fourths of 1% for any portion of a month.

**ARTICLE VI.  
LIMITATIONS ON OBLIGATIONS OF DISTRICT**

6.00. No Liability for Water Shortages.

The District shall not be liable for any failure to deliver water or any damage arising from a shortage in the supply of water, to meet the water demands of the Water Users in the District.

6.01. No Liability for Facility Failure.

The District shall not be liable for any damage arising from a suspension of the delivery of water for the purposes of maintaining, repairing, replacing, investigating, or inspecting any District facility used for the delivery of water in the District.

6.02. No Liability for Delivery Beyond Turnout.

The District shall not be liable for the control, carriage, handling, use, disposal or distribution of water delivered to a Water User after the water has passed through the District's turnout.

6.03. No Liability for Water Quality.

The District assumes no responsibility for the quality of water to be delivered through District facilities. The water, as delivered by the District, is unfit for human consumption.

**ARTICLE VII.  
MISCELLANEOUS PROVISIONS**

7.00. Operations and Maintenance of District Facilities.

The operation and maintenance of all of the District facilities is within the exclusive control of the District. No person shall interfere with any facility of the District without the prior consent of the Operations Superintendent of the District.

7.01. Prohibitions.

(a) Pumping Into District Facilities.

No private pumping into or from District pipelines or reservoirs shall be permitted without the prior written consent of the District.

(b) Structures.

As further provided in Section 4.03, no structures of any kind shall be placed in, on, or over any District facility except as such are approved, both as to location and character of construction, by the District.

(c) Nuisances.

No rubbish, swill, garbage, manure or refuse, or dead animal or animal matter from any barnyard, stable, dairy or hog pen shall be placed in or allowed to be emptied into any District facility.

(d) Waste Waters.

No waste water shall be discharged into any District facility without the prior written consent of the District.

(e) Private Interference.

Attention is directed to Penal Code section 592 which provides as follows:

“(a) Every person who shall, without authority of the owner or the managing agent, and with intent to defraud, take water from any canal, ditch, flume or reservoir used for the purpose of holding or conveying water for the purpose of holding or conveying water for manufacturing, agricultural, mining, irrigating or generation of power, or domestic uses is guilty of a misdemeanor.”

“(b) If the total retail value of all the water taken is more than nine hundred and fifty dollars (950) , or if the defendant has previously been convicted of an offense under this section or any former section that would be an offense under this section, or of an offense under the laws of another state or of the United States that would have been an offense under this section if committed in this state, then the violation is punishable by imprisonment in the county jail for not more than one year or in the state prison.”

7.02 Authority of the General Manager.

The General Manager of the District is authorized to perform all acts necessary and proper to enforce these rules and regulations, and failure to comply with these rules and regulation shall be sufficient cause for termination of water service. In event a Landowner and/or Water User disagrees with a decision of the General Manger in administering these Rules and Regulations, said Landowner and/or Water User shall have the right to appeal to the Board of Directors within 30 days of such decision, which appeal shall be submitted in writing to the Board and specify the reason for the appeal. The appeal shall be considered at the next regularly scheduled meeting of the Board.

# Attachment C

## INTRODUCTION

This Groundwater Management Plan (Plan) is developed by the Kern-Tulare Water District (District) in accordance with Part 2.75 (commencing with Section 10750) of Division 6 of the Water Code. The purpose of this Plan is to document existing groundwater management programs and assist with identification and implementation of modifications to these programs that will better define the District's groundwater resources.

The procedure for adoption of a groundwater management plan includes the following:

- Hold a public hearing prior to adopting a resolution of intention to prepare a groundwater management plan. (Water Code, §10753.2(a); §10753.2(b).)
- Provide the State of California Department of Water Resources (DWR) a copy of the resolution of intention adopted, within 30 days of the date of adoption. Also provide to DWR contact information for the person in charge of drafting the groundwater management plan. (§10753.2(c).)
- Publish the resolution of intention to adopt a groundwater management plan. (§10753.3.)
- Prepare a groundwater management plan within two years of the date of the adoption of the resolution of intention. (§10753.4(a).)
- Provide a written statement to the public and DWR describing the manner in which interested parties would be allowed to participate in developing the groundwater management plan. (§10753.4(b).)
- Establish and maintain a list of persons interested in receiving notices regarding the groundwater management plan preparation, meeting announcements, and availability of draft groundwater management plans, maps and other relevant documents. Any person may request in writing to be placed on the list of interested persons. (§10753.4(c).)
- Hold a second public hearing to determine whether to adopt the groundwater management plan. (§10753.5.)
- Submit a copy of the groundwater management plan to DWR in electronic format. (§10753.7(b)(2).)

- Adopt rules and regulations to implement and enforce the groundwater management plan. (§10753.9(a)) These rules must consider the potential impact of those rules and regulations on business activities. (§10753.10.)

For the purposes of qualifying a groundwater management plan under section 10753.7, the groundwater management plan must develop management objectives for the groundwater basin that include the following components:

1. Provide for monitoring and management of:
  - Groundwater levels within the groundwater basin.
  - Groundwater quality degradation.
  - Inelastic land surface subsidence.
  - Changes in surface water flow and surface water quality that directly affect the groundwater levels or quality or area caused by groundwater pumping in the groundwater basin.
  - A description of how recharge areas identified in the plan substantially contribute to the replenishment of the groundwater basin.
2. Develop a plan to involve other agencies that enables the District to work cooperatively with other public entities whose service area or boundary overlies the groundwater basin.
3. Prepare a map that details the area of the groundwater basin defined in DWR Bulletin No. 118, the boundaries of the District, and the boundaries of other agencies that overlay the basin.
4. Prepare a map identifying the recharge areas for the groundwater basin. This map shall be submitted to the appropriate local planning agency, DWR, and interested parties, after adoption of the groundwater management plan.
5. Adopt monitoring protocols designed to detect changes in:
  - Groundwater levels.
  - Groundwater quality.
  - Inelastic surface subsidence for which subsidence has been identified as a potential problem.
  - Flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin.

In addition, under section 10753.8, the plan may include components related to the following:

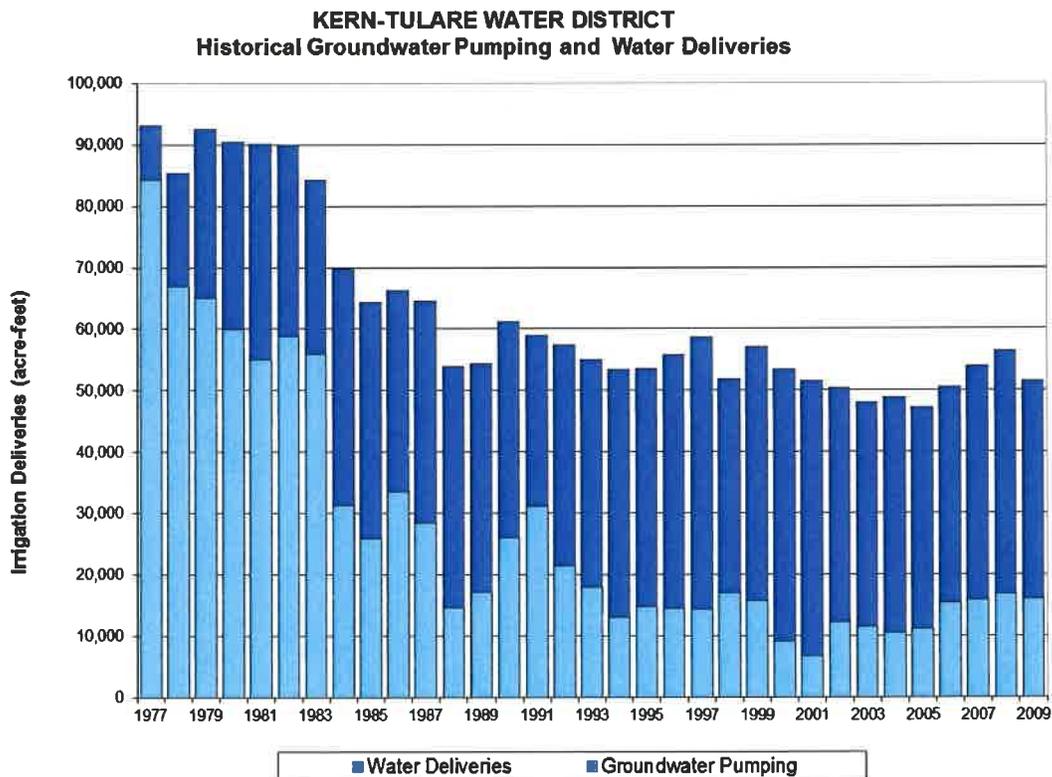
- a. The control of saline water intrusion.
- b. Identification and management of wellhead protection areas and recharge areas.
- c. Regulation of the migration of contaminated groundwater.
- d. The administration of a well abandonment and well destruction program.
- e. Mitigation of conditions of overdraft.
- f. Replenishment of groundwater extracted by water producers.
- g. Monitoring of groundwater levels and storage.
- h. Facilitating conjunctive use operations.
- i. Identification of well construction policies.
- j. The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.
- k. The development of relationships with state and federal regulatory agencies.
- l. The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

## DESCRIPTION OF DISTRICT

The District provides irrigation water to over 17,000 acres of high-value permanent crops in Kern and Tulare counties. The current annual irrigation demand is approximately 53,000 acre-feet (AF), of which approximately 36,000 AF is provided from the District. The remaining approximately 17,000 AF is from groundwater pumped by water users. At the present time, approximately 99 percent of irrigated lands are permanent plantings. The distribution system consists of four pumping plants located along the Friant-Kern Canal, three regulating reservoirs, six re-lift pumping plants, and approximately 60 miles of buried pipelines. In addition, the District operates one pumping plant located in a Delano-Earlimart Irrigation District reservoir.

Figure 1 illustrates the portion of irrigation demands satisfied with District water and that portion satisfied with groundwater. The irrigation demand has generally decreased and the imported water deliveries have increased over time. The decrease in irrigation demand is due to improved irrigation methods, lands being taken out of production and lands detaching from the District. The increase in imported water deliveries is due to distribution system improvements.

Figure 1



## **Geological Setting**

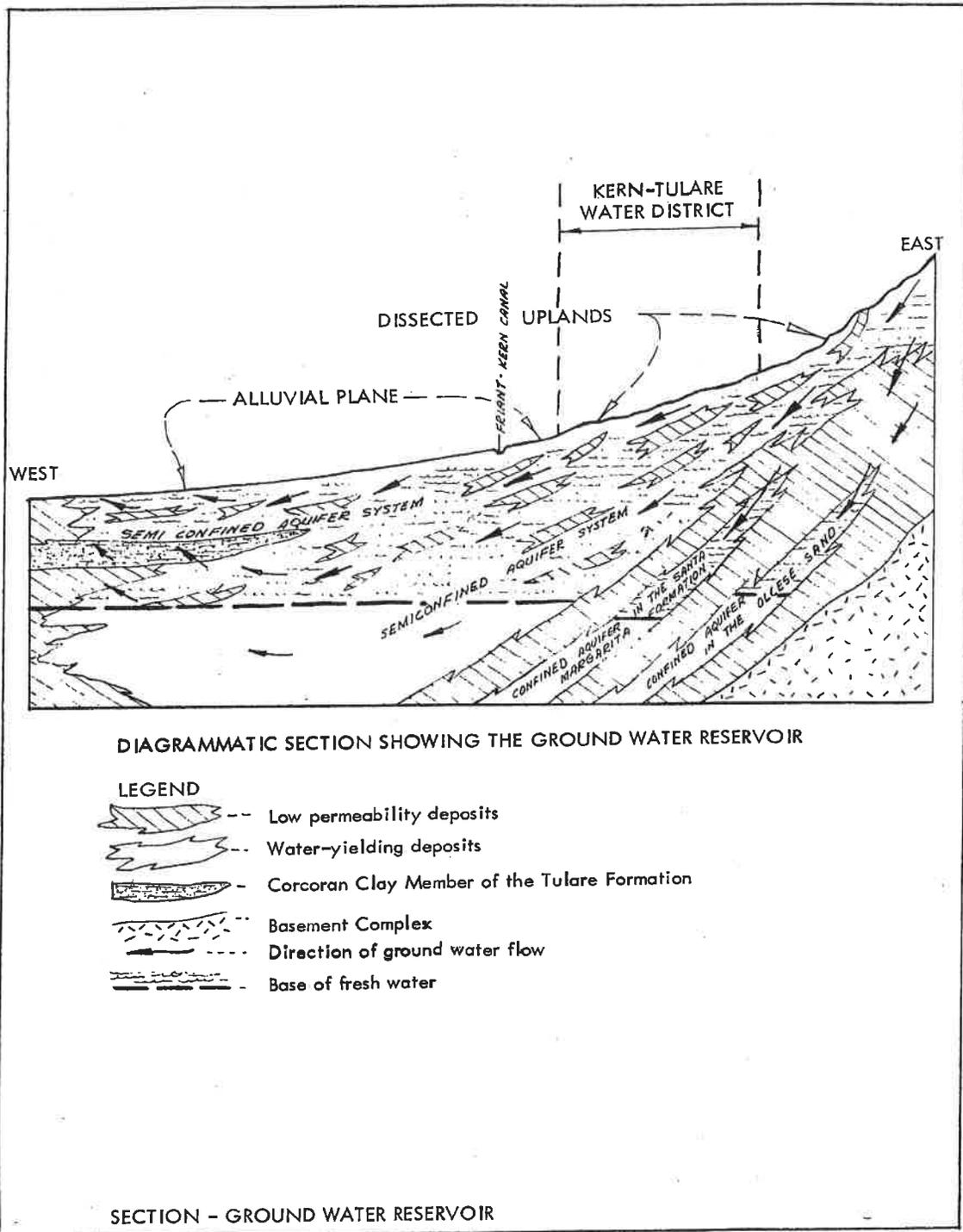
Figure 2 provides a generalized subsurface cross section extending from west to east through the District. The geological sequences of permeable, water-bearing sediments within the District, from youngest to oldest, are: 1) continental deposits, 2) the Santa Margarita formation, and 3) the Olcese sand.

