FIVE YEAR UPDATE

AGRICULTURAL WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT

JUNE 2013

EXETER IRRIGATION DISTRICT
RESOLUTION NO. 2013-04

ADOPTING A FIVE YEAR UPDATE
OF THE DISTRICT'S WATER MANAGEMENT PLAN.

WHEREAS, a five year update to the Exeter Irrigation District's WATER MANAGEMENT PLAN, has been prepared, presented to and discussed by the Board of Directors of the Exeter Irrigation District which defines water management, control and policies of the Exeter Irrigation District:

THEREFORE, BE IT RESOLVED, that the WATER MANAGEMENT PLAN prepared by the staff of the Exeter Irrigation District, is adopted as presented and discussed at a noticed meeting scheduled for this date, is deemed acceptable and the Board of Directors finds that adoption of same is in the best interest of the Exeter Irrigation District and its landowners;

RESOLVED FURTHER, that Thomas G. Weddle, Manager-Secretary, is hereby authorized and directed to file said WATER MANAGEMENT PLAN on behalf of the Exeter Irrigation District with the U. S. Bureau of Reclamation as deemed acceptable to this Board of Directors and to execute such other documents as may be necessary to carry out the intent of the above resolution.

The foregoing Resolution was adopted at a regular meeting of the Board of Directors of the Exeter Irrigation District held on the 11th day of July, 2013, upon a motion of Director Ferrara and seconded by Director Fuller, upon the following vote:

AYES: Cosart, Ferrara, Dungan, Fuller, Crosson

NOES: None

ABSENT: None

APPROVED: _____
Thomas G. Weddle, Secretary

CERTIFICATION

I do hereby certify that I am the duly appointed, qualified acting Secretary of the Board of Directors of the Exeter Irrigation District; that the foregoing is a full, true and correct copy of Resolution 2013-04 duly and regularly adopted by a majority of the Board of Directors of the Exeter Irrigation District, duly and regularly called and noticed regular meeting of the Board and held at the offices of the District on July 11, 2013, at which meeting a quorum of said Board of Directors was present and acting; that said Resolution as so adopted was duly entered in the minute book of said District and the same has not since been revoked, rescinded, altered, amended modified or changed and is now in full force and effect.

Date: July 11, 2013

Thomas G. Weddle, Secretary

Seal:

INTRODUCTION

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT

INTRODUCTION
WATER MANAGEMENT PLAN
EXETER IRRIGATION DISTRICT

This Water Management Plan (Plan) was prepared to comply with and satisfy the "Criteria for Evaluating Water Conservation Plans" (Criteria). These Criteria were developed by the United States Bureau of Reclamation (USBR) in response to the Central Valley Project Improvement Act of 1992 (CVPIA) and updated in 2008.

The Criteria identified items that have and will be evaluated in the 5-year updates of Water Management Plans prepared by districts in the Mid-Pacific Region. These Criteria were required by Public Law 102-575 Section 3405(e). This section of law also requires that all existing Water Management Plans be reviewed for adequacy.

Dennis R. Keller / James H. Wegley, Consulting Engineers, assisted Exeter Irrigation District in the preparation of this 5-year update of their Plan.

2010 WATER MANAGEMENT PLAN
FIVE YEAR UPDATE
WATER MANAGEMENT PLAN
EXETER IRRIGATION DISTRICT

EXETER IRRIGATION DISTRICT
2010 Water Management Plan

Date of first draft – MAY 2011
Date of final – JULY 11, 2013

Index

Section 1: Description of the District

District Name: *Exeter Irrigation District*

Contact Name: Thomas G. Weddle

Title: General Manager

Telephone: (559) 592-2181

E-mail: tgweddle@gmail.com

Web Address

A. History

1. Date district formed: *1937* *Date of first Reclamation contract*: *1950*
Original size (acres): *14,441* *Current year (last complete calendar year)*: *2010*

The Exeter Irrigation District (District) was organized March 22, 1937, under and pursuant to the provisions of California laws pertaining to the formation and operation of irrigation districts. District business is conducted by a five (5) member elected Board of Directors, consisting of a President, Vice-President and three (3) additional members. Full time District employees consist of a manager, who has been appointed District Secretary, two (2) office staff personnel and three (3) field employees. The District also retains counsel to advise the Board and staff on legal issues.

The District was formed as civic and agricultural leaders in the community of Exeter agreed that it was necessary to have an authorized and legal organization in place to consider the water needs of the Exeter area. Further, to negotiate and enter into contracts with the federal government for a surface water supply from the Central Valley Project when it became available (a project which had just been authorized by Congress). The only water available within the area was that obtained from groundwater sources. The formation of a legal entity to contract for surface water supply for the area was considered a necessity as the area had evolved from basically a dry farming area to that of permanent plantings, predominantly citrus and grapes,

during the 20 years preceding the formation of the District. Year-round water requirements of these permanent plantings had caused a substantial groundwater decline which needed to be stabilized if the area was to continue to prosper. It was further felt that if groundwater for the consumptive uses by the City of Exeter was to remain a viable source for their water supply needs, an imported surface water supply had to be found to relieve some of the agricultural pumping that was then contributing to groundwater overdraft exacerbated by the City's pumping with no offsetting recharge.

The quantity of additional water deemed necessary to be supplied to the Exeter area in order to bring the area into a water supply balance was determined after an in-depth study and evaluation performed by the USBR. The study and conclusions were documented in their "Technical Studies in Support of Factual Report", Exeter Irrigation District, dated November, 1949.

The District executed their initial water supply contract with the USBR on November 8, 1950, for 10,000 acre-feet of Class 1 water and 19,000 acre-feet of Class 2 water. The quantity of Class 1 water was increased to 11,500 acre-feet by an amended contract executed on July 27, 1953. The District renewed its water supply contract on September 28, 1990, for the same quantities of water contained in their 1953 amended contract. The District has since converted their contract from a 9(e) form to a 9(d) form by accelerating the payoff of the non-interest bearing capital debt due to the United States. The original size of the District was 14,441 acres with an irrigable acreage of 12,684 acres. The current size of the District is 15,184 acres, however, the irrigable acreage has only increased to 12,700 acres due to encroachments of the City of Exeter which lies almost in its entirety within the boundaries of the District (was 100% until about 1980). Annexations of additional agricultural lands to the District have been

permitted only as urban development has encroached into the agricultural areas previously served by the District.

The technical studies report prepared by the USBR noted that the Exeter area had an average water supply deficiency of approximately 21,000 acre-feet per year which became the average annual water supply that the District contract provided. More than fifty years of District operations have shown that, during the first 23 years that the quantity of surface water was brought into the area, the groundwater balance was still slightly deficient. With the conservation measures that have been initiated by both the District and the water users during the past two decades, indications are that, when a normal surface water supply is available to the District, the area is basically in a water supply balance.

The surface water supply available to and distributed by the District has remained unchanged since water deliveries commenced to the District by the USBR. The only variable to the District's water supply are those imposed by Mother Nature. The District does not currently, nor has it ever, supplied water for municipal or industrial purposes.

The rural agricultural population within the District is minimal and has remained basically unchanged through the years, yet is slowly starting to grow as more people come to the area. The City of Exeter has shown a slow, yet steady population increase during the past three decades. There was a slight decline in population following the severe freeze of 1990 which idled thousands of people in the area working in the citrus industry and in all related fields.

2. Current size, population, and irrigated acres

	(2010)
Size (acres)	15,112
Population served	10,334 (1)
Irrigated acres	12,227

[(1)]The District provides surface water to agricultural operations only. Water deliveries reduce agricultural pumping in the areas surrounding the City of Exeter, thus providing for in lieu recharge to the City wells. Assessment payments made by City landowners offset some fixed costs of the district, thus reducing the overall cost of District operations for the agricultural lands served by the District.

3. Water supplies received in current year

Water Source	*AF*
Federal urban water (Tbl 1)	
Federal agricultural water (Tbl 1)	12,567
State water (Tbl 1)	
Other Wholesaler (define) (Tbl 1)	
Local surface water (Tbl 1)	
Upslope drain water (Tbl 1)	
District ground water (Tbl 2)	
Banked water (Tbl 1)	
Transferred water (Tbl 6)	
Recycled water (Tbl 3)	
Other (define) (Tbl 1)	
Total	12,567

4. Annual entitlement under each right and/or contract

	AF	*Source*	*Contract #*	*Availability period(s)*
Reclamation Urban AF/Y				
Reclamation Agriculture AF/Y	11,500	Friant Division CVP – Class 1	I75r-2508-LTR1	All Year
Reclamation Agriculture AF/Y	19,000	Friant Division CVP – Class 2	I75r-2508-LTR1	All Year
Other AF/Y				

5. Anticipated land-use changes

Land conversions have occurred through annexations of agricultural lands within the District, as the City of Exeter continues to grow at a City controlled rate.

6. Cropping patterns (Agricultural only)

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

Original Plan (2004)		*Previous Plan (2004)*		*Current Plan*	
Crop Name	*Acres*	*Crop Name*	*Acres*	*Crop Name*	*Acres*
Citrus	9,650	Citrus	9,650	Citrus	9,824
Other (<5%)	3,050	*Other (<5%)*	3,050	*Other (<5%)*	1,658
Total	12,700	*Total*	12,700	*Total*	11,482

(See Planner, Chapter 2, Appendix A for list of crop names)

The total acreage of 11,482 listed in the table above, is the current cropped portion of the total irrigated acres (12,227) listed in Section 1.A.2. and in Section 5, Table 5. The remaining 745 acres were idle/fallow during the current year.

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

Original Plan (2004)		*Previous Plan (2004)*		*Current Plan*	
Irrigation Method	*Acres*	*Irrigation Method*	*Acres*	*Irrigation Method*	*Acres*
Mister/Fan Jet	9,770	Mister/Fan Jet	9,770	Micro	10,883
Sprinklers	1,221	Sprinklers	1,221	Furrow	599
Furrow	885	Furrow	885		
Drip	366	Drip	366		
Other	458	*Other*	458	*Other*	
Total	12,700	*Total*	12,700	*Total*	11,482

(See Planner, Chapter 2, Appendix A for list of irrigation system types)

The total acreage of 11,482 listed in the table above, is the current cropped portion of the total irrigated acres (12,227) listed in Section 1.A.2. and in Section 5, Table 5. The remaining 745 acres were idle/fallow during the current year.

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. Main laterals are designated by the diversion point milepost associated with the Friant-Kern Canal.

1. Incoming flow locations and measurement methods

Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
Friant-Kern Canal	FKC Mile Post 72.52	Propeller Meter	±2%
Friant-Kern Canal	FKC Mile Post 75.18	Propeller Meter	± 2%
Friant-Kern Canal	FKC Mile Post 75.18	Propeller Meter	± 2%
Friant-Kern Canal	FKC Mile Post 76.35	Propeller Meter	± 2%
Friant-Kern Canal	FKC Mile Post 76.98	Propeller Meter	± 2%
Friant-Kern Canal	FKC Mile Post 78.08	Propeller Meter	± 2%
Friant-Kern Canal	FKC Mile Post 79.24	Propeller Meter	± 2%

2. Current year Agricultural Conveyance System

See **Attachment A** for the District's distribution system map.

Miles Unlined - Canal	*Miles Lined - Canal*	*Miles Piped*	*Miles - Other*
0	0	60	0

3. Current year Urban Distribution System

Not Applicable.

4. Storage facilities (tanks, reservoirs, regulating reservoirs)

Name	*Type*	*Capacity (AF)*	*Distribution or Spill*
Regulating Reservoir No.1	Regulation	1<	Distribution
Regulating Reservoir No. 2	Regulation	1<	Distribution

5. Outflow locations and measurement methods (Agricultural only)
Provide this information in Section 2 F.

6. Description of the agricultural spill recovery system

The District does not have a spill recovery system as the District's delivery system is a closed system. Each landowner with either a furrow irrigation system and/or a micro irrigation

system typically has a tailwater return system which pumps any runoff back into their system for irrigation or for deep percolation during the wet season. All deep percolation losses within the District return to usable groundwater sources.

7. Agricultural delivery system operation (check all that apply)

On-demand	*Scheduled*	*Rotation*	*Other (describe)*
	✓		

8. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
FKC	Capacity	Subsidence/Siphons	Grower supply shortfall and groundwater overdraft

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

The District is currently evaluating the feasibility of integrating early and late season flows from the Foothill Ditch Co. into the District to augment available contract supplies.

C. Topography and Soils

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

The topography of lands within the Exeter Irrigation District (District) vary in elevation from about 630 feet along the northeastern boundaries to 340 feet in the southwest, with approximately 98 percent of the District below elevation 460. That portion of the District north of State Highway 198 has a northwesterly slope of approximately 17 feet per mile, while that portion of the District south of State Highway 198 has a southwesterly slope of about 16 feet per mile.

The Friant-Kern Canal, traversing basically in a north-south direction, lies within or is the District's eastern boundary for approximately eight (8) miles.

The District lies within the Yokohl Creek portion of the Kaweah River Alluvial Fan. Yokohl Creek is an intermittent stream which traverses through the northern portion of the District in a northwesterly direction for approximately two (2) miles.

2. District soil association map (Agricultural only)

See **Attachment B**, District Soils Map

Of the total acres within the District, 13,740 acres were classified in 1949, with the results presented in the "Technical Studies in Support of Factual Report", Exeter Irrigation District, prepared by the USBR. The 1,444 acres added to the District since the publication of the 1949 report were classified as part of the East Side Project, Initial Phase, Agriculture and Land Appendix (East Side Report). The great majority of District lands are classified as arable. The 782 acres of Class 6 lands are situated on the steeper slopes of the Sierra Nevada foothills, in a gravel borrow area, within the channel of Yokohl Creek and within the urban area. Class 1 land status is assigned to 3,262 acres. The largest portion of the District is in the Class 2 category with 9,734 acres. Class 3 lands have been assigned to 1,406 acres. Lands that were originally assigned a Class 4 designation in the 1949 and 1961 reports were reclassified as Class 3 during the preparation of a soils verification report prepared by the USBR in 1990 to support contract renewal and during the 1992 inclusion to the District. The 1940 and 1982 soils reports prepared by the SCS indicated that the predominate soils within the Exeter area are of the San Joaquin or Exeter series with significant, however, lesser areas of the Porterville series.

Class 1 soils within the District are predominately identified as Yettem sandy loam and as Cajon and Visalia sandy loams, all formed in alluvium. When properly managed, they present no specific problems for cultivation of crops suited to the region. The balance of Class 1 lands are situated along existing or ancient stream channels. The soils in those locations are identified

as Visalia sandy loam, Havala loam, Exeter loam, San Joaquin loam and Hanford sandy loam. Visalia sandy loam is a deep, well drained alluvium, easily penetrated by roots, not sticky when wet and suitable for numerous crops. Havala loam is very deep, well drained alluvium. Exeter loam and San Joaquin loam are well drained and moderately deep. They are suited for orchard crops and vineyards when the hardpan is ripped. The Hanford sandy loam is deep, easily tillable and well drained recent alluvium.

Class 2 lands are largely situated on hardpan soils, San Joaquin loam in the eastern half of the District, Exeter loam in the western half. Lesser inclusions of Ramona loam, Porterville clay and San Joaquin soils are also identified as Class 2. They are heavier textured soils and the increased class contents require greater care to avoid pudding or excessive compaction when tilling or otherwise operating heavy equipment. The San Joaquin clay loam also has a moderately shallow hardpan.

Class 3 lands, situated in areas of San Joaquin loam and Exeter loam, are similar to the Class 2 hardpan soils. The hardpan is characteristically shallower, however, and the relief of those areas with undulating terrain is prominent.

Class 6 lands consist of portions of the Yokohl Creek channel, ancient stream beds, the rocky steep slopes of the Sierra foothills, a construction materials borrow area and urban areas.

There are no limitations on agriculture within the District caused by soil problems other than those already noted which do not cause problems when proper soil preparation practices are employed prior to planting.

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

Soil Problem	*Estimated Acres*	*Effect on Water Operations and Management*
Salinity	None	None
High-water table	None	None
High or low infiltration rates	None	None
Other (define)	None	None

D. Climate

1. General climate of the district service area

The climate of the Exeter Irrigation District (District) is typical of the San Joaquin Valley, being semiarid and characterized by mild winters and hot, dry summers. Mean annual temperature at nearby Lindcove is 63.0 degrees Fahrenheit. The average annual minimum and maximum temperatures are 49.4 and 77.0 degrees, respectively.

The average yearly rainfall for the District area is 12.32 inches, based on records published for the California Irrigation Management Information System (CIMIS) Station Number 86 at Lindcove, for the 10-year period 2001-2010, inclusive. Rain falls principally during the period December to April.

The climatological normals for the District area presented in the preceding tables were obtained from CIMIS Station Number 86 at Lindcove, for the 10-year period of 2001-2010, inclusive. The climatological extremes for the District area were obtained from CIMIS Station Number 86 at Lindcove, for the period of 2001-2010, inclusive.

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*
Avg Precip.	2.09	1.91	1.21	1.52	0.38	0.20	0.00	0.02	0.05	0.73	1.36	2.87	12.32
Avg Temp.	46.3	50.1	55.7	59.5	69.6	76.5	82.7	79.5	73.6	63.3	53.2	46.7	63.0
Max. Temp.	57.2	61.6	69.3	72.8	84.2	91.6	98.1	95.8	90.6	78.4	66.4	57.6	77.0
Min. Temp	37.4	39.9	42.5	45.5	53.1	59.3	65.7	62.5	57.5	49.6	42.4	37.6	49.4
ETo	1.13	1.69	3.51	4.68	6.91	7.84	8.19	7.33	5.43	3.37	1.72	1.02	4.40

Weather station ID CIMIS #86 *Data period: Year* 2001 *to Year* 2010

Average wind velocity 2.6 mph *Average annual frost-free days:* 255

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

Not Applicable. Majority of permanent plantings are dormant during the winter months.

E. Natural and Cultural Resources

1. Natural resource areas within the service area

Name	*Estimated Acres*	*Description*
None	None	Not Applicable

2. Description of district management of these resources in the past or present

Not Applicable. None exist.

3. Recreational and/or cultural resources areas within the service area

Name	*Estimated Acres*	*Description*
None	None	Not Applicable

F. Operating Rules and Regulations

1. Operating rules and regulations

See **Attachment C**, District Rules and Regulations (water related)

2. Water allocation policy (Agricultural only)

See **Attachment C**, Page 1

Water received by the District is allocated equally to all eligible lands. This allocation has historically ranged from 0.27 acre-foot per acre in 1977 to just over 1.6 acre-feet per acre during some of the above normal water supply years.

This allocation policy is modified during critically dry years. The District's available surface water supply is considered a supplemental water supply, augmenting the groundwater supply pumped by each individual agricultural water user from his own individual well and pumping plant. During below normal water years, the District does maintain a small unallocated pool of water until late in the year for use by a water user that may be in need of emergency

water caused by his own well, pump or motor failure. Allocation of available supply are made based on the valuation of lands associated with the turnouts requesting delivery on any given day. As all irrigable lands are valued on an equal basis, this method allows for deliveries effectively on the basis of irrigated acres. Allocations are made without respect to the crop type.

3. Official and actual lead times necessary for water orders and shut-off (Agricultural only)

See **Attachment C**, Item 6, Page 1

Orders to turn on, turn off, increase, or decrease water are to be made at the District office. Such orders are to be made before 8:30 A.M. and 24 hours prior to the day scheduled for receiving the water. No water orders are accepted at the District office on Sunday, therefore, a water user who wants water on Monday must place his order at the District office on Saturday before 8:30 A.M.

4. Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)

See **Attachment C**, Item 15, Page 2

The District may refuse to deliver water through a pipeline not in a suitable condition to prevent waste of water, or to a landholding when there is excessive run-off and waste of water.

5. Policies on water transfers by the district and its customers

See **Attachment C**, Item 2, Page 1

Landowners may transfer all or part of their water allocation to another willing eligible landowner, provided a properly executed form obtained from and approved by the District, has been delivered to the District. The accepting landowner shall then become the responsible party to the District for the water delivery charges of that transferred allocation.

Water transfers into or out of the District are addressed on a case-by-case basis and require action by the Board of Directors. No written policies exist with respect to such transfers. Historic transfers receiving approval have been restricted to adjacent districts sharing the

common groundwater basin. The District is currently negotiating a long-term transfer agreement to a landowner who has a parcel which is split between two districts. This agreement will form the basis for a policy which could be added to the existing rules and regulations.

G. Water Measurement, Pricing, and Billing

1. *Agricultural Customers*

a. *Number of farms* 405

b. *Number of delivery points (turnouts and connections)* 471

c. *Number of delivery points serving more than one farm* 0

d. *Number of measured delivery points (meters and measurement devices)* 471

e. *Percentage of delivered water that was measured at a delivery point* 100

f. *Delivery point measurement device table (Agricultural only)*

Measurement Type	*Number*	*Accuracy (+/- %)*	*Reading Frequency (Days)*[1]	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
Orifices				See Description Below	See Description Below
Propeller meter	471	± 2%	Daily		
Weirs					
Flumes					
Venturi					
Metered gates					
Acoustic doppler					
Other (define)					
Total	471				

[1]*Reading Frequency is the Beginning and end of each irrigation period and on the first day of each month.*

Meters are not tested on a routine schedule, but are repaired and calibrated or replaced if they fail to operate, or if District personnel or the water user suspects that a meter is not registering accurately. Meters are checked at a minimum daily, during deliveries, to confirm the delivery rate relative to the water order and are read for totalizer data at least monthly.

2. Urban Customers

This section was intentionally left blank because the District does not have urban customers. Urban customers within the District are served by the City of Exeter.

a. *Total number of connections* N/A

b. Total number of metered connections N/A

c. Total number of connections not billed by quantity N/A

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

Meter Size and Type	*Number*	*Accuracy (+/-percentage)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
5/8-3/4"					
1"					
1 ½"					
2"					
3"					
4"					
6"					
8"					
10"					
Compound					
Turbo					
Other (define)					
Total					

3. Agriculture and Urban Customers

a. Current year agriculture and /or urban water charges - including rate structures and billing frequency

The District's current year water rate charges were $70 per acre-foot of water for water delivered west of the Friant-Kern Canal and $75 per acre-foot of water for water delivered east of the Friant-Kern Canal.

b. Annual charges collected from customers (current year data)

Fixed Charges			
Charges ($ unit)	*Charge units ($/acre), ($/customer) etc.*	*Units billed during year (acres, customer) etc.*	*$ collected ($ times units)*
$30.00	$/Acre	15,112 Acres	$453,360.00

Volumetric charges			
Charges ($ unit)	*Charge units ($/AF), ($/HCF), etc.*	*Units billed during year (AF, HCF) etc.*	*$ collected ($ times units)*
$70.00	$/Acre Foot	8,208.211 Acre Feet	$574,574.77
$75.00	$/Acre Foot	4,659.818 Acre Feet	$349,486.35

See **Attachment D**, District Sample Bills

c. Water-use data accounting procedures

The District reads each customer meter at the end of each month. Water usage bills are sent via mail to the corresponding customer by the 5th of the following month. The District houses all current and historical water accounting at the District office.

H. Water Shortage Allocation Policies

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

As previously stated in Section 1.F.2: Water received by the District is allocated equally to all eligible lands. This allocation has historically ranged from 0.27 acre-foot per acre in 1977 to just over 1.6 acre-feet per acre during some of the above normal water supply years.

This allocation policy is modified during critically dry years. The District's available surface water supply is considered a supplemental water supply, augmenting the groundwater supply pumped by each individual agricultural water user from his own individual well and pumping plant. During below normal water years, the District does maintain a small unallocated

pool of water until late in the year for use by a water user that may be in need of emergency water caused by his own well, pump or motor failure.

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

See **Attachment C**, Item 15, Page 2

Section 2: Inventory of Water Resources

A. Surface Water Supply

1. Acre-foot amounts of surface water delivered to the water purveyor by each of the purveyor's sources

2010 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (See Below) (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method							
January	2	0	0	0	0	0	2
February	7	0	0	0	0	0	7
March	42	0	0	0	0	0	42
April	65	0	0	0	4	0	69
May	732	0	0	0	38	0	770
June	2131	0	0	0	111	0	2,242
July	2848	0	0	0	148	0	2,996
August	2846	0	0	0	0	0	2,846
September	2354	0	0	0	0	0	2,354
October	1244	0	0	0	0	0	1,244
November	296	0	0	0	0	0	296
December	0	0	0	0	0	0	0
TOTAL	12,567	0	0	0	301	0	12,868

2. Amount of water delivered to the district by each of the district sources for the last 10 years

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (See Below) (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2001	13,784	0	0	0	0	0	13,784
2002	12,744	0	0	0	0	0	12,744
2003	12,659	0	0	0	0	0	12,659
2004	11,685	0	0	0	0	0	11,685
2005	13,183	0	0	0	0	0	13,183
2006	14,414	0	0	0	0	0	14,414
2007	6,786	0	0	0	0	0	6,786
2008	10,888	0	0	0	0	0	10,888
2009	9,888	0	0	0	0	0	9,888
2010	12,567	0	0	0	301	0	12,868
Total	118,598	0	0	0	301	0	118,899
Average	11,860	0	0	0	30	0	11,890

B. Ground Water Supply

1. Acre-foot amounts of ground water pumped and delivered by the district

2010 Month	District Groundwater (acre-feet)	Private Groundwater *(acre-feet)
Method		
January	0	341
February	0	775
March	0	1,130
April	0	713
May	0	5,643
June	0	6,058
July	0	7,824
August	0	3,704
September	0	1,001
October	0	0
November	0	0
December	0	4
TOTAL	0	27,193

*normally estimated

2. Ground water basin(s) that underlies the service area

Name	*Size (Square Miles)*	*Usable Capacity (AF)*	*Safe Yield (AF/Y)*
Kaweah Basin	Not Available	3,395,000	15,400

3. Map of district-operated wells and managed ground water recharge areas

The District does not own or operate any groundwater extraction wells. It is the responsibility of each landowner to address any irrigation demand not met through the District's surface water deliveries.

4. Description of conjunctive use of surface and ground water

The District has two (2) balancing ponds which can act as limited recharge areas, covering approximately two (2) acres, which are typically used when Reclamation makes non-storable water available. These obligation periods typically occur in high runoff years when,

because of the runoff pattern, the storage in Millerton Reservoir reaches its flood storage evacuation criteria, thereby requiring the Bureau to evacuate space so as to maintain available storage within the prescribed criteria. During these periods, the Friant Division contractors have to decide whether to utilize, transfer or spill their portion of that water which must be evacuated. The District typically uses as much of this water as possible for irrigation purposes and that which is in excess of the water requirement is diverted to the recharge basins.

The Kaweah River and its north distributary, the St. Johns River, passes to the north of the District and provides the primary means of groundwater recharge. Yokohl Creek, which flows west across the north boundary of the District, is an intermittent stream and also supplements the groundwater reservoir.

5. Ground Water Management Plan

See **Attachment E**, 2007 KDWCD Groundwater Management Plan

On October 3, 2006 the District signed a Memorandum of Understanding (MOU) with Kaweah Delta Water Conservation District to become a plan participant in KDWCD's Groundwater Management Plan. KDWCD's Groundwater Management Plan was last updated in 2007; however, KDWCD publishes annual updates.

6. Ground Water Banking Plan

The District does not participate in any groundwater banking projects. The District is currently negotiating a draft agreement to develop a banking project.

C. Other Water Supplies

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

None

D. Source Water Quality Monitoring Practices

1. Potable Water Quality (Urban only)

Not Applicable

2. Agricultural water quality concerns: *Yes* _____ *No* ✓
(If yes, describe)

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

Refer to Section 2.D.4.

4. Current water quality monitoring programs for surface water by source (Agricultural only)

There are currently three (3) water quality sampling and monitoring programs conducted on waters related to the District. The first of these is a four-entity program conducted on waters in the Friant-Kern Canal. A sample is taken monthly, year-round, on which tests are run to determine suitability and treatability. The second program is run by Reclamation District No. 770 on waters of the Kaweah River. Tests are run at least annually to provide a base related to pumping in to the Friant-Kern Canal for flood water management purposes. The tests are designed to insure that any waters pumped into the canal meet Title 22, CAC, standards. The third program is conducted on waters of Cottonwood Creek by the Kaweah Sub-watershed of the Southern San Joaquin Valley water Quality Coalition. Tests are run on intermittent discharges to said creek in compliance with requirements of the Irrigation Lands Regulatory Program of the Regional Water Quality Control Board. The tests are run to principally determine impacts on irrigation suitability of the receiving waters for irrigation purposes.

5. Current water quality monitoring programs for groundwater by source (Agricultural only)

Not Applicable.

E. Water Uses within the District

1. Agricultural

2010 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)
Alfalfa hay	20	5.00	0.20	0.00	0.00	104
Almonds	5	2.80	0.10	0.00	0.10	14
Cherries	19	3.70	0.20	0.00	0.40	67
Citrus	9,824	2.90	0.10	0.30	0.70	25,542
Grapes, Table	81	3.80	0.10	0.00	0.10	308
Grapes, Wine	5	3.80	0.10	0.00	0.10	19
Grapefruit	110	2.90	0.10	0.30	0.70	286
Irrigated Pasture	13	6.50	0.00	0.00	0.00	85
Lemons and Limes	60	2.90	0.10	0.30	0.70	156
Nursery	5	1.90	0.00	0.00	0.00	10
Olives	453	2.80	0.10	0.00	0.40	1,133
Peaches	34	3.70	0.20	0.00	0.40	119
Peppers (all kinds)	20	2.80	0.20	0.00	0.20	56
Persimmons	33	3.70	0.20	0.00	0.40	116
Pomegranets	73	3.70	0.20	0.00	0.40	256
Prunes and Plums	634	3.70	0.20	0.00	0.40	2,219
Pistachios	83	2.80	0.10	0.00	0.10	232
Strawberries	3	2.80	0.20	0.00	0.20	8
Walnuts	7	2.80	0.10	0.00	0.10	20
Idle	745	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
Crop Acres	12,227					30,748

Total Irrig. Acres 12,227 (If this number is larger than your known total, it may be due to double cropping)

2. Types of irrigation systems used for each crop in current year

Crop name	*Total Acres*	*Level Basin - acres*	*Furrow - acres*	*Sprinkler - acres*	*Low Volume - acres*	*Multiple methods - acres*
Alfalfa Hay	20		20			
Almonds	5				5	
Cherries	19				19	
Citrus	9,824				9,824	
Grapes, Table	81		81			
Grapes, Wine	5		5			
Grapefruit	110				110	
Irrigated Pasture	13		13			
Lemons and Limes	60				60	
Nursery	5				5	
Olives	453		453			

Peaches	34				34	
Peppers (all kinds)	20		20			
Persimmons	33				33	
Pomegranets	73				73	
Prunes and Plums	634				634	
Pistachios	83				83	
Strawberries	3				3	
Walnuts	7		7			

3. Urban use by customer type in current year

Not Applicable

4. Urban Wastewater Collection/Treatment Systems serving the service area – current year

Not Applicable

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

None

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

From Whom	*To Whom*	*AF*	*Use*
Exeter Irrigation District	Tulare Irrigation District	1,800	Agriculture to Agriculture
Exeter Irrigation District	Tulare Irrigation District	1,250	Agriculture to Agriculture
Exeter Irrigation District	Kaweah Delta Water Conservation District	1,400	Agriculture to Agriculture
Exeter Irrigation District	Kaweah Delta Water Conservation District	2,400	Agriculture to Agriculture
Exeter Irrigation District	Tulare Irrigation District	500	Agriculture to Agriculture

7. Trades, wheeling, wet/dry year exchanges, banking or other transactions in current year (Table 6)

None

8. *Other uses of water in current year*

None

F. Outflow from the District (Agricultural only)

Districts included in the drainage problem area, as identified in "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley (September 1990)," should also complete Water Inventory Table 7 and Appendix B (include in plan as Attachment L)

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

There are no outflow points, outflow measurement points or outflow water-quality testing locations. System shutdowns for maintenance requiring dewatering are preceded by actions to pump water from the system to one of the reservoirs for recharge or to landowner/grower lands to meet crop ET demands.

1. Surface and subsurface drain/outflow in current year

The District did not have any surface and/or significant subsurface drainage/outflow during 2010.

2. Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program

Not Applicable

3. Outflow (surface drainage & spill) Quality Testing Program

Not Applicable

Outflow (subsurface drainage) Quality Testing Program

Not Applicable

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, on behalf of all of its landowners in the Kaweah Sub-watershed of the Southern San Joaquin Valley 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)

See Section 5, Table 1.

b. Ground water extracted by the district, by month (Table 2)

See Section 5, Table 2.

c. Effective precipitation by crop (Table 5)

See Section 5, Table 5.

d. Estimated annual ground water extracted by non-district parties (Table 2)

See Section 5, Table 2.

e. Recycled urban wastewater, by month (Table 3)

See Section 5, Table 3.

f. Other supplies, by month (Table 1)

See Section 5, Table 1.

2. Water Used Quantified

a. Agricultural conveyance losses, including seepage, evaporation, and operational spills in canal systems (Table 4) or
Urban leaks, breaks and flushing/fire uses in piped systems (Table 4)

See Section 5, Table 4.

b. Consumptive use by riparian vegetation or environmental use (Table 6)

See Section 5, Table 6.

c. Applied irrigation water - crop ET, water used for leaching/cultural practices (e.g., frost protection, soil reclamation, etc.) (Table 5)

See Section 5, Table 5.

d. Urban water use (Table 6)

See Section 5, Table 6.

d. Ground water recharge (Table 6)

See Section 5, Table 6.

e. Water exchanges and transfers and out-of-district banking (Table 6)

See Section 5, Table 6.

f. Estimated deep percolation within the service area (Table 6)

See Section 5, Table 6.

g. Flows to perched water table or saline sink (Table 7)

See Section 5, Table 7.

h. Outflow water leaving the district (Table 6)

See Section 5, Table 6.

j. Other

3. Overall Water Inventory

a. Table 6

See Section 5, Table 6.

H. Assess Quantifiable Objectives:

Identify the Quantifiable Objectives that apply to the District (Planner, chapter 10) and provide a short narrative describing past, present and future plans that address the CALFED Water Use Efficiency Program goals identified for the District.

The District has been identified as having lands within its boundary that are subject to quantifiable objectives. The identified quantifiable objectives address increasing the water supply for beneficial uses by providing long-term diversion flexibility to benefit Pixley National Wildlife Refuge, to provide improved long-term diversion flexibility to increase the water supply for beneficial uses and to decrease flows to salt sinks to increase the water supply for beneficial uses.

In addition to importing surface water for irrigation and groundwater recharge purposes, the District is developing potential projects to capture periodic seasonal flows for beneficial uses during wet years, thus decreasing flows to the Tulare Lake Bed area. The District currently has no plans in place that would make water available to the Pixley National Wildlife Refuge. The District does not have any habitat preservation or restoration sites which could be the candidate areas for conserved water supply diversions.

District growers have improved on-farm irrigation systems to the extent that in excess of 90 percent of these systems are permanent, low volume systems. This has resulted in reduced losses to the soil mantle outside of the root zone. Resultant water savings have first been dedicated to improving crop yields with the periodic residual being the negotiating tool to allow the District to deal with reduced water supplies resulting from settlement of the San Joaquin River litigation.

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 turnouts that are unmeasured or do not meet the standards listed above: 0

Number of measurement devices installed last year: 0

Number of measurement devices installed this year: 0

Number of measurement devices to be installed next year: 0

Types of Measurement Devices Being Installed	*Accuracy*	*Total Installed During Current Year*
None		

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

Name: Thomas G. Weddle *Title:* General Manager

Address: P.O. Box 546, Exeter, CA 93221-0546

Telephone: (559) 592-2181 *E-mail:* tgweddle@gmail.com

3. *Provide or support the availability of water management services to water users*

See **Attachment F**, Notices of District Education Programs and Services Available to Customers.

a. On-Farm Evaluations

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

Note: Notwithstanding how notice of availability of farm evaluation services have been in the past, the newly minted conservation bulletin will contain specific details regarding the program purposes, elements and participation specifics.

	Total in district	*# surveyed last year*	*# surveyed in current year*	*# projected for next year*	*# projected 2nd yr in future*
Irrigated acres	12,227	40	0	620[1]	620[1]
Number of farms	471	1	0	25	25

[1]This acreage is the annual target goal of the District for participation.

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

See **Attachment F**, Notices of District Education Programs and Services Available to Customers.

Each week, the Friant Water Authority issues a reproduction of crop coefficients to all of its contractors which are compiled by the Kings River Conservation District and made available by the District to its growers. The table lists the daily average for the previous seven (7) days and estimate of the average for the subsequent seven (7) days of crop coefficients. District water delivery information is proved to each water user, each month in which delivery to a water user is made. Delivery information is provided on monthly billing update transmittals. This information can then be used by a water user to manage water available by field and crop.

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

Each week, the Friant Water Authority issues a reproduction of crop coefficients and CIMIS evapotranspiration rates to all of its contractors which are compiled by the Kings River Conservation District and made available by the District to its growers. The crop coefficients table lists the daily, average for the previous seven (7) days and an estimate of the average for the subsequent seven (7) days, while the CIMIS evapotranspiration rates table lists data for twelve (12) CIMIS stations located within the Friant Division, CVP service area and details daily, total for the previous seven (7) days, normal previous seven (7) days, variance percentage from normal and normal next seven (7) days, evapotranspiration rates.

Most normal year information pertaining to irrigation scheduling and crop evapotranspiration (ET), such as CIMIS data and crop coefficients, is available to the

landowner/grower through many agencies or services. The following are examples of services and information that are available to growers:

- The office of Water Use Efficiency (OWUE), through the Department of Water Resources (DWR) provides CIMIS data free of charge to the public for the use in estimating crop water use for irrigation scheduling. This information can be found through the OWUE's CIMIS website at www.cimis.water.ca.gov;
- During the growing season, crop ET information is published in the local newspapers and broadcast daily over the radio for reference and use by any water user;
- The U.S. Weather Service currently provides real-time CIMIS ET data and forecasts on their local weather channels and on the NOAA website.

The examples listed above provide crop specific ET data that is based on real-time. In an effort to assist District landowners in the understanding of crop coefficient and evapotranspiration rates, and how to develop water use for a specific crop, calculated examples will be published within the on-farm water conservation tools and strategies found in the Water Conservation Information Bulletins, as described in Section 3.3.d. of this report.

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

The District makes available surface water quality data to all landowners/growers. The District is a participant in the Kaweah Sub-watershed of the Southern San Joaquin Water Quality Coalition. The Kaweah and St. John's Rivers Association (K&SJRA) is the lead agency for the Kaweah Sub-watershed of the Southern San Joaquin Water Quality Coalition. K&SJRA publishes periodic newsletters dealing with current Irrigated Lands Regulatory Program issues, current water quality issues and responses and upcoming activities. As the District subscribes on behalf of all of its landowners, it transmits a copy of all of these newsletters to all landowners. The Coalition maintains a website which contains links to all submitted data, prepared reports and documents and links to state maintained water quality databases such as SWAMP. All of these sites are designed to be user friendly.

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

Program	*Co-Funders (If Any)*	*Yearly Targets*
Water Conservation Information Bulletins	Keller/Wegley Consulting Engineers Client Group	Quarterly Publications/Mailings
Friant Water Authority	Friant Division Contractors	Monthly Publications

See **Attachment F** for samples of materials and notices provided.

The Water Conservation Information Bulletins will be provided to the District to inform both the District and its growers of on-farm water conservation tools and strategies. This educational program is being partially funded by Keller/Wegley Consulting Engineers with the balance of the cost covered by the District. See **Attachment F**, Notices of District Education Programs and Services Available to Customers, for the first and second publications.

e. other

None – no other information is currently provided.

4. Pricing structure - based at least in part on quantity delivered
Describe the quantity-based water pricing structure, the cost per acre-foot, and when it became effective.

The management of the contract water supply of the District is directed to preserving and enhancing the groundwater resources of the service area. Historically, the District has supplied water to its growers utilizing a long-term Class 1 and Class 2 contract for CVP waters from the Friant-Kern Canal. The water supply policies of the District are therefore based on the pricing of water to recover the costs associated with obtaining the supplies and to augment the supply which the District growers have available from the groundwater reservoir.

The District's pricing structure is that of three (3) forms, which are values set on an annual basis. Fixed charges are based on a per acre basis and applied to all eligible lands.

Volumetric charges are based on a per acre-foot basis and can be adjusted as water supply allocations from Reclamation change. The cost per acre-foot for 2010 was $70.00 for lands served west of the Friant-Kern Canal and $75.00 for lands served east of the Friant-Kern Canal. Lands that are served by the District located west of the Friant-Kern Canal are supplied surface water through a gravity system. Lands located east of the canal are served through pressurized laterals. Water delivered through these systems are charged the third form of pricing, known as lift charges. Lift charges are based on a per lift basis.

5. Evaluate and describe the need for changes in policies of the institutions to which the district is subject

The Board of Directors and the District Manager review, at least on an annual basis, the policies of the District to insure consistency with the then current rules and regulations of the District. In addition, the District has and continues to review and comment on policy issues related to the Sacramento-San Joaquin Rivers delta, the restoration of the San Joaquin River, carryover storage in Millerton Reservoir and San Luis Reservoir, Friant-Kern Canal delivery issues and employment related regulations.

6. Evaluate and improve efficiencies of district pumps

Describe the program to evaluate and improve the efficiencies of the contractor's pumps.

Pump tests are performed by the Southern California Edison Company on a rotating basis. A specific number of pumps are scheduled for testing each year in a set order, modified if the observed operating characteristic of a pump appears to be utilizing more power per acre-foot pumped than it has in recent history. The goal is to insure that all pumps have been tested on no more than a once every four (4) year basis. Initial steps related to a complete system replacement have been initiated. Target pumping unit overall efficiencies are to exceed 62 percent with maintenance steps considered for units falling below this goal.

Replacement/rebuild procedures are implemented for any unit falling below an overall efficiency level of 45 percent.

B. Exemptible BMPs for Agricultural Contractors

(See Planner, Chapter 2, Appendix C for examples of exemptible conditions)

1. Facilitate alternative land use

Drainage Characteristic	*Acreage*	*Potential Alternate Uses*
High water table (<5 feet)	0	Not Applicable
Poor drainage	0	Not Applicable
Ground water Selenium concentration > 50 ppb	0	Not Applicable
Poor productivity	0	Class 6 lands are not eligible

Describe how the contractor encourages customers to participate in these programs.

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

Sources of Recycled Urban Waste Water	*AF/Y Available*	*AF/Y Currently Used in District*
No sources of urban wastewater exist within the District	N/A	N/A

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

Based on Farm Program participation, the growers within the District have an on-going and intimate relationship with the local NRCS office. The exposure to said office is a multiple number of times in any given year and program information made available by and through said office is disseminated on a continuous basis. The District does not currently track the number of growers who are participating in NRCS programs, nor the nature of those programs.

In addition to the individual grower efforts, the District disseminates to the growers information from the FWA which tabulates the available funding program sources and the types of programs which are funded.

4. Incentive pricing

The nature of the contract water supply of the District is based on preserving and enhancing the groundwater resources of the service area. Historically, the District has supplied water to its growers utilizing a long-term Class 1 and Class 2 contract for CVP waters from the Friant-Kern Canal. The water pricing policies of the District associated with delivery of this supply are designed to recover the costs associated with obtaining the supply and the maintenance and enhancement of available groundwater resources within the boundaries of the District. The goal of the water pricing policy is to maximize the use of surface water to support the planned conjunctive use of groundwater and Class 2 contract supplies. This is consistent with the goals of the Kaweah Delta Water Conservation District's adopted Groundwater Management Plan of which the District is a member.

The water supply allocation and pricing procedures of the District have historically been established on an annual basis by resolution of the Board. The District conveys water usage, price and payment terms and conditions associated with its water deliveries in its monthly water billing forms, copies of which are attached hereto as **Attachment D**.

The pricing procedures of the District are consistent with the adopted conjunctive use/management goals. The District uses two (2) pricing mechanisms to optimize its groundwater resources and send appropriate incentives to irrigators. The two mechanisms are (1) wet vs. dry year variation in pricing and (2) the association of District costs of both fixed and variable natures to insure that the volumetric water prices are consistent with farmers' groundwater pumping costs. These mechanisms are described below:

1. The blending of the cost elements associated with the water supply and the variable nature of the contract supply leads to a mix where the cost of the supply

decreases as the non-storable water supply allocation increases. The decrease in surface water costs during wet years creates incentive for farmers to use surface water as a substitute for groundwater, thus minimizing overdraft. Conversely, the cost of the delivered supply increases as the supply decreases. The delivery of a declared supply of less than the Class 1 contract amount reflects the highest cost per acre-foot. Growers are sent a price signal which encourages them to utilize less surface water and more groundwater, optimizing the groundwater resource; and

2. The District uses allocation of costs of District operations to fixed charges to adjust surface water volume prices to compete with farmers' groundwater pumping costs. The average price of surface water for the District depends on the blend of Class 1 and Class 2 supplies. This pricing adjustment, in conjunction with wet/dry priced variation described above, encourages farmers to make optimal use of both surface and groundwater resources.

In addition to using incentive pricing to manage conjunctive water use goals, the District encourages intra-district water trading among farmers, further optimizing the District water resources. Internal trading is an informal policy of the District and is facilitated by District water accounting procedures. Negotiated prices on these trades are an internal matter between the farmers and are not recorded by the District. The trades are most prevalent in dry years.

5. a) Line or pipe ditches and canals

Not applicable. The District's distribution system is a closed pipeline system. Leaks which are discovered are promptly repaired. The District maintains equipment and repair parts

in inventory and has both trained crew and outside contracting services available to effect repairs promptly.

b) Construct regulatory reservoirs

None

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

The District provides adequate lead time for water orders and prompt response for on/off requests. As an important response to District policy, landowner/grower field blocks have been adjusted for size for delivery rotation within the 24-hour minimum delivery period of the District. Modification of the delivery period policy is periodically visited to insure that growers are not being forced into a mandated non-conservation position. Rule 9, Appendix C, page C-2, has been developed in response to District policy related to 24-hour minimum runtimes. Between Rule 9 and block size configurations by growers, the District receives little to no comment regarding the 24-hour run period requirement. The District does accommodate emergency shut-offs notwithstanding the 24-hour run time policy.

7. Construct and operate district spill and tailwater recovery systems

Distribution System Lateral	*Annual Spill (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
The District has no spills as the system is closed. no tailwater, if any, is returned to the District system.		
Total		

Drainage System Lateral	*Annual Drainage Outflow (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
Not Applicable – none exist.		
Total		

8. Plan to measure outflow.

Total # of outflow (surface) locations/points 0

Total # of outflow (subsurface) locations/points 0

Total # of measured outflow points 0

Percentage of total outflow (volume) measured during report year Not Applicable

Identify locations, prioritize, determine best measurement method/cost, submit funding proposal

Location & Priority	*Estimated cost (in $1,000s)*				
	2009	*2010*	*2011*	*2012*	*2013*
The District operates a closed system with no outflow locations. All flows are contained within District facilities.					

9. Optimize conjunctive use of surface and ground water

The District operates in a conjunctive use fashion and supplies surface water supplemental to groundwater resources. The District prices surface water to be competitive with groundwater sources.

10. Automate canal structures

No. The District has no current plans to automate any canal structures. The District maintains adequate staff to accomplish both proper operation and maintenance. Automation would not decrease staff requirements and, therefore, is not currently cost effective.

11. Facilitate or promote water customer pump testing and evaluation

See **Attachment F**, Notices of District Education Programs and Services Available to Customers

The District has and will continue to provide information to the growers relative to the availability of pump testing and efficiency services provided by the serving utility or local pump companies. The involvement of the District with private pump efficiencies is related to water

conservation and overall resource management. The fact that a farmer may apply a given amount of water to a field with a pump which is operating at a less than optimum efficiency does affect the application time and the total quantity of water which is being demanded by the crop. With Board approval of this Plan, the District has plans to initially distribute and continuously make available a memorandum informing landowners with a listing of local participating pump test companies.