Wells drilled on the west side of the District tap into the continental deposits. Continental deposits comprise an unconfined aquifer and are the most commonly tapped aquifer in the region. The top of this aquifer is the water table and the bottom is the base of freshwater, which is believed to occur at a depth of 2,000 feet.

Wells drilled on the east side of the District tap into the confined aquifers of the Santa Margarita formation and Olcese sand deposits. The Santa Margarita formation begins from 1,000 to 1,700 feet below the surface, ranging in thickness from 150 to 200 feet. Underlying the Santa Margarita formation by about 150 to 200 feet is the Olcese sand aquifer, ranging in thickness from 300 to 450 feet.

The Santa Margarita formation and the Olcese sand deposits are shallow to the east and deepen to the west. These deposits contain useable groundwater and are located beneath fine-grained deposits that limit the natural recharge from the land surface. In the easterly parts of the District, a number of wells drilled to depths of 1,400 to 2,500 feet tap highly permeable deposits of the Santa Margarita and/or the Olcese Formations. These formations are considered to be a separate aquifer from the continental deposits. Fresh groundwater is present in some areas of the Santa Margarita formation and the Olcese sand deposits to depths exceeding 3,000 feet.

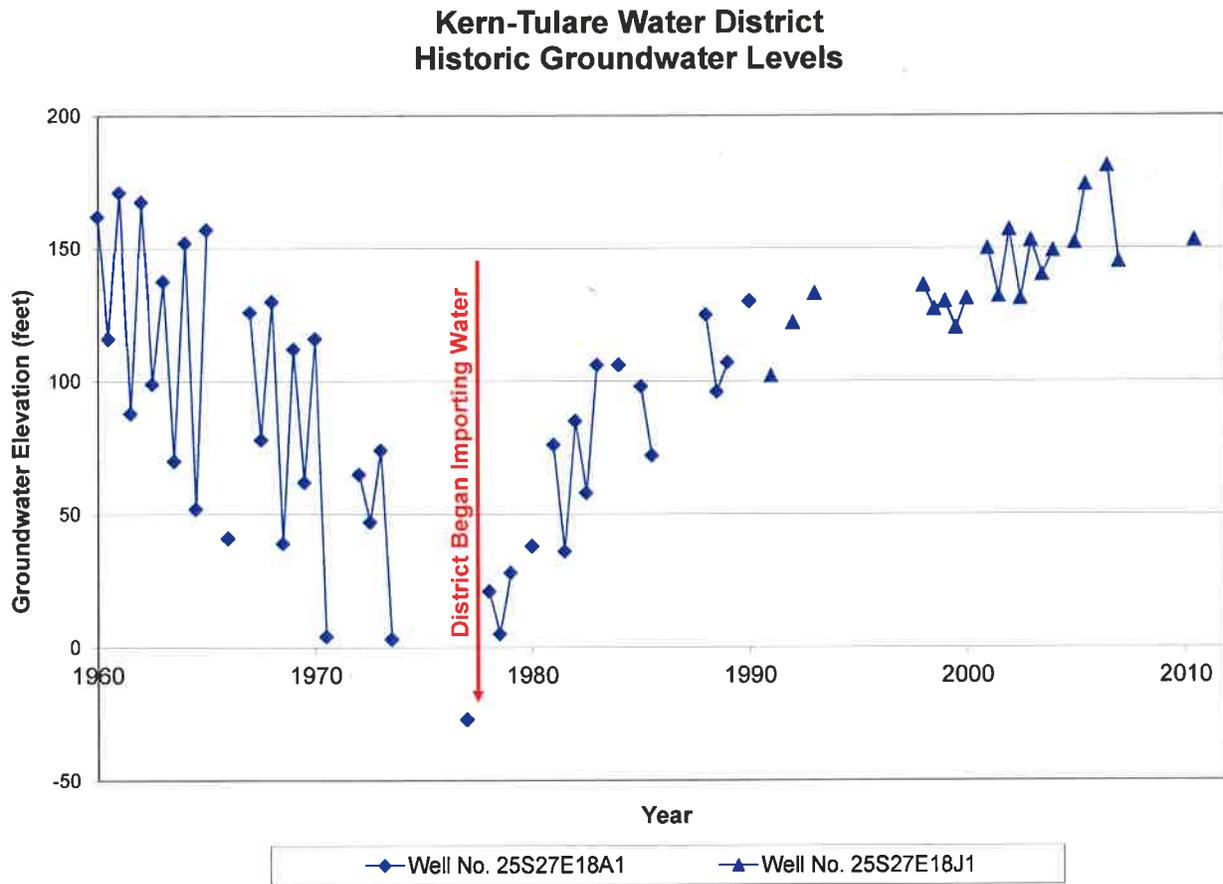
Figure 2



### Occurrence and Movement of Groundwater

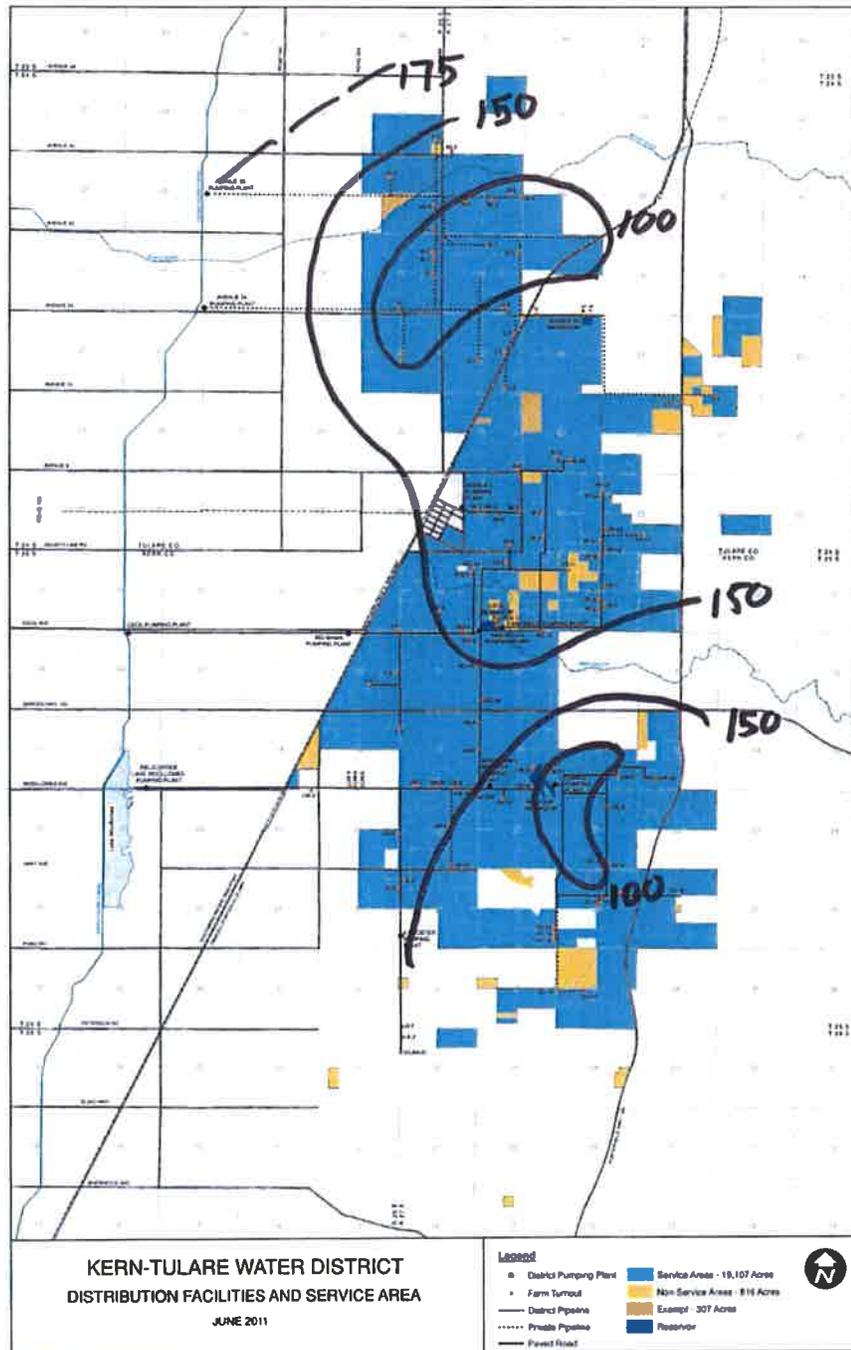
A hydrograph of groundwater elevations near the center of the District from 1960 to date is presented in Figure 3. Prior to 1977, groundwater levels throughout the District were falling at a rate of approximately 10 feet per year. As a result of these declining groundwater levels, groundwater quality was degrading and subsidence of the land surface was occurring. Groundwater conditions have steadily and dramatically improved since 1977 as a result of the District's importation of irrigation water into the area.

Figure 3



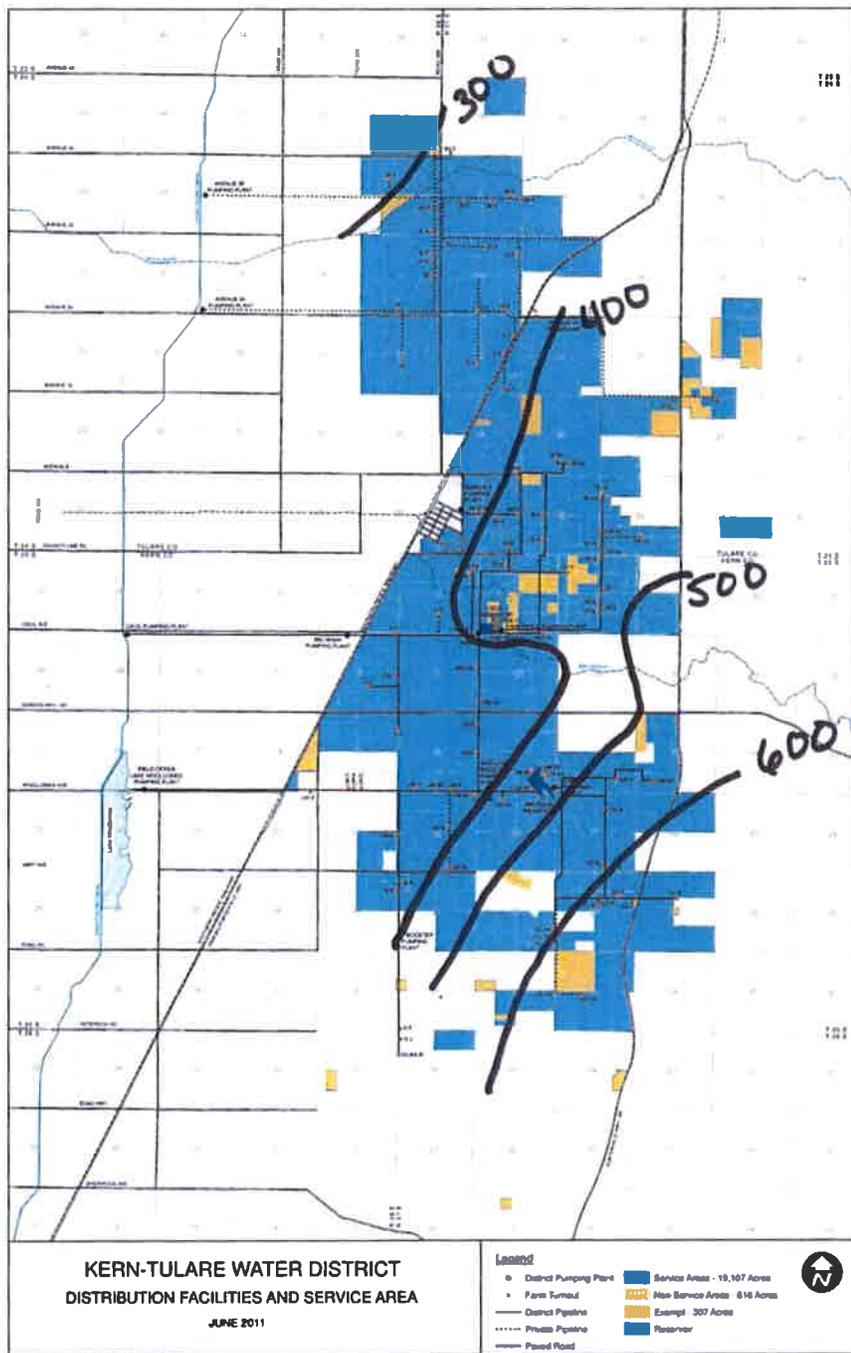
Elevations (above mean sea level) of groundwater levels within the District for spring 2010 are presented in Figure 4. Groundwater flows from both the east and west into the District.

Figure 4



Depth to groundwater within the District for spring 2010 is presented in Figure 5. Depth to groundwater increases both east and south into the District.

Figure 5



## **Groundwater Recharge**

Sources of groundwater replenishment include underflow from foothill recharge areas, recharge from intermittent streams, and groundwater inflow from the west. The movement of groundwater has historically been westerly from the foothills toward the San Joaquin Valley. However, groundwater extraction in excess of groundwater recharge within the District has locally reversed this westerly gradient. In addition, Delano-Earlimart Irrigation District (DEID) and Southern San Joaquin Municipal Utility District (SSJMUD), located immediately to the west of the District, receive firm supplies of Central Valley Project (CVP) water, which has caused improved water levels beneath those districts. Other than irrigation deliveries, there are no intentional recharge areas within the District's boundaries which would impact groundwater quality or quantity.

## **Groundwater Quality**

Groundwater in the continental deposits contains between 250 and 400 parts per million (ppm) total dissolved solids and is of a calcium bicarbonate or sodium bicarbonate chemical type. The water is classified as suitable for irrigation.

Sedimentary rocks comprising the Santa Margarita and the Olcese formations are largely marine in origin and probably contained salty water when deposited. A short distance west of Richgrove an interface between fresh and saline water is believed to exist in these formations which extends southeasterly through the District. Fresh groundwater found west of the interface is attributed to partial flushing by fresh water subsequent to the deposition of the aquifer. Water east of the interface is sodium chloride in character with total dissolved solids concentrations between 300 and 500 ppm and is classed as having medium to high salinity hazard and high to very high sodium hazard. Groundwater from the Santa Margarita and the Olcese Formations is high in hydrogen sulfide concentrations, which produces a noticeable odor.

## **GROUNDWATER MANAGEMENT**

(§10753.7)

### **BASIN MANAGEMENT OBJECTIVES**

The basin management objectives for the District are: (1) maintain or improve groundwater levels within the District, (2) control degradation of groundwater quality, and (3) limit land subsidence. These objectives can be accomplished as follows:

1. Pursue and support measures that will increase the yield and reliability of the District's CVP water supplies.
2. Work cooperatively with the City of Bakersfield and Kern County Water Agency to acquire additional water supplies from the Kern River and State Water Project.
3. Continue to purchase Friant water supplies, Section 215 water, and other water available from the Friant-Kern Canal.
4. Continue to implement water exchanges and banking programs with other water districts.
5. Set water rates to encourage water users to maximize the use of surface water when it is available.
6. Maintain and possibly improve distribution facilities to maximize the delivery capability of surface water when it is available.

## **MONITORING AND MANAGEMENT**

### **(§10753.7(a)(1))**

The District's monitoring program provides data necessary for the Districts to evaluate changes in the groundwater basin in the immediate vicinity of the District. The District's monitoring program consists of the following elements.

#### **Groundwater Levels within the Groundwater Basin**

The District will measure the depth to groundwater at selected wells where access and measurability are reasonably available in the spring and the fall of each year. From this information, the District will prepare contour maps of elevation of groundwater and depth to groundwater at approximately 5 year intervals. The District will also prepare hydrographs of groundwater levels in selected wells at approximately 5 year intervals.

#### **Groundwater Quality Degradation**

Groundwater quality samples are occasionally taken from wells in the District. This data is available from the Kern County Water Agency (Agency) and from DWR. Additionally, the Agency prepares an annual report that identifies areas of water quality concern throughout the county. The most recent report, entitled "Kern County Water Agency Water Supply Report, 2009", does not indicate there are any areas of concern for the District.

#### **Inelastic Land Surface Subsidence**

Prior to the importation of surface water supplies, land surface subsidence was a significant concern. However, since groundwater levels have been stabilized as a result of District water supplies, subsidence is not a concern. Therefore, the District has not found it necessary to monitor subsidence and have relied upon infrequent studies by state and federal agencies.

**Changes in surface flow and surface water quality that directly affect the groundwater levels or quality or are caused by groundwater pumping**

Other than improvements in groundwater from providing District water, the District there are no changes in surface flow and surface water quality that directly affect the groundwater basin or are caused by groundwater pumping.

**A description of how recharge areas identified in the plan substantially contribute to the replenishment of the groundwater basin.**

Other than improvements in groundwater from providing District water, there are no intentional recharge areas within the District's boundaries. The District replenishes groundwater by providing surface water so that groundwater is not pumped. As shown in Figure 2, the District is underlain by a confined aquifer so direct recharge to the groundwater basin is not an option. Therefore, the strategy the District has employed has been to develop banking programs with other districts for return during dry years and thus avoiding further pumping within the District.

**REGIONAL AGENCY INVOLVEMENT**

**(§10753.7(a)(2))**

Recently, the District, along with other districts in the region, formed the Poso Creek Regional Management Group. A map that details the area of the management group is presented in Figure 6. This regional management group was formed to enhance water management and planning activities in the region and has developed a regional water management plan that it is currently implementing. Other members of the management group include:

- Semitropic Water Storage District
- Shafter-Wasco Irrigation District
- North Kern Water Storage District
- Cawelo Water District
- Delano-Earlimart Irrigation District
- North West Kern Resource Conservation District

In 2001, the District participated along with eight other local water districts (Delano-Earlimart Irrigation District, Lower Tule River Irrigation District, Pixley Irrigation District, Porterville Irrigation District, Saucelito Irrigation District, Southern San Joaquin Municipal Utility District, Stone Corral Irrigation District, and Terra Bella Irrigation District) to prepare a report entitled: "Analysis of Groundwater Resources". The purpose of the investigation was to characterize the hydrologic conditions and identify favorable areas for recharge of surface water supplies that can be stored underground and later recovered.

The District is a member of the Friant Water Authority. As a member of this authority, District staff attends several meetings a month to work cooperatively on water supply related issues, including groundwater management and surface water supplies.

The District is a Participant in the Cross Valley Canal and has contributed to financing construction and improvements, and as such, meets on a monthly basis with other local water districts and urban purveyors to work cooperatively on water conveyance and other related issues.

Figure 6  
Poso Creek Regional Management Group Map  
(§10753.7(a)(3))

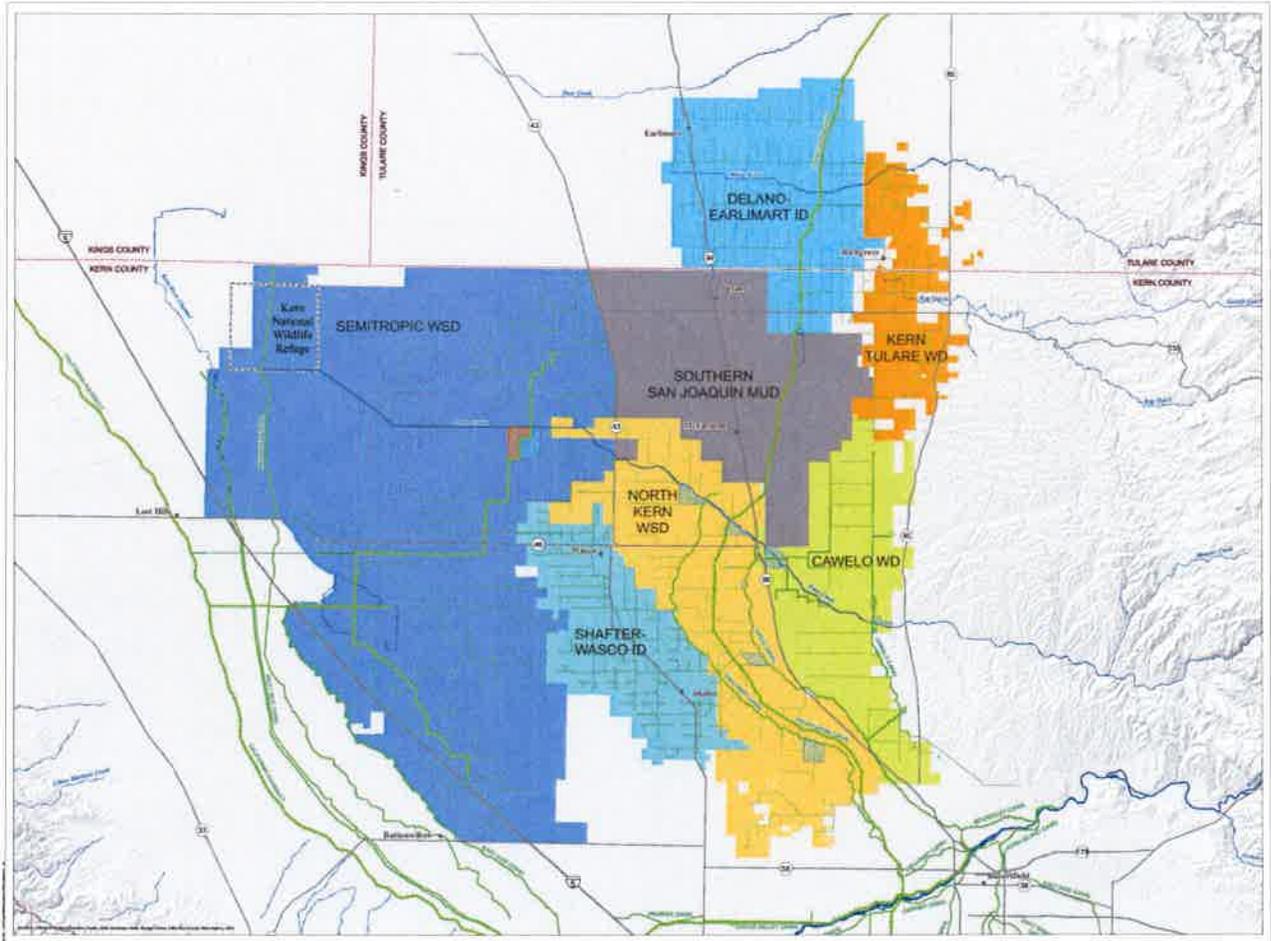


Figure 7  
(§10753.7(a)(3))

# Groundwater Basins in California

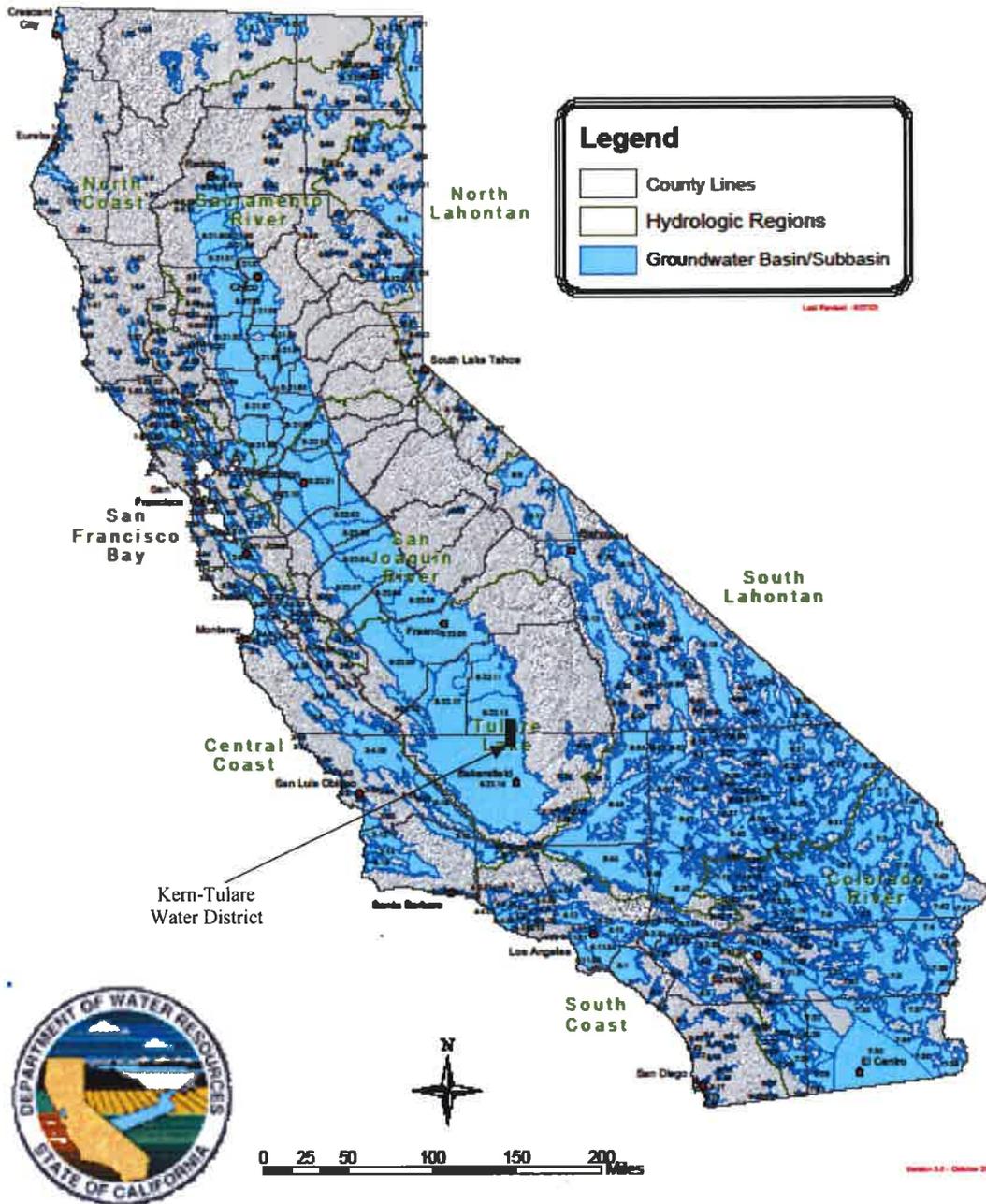
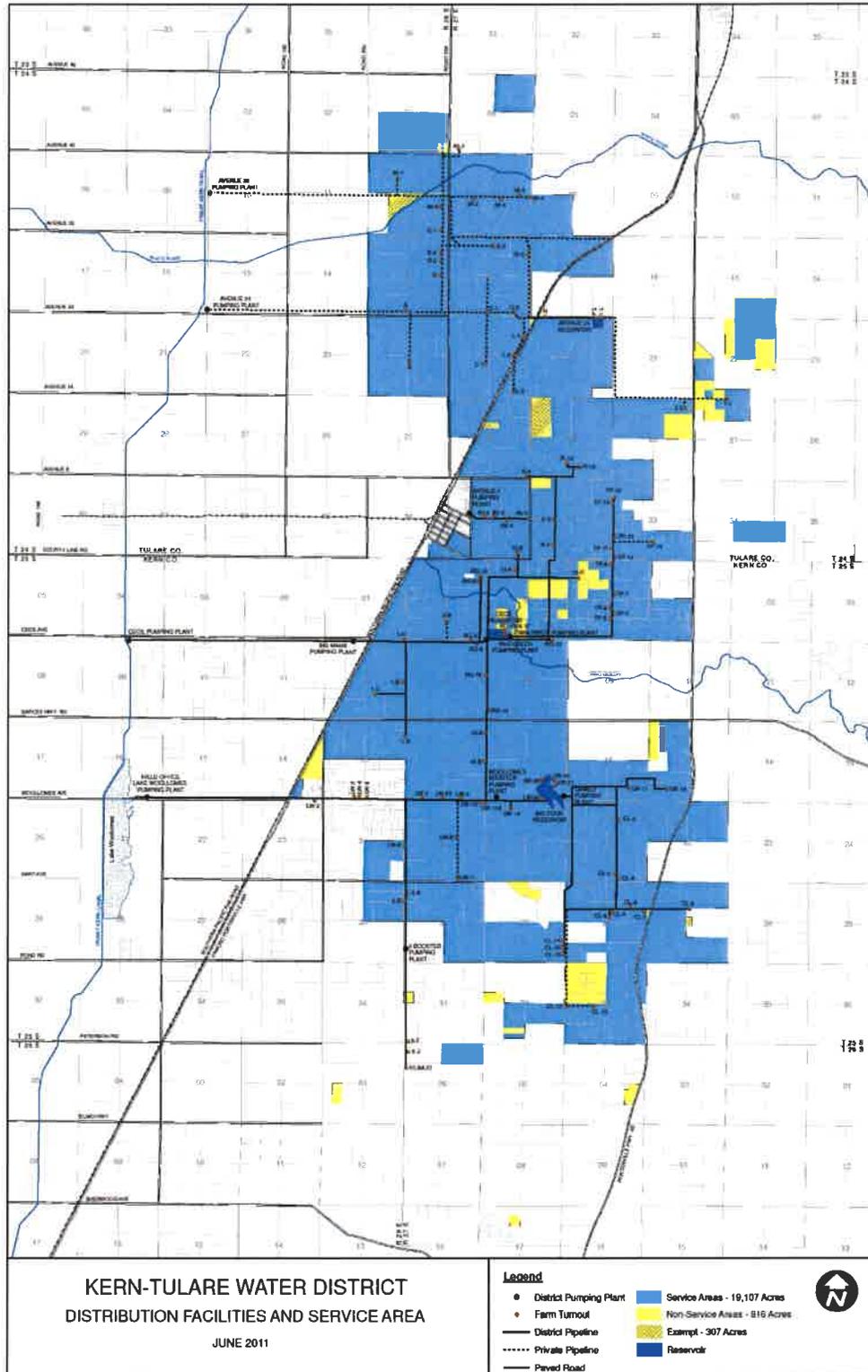