12. Mapping

GIS maps	*Estimated cost (in $1,000s)*				
	2009	*2010*	*2011*	*2012*	*2013*
Layer 1 – Distribution system	0	2	4	4	2
Layer 2 – Drainage system					
Suggested layers:					
Layer 3 – Ground water information					
Layer 4 – Soils map					
Layer 5 – Natural & cultural resources					
Layer 6 – Problem areas					

C. Provide a 3-Year Budget for Implementing BMPs

1. Amount actually spent during current year (2010).

BMP #		BMP Name	Actual Expenditure (not including staff time)	Staff Hours
A	1	Measurement	$0	240
	2	Conservation staff	3,500	10
	3	On-farm evaluation /water delivery info	1,000	1
		Irrigation Scheduling	500	10
		Water quality	0	48
		Agricultural Education Program	12,700	20
	4	Quantity pricing	0	0
	5	Policy changes	0	0
	6	Contractor's pumps	500	4
B	1	Alternative land use	0	0
	2	Urban recycled water use	0	0
	3	Financing of on-farm improvements	0	0
	4	Incentive pricing	320	8
	5	Line or pipe canals/install reservoirs	0	0
	6	Increase delivery flexibility	9,000	20
	7	District spill/tailwater recovery systems	0	0
	8	Measure outflow	0	0
	9	Optimize conjunctive use	2,000	20
	10	Automate canal structures	0	0
	11	Customer pump testing	0	0
	12	Mapping	2,000	12
		Total	$31,520	393

2. Projected budget summary for the next year (2011).

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	*1*	*Measurement*	*$15,000*	*260*
	2	*Conservation staff*	*10,000*	*30*
	3	*On-farm evaluations/water delivery info*	*1,000*	*10*
		Irrigation Scheduling	*500*	*10*
		Water quality	*0*	*0*
		Agricultural Education Program	*14,000*	*68*
	4	*Quantity pricing*	*0*	*0*
	5	*Policy changes*	*3,000*	*20*
	6	*Contractor's pumps*	*1,000*	*8*
B	*1*	*Alternative land use*	*0*	*0*
	2	*Urban recycled water use*	*0*	*2*
	3	*Financing of on-farm improvements*	*100*	*1*
	4	*Incentive pricing*	*320*	*8*
	5	*Line or pipe canals/install reservoirs*	*0*	*0*
	6	*Increase delivery flexibility*	*10,000*	*80*
	7	*District spill/tailwater recovery systems*	*0*	*0*
	8	*Measure outflow*	*0*	*0*
	9	*Optimize conjunctive use*	*10,000*	*50*
	10	*Automate canal structures*	*0*	*0*
	11	*Customer pump testing*	*0*	*0*
	12	*Mapping*	*4,000*	*24*
		Total	*$58,920*	*571*

3. Projected budget summary for 3rd year (2012).

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	*1*	*Measurement*	*$5,000*	*260*
	2	*Conservation staff*	*2,500*	*10*
	3	*On-farm evaluations/water delivery info*	*1,000*	*10*
		Irrigation Scheduling	*500*	*10*
		Water quality	*0*	*0*
		Agricultural Education Program	*16,000*	*60*
	4	*Quantity pricing*	*0*	*0*
	5	*Policy changes*	*3,000*	*20*
	6	*Contractor's pumps*	*1,000*	*8*

(continued)

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
B	*1*	*Alternative land use*	*$0*	*0*
	2	*Urban recycled water use*	*0*	*2*
	3	*Financing of on-farm improvements*	*100*	*1*
	4	*Incentive pricing*	*320*	*8*
	5	*Line or pipe canals/install reservoirs*	*0*	*0*
	6	*Increase delivery flexibility*	*5,000*	*40*
	7	*District spill/tailwater recovery systems*	*0*	*0*
	8	*Measure outflow*	*0*	*0*
	9	*Optimize conjunctive use*	*5,000*	*40*
	10	*Automate canal structures*	*0*	*0*
	11	*Customer pump testing*	*0*	*0*
	12	*Mapping*	*4,000*	*24*
		Total	*$43,420*	*493*

4. Projected budget summary for 3rd year (2013).

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	*1*	*Measurement*	*$5,000*	*260*
	2	*Conservation staff*	*2,500*	*10*
	3	*On-farm evaluations/water delivery info*	*5,000*	*60*
		Irrigation Scheduling	*500*	*10*
		Water quality	*0*	*0*
		Agricultural Education Program	*16,000*	*60*
	4	*Quantity pricing*	*0*	*0*
	5	*Policy changes*	*3,000*	*20*
	6	*Contractor's pumps*	*1,000*	*8*
B	*1*	*Alternative land use*	*$0*	*0*
	2	*Urban recycled water use*	*0*	*2*
	3	*Financing of on-farm improvements*	*2,000*	*24*
	4	*Incentive pricing*	*320*	*8*
	5	*Line or pipe canals/install reservoirs*	*0*	*0*
	6	*Increase delivery flexibility*	*5,000*	*40*
	7	*District spill/tailwater recovery systems*	*0*	*0*
	8	*Measure outflow*	*0*	*0*
	9	*Optimize conjunctive use*	*5,000*	*40*
	10	*Automate canal structures*	*0*	*0*
	11	*Customer pump testing*	*0*	*0*
	12	*Mapping*	*4,000*	*24*
		Total	*$49,320*	*566*

5. *Projected budget summary for 3rd year (2014).*

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	1	Measurement	$5,000	260
	2	Conservation staff	2,500	10
	3	On-farm evaluations/water delivery info	5,000	60
		Irrigation Scheduling	500	10
		Water quality	0	0
		Agricultural Education Program	16,000	60
	4	Quantity pricing	0	0
	5	Policy changes	3,000	20
	6	Contractor's pumps	1,000	8
B	1	Alternative land use	$0	0
	2	Urban recycled water use	0	2
	3	Financing of on-farm improvements	2,000	24
	4	Incentive pricing	320	8
	5	Line or pipe canals/install reservoirs	0	0
	6	Increase delivery flexibility	5,000	40
	7	District spill/tailwater recovery systems	0	0
	8	Measure outflow	0	0
	9	Optimize conjunctive use	5,000	40
	10	Automate canal structures	0	0
	11	Customer pump testing	0	0
	12	Mapping	4,000	24
		Total	$49,320	566

Section 4: Best Management Practices for Urban Contractors

(Due to the adoption of revised BMPs in December 2008, this section will be updated in Spring 2009.)

Not Applicable.

A. Urban BMPs

1. *Utilities Operations*
   - *1.1 Operations Practices*
   - *1.2 Pricing*
   - *1.3 Metering*
   - *1.4 Water Loss Control*

2. *Education*
   - *2.1 Public Information Programs*
   - *2.2 School Education*

3. *Residential*

4. *CII*

5. *Landscape*

B. Provide a 3-Year Budget for Expenditures and Staff Effort for BMPs

1. Amount actually spent during current year.

Year 2010 BMP #	BMP Name	Projected Expenditures (not including staff hours)	Staff Hours
1.	Utilities Operations		
	1.1 Operations Practices	$0	0
	1.2 Pricing$0	0	
	1.3 Metering	$0	0
	1.4 Water Loss Control	$0	0
2.	Education		
	2.1 Public Information Programs	$0	0
	2.2 School Education	$0	0
3.	Residential	$0	0
4.	CII	$0	0

5. Landscape		$0	0
	Total	$0	0

2. Projected budget summary for 2nd year.

Year 2011		Projected Expenditures	
BMP #	BMP Name	(not including staff hours)	Staff Hours
1. Utilities Operations			
1.1 Operations Practices		*$0*	*0*
1.2 Pricing		*$0*	*0*
1.3 Metering		*$0*	*0*
1.4 Water Loss Control		*$0*	*0*
2. Education			
2.1 Public Information Programs		*$0*	*0*
2.2 School Education		*$0*	*0*
3. Residential		*$0*	*0*
4. CII		*$0*	*0*
5. Landscape		*$0*	*0*
	Total	*$0*	*0*

3. Projected budget summary for 3rd year.

Year 2012		Projected Expenditures	
BMP #	BMP Name	(not including staff hours)	Staff Hours
1. Utilities Operations			
1.1 Operations Practices		$0	0
1.2 Pricing$0		0	
1.3 Metering		$0	0
1.4 Water Loss Control		$0	0
2. Education			
2.1 Public Information Programs		$0	0
2.2 School Education		$0	0
3. Residential		$0	0
4. CII		$0	0
5. Landscape		$0	0
	Total	$0	0

Section 5: District Water Inventory Tables

Table 1

Surface Water Supply

2010 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (See Below) (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method							
January	2	0	0	0	0	0	2
February	7	0	0	0	0	0	7
March	42	0	0	0	0	0	42
April	65	0	0	0	4	0	69
May	732	0	0	0	38	0	770
June	2131	0	0	0	111	0	2,242
July	2848	0	0	0	148	0	2,996
August	2846	0	0	0	0	0	2,846
September	2354	0	0	0	0	0	2,354
October	1244	0	0	0	0	0	1,244
November	296	0	0	0	0	0	296
December	0	0	0	0	0	0	0
TOTAL	12,567	0	0	0	301	0	12,868

Table 2

Ground Water Supply

2010 Month	District Groundwater (acre-feet)	Private Groundwater *(acre-feet)
Method		
January	0	341
February	0	775
March	0	1,130
April	0	713
May	0	5,643
June	0	6,058
July	0	7,824
August	0	3,704
September	0	1,001
October	0	0
November	0	0
December	0	4
TOTAL	0	27,193

*normally estimated

Table 3

Total Water Supply

2010 Month	Surface Water Total (acre-feet)	District Groundwater (acre-feet)	Recycled M&I (acre-feet)	Total District Water (acre-feet)
Method				
January	2	0	0	2
February	7	0	0	7
March	42	0	0	42
April	69	0	0	69
May	770	0	0	770
June	2,242	0	0	2,242
July	2,996	0	0	2,996
August	2,846	0	0	2,846
September	2,354	0	0	2,354
October	1,244	0	0	1,244
November	296	0	0	296
December	0	0	0	0
TOTAL	12,868	0	0	12,868

*Recycled M&I Wastewater is treated urban wastewater that is used to meet agricultural demands.

Table 4

Distribution System

2010 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)
Pipelines	316,800	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
TOTAL	316,800	0	0	0	0	0	0	0

Table 5

Crop Water Needs

2010 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)
Alfalfa hay	20	5.00	0.20	0.00	0.00	104
Almonds	5	2.80	0.10	0.00	0.10	14
Cherries	19	3.70	0.20	0.00	0.40	67
Citrus	9,824	2.90	0.10	0.30	0.70	25,542
Grapes, Table	81	3.80	0.10	0.00	0.10	308
Grapes, Wine	5	3.80	0.10	0.00	0.10	19
Grapefruit	110	2.90	0.10	0.30	0.70	286
Irrigated Pasture	13	6.50	0.00	0.00	0.00	85
Lemons and Limes	60	2.90	0.10	0.30	0.70	156
Nursery	5	1.90	0.00	0.00	0.00	10
Olives	453	2.80	0.10	0.00	0.40	1,133
Peaches	34	3.70	0.20	0.00	0.40	119
Peppers (all kinds)	20	2.80	0.20	0.00	0.20	56
Persimmons	33	3.70	0.20	0.00	0.40	116
Pomegranets	73	3.70	0.20	0.00	0.40	256
Prunes and Plums	634	3.70	0.20	0.00	0.40	2,219
Pistachios	83	2.80	0.10	0.00	0.10	232
Strawberries	3	2.80	0.20	0.00	0.20	8
Walnuts	7	2.80	0.10	0.00	0.10	20
Idle	745	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
Crop Acres	12,227					30,748

Total Irrig. Acres 12,227 (If this number is larger than your known total, it may be due to double cropping)

Table 6

2010 District Water Inventory

Water Supply	Table 3		12,868
Riparian ET	(Distribution and Drain)	minus	0
Groundwater recharge	(intentional - ponds, injection)	minus	0
Seepage	Table 4	minus	0
Evaporation - Precipitation	Table 4	minus	0
Spillage	Table 4	minus	0
Transfers/exchanges/trades/wheeling	(into or out of the district)	plus/minus	0
Non-Agri deliveries	(delivered to non-ag customers)	minus	0
Water Available for sale to agricultural customers			12,868
Compare the above line with the next line to help find data gaps			
2010 Actual Agricultural Water Sales	From District Sales Records		12,868
Private Groundwater	Table 2	plus	27,193
Crop Water Needs	Table 5	minus	30,748
Drainwater outflow	(tail and tile not recycled)	minus	0
Percolation from Agricultural Land	(calculated)		9,313

Table 7

Influence on Groundwater and Saline Sink

2010

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)	12,227
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

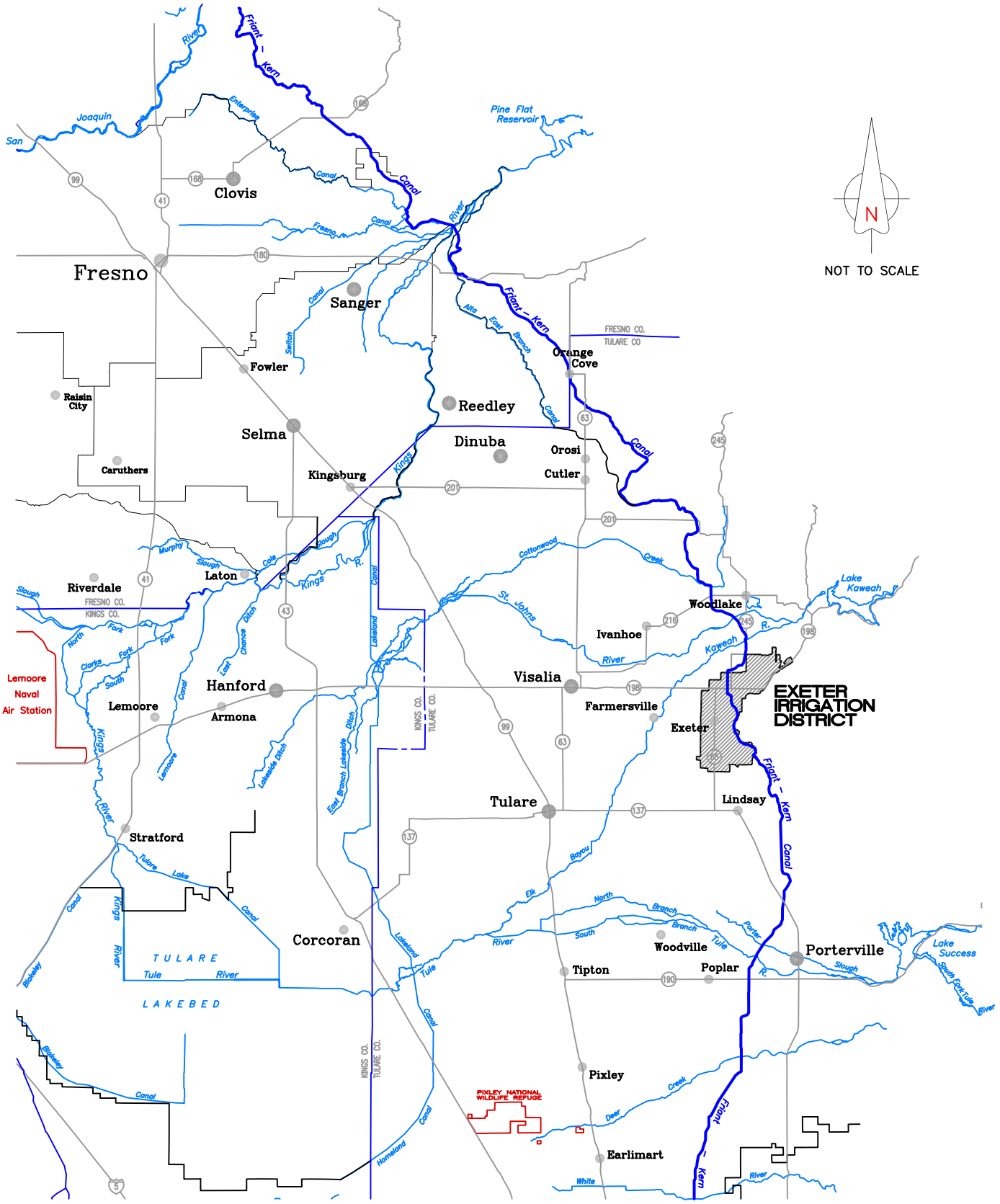
Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (See Below) (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2001	13,784	0	0	0	0	0	13,784
2002	12,744	0	0	0	0	0	12,744
2003	12,659	0	0	0	0	0	12,659
2004	11,685	0	0	0	0	0	11,685
2005	13,183	0	0	0	0	0	13,183
2006	14,414	0	0	0	0	0	14,414
2007	6,786	0	0	0	0	0	6,786
2008	10,888	0	0	0	0	0	10,888
2009	9,888	0	0	0	0	0	9,888
2010	12,567	0	0	0	301	0	12,868
Total	118,598	0	0	0	301	0	118,899
Average	11,860	0	0	0	30	0	11,890

PLATES

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT



LOCATION MAP
AGRICULTURAL WATER MANAGEMENT PLAN
EXETER IRRIGATION DISTRICT

L:\EID\AG WATER MANAGEMENT PLAN\PLATE 1 - LOCATION MAP.dwg

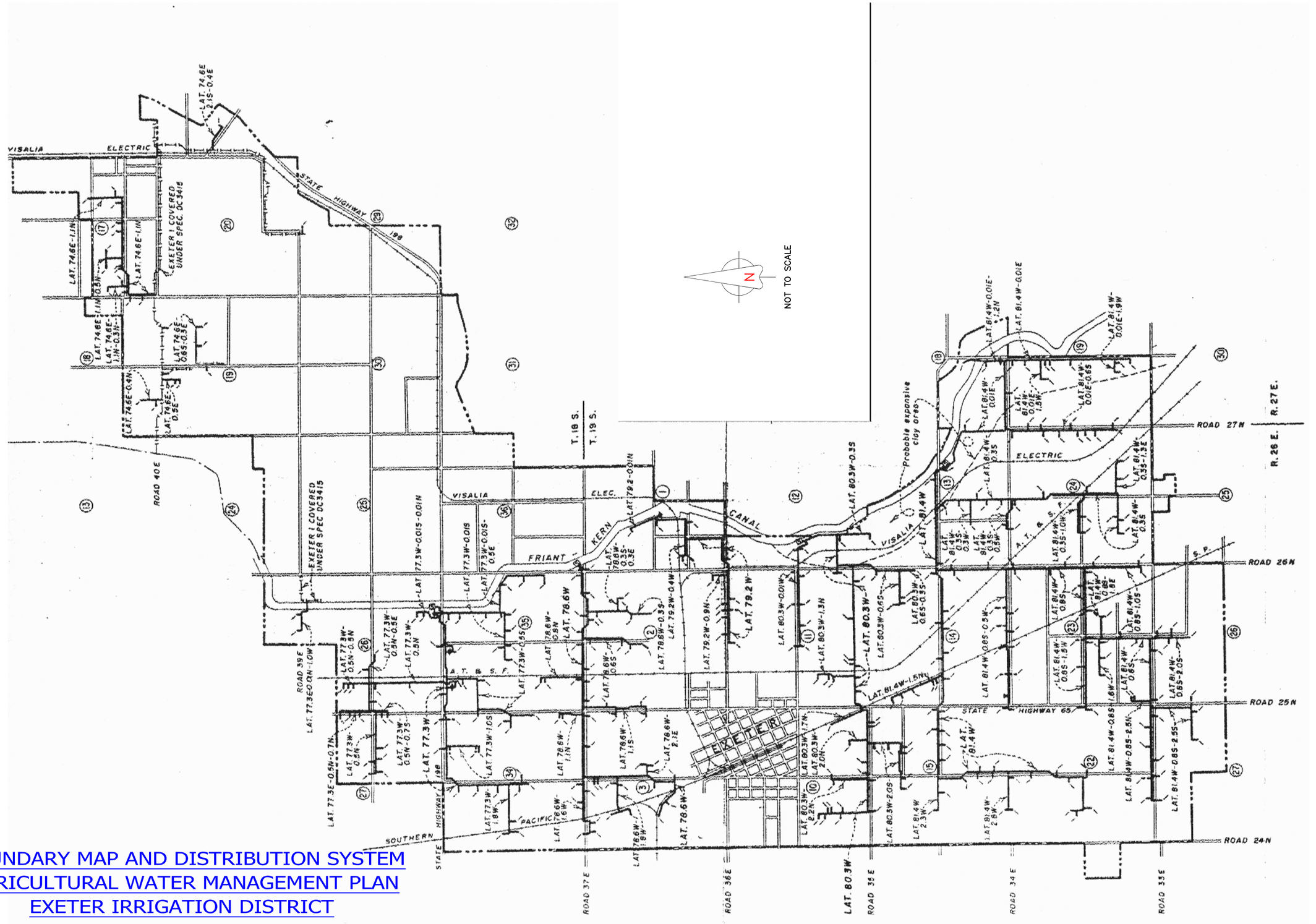
ATTACHMENT A

DISTRICT FACILITIES MAP

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT



BOUNDARY MAP AND DISTRIBUTION SYSTEM
AGRICULTURAL WATER MANAGEMENT PLAN
EXETER IRRIGATION DISTRICT

L:\EIDVAG WATER MANAGEMENT PLAN\ATTACHMENT A - BOUNDARY AND DISTR SYS.dwg

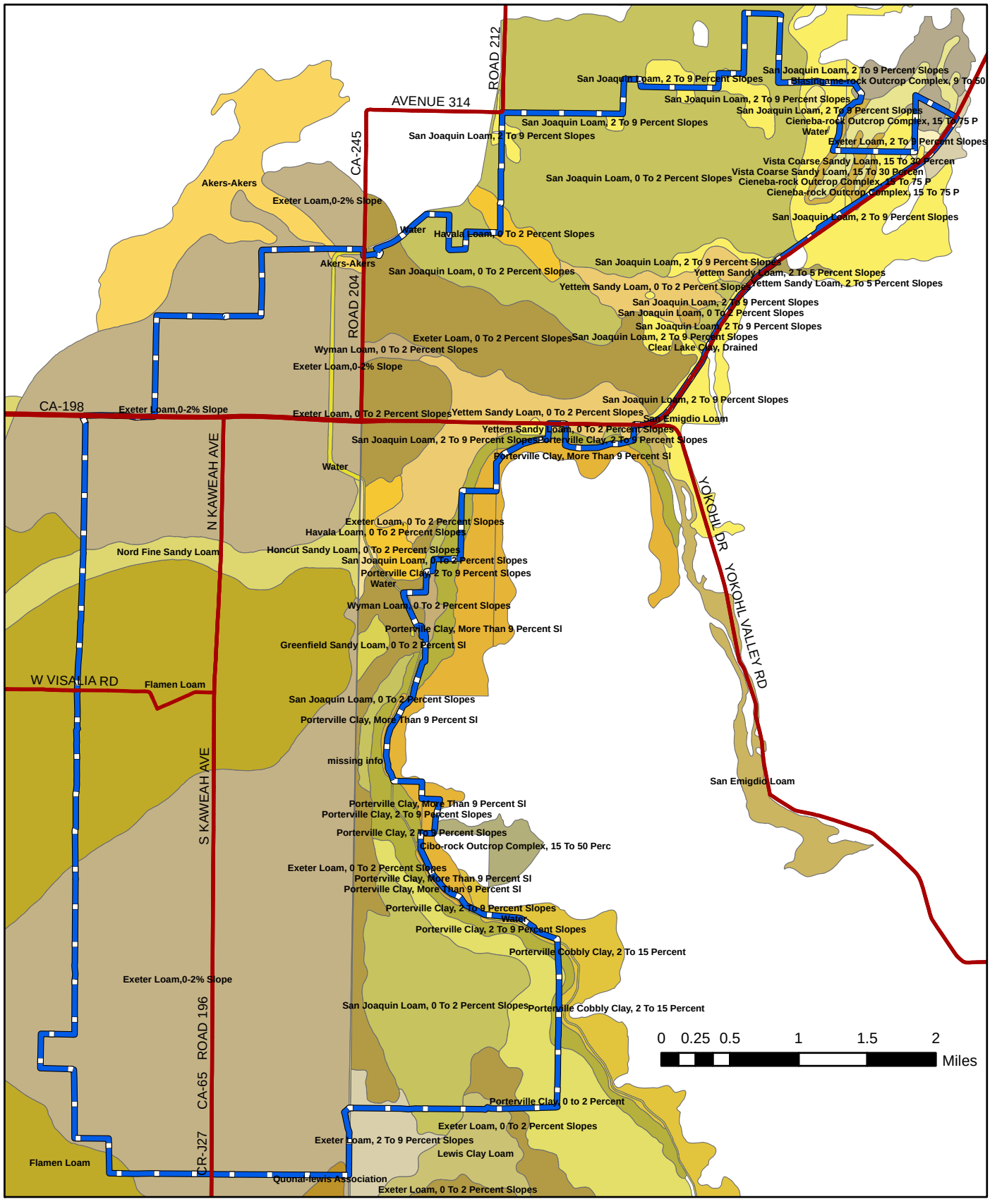
ATTACHMENT B

DISTRICT SOILS MAP

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT



Legend

- Highways
- Exeter Irrigation District

N

SOIL CLASSIFICATIONS

WATER MANAGEMENT PLAN - UPDATE 2011

EXETER IRRIGATION DISTRICT

Path: L:\GIS Shape Files Index\EID\WMP UPDATE 2011\UPDATE 2011 rev.mxd

ATTACHMENT C

DISTRICT RULES AND REGULATIONS

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT

EXETER IRRIGATION DISTRICT

WATER ALLOCATION AND DELIVERY RULES AND REGULATIONS

The Exeter Irrigation District expects to furnish water to property owners or water users within the District boundaries in accordance with the following rules and regulations, to the extent it is physically possible to do so.

1. At the beginning of each irrigation season all water allocated to the Exeter Irrigation District by the United States Bureau of Reclamation shall be prorated equally to each eligible acre of agricultural land within the District according to the latest assessed valuation of the land.

When land ineligible to receive Central Valley Project water, because of failure to comply with the Reclamation Reform Act of 1982, becomes eligible after the first allocation of water has been made, the property owner may request a proportionate share of the water allocated for the season on a basis of 96% if requested in March; 89% in April; 77% in May; 62% in June; 44% in July; 26% in August, and 12% in September.

2. Landowners may transfer all or part of their water allocation to another willing eligible landowner, provided a properly executed form obtained from and approved by the District, has been delivered to the District. The accepting landowner shall then become the responsible party to the District for the water delivery charges of that transferred allocation.

Allocated water remaining at the conclusion of the season, December 31 or earlier if the Friant-Kern Canal is dewatered for maintenance, will be charged for unused water. The rate for unused water is established annually.

3. When any person except a property owner requests service from the District, he shall file a form properly completed, provided by the District, which authorizes said person to give orders to the District for the delivery of water to the certain described land, and further designates the property owner as the party responsible to the District for all water charges.

4. In case any charges for water and other services, or either, remain unpaid, the amount of the unpaid charges may be added to and become a part of the annual assessment levied upon the land, upon which the water for which the charges are unpaid was used, and upon the land subject to the charges for any other District services and shall constitute a lien on that land.

Water will not be delivered to any otherwise eligible piece of property that has a delinquent assessment or outstanding lien against the property by the District, until such time as the delinquent assessment and/or lien has been cleared.

5. Water used each month will be billed no later than the 15th of the following month. All bills shall be due upon receipt and are delinquent when not paid within 30 days after the date of the bill. There shall be a penalty added of 1% per month on all delinquent bills.

Water deliveries will be terminated immediately to any piece of property that has a delinquent water bill of 30 days (60 days after the initial billing). Deliveries will not resume until such time as the water delivery charges are brought current.

6. Orders to turn on, turn off, increase, or decrease water shall be made at the District office. Such orders shall be made before 8:30 A.M., and 24 hours prior to the day scheduled for receiving the water. No water orders will be accepted at the District office on Sunday, therefore, a water user who wants water on Monday must place his order at the District office on Saturday before 8:30 A.M.