Figure 8



## **MAP IDENTIFYING RECHARGE AREAS**

(§10753.7(a)(4)(A))

There are no intentional recharge areas within the District's boundaries, so a map has not been prepared.

## **MONITORING PROTOCOLS**

(§10753.7(a)(5))

### **Groundwater Levels**

The District will prepare a monitoring report once every 5 years to present the results of the monitoring program described below.

- The District shall use a portable well sounding unit to monitor water levels at selected wells in the fall and spring of each year.
- All Data shall be collected for selected wells on a groundwater level measurement form. An example of this form is presented in Appendix A.
- The District will provide an opportunity for landowners to convert wells to monitor wells rather than abandoning them.

### **Groundwater Quality**

The District will continue to review the data available from the Agency and DWR. If there are areas of concern that arise from that data the District may revise these protocols.

### **Inelastic Land Surface Subsidence**

The District will continue to review the data available from the state and federal agencies. If there are areas of concern that arise from that data the District may revise these protocols.

### **Flow and quality of surface water that directly affect the groundwater levels or quality or are caused by groundwater pumping in the basin**

There are no changes in surface flow and surface water quality that directly affect the groundwater basin or are caused by groundwater pumping.

## **Reporting Data**

Groundwater level data will be used to generate the following reports:

- Hydrographs of groundwater elevations for selected wells (once every 5 years)
- Contours of elevation of groundwater within the District (once every 5 years)
- Contours of depth to groundwater within the District (once every 5 years)

## **ADDITIONAL PLAN COMPONENTS**

**(§10753.8)**

### **Control of Saline Water Intrusion**

Due to the District's location, saline water intrusion is not a concern.

### **Identification and Management of Wellhead Protection Areas and Recharge Areas**

The Counties of Kern and Tulare have adopted and administered an ordinance (Kern County Ordinance Code Chapter 14.08, and Tulare County Ordinance Code Part 4 Chapter 13) which includes wellhead protection, which individual landowners are to follow. The District currently does not operate or maintain any wells or recharge areas within the District. If the District develops wells or recharge areas, it will comply with County ordinances.

### **Regulation of the Migration of Contaminated Groundwater**

The District has not identified any areas of contaminated groundwater underlying its boundaries.

### **The Administration of a Well Abandonment and Well Destruction Program**

The District does not have any wells that it maintains or operates and assumes that landowners will comply with all local ordinances (Kern County Ordinance Code Chapter 14.08, Tulare County Ordinance Code Part 4 Chapter 13).

### **Mitigation of Conditions of Overdraft**

The purpose of the District is to provide water to mitigate overdraft. This purpose is frustrated by environmental and regulatory actions in the Delta and on the San Joaquin River. Figure 3 of this plan shows that groundwater levels have rebounded and remain stable since the District's inception, but that stability remains in jeopardy as water supplies become scarcer and more

costly. The best way to avoid overdraft is for the District to maintain an adequate and affordable water supply.

### **Replenishment of Groundwater Extracted by Water Producers**

The purpose of the District is to replenish groundwater by importing water from outside sources. This imported water ensures growers have adequate and affordable supplies so that they do not pump groundwater. This purpose is frustrated by environmental and regulatory actions in the Delta and on the San Joaquin River.

### **Monitoring of Groundwater Levels and Storage**

The measurement and monitoring of groundwater levels was described earlier in this plan. The District has determined that the previously described procedure is adequate to understanding the District's groundwater resources and does not feel that calculation of change in storage is necessary.

### **Facilitating Conjunctive Use Operations**

The District's purpose is to facilitate conjunctive use operations by supplying surface water, which preserves the groundwater. The District also participates in groundwater banking outside of its District as noted in the Exchange and Transfers section of this document. The District continues to investigate conjunctive use opportunities both within and outside of the District.

### **Identification of Well Construction Policies**

The District is superseded and governed by the County Ordinances (Kern County Ordinance Code Chapter 14.08, Tulare County Ordinance Code Part 4 Chapter 13) The District has no plans for construction of wells within the District.

### **The Construction and Operation by the Local Agency of Groundwater Contamination Cleanup, Recharge, Storage, Conservation, Water Recycling, and Extraction Projects.**

The District has not identified any groundwater contamination or need for groundwater contamination cleanup within its boundaries.

The District has not identified a suitable groundwater recharge project within its boundaries.

Through this plan, the District continues to monitor the groundwater levels within the District, but has not identified a need for any construction or changes to District operations.

There are some landowners that receive recycled oilfield water, which is blended and used on their crops. The District has not identified a need for any construction or operation project that the District should pursue at this time.

The District has no plans for construction of wells within the District and therefore has not identified a need for any construction or operation of groundwater extraction projects.

**The development of relationships with state and federal regulatory agencies**

The District is part of the Kern Watershed Coalition and the Southern San Joaquin Water Quality Coalition which interacts with the Regional Board and District staff occasionally attends Regional Board meetings.

**The Review of Land Use Plans and Coordination with Land Use Planning Agencies to Assess Activities Which Create a Reasonable Risk of Groundwater Contamination**

The District has no authority to control land use within its boundaries. All land use decisions are provided by the Counties.

# Attachment D

# KERN-TULARE WATER DISTRICT

# STATEMENT

5001 California Avenue, Suite 202  
 Bakersfield, CA 93309  
 Telephone: 661-327-3132 Fax: 661-327-2724

Billing Month: August  
 Statement Period: 8/1/14 - 8/31/14  
 Beginning Balance: \$1,539.64  
 Current Charges: \$4,096.76  
 Account No.: 1217  
 Page: 1 of 1

Bill To:

**[REDACTED]**  
**[REDACTED]**  
**[REDACTED]**

**Amount Due: \$ 4,096.76**  
 Remit Stub with Total Amount Due

If payment is not received by the 25th day of the billing month a 10% penalty shall be added, as well as interest from the date of delinquency to the date of payment at a rate of .05% per day. If payment plus said penalty and interest is not received by 5:00 p.m. of the 5th weekday of the next month following the billing, the District shall suspend water deliveries.

Date	Description					Amount
8/1/2014	Beginning Balance					\$1,539.64
8/20/14	Payment					(\$1,539.64)
8/31/14	August 2014 Water Deliveries					
	<b>Turnout</b>	<b>Rate</b>	<b>Start Reading</b>	<b>Final Reading</b>	<b>AcFt</b>	<b>AcFt YTD</b>
	13-H	\$244.00	7.58	24.37	16.79	35.94
					<b>16.79</b>	<b>35.94</b>
						<b>\$4,096.76</b>
<b>Amount Due:</b>						<b>\$4,096.76</b>

Please pay from this statement, invoice will not follow.

# KERN-TULARE WATER DISTRICT

# STATEMENT

5001 California Avenue, Suite 202  
 Bakersfield, CA 93309  
 Telephone: 661-327-3132 Fax: 661-327-2724

Billing Month: August  
 Statement Period: 8/1/14 - 8/31/14  
 Beginning Balance: \$25,429.68  
 Current Charges: \$22,737.45  
 Account No.: 1214  
 Page: 1 of 1

Bill To:

[REDACTED]  
 [REDACTED]  
 [REDACTED]

**Amount Due: \$ 48,167.13**  
 Remit Stub with Total Amount Due

If payment is not received by the 25th day of the billing month a 10% penalty shall be added, as well as interest from the date of delinquency to the date of payment at a rate of .05% per day. If payment plus said penalty and interest is not received by 5:00 p.m. of the 5th weekday of the next month following the billing, the District shall suspend water deliveries.

Date	Description						Amount
8/1/2014	Beginning Balance						\$25,429.68
8/26/14	Late Penalty						\$2,542.97
8/29/14	Compound Interest Through 8/29/2014						\$54.72
8/31/14	August 2014 Water Deliveries						
	<b>Turnout</b>	<b>Rate</b>	<b>Start Reading</b>	<b>Final Reading</b>	<b>AcFt</b>	<b>AcFt YTD</b>	
	R-8	\$244.00	2,629.99	2,712.53	82.54	424.45	\$20,139.76
					<b>82.54</b>	<b>424.45</b>	<b>\$20,139.76</b>
						<b>Amount Due:</b>	<b>\$48,167.13</b>

Please pay from this statement, invoice will not follow.

# KERN-TULARE WATER DISTRICT

5001 California Avenue, Suite 102  
 Bakersfield, CA 93309  
 Telephone: 661-327-3132 Fax: 661-327-2724

## 2016 ASSESSMENT/STANDBY STATEMENT



Account No: 1217

PARCEL	LOCATION	DESCRIPTION	ACRES	RATE	AMOUNT
051-050-28-4	4-25-27	Service Area Assessments	36.71	27.00	991.17
		Service Area Standby	36.71	74.00	2,716.54
051-050-30-0	4-25-27	Service Area Assessments	9.10	27.00	245.70
		Service Area Standby	9.10	74.00	673.40
051-050-31-8	4-25-27	Service Area Assessments	9.55	27.00	257.85
		Service Area Standby	9.55	74.00	706.70
051-050-42-9	4-25-27	Service Area Assessments	1.77	27.00	47.79
		Service Area Standby	1.77	74.00	130.98
051-050-47-4	4-25-27	Service Area Assessments	0.87	27.00	23.49
		Service Area Standby	0.87	74.00	64.38

(Continued on Next Page)

Page 1 of 2

**Please Read Carefully:**

Charges are due and payable upon receipt. If the 1st installment is not paid on or before February 1, 2016 and the 2nd installment is not paid on or before June 1, 2016, charges become delinquent. Upon delinquency, a penalty of 10% will be added to the Standby charge and 5% to the Assessment charge. The delinquent standby amounts including penalty will bear interest at the rate of 1.5% per each full month of delinquency. District water will not be delivered for use upon any parcel of land against which there are any delinquent assessments, standby charges, or water tolls.

Assessee has the option of paying standby charges in 2 installments, or paying both installments before the first installment is delinquent. The 2nd Installment may be paid only if 1st Installment has been paid. A courtesy reminder notice will be mailed for the 2nd Installment.

RETURN THIS STUB WITH SECOND INSTALLMENT PAYMENT.

**2nd**  
Installment

Assess Year: 2016  
 Account No: 1217  
 2004 Wilson Family Trust

"Amount Due" -----> **\$5,256.01**

Remit To: **KERN-TULARE WATER DISTRICT**  
 5001 California Avenue, Suite 102  
 Bakersfield, CA 93309

"Amount Paid" -----> \$ \_\_\_\_\_

2ND INSTALLMENT DELINQUENT IF NOT PAID ON OR BEFORE JUNE 1, 2016.

RETURN THIS STUB WITH FIRST INSTALLMENT PAYMENT.

**1st**  
Installment

Assess Year: 2016  
 Account No: 1217  
 2004 Wilson Family Trust

"Amount Due" -----> **\$5,256.07**

Remit To: **KERN-TULARE WATER DISTRICT**  
 5001 California Avenue, Suite 102  
 Bakersfield, CA 93309

"Amount Paid" -----> \$ \_\_\_\_\_

1ST INSTALLMENT DELINQUENT IF NOT PAID ON OR BEFORE FEBRUARY 1, 2016.

# KERN-TULARE WATER DISTRICT

5001 California Avenue, Suite 102  
Bakersfield, CA 93309  
Telephone: 661-327-3132 Fax: 661-327-2724

## 2016 ASSESSMENT/STANDBY STATEMENT

[REDACTED]

Account No: 1217

PARCEL	LOCATION	DESCRIPTION	ACRES	RATE	AMOUNT
051-070-21-7	5-25-27	Service Area Assessments	36.97	27.00	998.19
		Service Area Standby	36.97	74.00	2,735.78
051-080-09-1	5-25-27	Service Area Assessments	9.11	27.00	245.97
		Service Area Standby	9.11	74.00	674.14
		Total:			<u>10,512.08</u>

# Attachment E

**KERN-TULARE WATER DISTRICT**

AC

**WATER SERVICE AUTHORIZATION FOR 2015**

<u>APN(s)</u>	<u>Acres</u>	<u>Turnout No.</u>
051-010-58-5	3.00	TP-5
051-020-05-5	46.44	TP-5
051-020-06-3	14.34	TP-5
051-020-07-1	13.86	TP-5
051-020-08-9	74.64	TP-5
051-060-05-1	37.30	TP-5
051-060-06-9	37.36	TP-5
051-060-07-7	37.32	TP-5
051-060-08-5	37.13	TP-5
051-060-25-9	26.89	TP-5

**Representation and Acknowledgements.**

The undersigned represents that it is the holder of title to the above-described lands and acknowledges that (a) the Landowner desires delivery of water during the year (b) the designation of a Water User and Billing Contact, does not relieve the undersigned of its obligations to the District, (c) a 10% penalty will be due and payable to the District if payment is not received by the District by the 25th day of the billing month and interest will accrue at the rate of 0.05% per day from the delinquent date, and (d) the District will suspend water deliveries to the above-described lands if the amount due to the District, including any penalty and any interest, is not received by the District by 5:00 p.m. on the 5th day of the month following such billing.

**LANDOWNER (A holder of title to land within the District, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name: Adams, Paul & Jan  
Address: 12201 Avenue 480  
Orange, CA 92668  
Telephone No.: \_\_\_\_\_ Fax No.: 559-626-4959 EMail: \_\_\_\_\_

**Landowner(s) Signature:** \_\_\_\_\_

**WATER USER (the holder of title to land within the Service Area or his authorized agent, who receives water service from the District, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name(s): South Ranches, LLC  
Address: 12201 Avenue 480  
Orange, CA 92668  
Telephone No.: 559-626-4732 Fax No.: 559-626-4959 EMail: \_\_\_\_\_

Authorized to Order Water:  
1. Jared Rhomlee 2. Rafa Velasquez  
3. \_\_\_\_\_ 4. \_\_\_\_\_

**BILLING CONTACT (An individual or entity that the Landowner has designated as responsible for receiving monthly water statements, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name: South Ranches, LLC  
Address: 12201 Avenue 480  
Orange, CA 92668  
Telephone No.: 559-626-4732 Fax No.: 559-626-4959 EMail: \_\_\_\_\_

RECEIVED  
DEC - 1 2014  
KERN-TULARE  
WATER DISTRICT

**KERN-TULARE WATER DISTRICT**

**WATER SERVICE AUTHORIZATION FOR 2015**

RECEIVED

DEC 2 5 2014

KERN-TULARE WATER DISTRICT

<u>APN(s)</u>	<u>Acres</u>	<u>Turnout No.</u>
338-180-037	9.36	TP-8

**Representation and Acknowledgements.**

The undersigned represents that it is the holder of title to the above-described lands and acknowledges that (a) the Landowner desires delivery of water during the year (b) the designation of a Water User and Billing Contact, does not relieve the undersigned of its obligations to the District, (c) a 10% penalty will be due and payable to the District if payment is not received by the District by the 25th day of the billing month and interest will accrue at the rate of 0.05% per day from the delinquent date, and (d) the District will suspend water deliveries to the above-described lands if the amount due to the District, including any penalty and any interest, is not received by the District by 5:00 p.m. on the 5th day of the month following such billing.

**LANDOWNER (A holder of title to land within the District, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name: [Redacted]  
 Address: [Redacted]  
 Telephone No.: \_\_\_\_\_ Fax No.: 5595354334 EMail: \_\_\_\_\_  
 Landowner(s) Signature: [Signature]

**WATER USER (the holder of title to land within the Service Area or his authorized agent, who receives water service from the District, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name(s): [Redacted]  
 Address: [Redacted]  
 Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_ EMail: \_\_\_\_\_  
 Authorized to Order Water:  
 1. \_\_\_\_\_ 2. \_\_\_\_\_  
 3. \_\_\_\_\_ 4. \_\_\_\_\_

**BILLING CONTACT (An individual or entity that the Landowner has designated as responsible for receiving monthly water statements, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name: [Redacted]  
 Address: [Redacted]  
 Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_ EMail: \_\_\_\_\_

**KERN-TULARE WATER DISTRICT**

**WATER SERVICE AUTHORIZATION FOR 2014**

<u>APN(s)</u>	<u>Acres</u>	<u>Turnout No.</u>
051-050-28-4	36.71	13-H
051-050-30-0	9.10	13-H
051-050-31-8	9.55	13-H
051-050-42-9	1.77	13-H
051-050-47-4	0.87	13-H
051-070-21-7	36.97	13-H

**Representation and Acknowledgements.**

The undersigned represents that it is the holder of title to the above-described lands and acknowledges that (a) the Landowner desires delivery of water during the year (b) the designation of a Water User and Billing Contact, does not relieve the undersigned of its obligations to the District, (c) a 10% penalty will be due and payable to the District if payment is not received by the District by the 25th day of the billing month and interest will accrue at the rate of 0.05% per day from the delinquent date, and (d) the District will suspend water deliveries to the above-described lands if the amount due to the District, including any penalty and any interest, is not received by the District by 5:00 p.m. on the 5th day of the month following such billing.

**LANDOWNER (A holder of title to land within the District, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name: 2004 Wilson Family Trust  
Address: 4731 Avenue 400  
Dinuba, CA 93618  
Telephone No.: Fax No.: EMail: keith@kingfresh.com

**Landowner(s) Signature:** \_\_\_\_\_

**WATER USER (the holder of title to land within the Service Area or his authorized agent, who receives water service from the District, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name(s): 2004 Wilson Family Trust  
Address: 4731 Avenue 400  
Dinuba, CA 93618  
Telephone No.: Fax No.: EMail: keith@kingfresh.com

Authorized to Order Water:  
1. 2.  
3. 4.

**BILLING CONTACT (An individual or entity that the Landowner has designated as responsible for receiving monthly water statements, for the APN(s) and Turnout(s) listed on this Water Authorization):**

Name: 2004 Wilson Family Trust  
Address: 4731 Avenue 400  
Dinuba, CA 93618  
Telephone No.: Fax No.: EMail: keith@kingfresh.com

# Attachment F

# TechnoFlo

## Your Flow Meter Source

### CERTIFIED TEST REPORT

Customer: Kern Tulare Water District  
 Model #: MLO4D  
 Meter Serial #: 20051188-06

### CONFIGURATION

Test line Inside Diameter: 5.990  
 Customer Inside Diameter: 6.015  
 Dial: --- 1200GPM/.001AF  
 Meter Gears:  
 Totalizer Gears:  
 Final Meter Index:  
 Test Facility: Gravimetric  
 Notes: Test after digital conversion. GPR 1.5672

### CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY Test Line I.D.	% ACCURACY Customer I.D.
1	1,087	100.5	99.6
2	527	101.1	100.3
3	212	100.4	99.6
4			
5			
6			

**Certified By: Steven Huth /FH**

**Test Date: 7/30/2015**

This calibration was performed on a primary or secondary test facility, traceable to NIST National Institute of Standards Technology, USA. The estimated uncertainty of the calibration facilities are:

Primary +/- 0.125%

Secondary +/- 0.25%

**TechnoFlo**

SYSTEMS

P.O. Box 1448

Porterville, CA 93258-1448 U.S.A.

Phone 559-783-1207 \* FAX 559-783-1209

www.technoflo.com

RG-15



### ACCURACY TEST

This flow meter has been wet flow calibrated in an NIST traceable flow laboratory per the manufacturer's specification for the model and size listed below. The final reading on mechanical totalizers is the result of final form testing (totalizers with electronic displays are reset to zero after testing.)

Totalizer Reading:

Meter Size: 8  
Model: ML-12-D  
Cal. for Pipe ID: 8.095  
Serial No.: 20040177  
Date: 2/4/04

Form 507



6 Booster

### ACCURACY TEST

This meter has been wet flow calibrated in an NIST traceable flow lab per manufacturer's specification for the listed size and model number. The final reading on the totalizer is the result of this final form testing.

12 \* MODEL UM06-12-R5  
Calibrated For KERN-TULARE  
Serial No. UM20020397

TOTALIZER READING:

DATE: 10-25-02 BY: HMA

FORM 507-1299

T-4



### ACCURACY TEST

This meter has been wet flow calibrated in an NIST traceable flow lab per manufacturer's specification for the listed size and model number. The final reading on the totalizer is the result of this final form testing.

12 \* MODEL LP-33-D  
Calibrated For 12.374  
Serial No. 20023033

TOTALIZER READING:

DATE: 10/10/02 BY: [Signature]

FORM 507-1299



### ACCURACY TEST

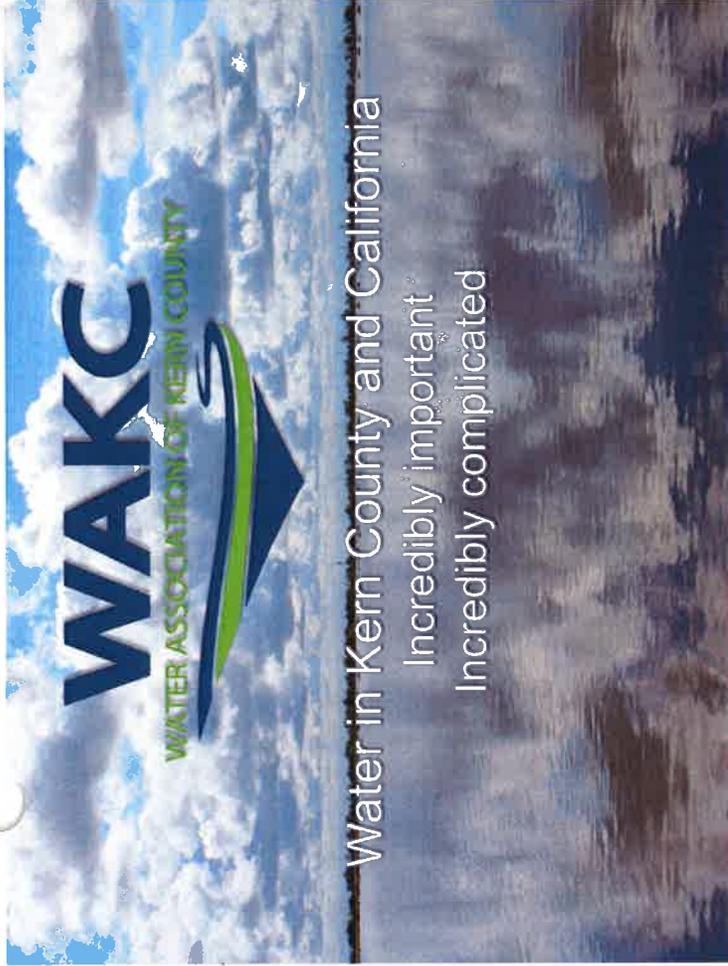
This flow meter has been wet flow calibrated in an NIST traceable flow laboratory per the manufacturer's specification for the model and size listed below. The final reading on mechanical totalizers is the result of final form testing (totalizers with electronic displays are reset to zero after testing.)