7. On the day the order is put into effect, the water tender will turn on or off as directed, at the time he passes that point of delivery on his regular run for that day. Orders for a certain hour cannot be accepted, but the water tender will cooperate with the user as far as possible and still maintain efficient operation of the system.

8. After water has been turned on, it shall run continuously day and night until ordered off, and turn on will not be made for less than a 24-hour period. The 24-hour notice for water to be turned off may be waived in case of farm pipe line leak or other emergency.

9. A change of water from one delivery point to another may be made without a 24-hour notice, provided both deliveries are served from the same District distribution system main line or pump station and provided such change is requested to be made during the water tender's regular run for that day.

10. No changes will be made by the water tender during the afternoon unless an emergency exists.

11. If a delivery meter fails to operate accurately, the amount of water used will be calculated on the basis of continuous flow during all days and nights as determined by the amount of water turned on, from the time delivery was turned on until turned off.

12. No other person except an employee of the Exeter Irrigation District, unless otherwise designated, shall operate any of the distribution facilities. Tampering with or changing the adjustment of any meter or valve is strictly prohibited. An interference with government facilities under the control of the District is a penal offense.

13. Prior to periods of maximum demand, water orders will be taken on a demand basis in accordance with previously described procedure. After maximum design capacity is reached in any pipe line or system of pipe lines, additional water orders will be delivered on a prorate basis. Water users irrigating at the time maximum capacity is reached will be held to a prorated flow of water in order to obtain the additional water. The prorate will start with the water user who has been taking more than his prorated share for the longest period of time. Water obtained in this manner will be distributed according to the same method of prorate to water users who have their requests on file in the District office.

A water users prorate will be determined by multiplying the maximum capacity of the distribution system from which he is being served by the assessed valuation of his property and dividing by the total assessed valuation of the land being served from said system.

During this time of maximum water delivery, a water user who requests an emergency turn-off to make pipe line repairs may have the same amount of water turned on when the repairs are made without any unnecessary delay.

14. All connections from the farm irrigation system to the distribution system must be approved by the District Manager before any water is delivered.

15. The District may refuse to deliver water through a pipe line not in a suitable condition to prevent waste of water, or to a landholding when there is excessive run-off and waste of water.

16. The District assumes no responsibility for damages resulting directly or indirectly from any private pipe line or ditch, or the water flowing therein.

17. The District assumes no responsibility for the bacterial quality of water delivered through its Facilities from the Bureau of Reclamation canal delivery system. This water is not intended for human consumption without proper treatment by an approved domestic water supply purveyor.

ATTACHMENT D

DISTRICT SAMPLE BILLS

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT

BILLING DATE
METER NUMBER

METER READING
TO DATE
PREVIOUS
PERIOD
ESTIMATE
CHARGES
ACRE FEET
RATE
AMOUNT
PAST DUE
PENALTY
TOTAL AMOUNT

EXETER IRRIGATION DISTRICT
P.O. BOX 546
EXETER, CA. 93221

A PENALTY OF 1% PER MONTH WILL BE ADDED WHEN NOT PAID WITHIN 30 DAYS AFTER DATE OF BILL

METER NUMBER

SEND
TO

PLEASE PAY THIS AMOUNT
THIS STUB MUST BE RETURNED TO ENSURE PROPER CREDIT

ATTACHMENT E

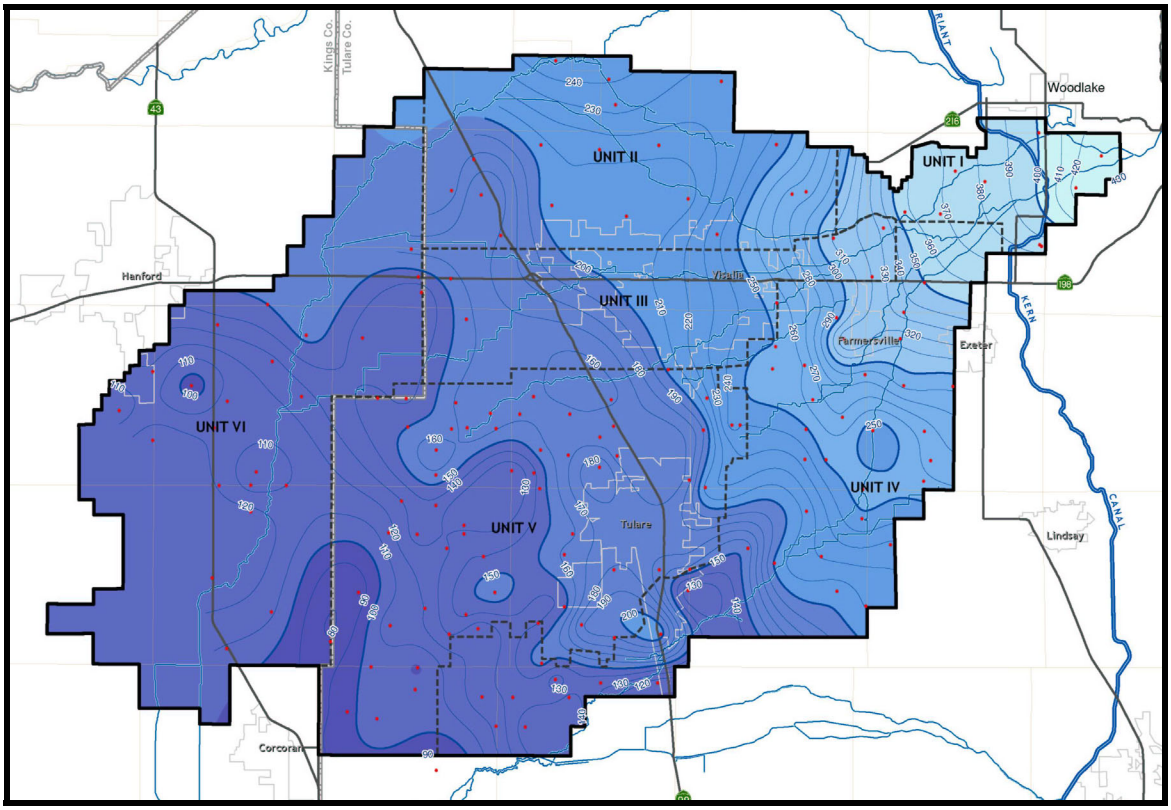
GROUNDWATER MANAGEMENT PLAN

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT

KAWEAH DELTA
Water Conservation
DISTRICT



GROUNDWATER MANAGEMENT PLAN

(Updated: November 7, 2006)

Table of Contents

Table of Contents

List of Plates

Table of Contents

List of Tables

Appendices

SECTION 1: INTRODUCTION

1.1 Overview

On July 5, 1995, the Kaweah Delta Water Conservation District (District) formally adopted the District's Groundwater Management Plan (Plan). The Plan allows the District to manage groundwater on a local basis in lieu of a mandated plan administered by the State of California Department of Water Resources. The District has long recognized groundwater as an important resource to the area and the Plan gives the District the authority to engage in specific activities, which are beneficial to the groundwater basin within the Plan area.

The Plan was originally prepared and implemented by the District in response to 1992 state legislation AB 3030. Since the establishment of the District's Plan, more recent state legislation SB 1938, current California Water Code interpretation and discussions within the Department of Water Resource's Bulletin 118 led the District to reevaluate the Plan and its components. This document, therefore, is an update of the Kaweah Delta Water Conservation District's 1995 Groundwater Management Plan.

1.2 Plan Authority

The District is an authorized groundwater management agency within the meaning of California Water Code (CWC) § 10753[1](b) and by the establishment of the Plan. The Plan does not conflict with existing groundwater ordinances and groundwater management plans and the District continues to endeavor to coordinate Plan elements with other local agencies that have adopted rules and regulations to implement and enforce their own AB255, or AB 3030 plans as required by CWC § 10753.9(a).

1.3 Background

AB 3030 provided an opportunity for the District to prepare and implement a Groundwater Management Plan. While the legislation allows for separate plans to be developed by each public agency with jurisdiction over water, a well-conceived Plan covering the entire District offers improved management and benefit capabilities for all agencies within the plan area.

The availability of groundwater to serve community and agricultural needs can be impacted by activities that take place a considerable distance beyond local boundaries. There is considerable common use of the

[1] CWC § 10753(b). Any local agency, whose service area includes a groundwater basin, or a portion of a groundwater basin, that is not subject to groundwater management pursuant to other provisions of law or a court order, judgment, or decree, may, by ordinance, or by resolution if the local agency is not authorized to act by ordinance, adopt and implement a groundwater management plan pursuant to this part within all or a portion of its service area.

groundwater resource and this coordinated Plan has been and will continue being a benefit to competing interests using the groundwater resource. This coordination is accomplished through the development of a Memorandum of Understanding (MOU) between the District and other local agencies within the plan area along with a periodic meeting of the MOU participants.

The Plan covers all of the land within the boundary of the District. Any local agency, as that term is defined by Government Code section 10752(g), can exclude the land within its boundary from being covered by the Plan by choosing not to be included in the Plan. Accordingly, the Plan covers all land within the boundary of the District, less that land within the boundaries of local agencies which elect not to participate in the Plan or which may opt out of the Plan (hereinafter the "Plan Area").

1.4 Purpose and Goals

The Plan recognizes that the conjunctive management of water supplies within the Plan Area must be continued. Achieving hydrologic equilibrium requires the management of both surface and groundwater supplies. Maintaining this balance will be the principal benefit to be derived from the Plan. Retaining all existing surface and groundwater supplies within the Plan Area is critical to maintaining this delicate balance.

The Groundwater Management Plan is also a vital element within the District's Integrated Regional Water Management Plan (IRWMP). The Plan provides the organizational foundation for the operation of the IRWMP. Many of the Plan's primary elements are used in carrying out the purpose of the IRWMP. Shared elements between the Plan and IRWMP include;

- ✓ Participation
- ✓ Regional Coverage
- ✓ Regional Objectives
- ✓ Water Management Strategies
- ✓ Integration
- ✓ Project Prioritization

The principal actions called for by the Plan will be gathering and evaluating data concerning the quantity of groundwater. Actions have been and will continue to be developed to enhance the valuable groundwater resource by promoting those measures necessary to reduce the long-term groundwater level decline in the Plan Area. Many of the actions identified are currently being conducted. Other actions will require further study prior to implementation.

Adherence to Plan objectives and procedures will avoid and reduce duplication of activities by local jurisdictions. Additionally, plan elements can be utilized by all the agencies within the Plan Area in long-term planning activities. The Plan is designed to be flexible, allowing updates to be made as needed, based principally on the additional information that is gathered through the monitoring programs.

1.5 Plan Area

The District is located on the alluvial fan of the Kaweah River. This alluvial fan extends approximately 40 miles in a southwesterly direction, commencing in the foothills of the Sierra Nevada range on the east and continuing to near the central axis of the San Joaquin Valley in the vicinity of the east bed edge of Tulare Lake. The north and the northwest boundaries of the District generally abut the service area of the Kings River. The south boundary of the District generally abuts the service area of the Tule River.

The District's Plan includes those areas overlying the groundwater basin or associated groundwater sub-basins within the District. Those areas of the San Joaquin Valley Groundwater Basin resources located within the District include portions of the Kaweah, Kings, Tule and Tulare Lake groundwater sub-basins. These sub-basins are shown on Plate 1.

The District's Plan Area is presented on Plate 2. Areas managed under existing Groundwater Management Plans by local agencies that are excluded by agreement from this Plan include areas within the borders of the Corcoran Irrigation District and specific lands managed under the Tulare Lake Bed Coordinated Groundwater Management Plan (TLBCGMP).

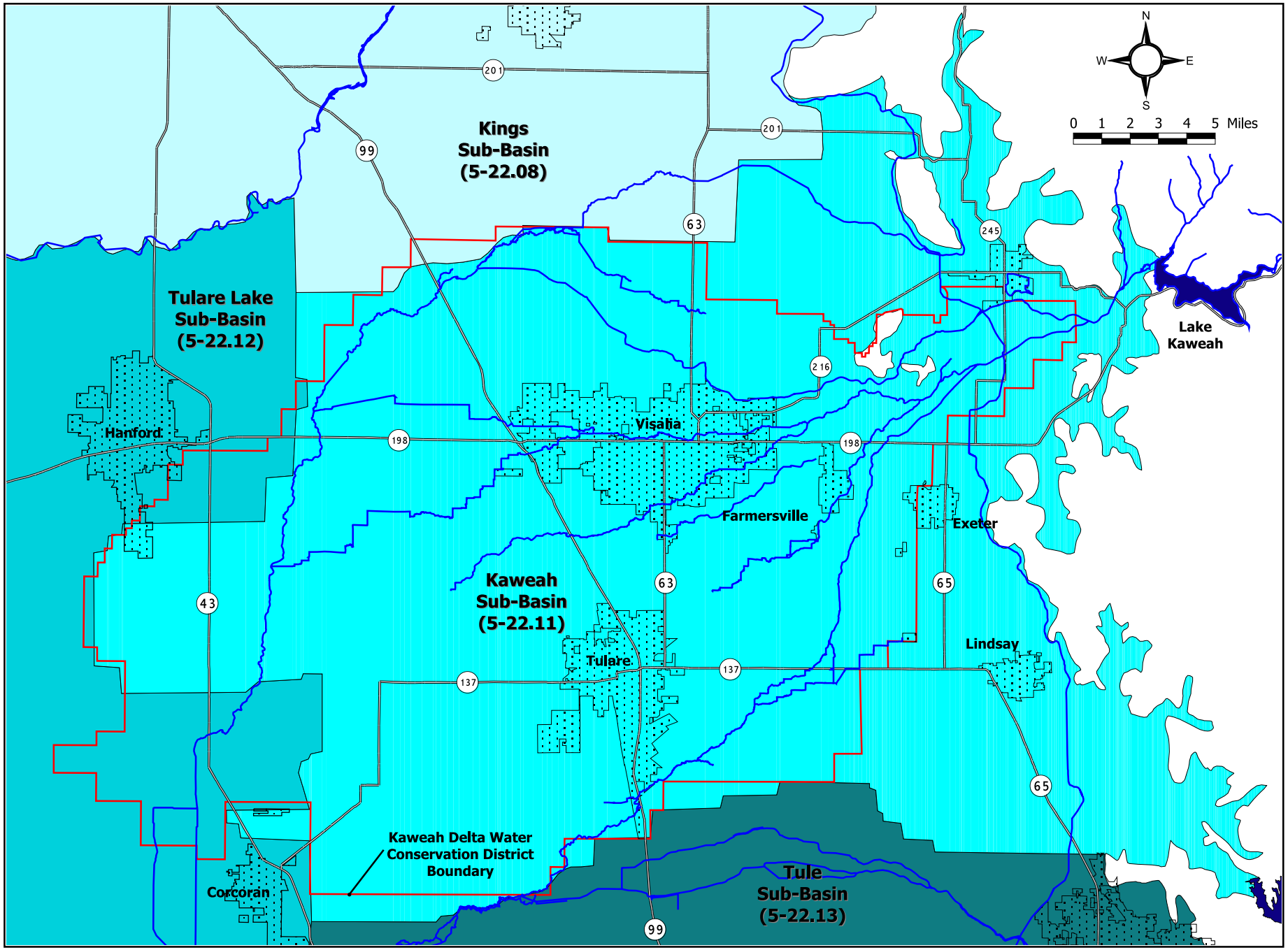


Plate No. 1 : Groundwater Sub-Basins

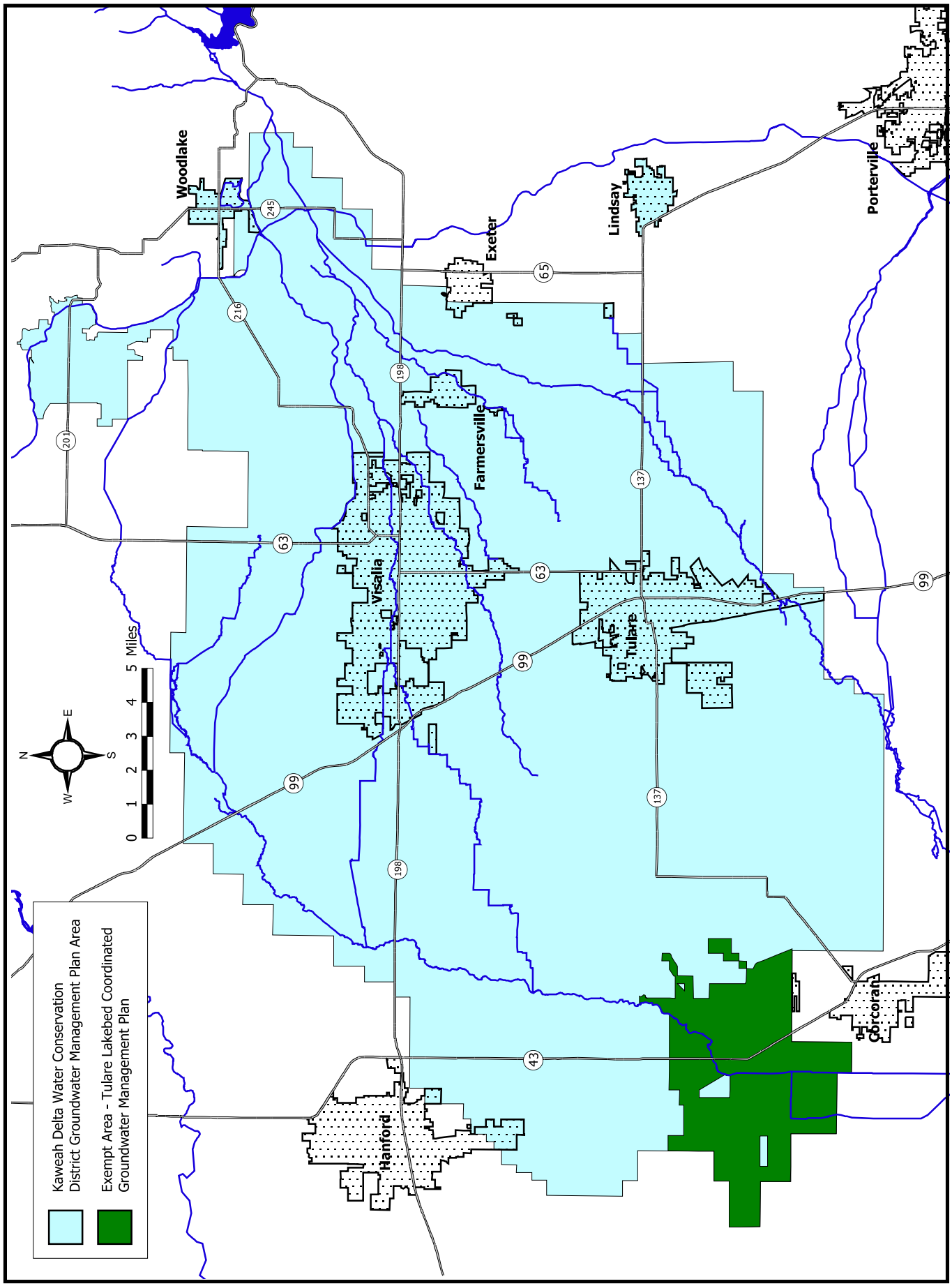


Plate No. 2 : Groundwater Management Plan Area

The District's Plan Area contains multiple local agencies that provide various types of water services. Those local agencies that have been included as stakeholders through the execution of a *Memorandum of Understanding (MOU)* are shown on Plate 3. The list of current stakeholders covered under a MOU is provided below in Table 1.

TABLE 1
PLAN STAKEHOLDERS

California Water Service Company	Kings County Water District (*AB 3030 Plan*)
City of Farmersville	Lakeside Ditch Company
City of Lindsay	Lakeside Irrigation Water District
City of Tulare	St. Johns Water District
City of Visalia	Stone Corral Irrigation District
City of Woodlake	Tulare Irrigation District (*AB 255 Plan*)
Consolidated Peoples Ditch Company	Ivanhoe Irrigation District

1.6 Management Plan Components

The District's Plan includes the following required and recommended components:

- ✓ CWC § 10753.7 (four mandatory components). Recent amendments to the CWC at § 10750 et seq. require a Groundwater Management Plans (GMP) to include several components to be eligible for award of funding administered by the Department of Water Resources (DWR) for the implementation of groundwater related studies, construction of groundwater projects and groundwater quality projects. These amendments to the CWC were included in Senate Bill 1938, effective January 1, 2003.
- ✓ CWC § 10753.8 (12 optional components). CWC § 10753.8 includes 12 specific technical issues that could be addressed in GMPs to manage the basin optimally and protect against adverse conditions.
- ✓ DWR Bulletin 118-2003, Appendix C (six recommended components). The recent 2003 update to the Department of Water Resource's Bulletin 118, *California's Groundwater*, includes discussion of required and recommended components of Local Groundwater Management Plans. Review of the material results in identifying components that are not included in CWC § 10750 et seq.

Table 2 summarizes the required and recommended components of an AB 3030 plan developed pursuant to current State guidance and the appropriate section of the District's Plan where each component is addressed.

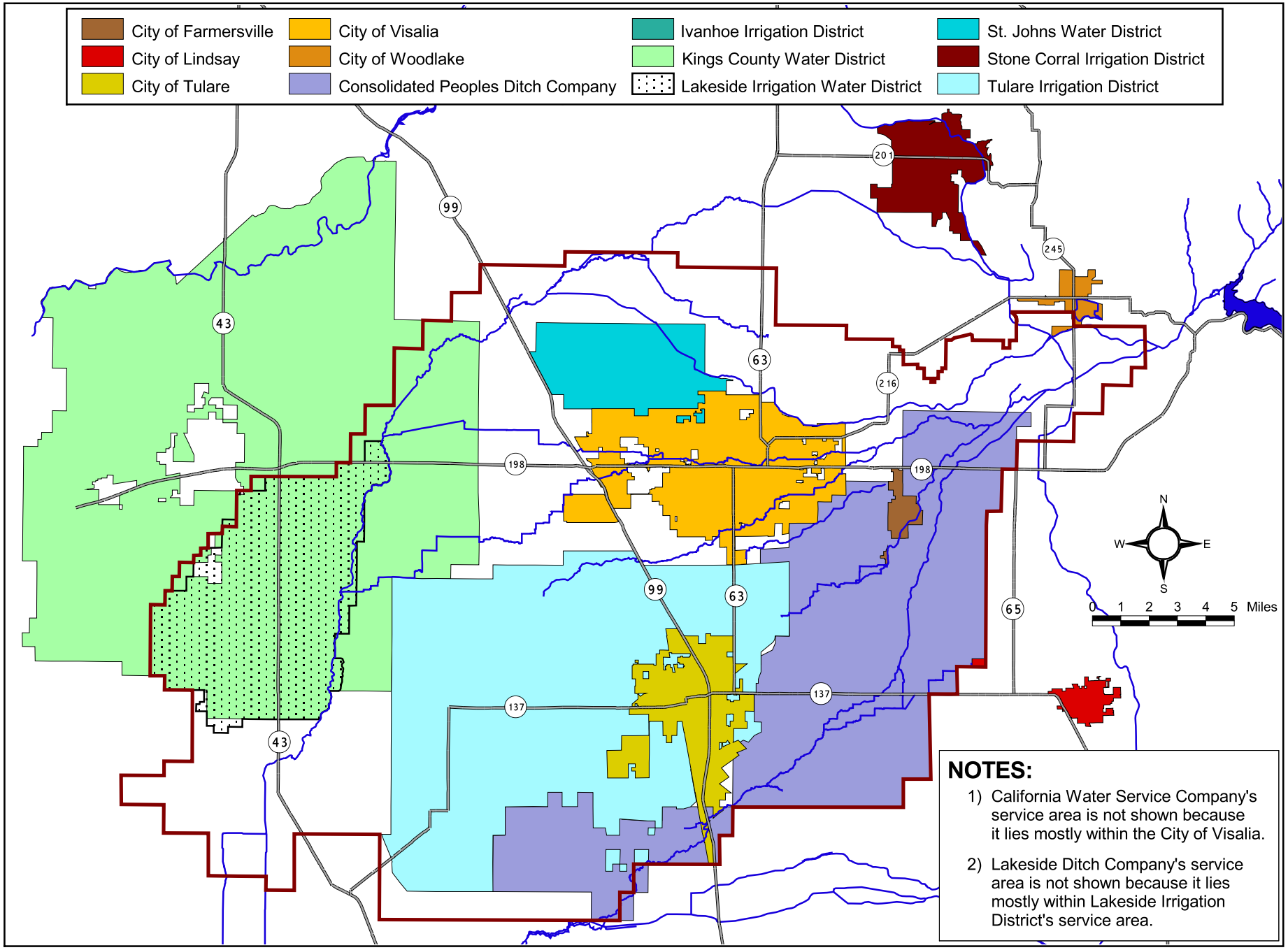


Plate No. 3 : Plan Participants

TABLE 2
GROUNDWATER MANAGEMENT PLAN COMPONENTS

Plan Component Description	District Plan Section
Mandatory Plan Components (CWC § 10753.7(a))	
(1) Basin Management Objectives	3.2
(2) Other Agency Involvement	3.6
(3) Plan Map	1.4
(4) Monitoring Protocols	3.3.5
Optional Plan Components (CWC § 10753.8)	
(a) Saline Water Intrusion	3.4.3
(b) Wellhead Protection	3.4.2
(c) Migration of Contaminated Water	3.4.4
(d) Well Abandonment	3.4.1
(e) Overdraft Mitigation	3.5.2
(f) Groundwater Replenishment	3.5.1
(g) Groundwater Monitoring	3.3.1
(h) Conjunctive Use	3.5.3
(i) Well Construction Policies	3.4.5
(j) Operation of Facilities	3.5.1.4
(k) Relationships with other agencies	3.6.3
(l) Land Use Planning	3.7.1
Recommended Plan Components (BU 118-2003, Appendix C)	
✓ Stakeholder Advisory Committee	3.6.2
✓ Plan Area Description	2.1 – 2.7
✓ Management Objectives Contributions	3.2
✓ Monitoring Program Description	3.3
✓ Periodic Groundwater Reports	3.7.3
✓ Periodic Plan Re-evaluation	3.7.4

SECTION 2: BASIN CONDITIONS

2.1 The District

The District was formed under the provisions of the Water Conservation District Act of 1927 for the purpose of doing those things authorized by the Act. The District, includes lands in both Tulare County and Kings County. The boundary is shown on Plate 4, which also shows hydrologic units established in the District. The total area of the District is about 340,000 acres, with approximately 257,000 acres located in the westerly portion of Tulare County and the balance, or about 83,000 acres, in the northeasterly corner of Kings County.

The lands within the District are used for agricultural purposes, although the cities of Visalia and Tulare constitute significant areas of urbanization. Other communities include Farmersville, Exeter, Goshen, Ivanhoe, Waukena and Guernsey.

2.2 Climate

The area is semi-arid with mild winters and hot, dry summers. The average rainfall, based on District records, is approximately 11 inches per year. Distribution of such rainfall varies from 13 inches on the eastern portions of the District to 7 inches on the western portions. The majority of this rainfall occurs from November through April. With the long, hot summers that normally occur in the valley, there is a potential for about five feet of water that evaporates per year, with the majority of that evaporation occurring during the period from April through October.

Rainfall in the District occurs primarily in the winter months, with virtually no rainfall in the summer months. Annual crop use per acre averages several times the amount of average precipitation. As a result, agricultural crops grown within the District are heavily dependent upon irrigation from surface water deliveries and groundwater pumping, with water needs only partially satisfied by rainfall.

2.3 Land Use

The cropping patterns within the District vary with changes in agricultural economics. In 1981, approximately 77% of the irrigated land was planted in row crops, 20% in permanent plantings and 3% in pasture. In 1999, approximately 71% of the irrigated land was in row crops, 28 % in permanent plantings and 1% in pasture. A tabulation of the land utilization for 1981 and 1999 as compiled in the Final Report (2003) of Water Resources Investigation of the Kaweah Delta Water Conservation District is presented in Table 3.

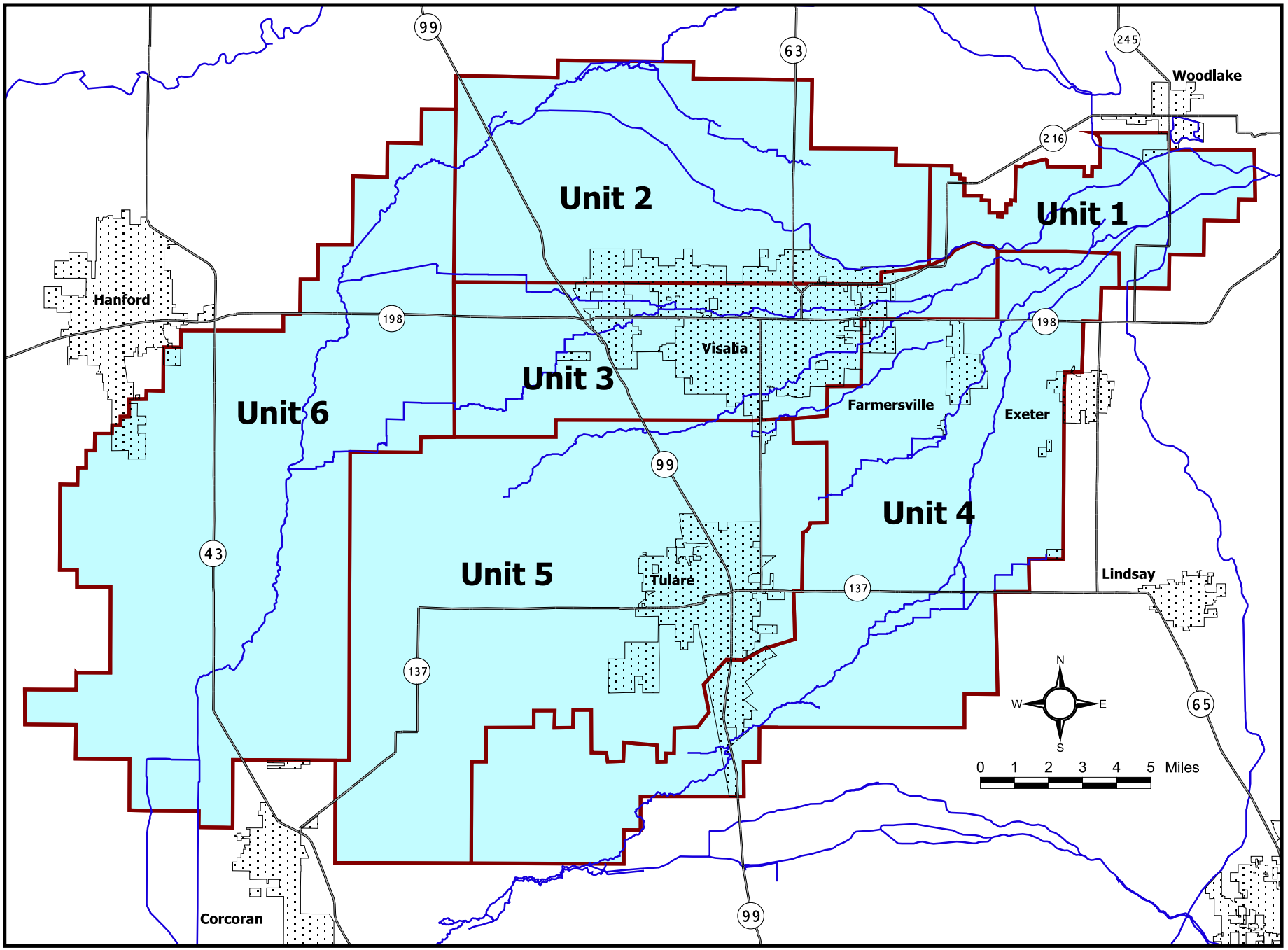


Plate No. 4 : Hydrologic Units

TABLE 3
DISTRICT SUMMARY OF LAND UTILIZATION

(Values in Acres)

Category of Land Use	1981	1990	1999
Irrigated			
Cotton	94,229	93,765	62,295
Alfalfa	33,977	41,257	38,923
Grain	65,062	65,960	87,927
Deciduous and Nuts	36,502	39,262	44,540
Pasture	8,873	4,005	2,954
Miscellaneous Field	2,911	1,053	510
Sugar Beets	1,869	1,100	900
Grapes	9,187	7,492	29,796
Citrus	6,337	6,587	7,184
Rice	313	31	0
Truck	3,995	5,494	10,872
Subtotal, Irrigated	**263,255**	**266,006**	**285,901**
Nonirrigated			
Farmsteads, Dairies, Feed Lots	21,352	29,797	29,508
Urban, Commercial and Industrial	10,397	10,156	13,136
Idle (Fallow)	13,923	7,634	6,958
Roads, Channel and Canals	2,045	3,386	2,433
Undeveloped	28,833	23,047	2,115
Unknown	246	25	0
Sub-total, Nonirrigated	**76,796**	**74,045**	**54,150**
TOTAL	**340,051**	**340,051**	**340,051**

Reference: Water Resources Investigation of the Kaweah Delta Water Conservation District (Final Report 2003)

2.4 Surface Water Hydrology

The majority of the watershed area for the Kaweah River is in the high Sierra Nevada Mountains, which experiences heavy snowfall during most winter months. During the spring and summer months, the snow melts to form tributaries of the Kaweah River. In normal years, the Kaweah River does not reach its highest stage until the middle of May or early June. For the last fifty years, the average annual runoff for the Kaweah River has been 454,295 acre-feet. Average runoff is not the runoff experienced every year. There are great variations in the flows of the Kaweah River, not only from year to year, but also from month to month. Historically, there have been alternating periods of flood and drought in the discharge

area of the Kaweah River, which have been greatly curtailed since 1961 with the completion and operation of Terminus Dam.

In addition to the Kaweah River runoff and rainfall, water enters the District by of way canals from the Kings River and smaller tributary streams such as Dry Creek and Yokohl Creek. Water is also often imported into the District from the Central Valley Project.

At McKay Point, a significant geographical feature immediately to the east of the eastern District boundary and about 1 ½miles west of the community of Lemon Cove, the Kaweah River divides into the St. Johns River and Lower Kaweah River. Water then enters the District in these two channels. Within the District, these branches continue to divide into both natural and manmade distributaries forming the Kaweah Delta. Included in Section 3.3 of this Plan is Plate No. 16 “Kaweah Watercourses” that displays the extent of the surface water conveyance systems throughout the District.

Numerous public and private entities within the District divert surface water from the Kaweah River and its distributaries. About 250,000 acres within the District have access to surface water supplies from the rivers system. Because of the erratic nature of flows in the Kaweah River, which vary substantially in magnitude from month to month and year to year, nearly all these lands must satisfy supplemental water needs from groundwater. Note that all municipal and industrial uses within the District are supplied exclusively from groundwater.

Terminus Dam and Reservoir, located on the Kaweah River about 3 ½miles to the east of the District, was completed in 1962 by the U.S. Army Corps of Engineers. This project was constructed mainly for flood control purposes and to provide storage for irrigation waters. The dam is an earth fill structure with a controlled outlet capacity of up to 8,900 cfs. The reservoir space available for conservation and irrigation re-regulation is about 183,000 acre-feet. The District presently has contracts with the United States for the repayment of operation and maintenance costs allocated to flood control and irrigation re-regulation space purposes. The District is the sole entity that holds the contracts for all the conservation and irrigation storage space in the reservoir.

The Friant-Kern Canal, a feature of the Federal Central Valley Project (hereinafter "CVP"), traverses the easterly portion of the District. San Joaquin River water is delivered to certain lands within the Plan Area via this facility. Both the Tulare Irrigation District and Ivanhoe Irrigation District which lie entirely within the Plan Area, obtain water from the Friant-Kern Canal as they have a long-term contract with the Bureau of Reclamation for CVP water. Although the Tulare Irrigation District and Ivanhoe Irrigation District are

the only entities fully within the Plan Area with such a Friant Division contract, the District itself, as well as other entities therein, has historically received substantial quantities of CVP water from time to time through temporary and surplus water service contracts. This water was either percolated or used to offset groundwater extraction. Other special districts located partially within or adjacent to the Plan Area, such as Exeter Irrigation District and Lindmore Irrigation District, also have long-term Friant Division contracts for CVP water.

In common with other areas along the east side of the San Joaquin Valley, the District historically has experienced the anomaly of flood control problems coupled with water deficiency. From time to time, flows in the Kaweah River have reached damaging levels, with substantial volumes of water escaping their channel banks to flood valuable agricultural lands within the District. Even with capture of some of the water associated with these high flood flow events, water supplies are insufficient to meet demands. This is demonstrated in groundwater level declines in all but the eastern portions of the District.

2.5 Hydrogeology

Most of the lands in the District are contained within the Kaweah subbasin of the San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Basin is surrounded on the west by the Coast Range, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta utilizing the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne and Stanislaus Rivers. The Kings, Kaweah, Tule and Kern Rivers that flow toward the trough of the Tulare drainage basin, which includes the beds of the former Tulare, Buena Vista and Kern Lakes, internally drain the southern portion of the valley.

The Kaweah subbasin lies between the Kings Groundwater Subbasin on the north, the Tule Groundwater Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east and the Tulare Lake subbasin on the west. The subbasin is generally comprised of lands in the Kaweah Delta Water Conservation District. Major rivers and streams in the subbasin include the Lower Kaweah and St. Johns Rivers. The Kaweah River is considered a primary surface water source for groundwater recharge to the area.

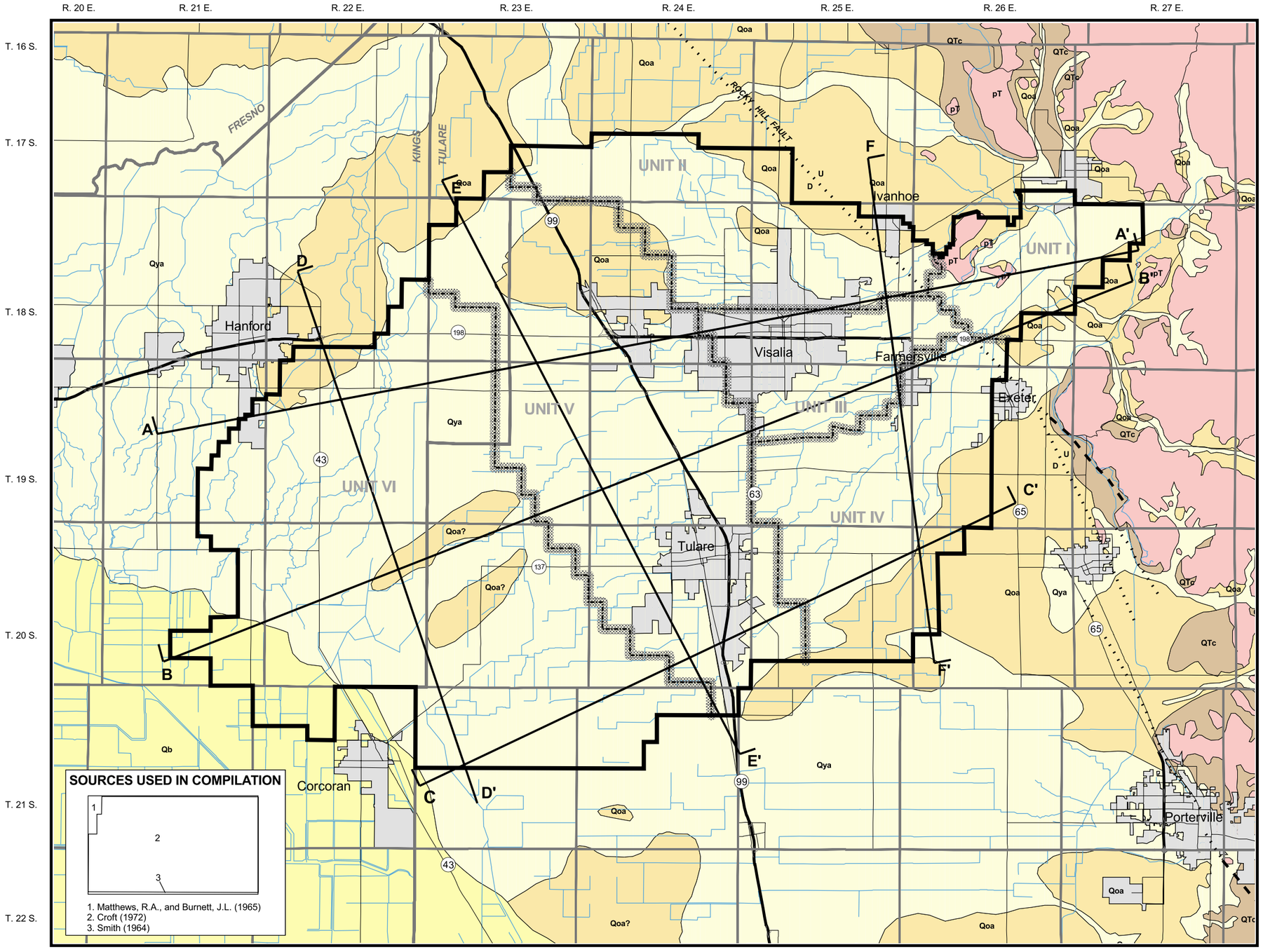
The sediments that comprise the Kaweah Subbasin aquifers are unconsolidated deposits of Pliocene, Pleistocene and Holocene age. On the east side of the subbasin, these deposits consist of arkosic material derived from the Sierra Nevada and are divided into three stratigraphic units: continental deposits, older alluvium and younger alluvium. In the western portion of the subbasin, near Tulare Lake bed,

unconsolidated deposits consisting of flood-subbasin and lacustrine and marsh deposits interfinger with east-side deposits.

The continental deposits of Pliocene and Pleistocene age are divided into oxidized and reduced deposits based on depositional environment. The oxidized deposits, which crop out along the eastern margin of the valley, consist of deeply weathered, poorly permeable, reddish-brown sandy silt and clay with well-developed soil profiles. The reduced deposits are moderately permeable and consist of micaceous sand, silt and clay that extend across the trough in the subsurface to the west side of the valley.

Older alluvium, which overlies the continental deposits, is moderately to highly permeable and is the major aquifer in the subbasin. Younger alluvium consists of arkosic beds, moderately to highly permeable consisting of sand and silty sand. Flood-basin deposits consist of poorly permeable silt, clay and fine sand. Groundwater in the flood-basin deposits is often of poor quality. Lacustrine and marsh deposits consist of blue, green, or gray silty clay and fine sand and underlie the flood-subbasin deposits. Clay beds of the lacustrine and marsh deposits form aquitards that control the vertical and lateral movement of groundwater. The most prominent clay bed is the Corcoran Clay, which underlies the western half of the Kaweah Subbasin at depths ranging from about 200 to 500 feet (DWR 1981). In the eastern portion of the subbasin, groundwater occurs under unconfined and semi-confined conditions. In the western half of the subbasin, where the Corcoran Clay is present, groundwater is primarily confined below the Corcoran Clay.

The geology of the District and surrounding areas is depicted on Plate 5. The associated geologic legend is depicted in Plate 12. Plates 6 through 11 illustrate this geology in cross section.



Legend

- District Boundary
- Hydrologic Unit Boundary
- Cross Section Location
- County Line
- Township and Range Lines
- Streams
- Urban Areas
- Fault--dashed where inferred, dotted where concealed; U, upthrown side; D, downthrown side

Projection: California State Plane, Zone 4. NAD83, Feet

UNCONSOLIDATED DEPOSITS

WEST SIDE (Coast Ranges Provenance)		EAST SIDE (Sierra Nevada Provenance)	
	Qb Flood basin deposits (Holocene)	Qya	Younger alluvium (Holocene)
QTa Alluvium, undifferentiated (Pliocene to Holocene)		Qoa	Older alluvium (Pleistocene and Holocene (?))
	QTl Lacustrine and marsh deposits (Pliocene and Pleistocene)	QTc	Continental deposits (Pliocene and Pleistocene(?))

CONSOLIDATED ROCKS

pT Basement complex (gabbro, diorite, granodiorite, and metamorphic rocks) (pre-Tertiary)

N

SCALE = 1:250,000

4 0 4 Miles

Plate No. 5
Regional Geologic Map

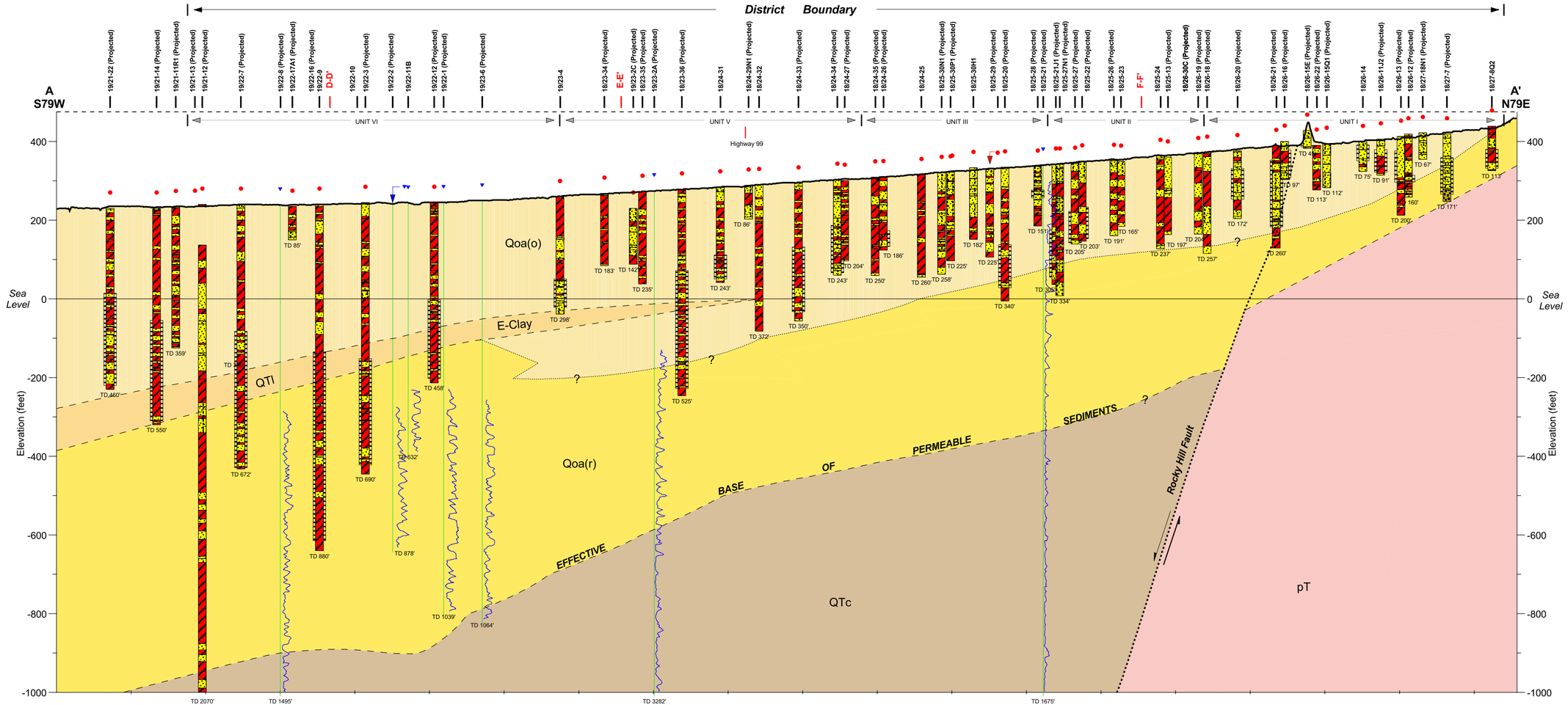


Plate No. 6:
Hydrogeologic Section A-A'
Kaweah Delta Water Conservation District
Kings and Tulare Counties