Totalizer Reading:

Meter Size: 10"  
Model: MC-04-D  
Cal. for pipe ID: 10.220  
Serial No.: 821672  
Date: 10-21-05

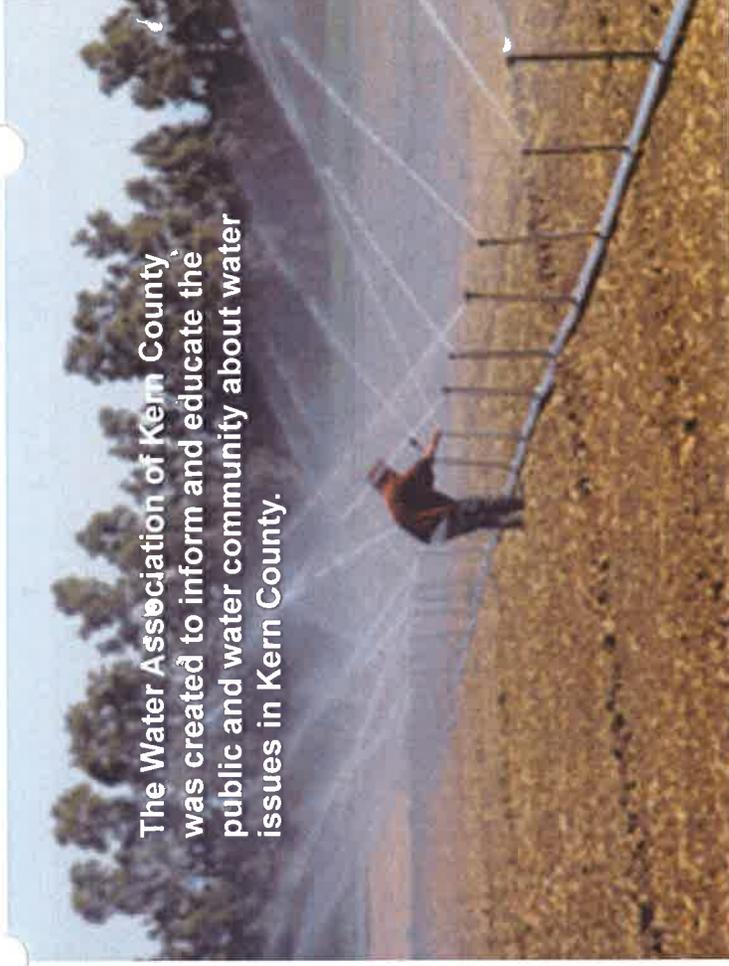
Form 507

# Attachment G



## Water in Kern County and California

Incredibly important  
Incredibly complicated



The Water Association of Kern County was created to inform and educate the public and water community about water issues in Kern County.

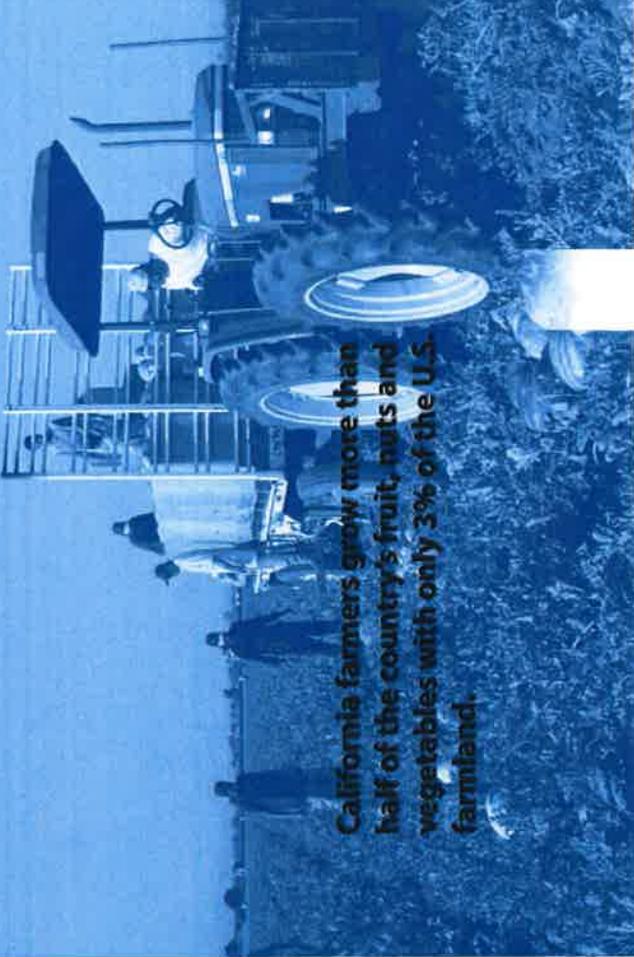
### Earth's Water Supply

- 97% Salt Water  
Oceans
- 2% Frozen Water  
(Polar ice caps, glaciers)
- 1% Fresh Water  
(rivers, groundwater)



### Water Facts

California farmers grow more than half of the country's fruit, nuts and vegetables with only 3% of the U.S. farmland.



## Water Facts



Everything at the market has been grown by a farmer.

It takes 100 gallons of water to produce one watermelon.



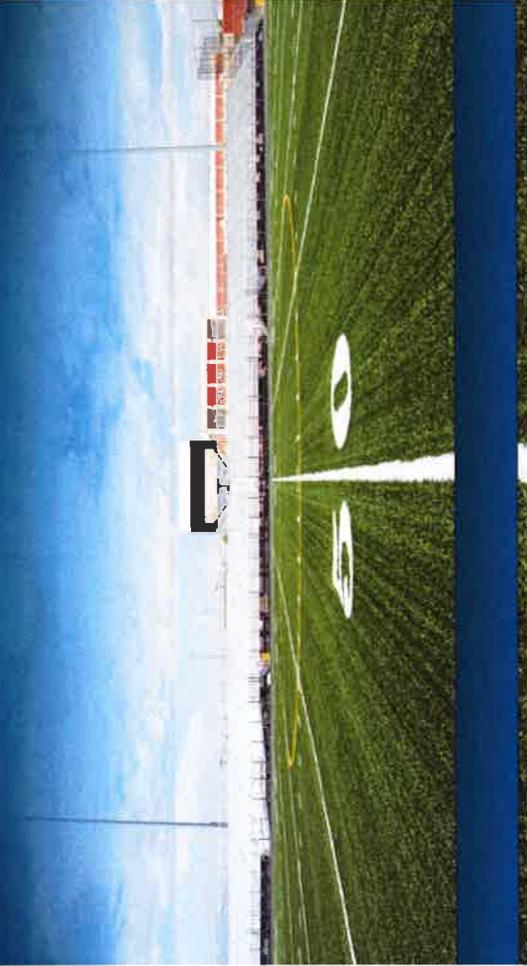
## Water Facts



It takes 200 gallons of water to make a pizza.

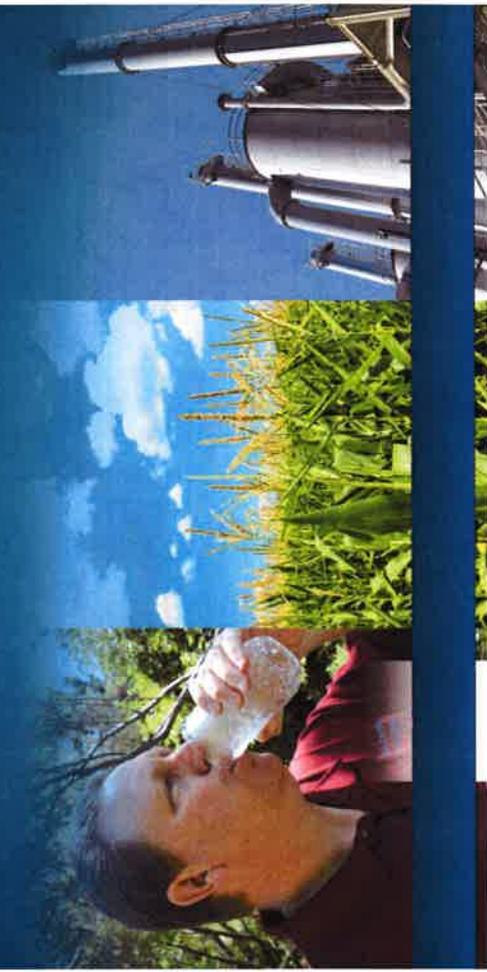
## What is an Acre-Foot?

325,851 gallons, or a football field covered with 1 foot of water.



## Annual Water Usage in Kern County

Municipal and Industrial → 400,000 acre-feet  
Agricultural → 2,700,000 acre-feet



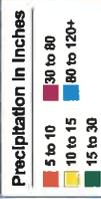
## Kern County Agriculture

- ◆ About one-third of Kern's area is on the valley floor, which is intensively cultivated.
- ◆ There are 850,000 irrigated acres on the valley floor, one-third of which are permanent crops (trees and vines). More permanent crop acreage is being planted and less row crops (cotton, corn) are being planted.
- ◆ Kern consistently ranks 3rd or 4th in the state in value of production.

## California's Hydrology



◆ Rain does not fall where people live



Very Wet

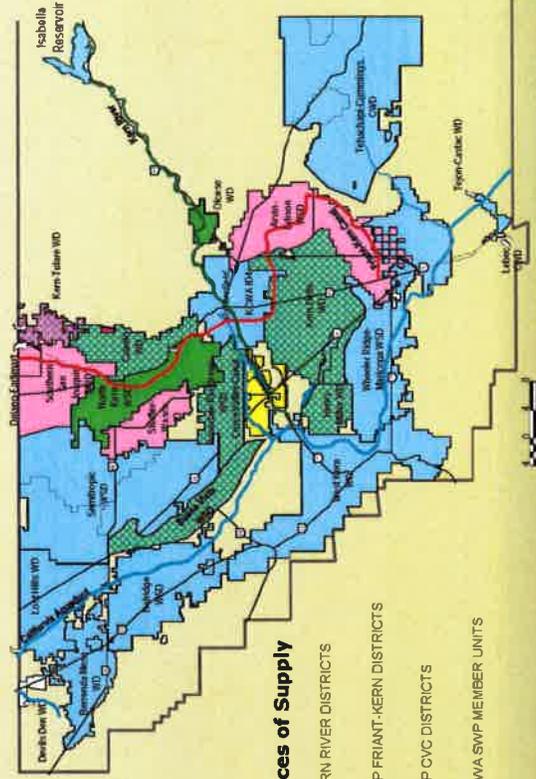


Where is Kern County?



Kern County

## Kern County Water Districts

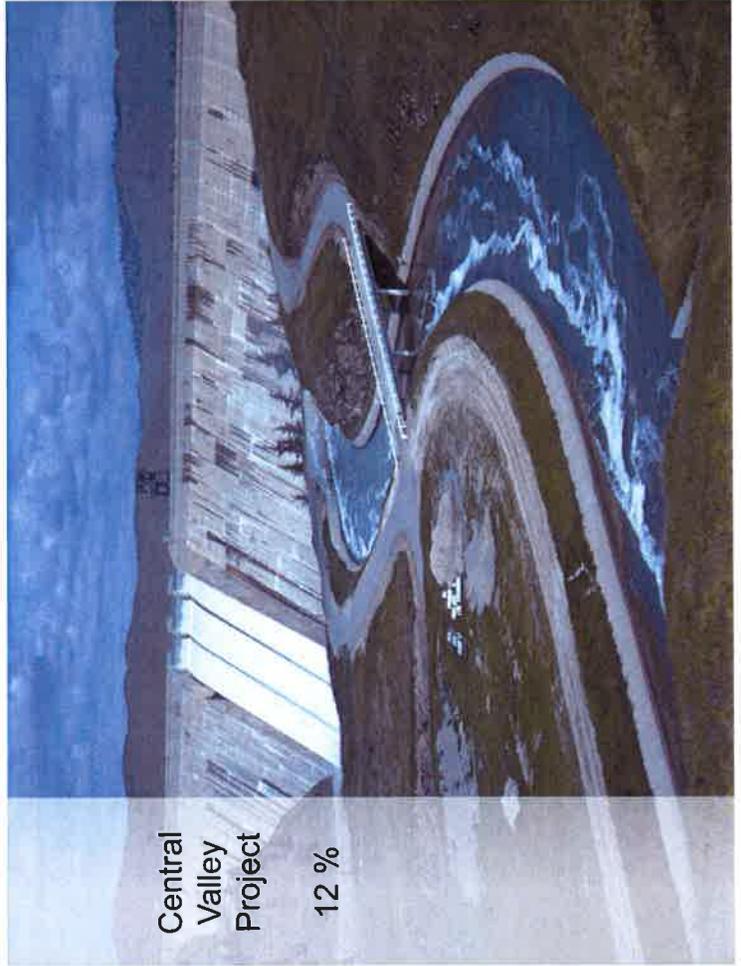
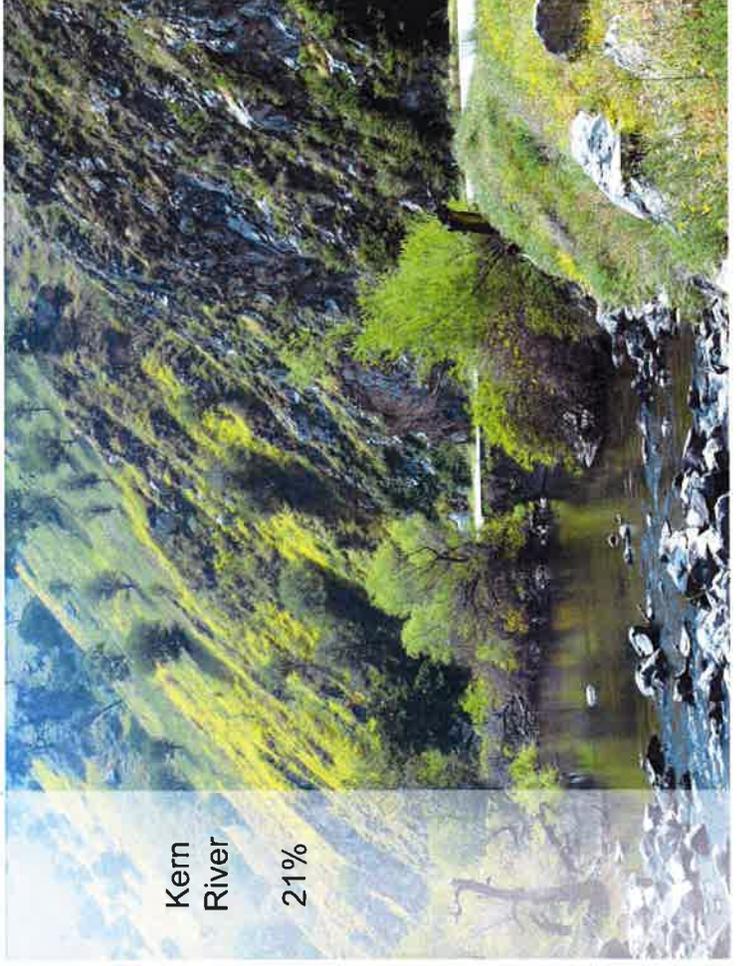
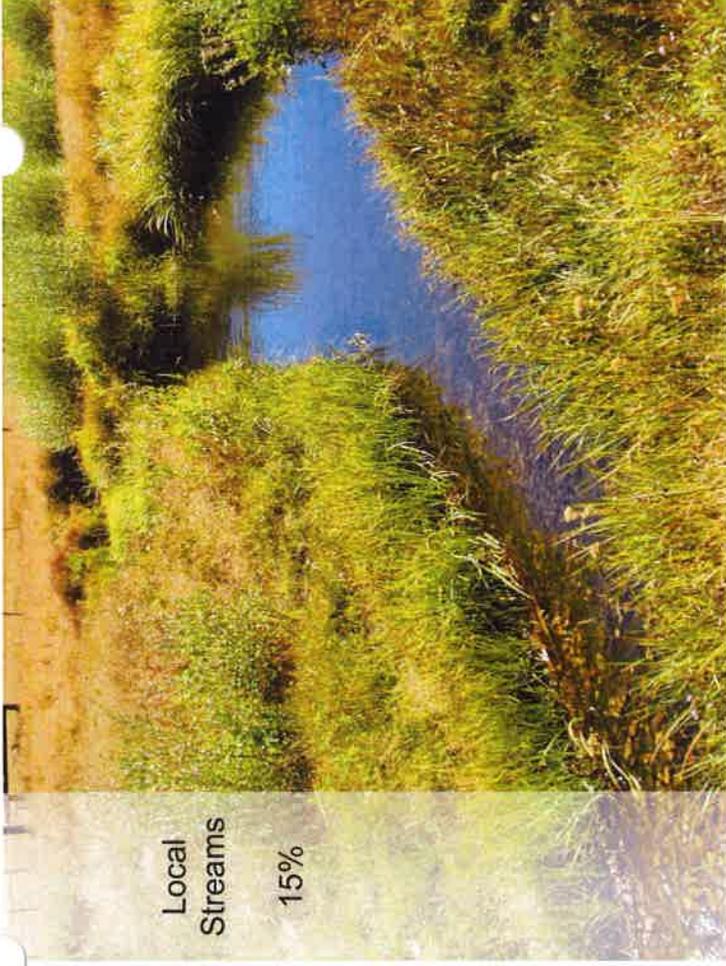