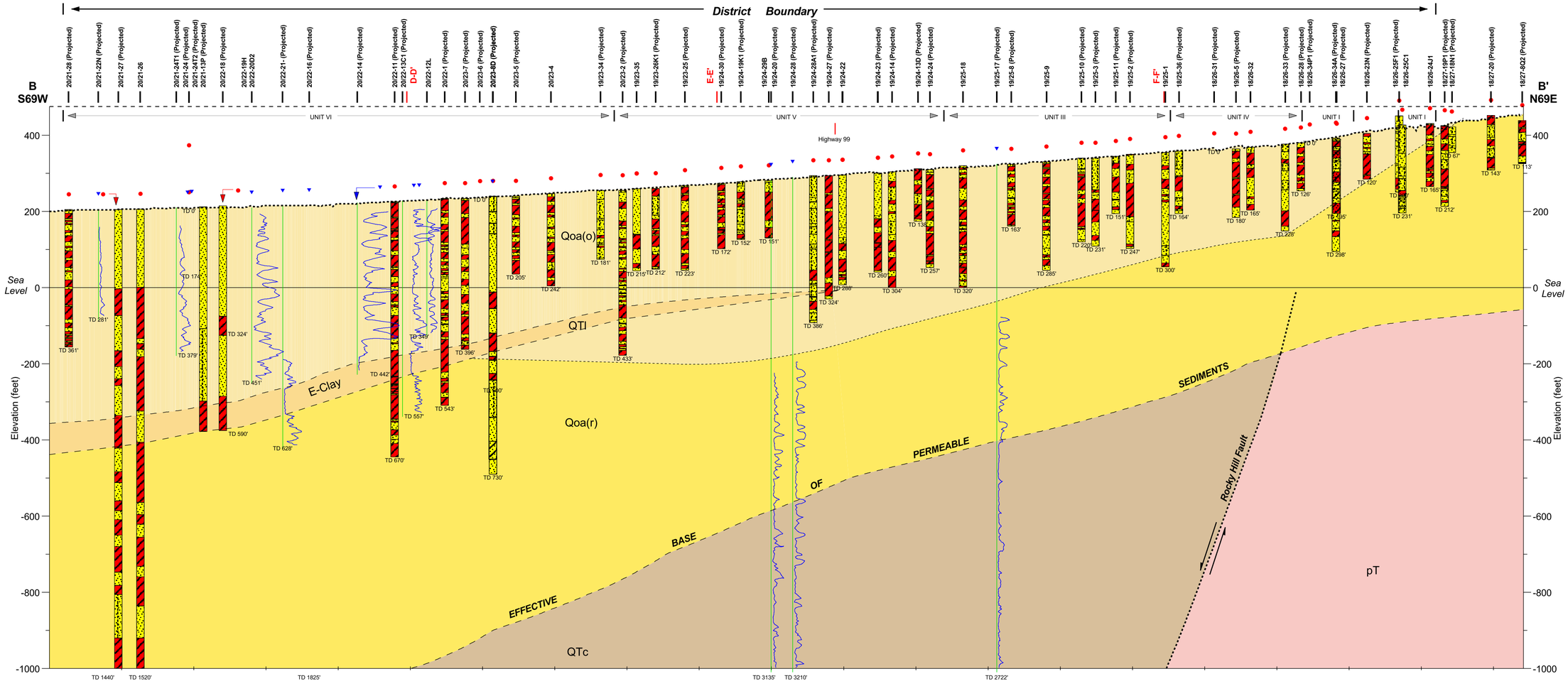
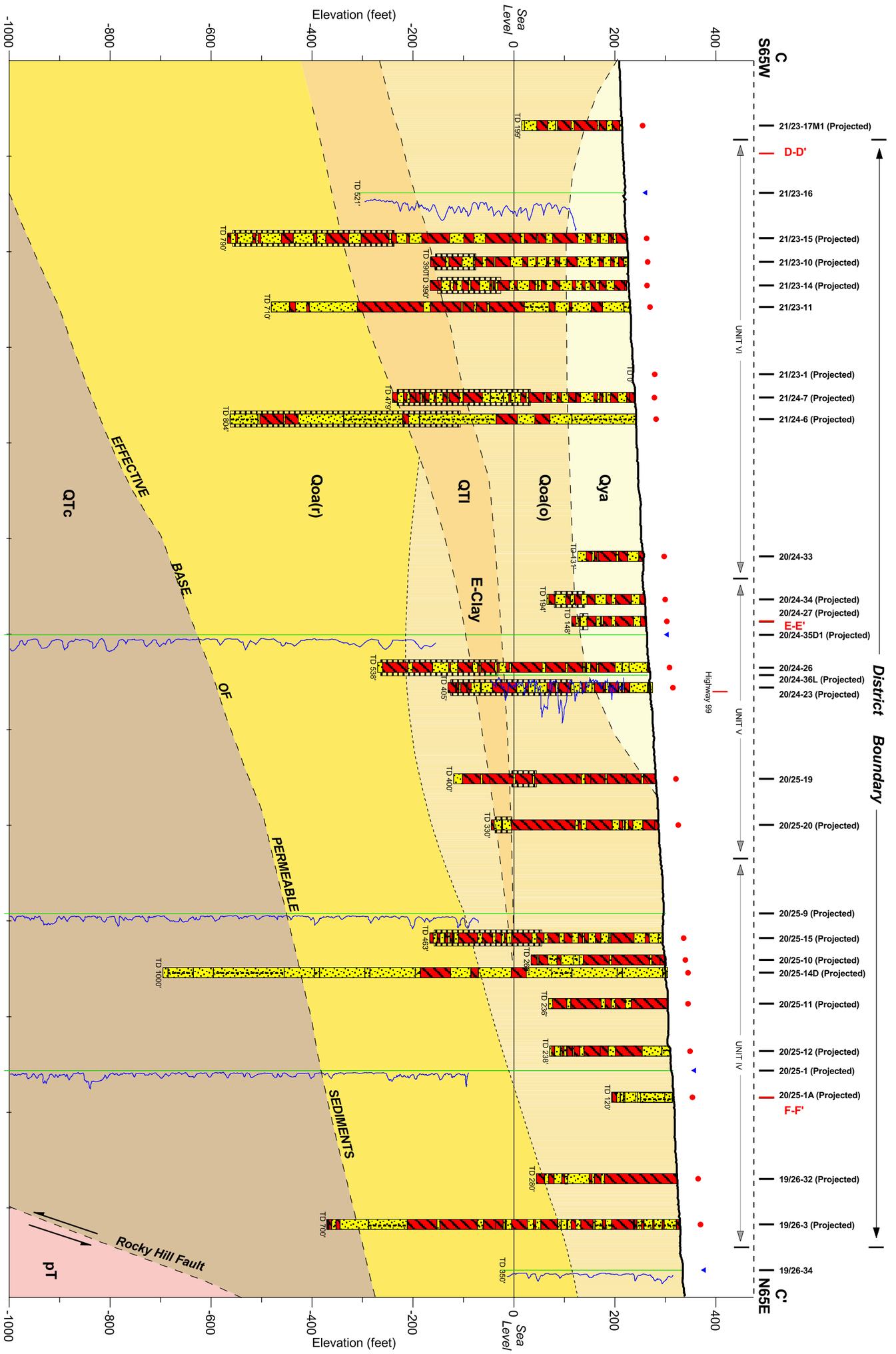


Plate No. 7:
Hydrogeologic Section B-B'
Kaweah Delta Water Conservation District
Kings and Tulare Counties



E-22

Plate No. 8:
Hydrogeologic Section C-C'
Kaweah Delta Water Conservation District
Kings and Tulare Counties

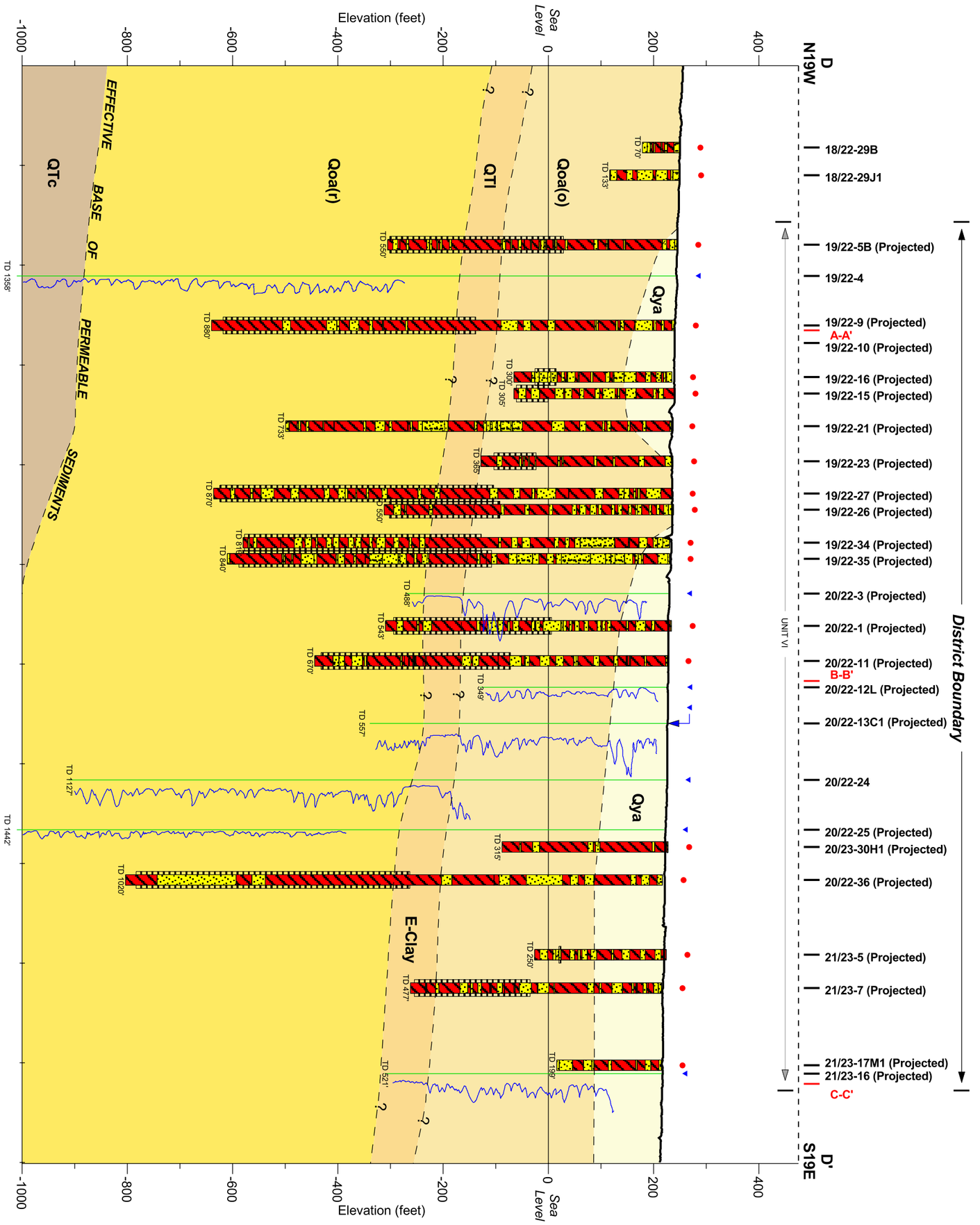


Plate No. 9:
Hydrogeologic Section D-D'
Kaweah Delta Water Conservation District
Kings and Tulare Counties

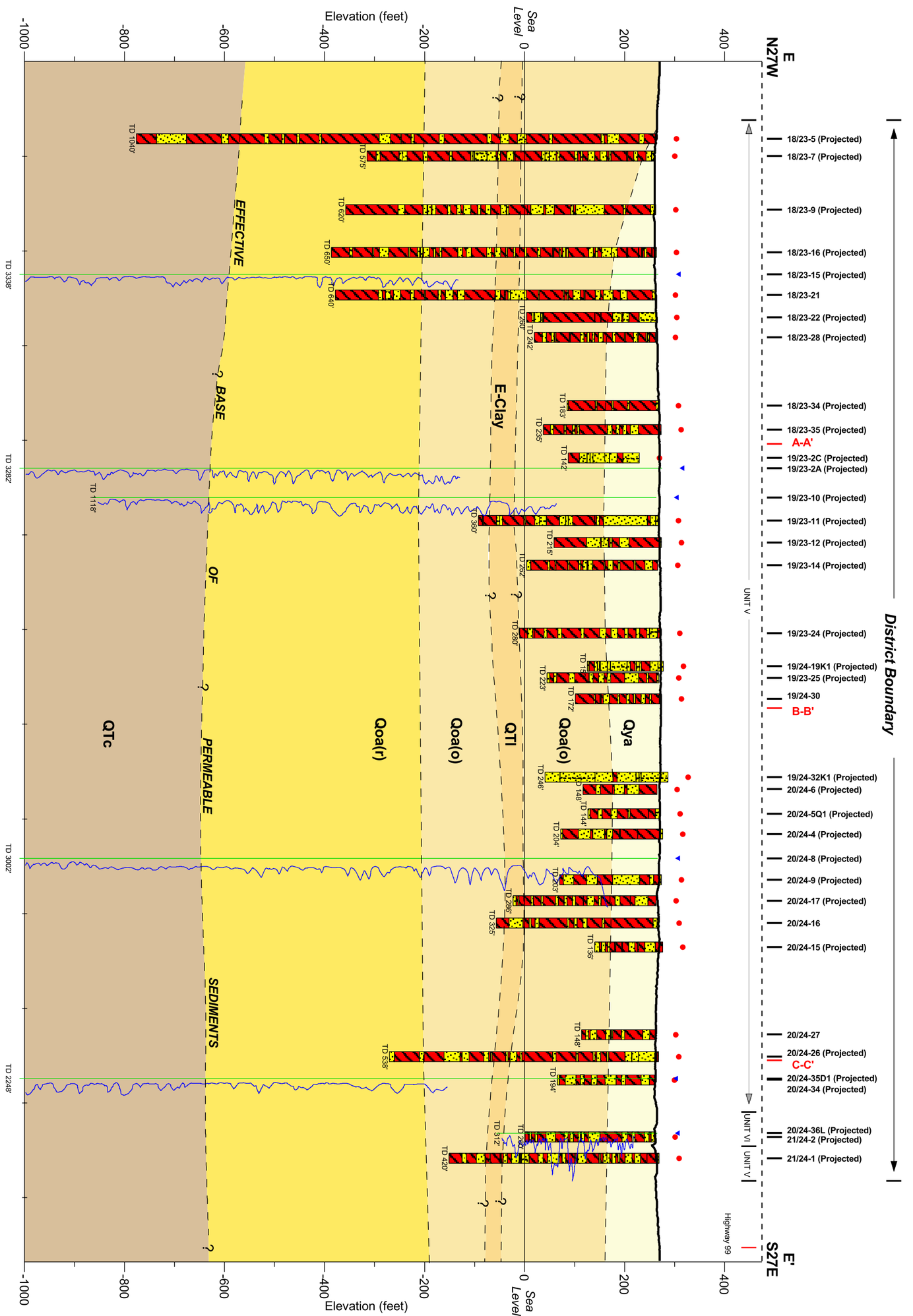


Plate No. 10:
Hydrogeologic Section E-E'
Kaweah Delta Water Conservation District
Kings and Tulare Counties

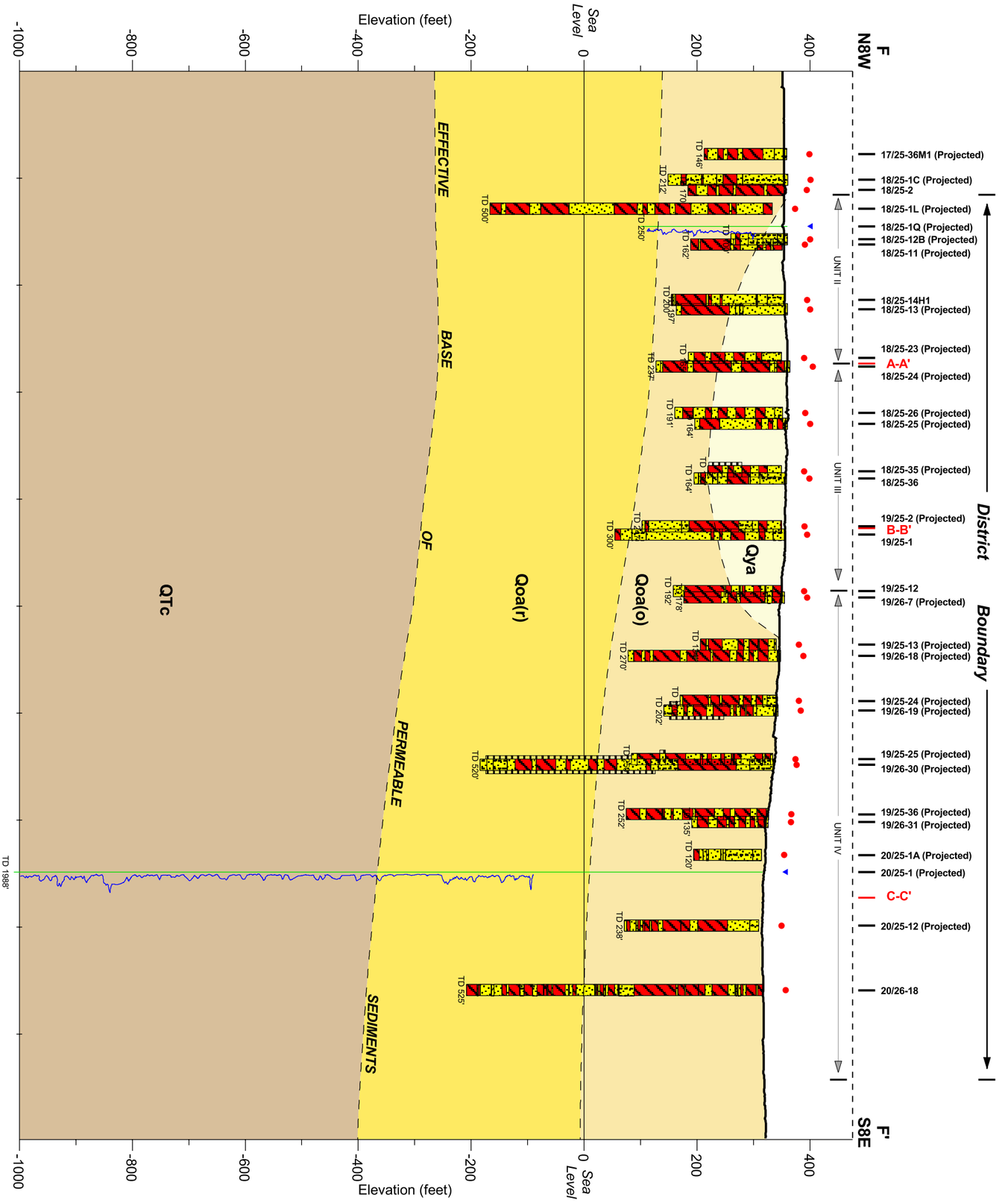


Plate No. 11:
Hydrogeologic Section F-F'
Kaweah Delta Water Conservation District
Kings and Tulare Counties

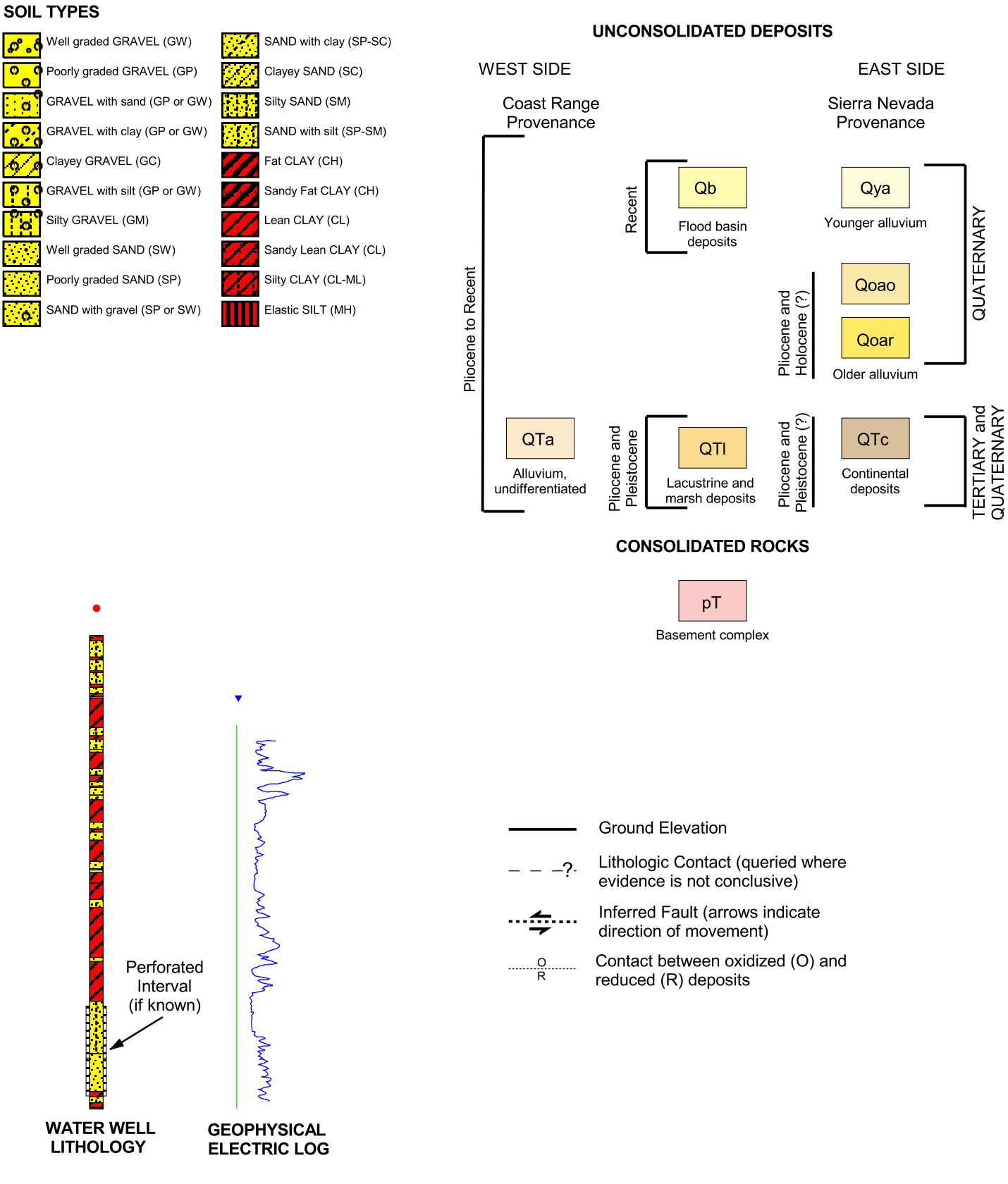


Plate No. 12 : Geologic Legend

2.6 Groundwater

Historically, much of the land within the District had a groundwater table close to the land surface. In the early part of the 20th century, the distance from the ground surface to the groundwater table may have averaged less than fifty feet. Over the last fifty years, each successive drought period has resulted in an increase in groundwater pumping that has caused the water table to drop significantly. It is anticipated that as agricultural land is converted to urban uses and industry grows, the competition for water resources among agricultural, urban, industrial and environmental interests will continue to increase.

Groundwater is the most dependable water supply for the Basin's agricultural, industrial and domestic water users who regularly draw upon this valuable resource from individually owned wells. The continued pumping of groundwater has resulted in an overdraft of the groundwater basin, that is, more water has been pumped from the basin than has been recharged into the basin on a long-term basis. Even though over 3 million acre-feet of surface water has been imported into the District over the past 30 years in an effort to supplement local surface water supply and reduce dependence on groundwater, the average depth to groundwater within the Plan Area has continued to drop.

The District has been monitoring groundwater levels since the 1950's. This is accomplished through groundwater level measurements taken in the late fall and early spring. Based on the water level readings, there is an overall trend of declining groundwater levels within the Basin. A graphical analysis of historical groundwater levels reveals the areal extent of overdraft throughout the District and is presented on Plate No. 13, "Contours of Equal Difference in Water Levels, 1952 to 1999". It is important to note that the Basin does have the ability to respond to positive conditions and this is demonstrated during years of above-average precipitation when the decline has been periodically interrupted by short-term groundwater recovery.

The condition of overdraft results in additional pumping costs to accommodate increased lift. As the water table continues to drop, pumping must occur from deeper levels of the aquifer which often have lower porosity and specific yield characteristics than those found in the upper levels of the unconfined aquifer. The long-term impact is a further reduction in the available groundwater supply in storage. Using the collected historical data and the transmissivity factors of the aquifers, a determination can be made of the estimated quantity of inflow and/or outflow of groundwater within the Plan Area. This data allows the District to identify and evaluate areas that could be more severely impacted during periods of sustained drought due to low yield of wells and the limited depths of the aquifers. This important water management tool is useful to the District in developing long-term planning decisions.

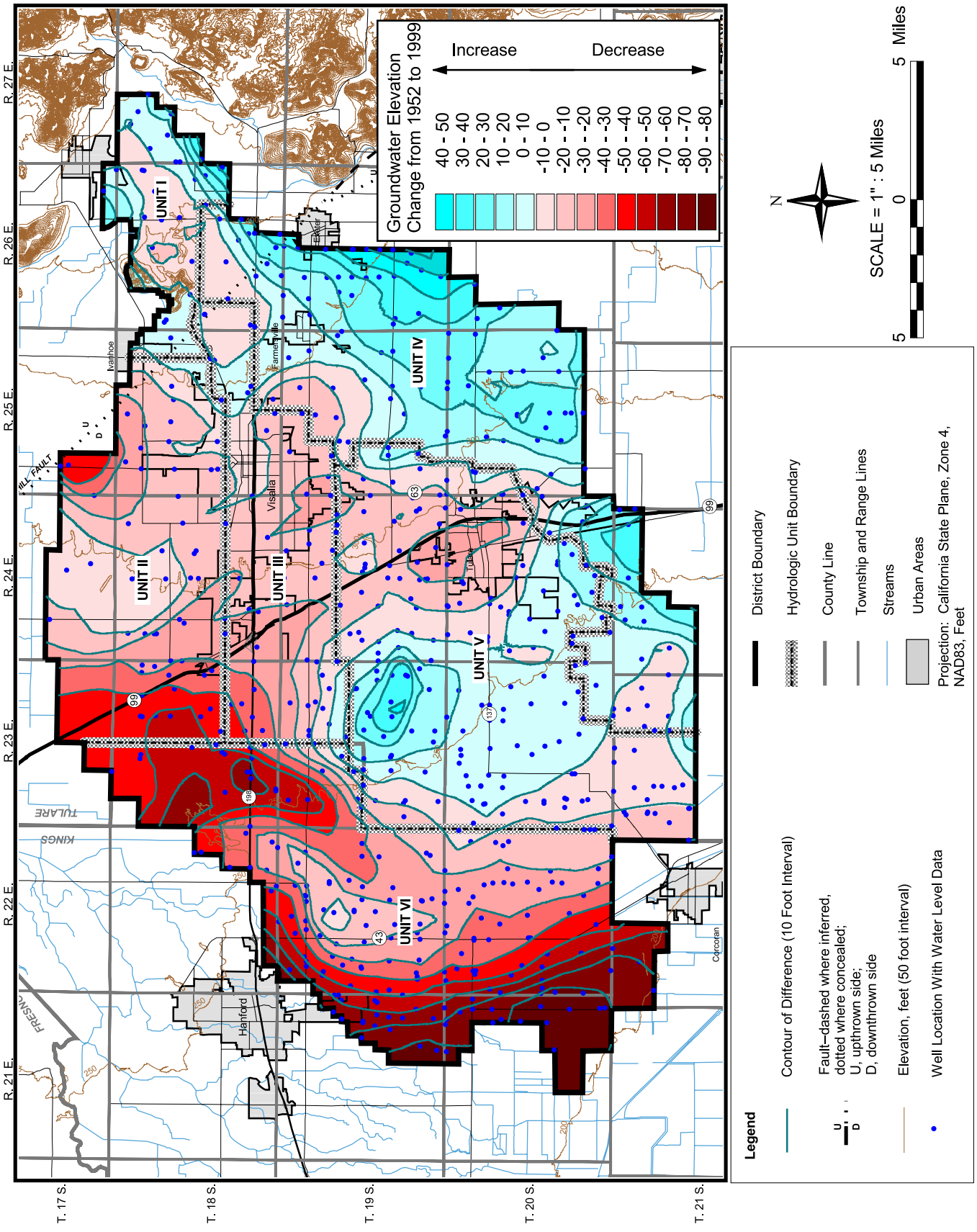


Plate No. 13

Contours of Equal Difference in Water Levels, 1952 to 1999

Kaweah Delta Water Conservation District

2.7 Water Demand and Supply

The dominant use of water within the District occurs from irrigated agricultural. Average annual applied water demand for crops grown in the District is approximately 3.7 acre-feet per acre. The applied water demand ranges from 1.9 acre-feet per acre for truck crops to 6.5 acre-feet per acre for pasture. A summary tabulation of estimated annual water demands for crops grown in the District for the years 1981, 1990 and 1999 is set forth in Table 5 on the following page. Uses outside of irrigated agriculture commonly include municipal, industrial and domestic applications. Table 4 presents a summary of water demands within the District that are not classified as irrigated agricultural.