### Sources of Supply

- KERN RIVER DISTRICTS
- CVP-FRIANT-KERN DISTRICTS
- CVP-CVG DISTRICTS
- KOWA SWP MEMBER UNITS

# Kern County Water Sources – “Average” Year

Source	Percent	Acre-feet / Year
Kern River	21%	700,000
State Water Project	21%	700,000
Federal (CVP)	12%	400,000
Local Streams and other sources	15%	500,000
Groundwater Landowner/Districts (Basin) In-County Banking Conservation/Following	31%	1,100,000
<b>TOTAL</b>		<b>3,400,000</b>



## Kern River

The Kern River provides 600,000 acre-feet of water and is the largest natural surface water sources in Kern County.



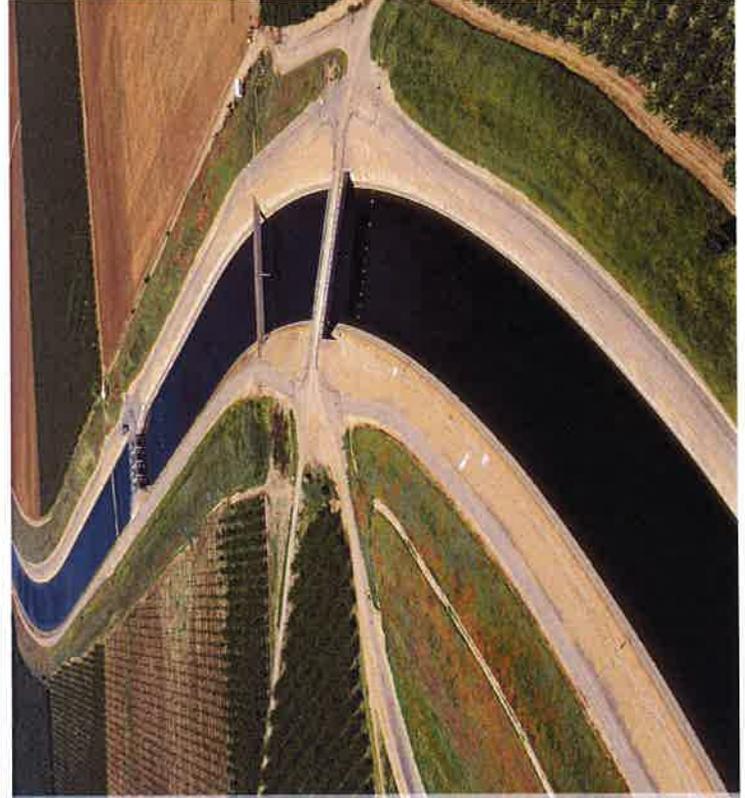
After Miller and Lux appealed the trial court decision, the Supreme Court rendered a landmark decision which established water rights law for California and other western states, and directed that the case be reviewed on certain issues. Rather than pursue further litigation, Henry Miller proposed a **compromise**. This compromise brought about a settlement of the water dispute that had taken so much time, energy and resources to fight.

According to the agreement, Kern River water would be jointly measured above Gordon's Ferry at a site to be known as First Point of Measurement. One third of the water, during the six spring and summer months, would belong to downstream lands owned by Miller and Lux. The one third water allocation would be delivered to the west side in undiminished quantities to a site known as Second Point of Measurement. Haggin and Tevis and the upstream canal companies would get the rest. In addition to the other concessions, they would assist in constructing a reservoir out of Buena Vista Lake for Miller and Lux, that would be used to store high flows not utilized by the upstream group.

The agreement was signed on **July 28, 1888**, and ratified by 30 corporations and 77 individuals. Little did they know that this historic Kern County Water Agreement would go on to constitute the basis for water rights on the Kern River for generations to come.

## State Water Project

21%



## The State Water Project

**1951:** The State publishes a series of bulletins

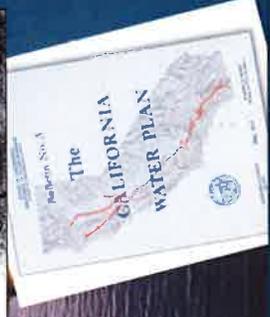
covering water supplies and needs.

**1951:** State Engineer A. D. Edmonston presents a study for the Feather River Project to the State Legislature

**1957:** The State begins construction at the Oroville Dam site.

**1959:** The State begins construction on the South Bay and California aqueducts.

**1960:** The Burns-Porter Act is narrowly passed by the California voters which authorizes the State to issue \$1.75 billion in general obligation bonds for the construction of the State Water Project.



## State Water Project Supplies

- ❖ Kern County Water Agency is the largest agricultural State Water Project (SWP) contractor, and the fourth-largest urban SWP contractor.
- ❖ KCWA's annual SWP contracted Table A supply is about 1,000,000 acre-feet a year.
  - 880,000 af per year for Agriculture
  - 119,000 af per year for Municipal & Industrial
- ❖ KCWA represents about 25% of the SWP.



## The SWP Today

- ❖ Number of Reservoirs: 20
- ❖ Total Storage Capability: 5.8 million acre-feet.
- ❖ Conveyance: 701 miles of canals and pipelines.
- ❖ Service Provided: 3 million acre-feet are delivered on average.
- ❖ Customers: The State holds contracts with 29 public water agencies. The SWP serves 750 thousand acres of farmland and over 25 million people.
- ❖ Payment: The SWP customers pay for the construction, operation and maintenance costs.



## Instability in California's Water System:

### Regulatory and Hydrologic Impacts for Kern County SWP Water

Year	Allocation	Cost For Undelivered Water	"Regulatory" Water Losses
2007	60%	\$16.9 M	EWA, b2*
2008	35%	\$35.5 M	509,000 af
2009	40%	\$31.7 M	380,000 af
2010	50%	\$32.0 M	800,000 af
2011	80%	\$13.1 M	150,000 af est.
2012	65%	\$25.2 M	430,000 af
2013	35%	49.5 M	665,000 af est.

\*There were no losses because the state and federal governments had implemented programs to avoid water supply cuts.

## Importance of the Delta

- Water is lifeblood of the state's economy and quality of life
- Critical statewide water hub
  - Heart of system
- Dependence on the Delta
  - 25 million residents depend on Delta for all or part of water supply
  - 3+ million acres of prime agricultural farm land
  - Hundreds of thousands of businesses throughout the state
- Recreational opportunities
- Largest estuary/rich ecosystems

# Where is the Delta?



# Importance of the Bay-Delta

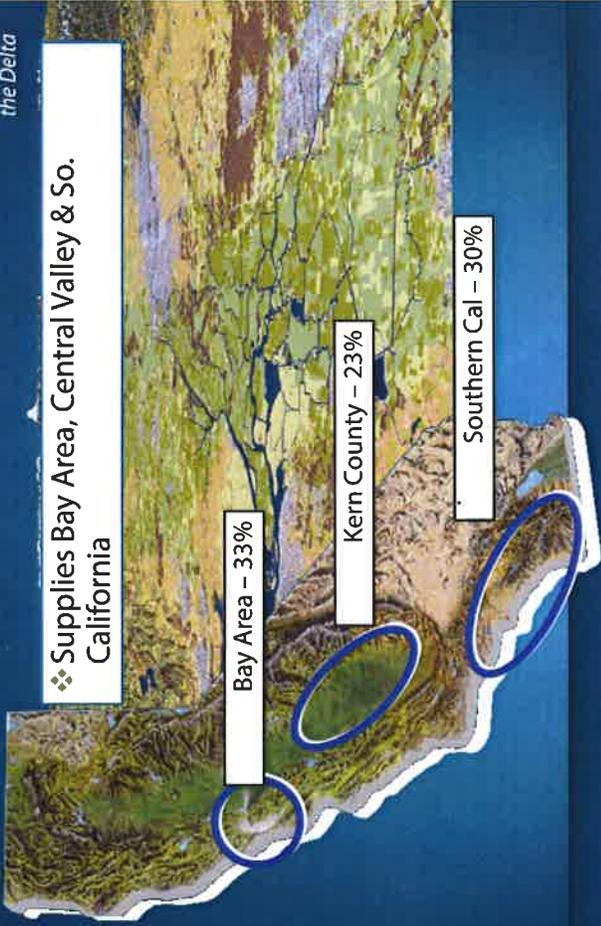
Some regions up to 100% dependent on the Delta

❖ Supplies Bay Area, Central Valley & So. California

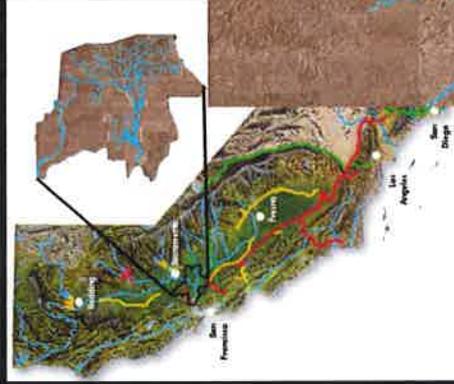
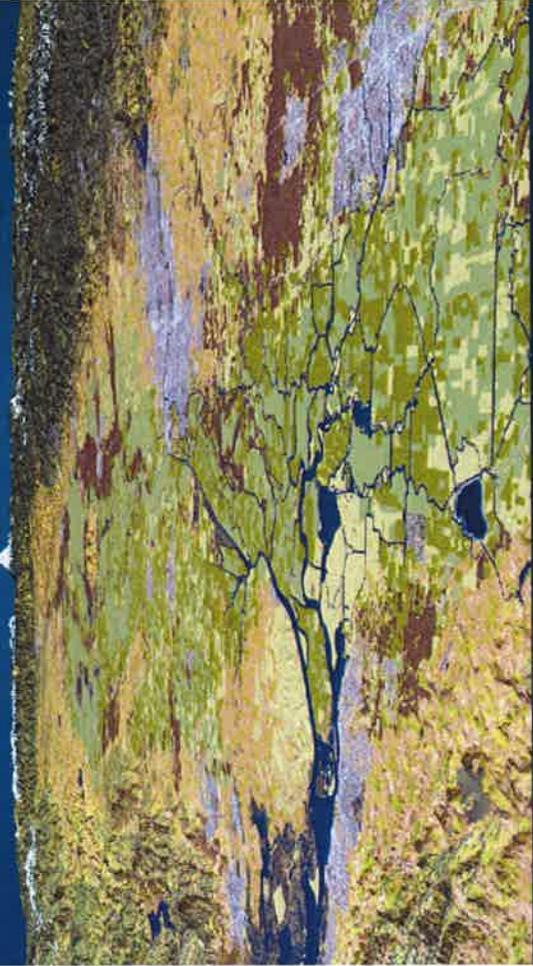
Bay Area – 33%