TABLE 4
ESTIMATED M&I WATER DEMAND IN THE DISTRICT

(Values in Acre-Feet)

Use Classification	1981	1990	1999
Urban Water Demand	24,167	32,947	42,457
Public Water System Demand	5,739	7,222	8,242
Rural Domestic Water Demand	1,876	1,876	1,876
Dairy and Related Water Demand	4,169	10,846	16,255
TOTAL	**35,951**	**52,891**	**68,830**

Reference: Water Resources Investigation of the Kaweah Delta Water Conservation District (Final Report 2003)

The District receives approximately 80% of its average annual surface water supply from the Kaweah River System and approximately 20% of its average surface water supply through imported water. Water demands that are not met from the supply of surface water are pumped from the groundwater basin. Since 1962, records show that over 5 million acre-feet of water has been imported into the District. The annual imported supply is variable and is dependent on available CVP supply. Kings River water is also diverted into the District. The annual imported surface water supply and deliveries (1963 through 2005) are presented in Table 6, Kaweah Delta Water Supply Inventory.

Notable changes that have affected water supplies to the District include the following:

- ✓ Central Valley Project (1950's)
- ✓ Terminus Project (Lake Kaweah: 1962)
- ✓ State Water Project (Tulare Lake Basin Water Storage District: 1968)
- ✓ Terminus Project (Lake Kaweah Enlargement: 2004)

TABLE 5
ESTIMATED APPLICATION OF IRRIGATED WATER TO CROPS IN THE DISTRICT

Category of Land Use	Average Water Demand (Feet)	1981		1990		1999	
		Net Irrigated Area (Acres)	Total Application (Acre-Feet)	Net Irrigated Area (Acres)	Total Application (Acre-Feet)	Net Irrigated Area (Acres)	Total Application (Acre-Feet)
Cotton	3.9	94,229	367,493	93,765	365,684	62,295	242,951
Alfalfa	5.0	33,977	169,885	41,257	206,285	38,923	194,615
Grain	2.8	65,062	182,174	65,960	184,688	87,927	246,196
Deciduous and Nuts	4.0	36,502	146,008	39,262	157,048	44,540	178,160
Pasture	6.5	8,873	57,675	4,005	26,033	2,954	19,201
Miscellaneous Field	3.0	2,911	8,733	1,053	3,159	510	1,530
Sugar Beets	4.0	1,869	7,476	1,100	4,400	900	3,600
Grapes	3.8	9,187	34,911	7,492	28,470	29,796	113,225
Citrus	2.9	6,337	18,377	6,587	19,102	7,184	20,834
Rice	6.0	313	1,878	31	186	0	0
Truck	1.9	3,995	7,591	5,494	10,439	10,872	20,657
TOTAL		**263,255**	**1,002,200**	**266,006**	**1,005,493**	**285,901**	**1,040,967**

Note: Total annual crop demand obtained from DWR Bulletin 113 or information from California Department of Water Resources for DAU242

TABLE 6
KAWEAH DELTA WATER SUPPLY INVENTORY

(Values in Acre-Feet)

Water Year	SURFACE WATER INFLOW					SURFACE WATER OUTFLOW		
	Terminus Flows	Creek Flows	CVP Imports	Kings River	TOTAL	Spills	Friant-Kern Pumping	TOTAL
1962-63	474,120	10,604	285,741	0	**770,465**	14,027	0	**14,027**
1963-64	228,099	3,703	105,736	0	**337,538**	1,190	0	**1,190**
1964-65	481,989	19,044	276,516	0	**777,548**	5,399	0	**5,399**
1965-66	246,551	1,648	117,175	0	**365,375**	2,900	0	**2,900**
1966-67	1,000,713	79,997	282,316	8,481	**1,371,506**	104,794	0	**104,794**
1967-68	231,545	2,168	134,922	0	**368,635**	3,775	0	**3,775**
1968-69	1,185,412	141,336	186,749	0	**1,513,497**	418,092	0	**418,092**
1969-70	429,185	13,329	113,373	26,468	**582,355**	17,586	0	**17,586**
1970-71	287,302	5,353	113,044	17,294	**422,993**	0	0	**0**
1971-72	163,243	1,835	42,014	0	**207,092**	0	0	**0**
1972-73	609,878	40,565	172,628	28,961	**852,032**	34,229	0	**34,229**
1973-74	485,551	27,093	260,418	19,785	**792,847**	29,566	0	**29,566**
1974-75	376,310	13,916	162,649	20,168	**573,043**	7,589	0	**7,589**
1975-76	135,927	1,505	36,782	1,753	**175,968**	202	0	**202**
1976-77	96,161	196	109	0	**96,467**	0	0	**0**
1977-78	814,317	99,802	122,348	9,037	**1,045,504**	44,863	9,112	**53,975**
1978-79	420,353	19,246	287,179	7,716	**734,494**	13,885	0	**13,885**
1979-80	874,598	62,371	209,303	1,087	**1,147,359**	97,785	5,096	**102,880**
1980-81	246,907	5,697	66,293	11,118	**330,014**	1,956	0	**1,956**
1981-82	742,680	41,983	241,594	3,217	**1,029,474**	58,035	29,532	**87,568**
1982-83	1,398,397	171,130	62,601	0	**1,632,129**	459,619	148,197	**607,816**
1983-84	528,171	37,214	121,468	42,685	**729,538**	79,973	0	**79,973**
1984-85	328,718	6,553	92,348	3,207	**430,827**	367	0	**367**
1985-86	808,032	51,337	163,909	18,068	**1,041,345**	63,660	92,739	**156,399**
1986-87	180,551	3,160	30,671	2,430	**216,812**	0	0	**0**
1987-88	182,282	2,747	99,058	1,995	**286,082**	0	0	**0**
1988-89	207,723	2,269	39,612	1,000	**250,604**	0	0	**0**
1989-90	134,201	859	0	0	**135,060**	0	0	**0**
1990-91	246,485	4,741	7,716	0	**258,942**	0	0	**0**
1991-92	146,744	1,787	17,639	1,226	**167,397**	0	0	**0**
1992-93	545,966	26,420	145,690	7,093	**725,169**	0	0	**0**
1993-94	188,055	2,535	27,777	1,392	**219,760**	0	0	**0**
1994-95	854,667	58,872	125,682	13,383	**1,052,604**	114,966	0	**114,966**
1995-96	518,993	21,753	128,521	33,796	**703,063**	236	0	**236**
1996-97	760,268	68,708	82,930	20,734	**932,641**	170,109	54,780	**224,889**
1997-98	906,426	127,460	79,058	13,918	**1,126,862**	94,306	137,018	**231,324**
1998-99	283,025	25,311	124,909	20,107	**453,352**	7,734	0	**7,734**
1999-00	361,012	35,084	114,236	2,575	**512,907**	21,479	0	**21,479**
2000-01	259,317	5,645	23,296	6,944	**295,203**	8	0	**8**
2001-02	297,368	5,427	41,654	2,095	**346,543**	81	0	**81**
2002-03	426,046	8,704	122,039	11,732	**568,521**	530	0	**2,156**
2003-04	229,667	2,410	34,374	73,973	**340,424**	391	0	**805**
2004-05	614,095	18,274	240,023	80,064	**952,456**	2,372	0	**2,372**
TOTAL	**19,937,050**	**1,279,791**	**5,142,100**	**513,502**	**26,872,447**	**1,871,704**	**476,474**	**2,350,218**
AVERAGE	**463,652**	**29,763**	**119,584**	**11,942**	**624,941**	**43,528**	**11,081**	**54,656**

SECTION 3: MANAGEMENT PROGRAM

3.1 Statutory Authority

The District hereby includes in its groundwater management program the right to engage in all of those activities provided by statutes, which authorize or are related to Plan developments.

California Water Code § 10753.7(a) states that, for the District to have a qualifying plan eligible to receive state funds administered by the Department of Water Resources, that such plan shall include as components all of the following:

(1) Prepare and implement basin management objectives;
(2) Involve other agencies to work cooperatively;
(3) Prepare a Plan Area map detailing the groundwater basin; and
(4) Adopt monitoring protocols designed to detect changes in groundwater conditions.

California Water Code § 10753.8 authorizes the District to include as components in its groundwater management plan 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; and
(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.

Additionally, the District intends to exercise all of the authority given to a water replenishment district in California Water Code § 60220 through § 60232, together with the authority of a water replenishment district to fix and collect fees and assessments within the Plan Area for groundwater management in accordance with California Water Code § 60300 through § 60352, as may be necessary for the District to accomplish the purposes and goals of the Plan.

Notwithstanding the foregoing, the District reserves the right to decide whether or not it will be involved and to the extent to which it will be involved in each of the activities authorized by the aforementioned

statutes. The District assumes no responsibility or liability for any authorized activity in which it is not actually involved. Further, upon thirty (30) days written notice to all other local agencies located within the Plan Area, the District may terminate the Plan, together with any and all activities, which may be a part of its groundwater management program at the time of such termination. The District shall not be required to notify other local agencies, or anyone else, if it merely terminates its involvement in an activity authorized by the aforementioned statutes, without terminating the Plan itself.

3.2 Basin Management Objectives

The goal of the Plan is to offer efficient and effective groundwater management in an effort to provide a sustainable, high quality supply of groundwater for agricultural, environmental and urban use for the future. The groundwater of San Joaquin Valley Groundwater Basin aquifer underlying the Kaweah Delta Water Conservation District is a significant water resource that must be reasonably used and conserved for the benefit of the overlying lands. This can be accomplished by avoiding extractions that exceed safe yield or produce a condition of overdraft within the Plan Area.

To accomplish the Plan's goal, the following management objectives are adopted under the Plan:

- ✓ Stabilize and potentially reverse the long-term decline of groundwater levels
- ✓ Monitor groundwater quality
- ✓ Monitor inelastic land surface subsidence resulting from groundwater pumping
- ✓ Maintain and augment surface water supplies that directly affect groundwater levels
- ✓ Monitor changes to surface water quality that directly affect groundwater quality
- ✓ Evaluate groundwater replenishment projects
- ✓ Evaluate cooperative management projects
- ✓ Provide effective and efficient management of groundwater recharge projects, facilities and programs
- ✓ Coordinate groundwater basin management with local agencies with groundwater authority within the Plan Area

Each of the adopted management objectives is designed toward attaining the Plan's goal. The way in which each objective contributes toward a more reliable supply of groundwater for long-term benefical use is described as follows:

- ✓ Stabilizing or reversing long-term decline of groundwater levels provides a balancing between groundwater demand and supply, ensuring a resource that will be available into the future
- ✓ Monitoring groundwater quality will enable the Plan to assess possible impacts that might diminish the usability of the resource

- ✓ Monitoring inelastic land surface subsidence is valuable in determining available groundwater storage and evaluating groundwater supplies
- ✓ Maintenance and augmentation of surface water supplies will reduce expected impacts of increased demands on groundwater supplies, which is critical in maintaining the ability to stabilize long-term draw down
- ✓ Monitoring surface water quality changes will enable the Plan to assess possible impacts that might diminish the usability of the resource
- ✓ Evaluation of replenishment projects will focus on providing greater recharge productivity, which will make the most efficient and effective use of facilities and resources.
- ✓ Evaluation of cooperative management projects is an effort to provide for greater recharge opportunities, which is important in attaining the stabilization of groundwater levels
- ✓ Providing effective and efficient management of groundwater recharge projects, facilities and programs works toward increasing recharge in the efforts to stabilize groundwater levels
- ✓ Coordinating groundwater basin management will promote a consistency in objectives between local agencies, providing a unified approach to meeting goals.

The interaction between basin management objectives, Plan elements and corresponding activities is fundamental to Plan effectiveness. The Plan will be carried out based upon the specific correlations developed between objectives and activities. The relationships for implementation of the Plan are diagramed in Plate No. 14.

3.3 Monitoring Program

Attaining the Plan's goal requires obtaining a comprehensive understanding of the interactive components that comprise and define the aquifer system. A vital Plan function is the collection of information concerning and related to groundwater conditions. Management objectives have been founded upon the knowledge of past and current conditions ascertained through the District's monitoring efforts. The Plan will continue to progress toward its goal through ongoing monitoring of the following components:

- ✓ Groundwater Supply and Quality
- ✓ Surface Water Supply and Quality
- ✓ Surface Water Management
- ✓ Inelastic Land Surface Subsidence

Consistent and reliable information is critical for any monitoring program. The Plan will be able to achieve this requirement through the implementation of monitoring protocols. Protocols have been and will continue to be developed to track changes in conditions.

Plate No. 14

Groundwater Management Plan Implementation Diagram

Kaweah Delta Water Conservation District

3.3.1 Groundwater

The District has an extensive monitoring network that was initially established in the 1950's. This network has been maintained and improved in a continuing effort to provide reliable information for annual and long-term assessment of groundwater conditions. Plate 15 identifies the location of monitoring sites where groundwater level measurements are currently collected. Ongoing groundwater monitoring will provide information needed to document current conditions, assess long-term trends and to support development and implementation of objectives associated with:

- ✓ Groundwater levels
- ✓ Groundwater quality
- ✓ Inelastic land surface subsidence

3.3.1.1 Groundwater Levels

Since the establishment of the groundwater monitoring network, the District has performed static groundwater level measurements in the spring and fall periods. Such measuring operations have been performed in coordination with DWR's semiannual requests for groundwater levels. The information is utilized by DWR in mapping groundwater levels for the San Joaquin Valley Groundwater Basin and by the District in annual reporting of groundwater conditions.

The District shall continue to monitor groundwater levels semi-annually. Further, the District will prepare charts depicting the information gathered through the monitoring phase, as well as reports quantifying the water demands, surface water and groundwater supplies. These summaries will assist the District in evaluating the effectiveness of the various elements of its program. The collection of this data will be continued with the conduct of the Plan. The information that has been prepared from this data in the past includes the following:

- ✓ Charts of spring and fall water elevations
- ✓ Charts of spring and fall depths to groundwater
- ✓ Charts showing the changes in groundwater levels

In addition, groundwater reports could include estimates of changes in groundwater storage, water delivered, water use and overdraft. Existing information coupled with possible new data would benefit the evaluation of the effectiveness of management activities.

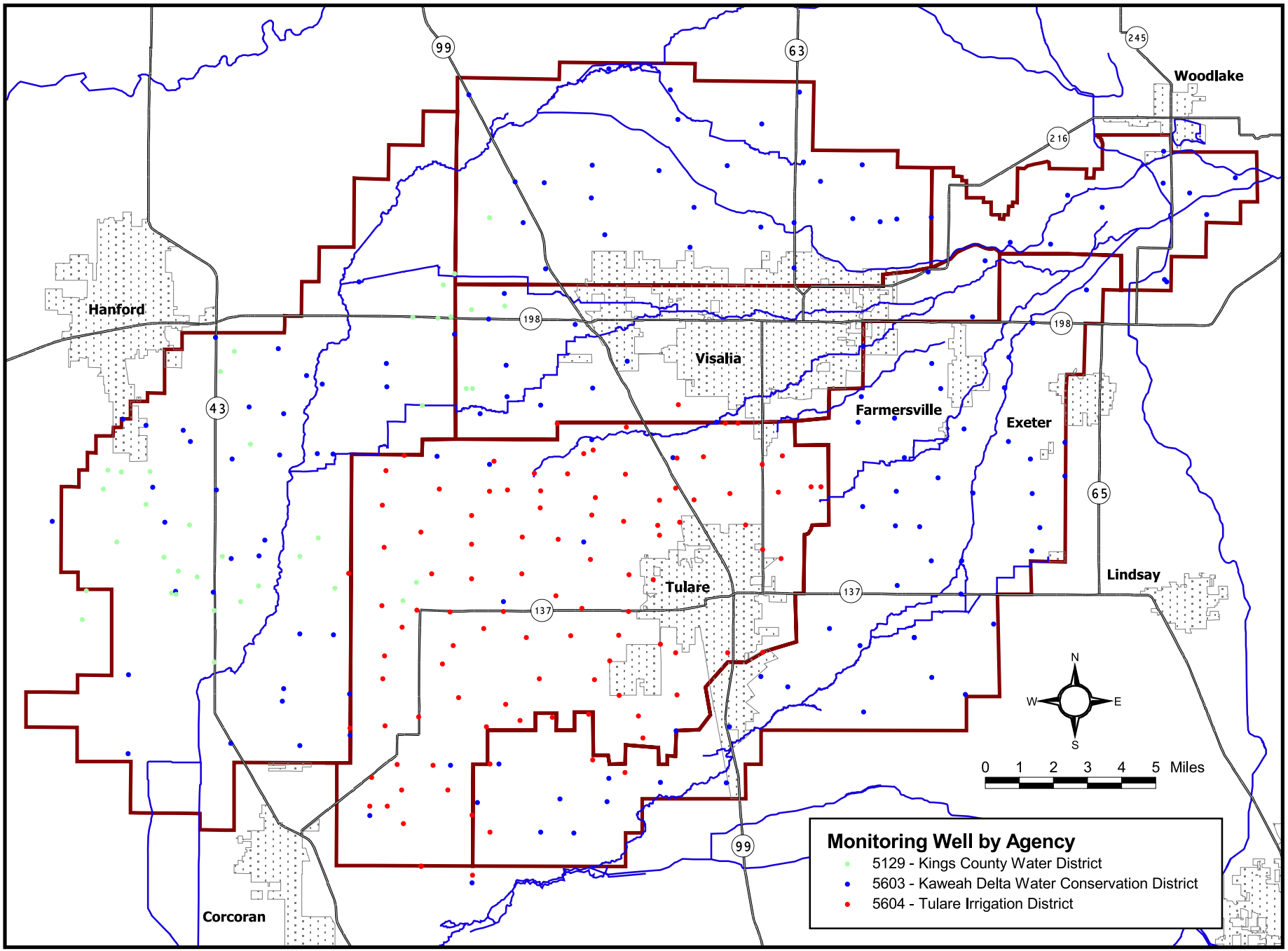


Plate No. 15 : Monitoring Wells (Water Levels)

3.3.1.2 Groundwater Quality

The District will pursue the collection of groundwater quality data from those agencies that have existing programs that record and report on relevant conditions. The effort will be focused toward monitoring key indicators of groundwater quality for the aquifers lying within the District. The indicators that the Plan will concentrate on will consist of the following:

- ✓ Temperature
- ✓ Total Dissolved Solids (TDS)
- ✓ Electrical Conductivity (EC)
- ✓ Acidity (pH)
- ✓ Chloride
- ✓ Sodium
- ✓ Nitrates

The initial effort will be the collection and review of water quality data for adequacy. The Environmental Health Departments of Kings and Tulare Counties will be used as a primary source for acquiring relevant data. Additionally, the Regional Water Quality Control Board can provide information gathered through their regulatory efforts. The District also intends to incorporate findings from the "Ground-Water Ambient Monitoring and Assessment Program" (GAMA) that is currently being performed by the United States Geological Survey and the State Water Resources Control Board. Compiling diverse sources of available information for tracking, trending and reporting within a specified area will be a useful way for the Plan to monitor groundwater quality conditions.

3.3.2 Surface Water

The delivery of surface water throughout the District is known to have a major influence on groundwater conditions. Percolation of surface water delivered through natural and man-made conveyance facilities is a primary source of inflow to the aquifers. Approximately 95 percent of all water usage within the District is for agricultural purposes. The supply for such demands is met with a combination of surface and groundwater. Therefore, the annual quantity and distribution of surface water has a direct correlation to the quantity of groundwater withdrawn from the aquifer. The quality of groundwater can also be affected through its supply source, as well as by changes in aquifer flow conditions that occur from groundwater elevation differences that result from the aquifer's response to water demands.

3.3.2.1 Surface Water Flows

There are two (2) primary surface water supply sources to lands lying within the Plan. The first source is water originating from the Kaweah River Watershed and the second from outside water sources such as the Friant-Kern Canal or Kings River. These available waters are obtained by or entitled to various irrigation companies and districts for delivery for beneficial purposes to lands within their respective

service areas. Continual measurement of all such surface flows are made and recorded by these entities for operational and legal purposes. Presently all those entities that have entitlement to Kaweah River water are bound together by the "Kaweah & St. Johns Rivers Association" (Association). The Association functions as Watermaster for delivery of waters to its members by means of the natural watercourses that run throughout the District. In the performance of such duties all surface water deliveries, both Kaweah River and imported sources, are regularly recorded and reported. Plate 16 identifies the watercourses and recording station locations operated or reported by the Association.

The District is a Kaweah River entitlement holder and member of the Association and as such has access to surface water flow information that will be utilized in exercising the Plan. More importantly, the District is under contract with the Association for performing all management and operational responsibilities. Thereby, the District directly oversees all aspects of measuring and recording surface water flows.

3.3.2.2 Surface Water Quality

The District will pursue the collection of surface water quality data from those agencies or organizations that have existing programs that record and report on relevant conditions. The District may use the surface water quality data it collects to monitor potential contamination of groundwater within the Plan Area. The effort will be focused toward monitoring key indicators of water that is conveyed in the natural systems within the District. Those indicators that the Plan will concentrate will consist of the following:

- ✓ Temperature
- ✓ Total Dissolved Solids (TDS)
- ✓ Electrical Conductivity (EC)
- ✓ Acidity (pH)
- ✓ Chloride
- ✓ Sodium
- ✓ Nitrates

As with groundwater quality monitoring, the Plan's initial effort will be the collection and review for adequacy of surface water quality data. Currently, the Association is engaged in a water quality program in response to the California Regional Water Quality Control Board's "Agricultural Conditional Discharge Waiver." The program involves performing surface water sampling at established locations on a defined cycle. Additionally, the Board also has permits in place for the monitoring and regulation of point source discharges, such as the City of Visalia's treated effluent discharges into Mill Creek. Plate 17 identifies known locations where surface water is sampled and monitored. The Plan will monitor surface water quality based upon available data in an effort to provide a consistent representation of key indicators on an annual and long-term basis.

Cottonwood Creek
Elbow Creek
Cross Creek
St. Johns River
North Mill Creek
Mill Creek
Packwood Creek
Deep Creek
Cameron Creek
Outside Creek
Inside Creek
Lewis Creek
Elk Bayou
Tule RIver
Cottonwood Creek
Friant-Kern Canal
St. Johns River
Lower Kaweah River
Mill Creek
Dry Creek
Lake Kaweah
Kaweah River
Lower Kaweah River
McKay Point
Friant-Kern Canal
Outside Creek
Elk Bayou
Cross Creek
99
63
43
198
137
65
216
245

Measurement Gage
Major Waterway
Minor Waterway
Hydrologic Unit Boundary

N
W
E
S

0 1 2 3 4 5 Miles

Kaweah Watercourses

Plate No. 16

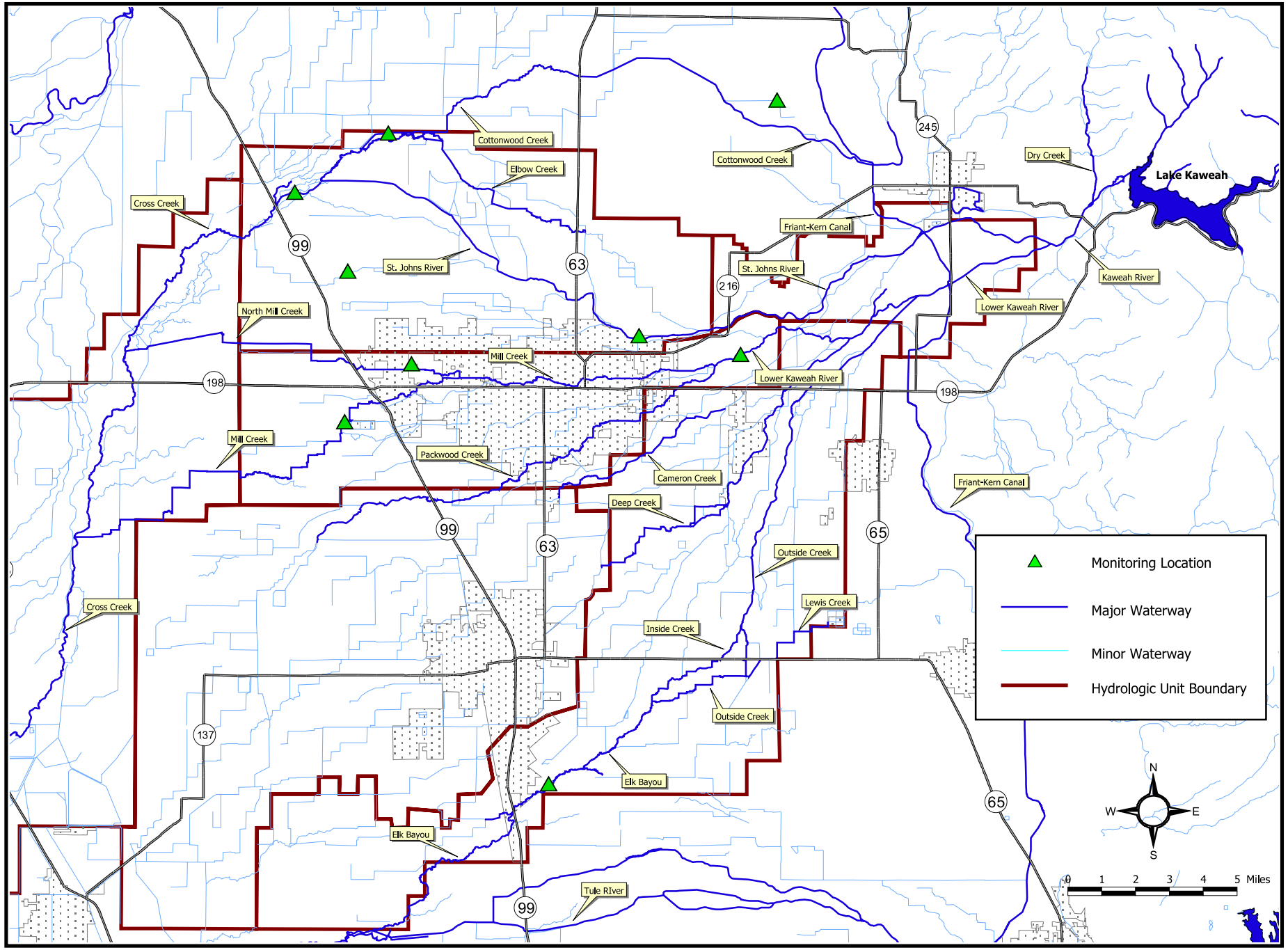


Plate No. 17 : Surface Water Monitoring

3.3.3 Water Transfers

Since the development of water storage facilities, like Lake Kaweah, water users have been able to manage surface water supplies for increased benefit. The ability to store water provides opportunities to acquire additional or release excess supplies through the water transfer process. Water transfers are means for the redistribution of surface waters to meet water demands. Groundwater is influenced by water transfers in such a way that those areas that are able to acquire additional surface supplies will proportionally reduce aquifer withdrawals. The two (2) types of transfers that the Plan is designed to monitor are Intra-District and Inter-District Transfers.