Kern County – 23%

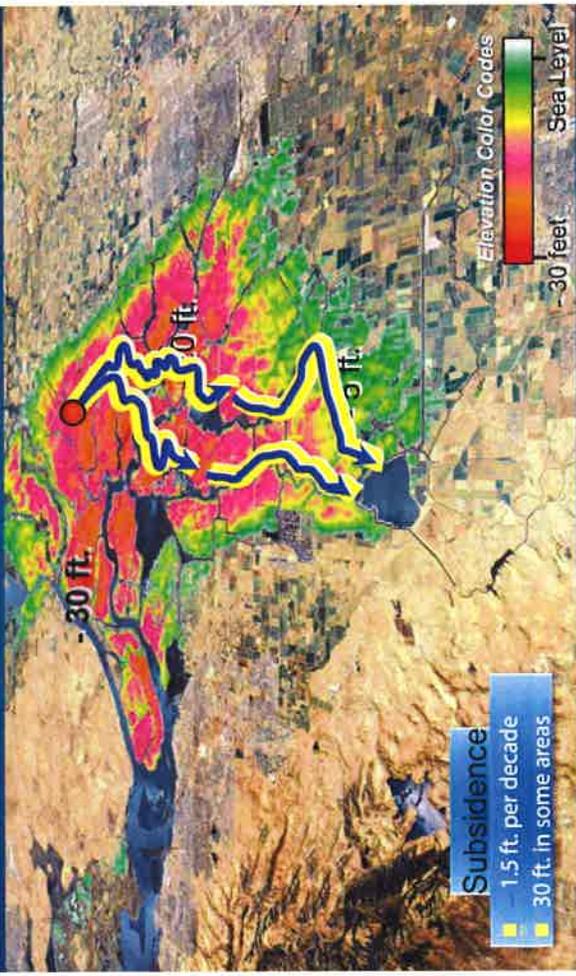
Southern Cal – 30%



# The Delta – The Weakest Link



### Land Subsidence Due to Farming & Peat Soil Oxidation



### Delta Water Use



### Delta Flows 1/20 to 6/14/10

Total Inflows = 8,581,000 AF



### DELTA SMELT



## Factors Contributing to the Delta's Ecosystem Decline

### ❖ Effluent Discharge to the Sacramento River

### • Predation

### ❖ Invasive Species

### ❖ Toxins Discharged to the Sacramento River

### ❖ Other Diversions Within the Delta



## Invasive Species

- Delta is considered one of the most invaded estuaries
- More than 185 alien aquatic and plant species inhabiting and altering the estuary

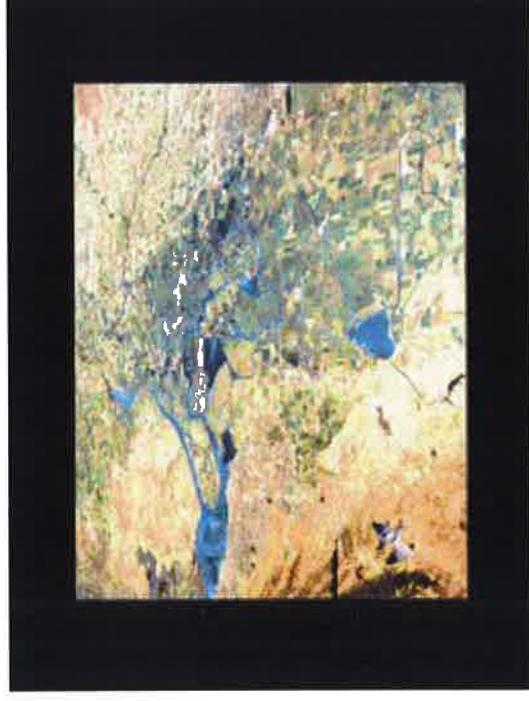


## Protecting California from a Catastrophic Loss of Water

- California depends on fresh water from the Sacramento-San Joaquin Delta to:
  - Supply more than 25 million Californians, plus industry and agriculture
  - Support \$400 billion of the state's economy
- A loss of water from the Delta impacts the economy:
  - Total costs to California's economy could be \$30 to \$40 billion in the first five years
  - Total job loss could exceed 30,000



## Seismic Risk in the Sacramento-San Joaquin Delta





Source: USGS (J.K. Nakata)

## Survival Strategies

Fallowing and deficit irrigation

Heavier reliance on groundwater

Significant increase in well drilling

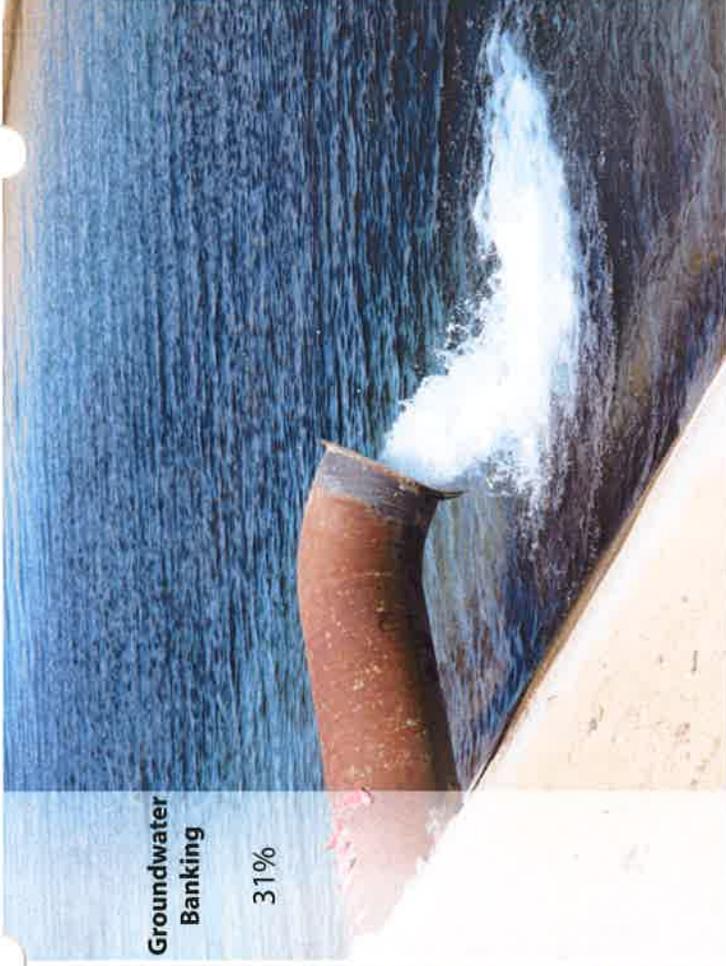
The Average Irrigation Efficiency in Kern County is 78%

Work on a long-term Delta solution



## Delta Solutions

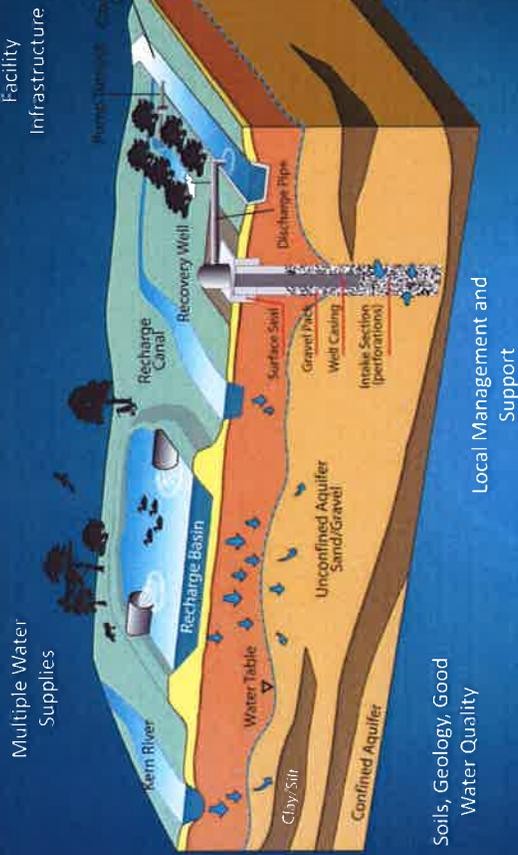
- Isolated Conveyance Facility (ICF)
- Bay Delta Conservation Plan (BDCP)  
Pursues co-equal goals of improving California's water supplies and restoring the Sacramento-San Joaquin Delta.
- Delta Habitat Conservation and Conveyance Program (DHCCP)  
Process for permitting and completing preliminary design for an isolated conveyance facility.



**Groundwater Banking**

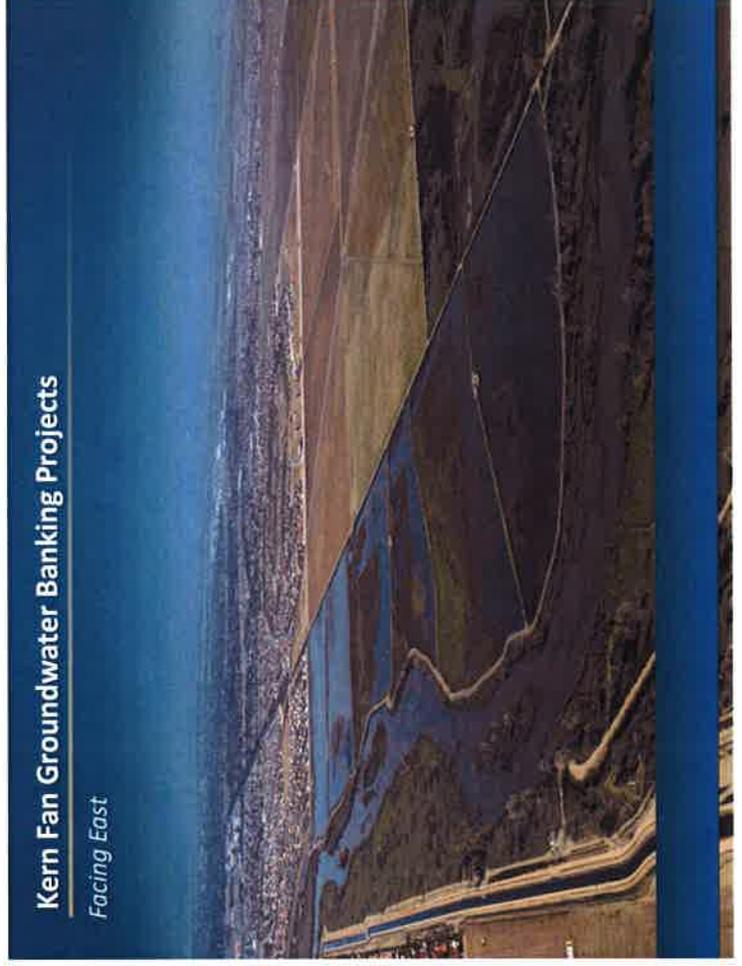
31%

## Four Keys to Success with Groundwater Banking



## Kern Fan Groundwater Banking Projects

Facing East



## Kern Fan Groundwater Banking Projects

*Facing Southwest*



For more information visit:

[www.wakc.com](http://www.wakc.com)





Mail to WAKC, P.O. Box 2165, Bakersfield, CA 93303

**MEMBERSHIP APPLICATION/INVOICE**

Company/Organization Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Website \_\_\_\_\_

Contact person \_\_\_\_\_

PLEASE CHOOSE ONE MEMBERSHIP CATEGORY

High-Flow Membership: \$10,000 up  
 Pipeline Membership: \$1,000-\$4,999  
 River Run Membership: \$500-\$9,999  
 Corporate/Business Membership \$500  
 Individual Membership \$100

Amount enclosed \$ \_\_\_\_\_

**Officers/Directors/Staff  
Executive Committee**

- Jason Gianquinto – President, Semitropic Water Storage District
- Jeanne Varga – First Vice President, Consultant
- Kim Brown – Second Vice President, Wonderful Orchards
- Dana Munn – Treasurer, Shafter Wasco Irrigation District
- Ernest Conant – Secretary, Young Woodridge
- Steve Dalke – Kern Tulare Water District
- Mike Day – Provost & Pritchard
- Holly Arnold – California Resources Corp.
- Gene Lundquist – Kern County Water Agency
- Bill Taube – Wheeler Ridge-Maricopa Water Storage District
- Harry Starkey – West Kern Water District
- David Couch – Kern County Board of Supervisors
- Tim Ruiz – East Niles Community Services District
- Beth Pandol – Executive Director

**Board**

- Rudy Valles – Cal Water Services
- David Ansolabehere – Cawelo Water District
- Eric Averett – Rosedale-Rio Bravo Water Storage District
- Les Clark – Independent Oil Producers
- Jerry Ezell – Shafter Wasco Irrigation District
- John Martin – Tehachapi-Cummings Water Storage District
- Jason Meadors – City of Bakersfield Water Resources Dept.
- Mark Mulikay – Kern Delta Water District
- Denise Newton – Pacific Gas & Electric Co.

**BECOME A MEMBER**



The Water Association of Kern County is the only non-profit in Kern County solely dedicated to educating the public about California's critical water situation.



P.O. Box 2165 Bakersfield, CA 93303 661-746-3300 www.wakc.com  
info@wakc.com