3.3.3.1 Intra-District Transfers

Intra-District surface water transfers are those that occur for the Plan's native water source, the Kaweah River, within the Kaweah River Basin as designated by the Association's "Transfer Policy". A copy of the "Transfer Policy" is included in Appendix "A." Kaweah River entitlement holders that store water within Lake Kaweah have the ability to transfer quantities of water in storage, under defined conditions, between like parties. An entitlement holder's water supply is based upon such factors as mean daily inflows to the lake and an allocation schedule. The most commonly occurring transfer is between users that have supplies in excess of their immediate demand to those users that have insufficient supplies. Frequency and magnitude of transfers are normally a function of the influence of seasonal climatic conditions on run-off from the watershed. Kaweah River water transfers within the Plan Area take place on a routine basis. The Plan has and will continue to monitor these transfers and their influence on groundwater conditions. Water transfers within the Plan Area are permissible and subject to the administration of the Kaweah River Watermaster under the direction of the Association's Board of Directors.

3.3.3.2 Inter-District Transfers

Inter-District surface water transfers are those that transfer Kaweah Water outside the District in exchange for a transfer back into the District from an external water source. The circumstances for these transfers are similar in nature to Intra-District Transfers. Supply and demand is the driving force behind such transactions. The main differences consist of utilizing multi-regional conveyance facilities and prolonged scheduling of deliveries.

Kaweah River water transfers between different water entities have been previously performed and will continue in the future. In the past, the District and Plan participants have completed such transfers on a limited basis. Intra-District transfers are seen as a mechanism that could be used to increase the total water supply within the Plan Area or to augment the water supply in specific areas of the basin during

critically dry years. In all cases, transfers shall be such that there is no net loss of water supply to lands within the District. The District shall endeavor to promote advantageous water transfers that increase the water supply available within the Plan Area. The Board of Directors of the District ("District Board of Directors") has the authority to initiate such transfers.

3.3.4 Inelastic Land Surface Subsidence

The San Joaquin Valley has been characterized as the largest human alteration of the earth's surface. The reason behind this statement comes from inelastic land surface subsidence that has occurred principally from aquifer-system compaction. The lowering of groundwater levels through sustained groundwater overdraft causes this type of subsidence. The impact to groundwater from such subsidence is the reduction in available aquifer storage capacity caused by the compaction of soil void space that retains groundwater. Studies performed by the Department of Water Resources and the United States Geological Survey have identified an area of subsidence in the western portion of the District that correlates with a confining geologic layer known as the Corcoran Clay. The magnitude of subsidence within this portion of the District was in the order of four feet for a study period extending from 1926 to 1970. Plate 18 is a representation of this subsidence in the San Joaquin Valley for this study period as reported in Geological Survey Professional Paper 437-H[2]. Studies performed since these findings have revealed a dramatic decrease in the rate of subsidence. This could be a result of the provision of State Project water to lands that pumped high amounts of groundwater that were in a condition of sustained groundwater overdraft.

The Plan will continue to monitor inelastic land surface subsidence through the use of research and reporting accomplished by agencies or organizations with a developed program. Monitoring efforts relating to subsidence will also consist of annual and long-term evaluations of sustained overdraft. Based on such indicators versus available data, the Plan will continue to assess the need for a more proactive approach through implementing subsidence surveying or installing and operating compaction recorders (extensometers).

3.3.5 Monitoring Protocols

Adequate assessment of groundwater conditions requires information that is both consistent and reliable. This is necessary in order to properly track and evaluate annual and long-term changes in those conditions that are monitored. The Plan's monitoring program has developed and employs measures to provide dependable and comparable data. The monitoring protocols applied by the Plan are outlined as follows:

[2] Figure 5, Page H11 of "Land Subsidence in the San Joaquin Valley, California, As of 1972", Studies of Land Subsidence, U.S. Geological Survey Professional Paper 437-H, by J.F. Poland, B.E. Lofgren, R.L. Ireland, and R.G. Pugh. Prepared in cooperation with the California Department of Water Resources. (1975)

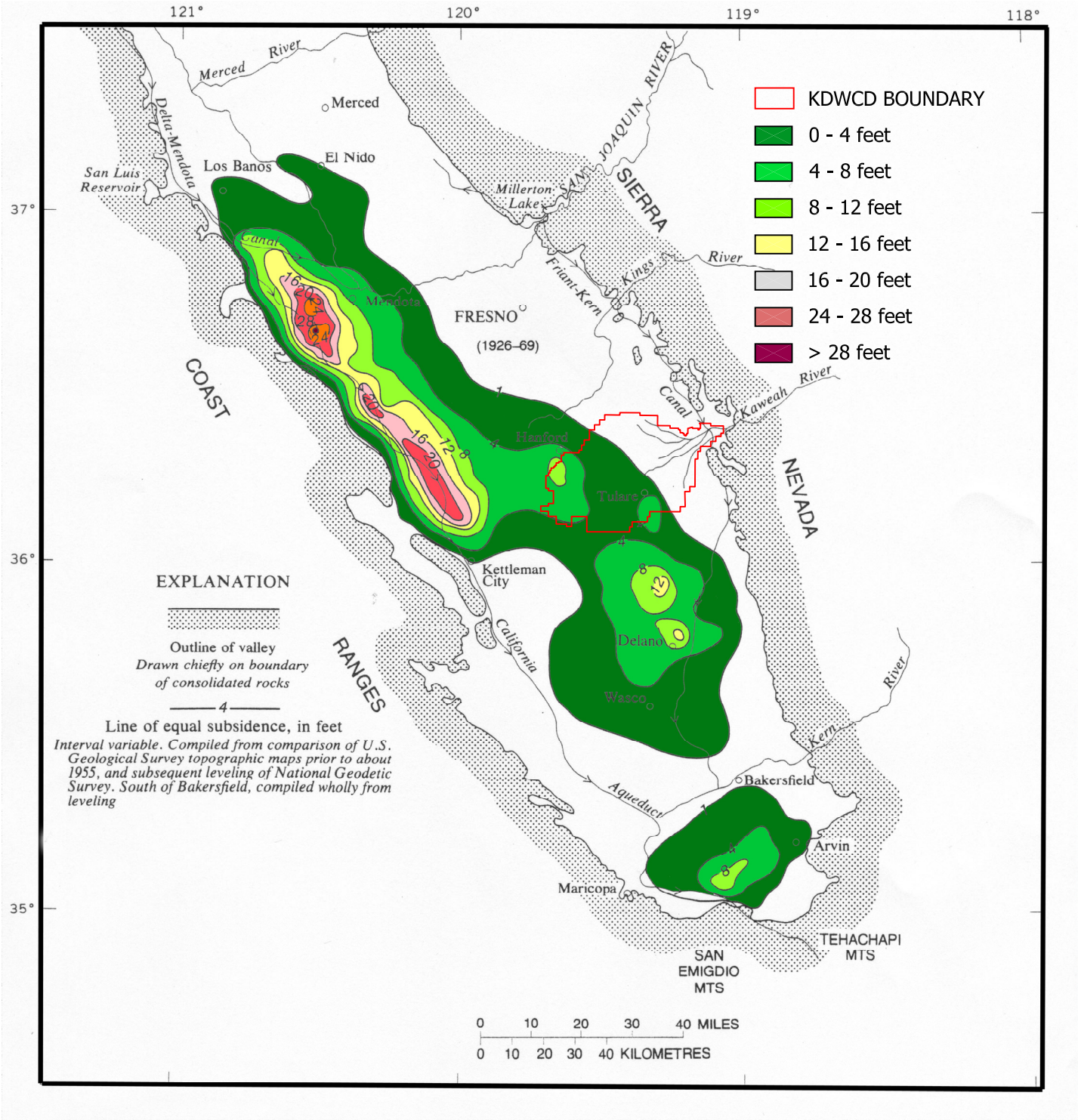


Plate No. 18
Inelastic Land Surface Subsidence
1926 thru 1970

Groundwater Levels: Measurements are taken semi-annually by the District and Plan participants in coordination with DWR's Spring and Fall measurement program. All identification, measuring and recording of data is performed in accordance with DWR's standards and procedures. The recorded data is compiled for presentation in the District's annual groundwater report.

Groundwater Quality: The Plan has established seven (7) different groundwater quality indicators that will be monitored. The District will annually compile data for the Plan from agencies that regularly collect groundwater quality data. The information will be organized in a manner for annual presentation and evaluation of the indicators. The effort will be focused on accumulating analogous data for tracking changes or trends in groundwater quality conditions.

Surface Water Flows: The District, in accordance with contracted responsibilities to the Association, regularly acquires surface flow measurements. Most all of the flows are measured on a continuous basis and in accordance with standard accepted practices. All flow information is compiled into annual water year reports. The Plan will draw all necessary surface flow information from this source.

Surface Water Quality: The Plan has established seven (7) different surface water quality indicators that will be monitored. The District will annually compile data for the Plan from agencies that regularly collect surface water quality data. The information will be organized in a manner for annual presentation and evaluation of the indicators. The effort will be focused on accumulating analogous data for tracking changes in surface quality conditions as it relates to groundwater management.

Water Transfers: The District, in accordance with contracted responsibilities to the Association, obtains all water transfer data on an occurrence basis. The collected information is recorded for reporting in the Association's annual water year reports. The Plan will draw all necessary water transfer information from this source. The data will be assembled in such a manner as to report the redistribution of surface water throughout the District and evaluate its influence on groundwater conditions.

Inelastic Land Surface Subsidence: The District will annually research known sources, like the United States Geological Survey or the State Department of Water Resources, for recent documentation and data from applicable programs focused primarily on the San Joaquin Valley. Pertinent information will be extracted for assessing conditions for inelastic land surface subsidence within the Plan Area.

3.4 Resource Protection

The Plan recognizes the importance of protecting the groundwater aquifer system. This resource is considered a vital component for both the region's economy and public health. California Water Code § 10753.8 authorizes the District to include components in its Plan for the provision of resource protection measures. Notwithstanding the foregoing, the District reserves the right to decide whether or not it will be involved in each of the activities authorized by the aforementioned statute. The Plan provides for resource protection through federal, state and local agency measures currently in place. The Plan will continue to coordinate with agencies that have protection measures in the form of ordinances and programs relevant to the protection of groundwater resources within the Plan Area. The following discussions will focus on those Plan components that address specific resource protection measures.

3.4.1 Well Abandonment

The County of Tulare, Kings County and City of Visalia have adopted Well Ordinances that address well destruction and establish requirements for destroying or abandoning wells within each agencies jurisdiction. All of these ordinances have provisions that stipulate impairment of the quality of water within the well or groundwater encountered by the well is not allowed. Those wells that are identified as defective require correction of the defective conditions or destruction of the well. Both county agencies have promoted programs for the destruction of abandoned wells in an effort to reduce potential sources that could have a negative impact to groundwater. In all cases, the primary responsibility for remedying defective or abandoned wells falls on the landowner and in those cases of non-compliance, the agencies have the authority to take necessary action to abate unsatisfactory conditions.

3.4.2 Wellhead Protection

The federal Wellhead Protection Program was established by Section 1428 of the Safe Drinking Water Act Amendments of 1986. The purpose of the program is to protect groundwater sources of public drinking water supplies from contamination, thereby eliminating the need for costly treatment to meet drinking water standards. A Wellhead Protection Area (WHPA), as defined by the 1986 Amendments, is "the surface and subsurface area surrounding a water well or wellfield supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield." The WHPA may also be the recharge area that provides the water to a well or wellfield. Unlike surface watersheds that can be easily determined from topography, WHPAs can vary in size and shape depending on geology, pumping rates, and well construction.

Wellhead Protection Programs are not regulatory by nature, nor do they address specific sources. They are designed to focus on the management of the resource, rather than control a limited set of activities or

contamination sources. Efforts to supply wellhead protection include Kings County's ordinance section for "Special Protection Areas." The ordinance provides for the prevention of mixing water between aquifers where groundwater quality problems are known to exist. Other protection areas within the Plan involve municipal/industrial water systems and small rural domestic water systems that rely on groundwater as a supply source.

3.4.3 Saline Water Intrusion

Saline water can slowly degrade a groundwater basin and ultimately render all or part of a basin unusable. The concentration of minerals in water is also referred to as total dissolved solids (TDS). The dissolved minerals are classified as inorganic salts, thus the term "salinity" is another way to describe mineral concentration. Several sources can contribute to increased salinity in groundwater. In addition to sea water intrusion, saline degradation of groundwater can be caused by use and re-use of the water supply; lateral or upward migration of saline water; downward seepage of sewage and industrial wastes; downward seepage of mineralized surface water from streams, lakes and lagoons; and interzonal or interaquifer migration of saline water.

Salt accumulation in surface water and groundwater in the Central Valley is a natural process inherent to lands with semi-arid to arid climates, enclosed basins, or reduced or impeded drainage. Salt accumulation in surface water and groundwater can impact and eventually eliminate most beneficial uses. Salt accumulation can be exacerbated by a wide variety of human activities including irrigation; importation of surface water; application of fertilizer (including manure and biosolids) and pesticides; land disposal of wastes including those from food processing facilities, wineries and municipal wastewater treatment plants; discharge of urban storm water runoff; and use of recycled wastewater.

Control of saline water intrusion occurs primarily at the state level through the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board.

3.4.4 Migration of Contaminated Groundwater

Groundwater contamination originates from a number of sources or activities such as leaking tanks discharging petroleum products or solvents, or the application of pesticides and fertilizers. Effective control and clean-up of contaminated groundwater requires a coordinated effort between all regulatory agencies involved, source control, understanding of the hydrogeology and delineation of the contamination.

Agencies with a role to play in mitigating groundwater contamination include the Kings and Tulare County Environmental Health Departments, California Regional Water Quality Control Board, California Environmental Protection Agency and the U.S. Environmental Protection Agency. The degree to which each agency participates depends on the nature and magnitude of the problem.

3.4.5 Well Construction Policies

The County of Tulare, Kings County and City of Visalia have adopted Well Ordinances that specify water well construction, deepening and reconstruction standards within each agencies' respective jurisdiction. In all the ordinances, reference is made to State of California, Department of Water Resources Bulletin's 74-81 and 74-90 as that agency's adopted water well standard or supplementary to their established standard. The ordinances have provisions that require permits for well construction, deepening and reconstruction, with oversight provided by the agencies' health or building departments.

3.5 Sustainability

Maintaining the ability to use the underlying aquifer without incurring depletion or permanent damage is one of the Plan's main objectives. The sustainability of the groundwater supply for all beneficial uses is of critical importance to the region's economic, social and environmental well-being. California Water Code § 10753.8 authorizes the District to include components in its Plan to implement measures that progress toward attaining a sustainable groundwater resource. Notwithstanding the foregoing, the District reserves the right to decide whether or not it will be involved in each of the activities authorized by the aforementioned statute. Groundwater replenishment, overdraft mitigation and conjunctive use have been identified by the Plan as fundamental elements in attaining groundwater sustainability.

3.5.1 Groundwater Replenishment

In any conjunctive use area, groundwater recharge is a critical part of the overall Plan. For many years, the District has operated and maintained recharge basins throughout the District. They are generally located in areas of highly permeable soils. One of the District's ongoing objectives is the location and acquisition of additional recharge sites. In addition, effective recharge is also obtained through the natural channels, canals and ditches located within the Plan Area. The reason being that most of the channels are located within soil zones with high permeability. The District has established and will continue to develop programs that promote surface water use that result in additional groundwater recharge and reduction in groundwater pumping.

3.5.1.1 Distribution of District Owned Water

There is a tremendous difference in the aquifer characteristics within the Plan Area. This is evident in both storage capability and yield. The impact of cyclical droughts is revealed by a greater drop in groundwater levels for those areas with limited aquifer thickness in comparison to portions of the Plan Area that are located over a thicker and higher yielding aquifer. The District has surface water sources derived from appropriated Kaweah River entitlement and temporary Central Valley Project Water supply contracts (CVP Section 215 Water). When such waters are utilized, they are distributed in a fashion to maximize the benefits of the resource and effectively recharge groundwater. During critically dry years, District owned surface water, if available, may need to be directed to the most severely impacted areas. The distribution of District owned water is at the discretion of and according to the direction given by the District Board of Directors.

3.5.1.2 Channel Recharge

There are over 200 miles of natural channels and many times that amount of manmade channels located within the Plan Area. One of the primary means of recharging groundwater is accomplished through the seepage that occurs in these channels during the conveyance of water. The transport of surface water throughout the Plan Area generally requires that water be diverted from natural channels into ditch systems. Natural channels are typically located in permeable soils. The effective amounts of channel recharge vary from year to year and are dependent upon water supplies, which are contingent upon annual climatic conditions. Channel recharge can also occur through programs, promulgated by the Plan, that use various sources of surface water to supply either conveyance losses for supplement of irrigation deliveries or that are delivered and retained in the channels solely for recharge.

The Plan participants will continue to use available surface waters to meet demands, which in turn replenish the aquifers by sinking those waters through distribution system seepage. The District will actively seek the cooperation of other government and water entities in the development of programs that promote channel recharge through water conveyance. When feasible, the District will consider delivery of water for channel recharge within the Plan Area. All such deliveries of recharge water shall be at the discretion of the District Board of Directors. The District will endeavor to evaluate and utilize recharge from natural channels, when appropriate. Natural channels with good recharge capabilities will be used as groundwater recharge facilities to receive recharge water.

3.5.1.3 Basin Recharge

Surface water that is conveyed into recharge facilities for the purpose of having such water infiltrate into the aquifer is classified as basin recharge. This type of recharge can be accomplished in a variety of

different ways. Basin recharge most commonly occurs during non-irrigation periods when water is released from Terminus Reservoir for flood control purposes. These flows are conveyed throughout the District, distributed in conveyance systems and delivered to recharge basins. The primary purpose of this activity is flood control with a simultaneous benefit of groundwater recharge. Other occurrences of basin recharge consist of programs, promulgated by the Plan, that use various sources of surface water delivered to recharge facilities.

Plan participants will continue to use available surface waters to replenish the aquifers by sinking those waters through recharge basins. The District will actively seek the cooperation of other government and water entities in the development of programs that promote basin recharge through utilization of existing facilities and the creation of new facilities. When feasible, the District will consider delivery of water for basin recharge within the Plan Area. All such deliveries of recharge water shall be at the discretion of the District Board of Directors.

3.5.1.4 In-Lieu Recharge

Another method of recharge occurs when additional surface water supplies are acquired and used to satisfy irrigation demands. These additional supplies proportionately reduce the amount of irrigation demand on groundwater. Thereby, surface water is used in-lieu of groundwater, allowing aquifers the ability to recover through a reduction in demand during irrigation cycles. This type of recharge is considered highly effective because groundwater demand is reduced while at the same time additional recharge is taking place from the delivery channels.

The Plan will continue to promote the acquisition of additional water supplies in order to maximize the amount of surface water available in the promulgation of in-lieu recharge. The District will actively seek the cooperation of other government and water entities in the development of programs that promote in-lieu recharge through the provision of additional water supplies. When feasible, the District will consider delivery of water for in-lieu recharge within the Plan Area. All such deliveries of recharge water shall be at the discretion of the District Board of Directors. The District will endeavor to evaluate and utilize in-lieu recharge, when appropriate.

3.5.1.5 Construction and Operation of Facilities

Presently there are more than forty (40) groundwater recharge basins located within the Plan Area. Most of these basins were constructed and are operated by the District. Additionally, there are Facilities Use Agreements in place between the District and most of the irrigation water entities within the Plan. These agreements grant the District the right to use and operate those companies' facilities for multiple

purposes, including the sinking (recharge) of water. The combination of recharge basins and access to conveyance facilities enables the District to capture available water for replenishment to the aquifer throughout the District. The District, in its sole discretion, shall determine which sinking basin(s), natural channel(s), canal(s) or ditch(es) shall be used to sink any water which the District has available for such purpose.

One of the District's objectives, which is integral to the Plan, is the expansion and improvement to the system of facilities that are used in the recharge of groundwater. New developments include cooperative programs that are progressing toward the construction of multi-functional facilities. These programs are expected to result in facilities that will provide composite solutions to such issues as urban storm water runoff, environmental enhancement and groundwater replenishment. The District will actively seek cooperation with other government and water entities in the acquisition and construction of facilities for groundwater replenishment.

3.5.2 Overdraft Mitigation

Since the early 1950's, the District has observed declining groundwater levels and the Kaweah Basin has been identified by the California Department of Water Resources as a basin subject to critical conditions of overdraft.[3] Critical conditions of overdraft are defined as a groundwater basin in which continuation of present practices would probably result in significant adverse overdraft-related environmental, social or economic impacts. Throughout the years the District has accomplished various studies that examined groundwater supplies. The most recent study was completed at the end of 2003. The "*Water Resources Investigation of the Kaweah Delta Water Conservation District*" once again confirmed the Basin was in a state of overdraft. The study was a comprehensive review of all the elements required to determine safe yield for the aquifers within the District. The final conclusion was that annual groundwater supplies were insufficient for water demands not met by surface water in the range of 20,000 to 36,000 acre-feet annually. The Plan will consider certain actions that will help alleviate the ongoing strain on the Basin aquifers. These actions are considered to be of great value in mitigating the existing overdraft of groundwater.

3.5.2.1 Water Conservation

Groundwater overdraft exists mainly because water demands exceed supply, with the difference taken from groundwater. Reducing demands through the most efficient usage of water is considered a viable approach to assist in mitigating overdraft. Water conservation efforts will be encouraged throughout the

[3] California Department of Water Resources, Bulletin 118-80: *Ground Water Basins in California*, A Report to the Legislature in Response to Water Code Section 12924 (January 1980)

Plan Area for agricultural, industrial and residential users. Existing and new irrigation methods, reuse of industrial water and domestic water saving devices are and will be encouraged.

District's policies and procedures promote the beneficial use of water. The District will continue to promote policies that enhance water conservation policies. The District Board of Directors has the authority to adopt water conservation and water regulation policies for the District and, pursuant to its Groundwater Management Plan, the Plan Area. If a local public agency adopts and enforces a water conservation plan within its boundaries, such a plan is encouraged to the extent it is not inconsistent with the District's Plan.

3.5.2.2 No Exportation of Groundwater

The Plan recognizes the importance of applying groundwater to lands within the Plan Area. Hydrogeologic conditions are such that equilibrium cannot be achieved or maintained if groundwater supplies are withdrawn and exported from the area. Since the District is located within an overdrafted basin, it is prudent to utilize all groundwater resources within the Plan Area. The District will take all appropriate action to prevent the exportation of water from the Plan Area.

A position has been adopted in the Plan that there shall be no exportation of groundwater that results in any additional net loss to the Plan Area's total available water supplies. The District Board of Directors has the authority to institute any measures proposed to prevent such loss.

3.5.2.3 Reduction in Groundwater Outflow

Groundwater within the Basin is not static, but travels vertically and horizontally due to a range of hydrogeological factors. The direction and quantity of groundwater flow is susceptible to changes that occur to the hydraulic gradient. Groundwater level measurements taken twice a year within the District will be used to identify the direction and quantity of groundwater flow. Typically, this outflow has been to the west and southwest. Groundwater outflow has historically been a naturally occurring condition within the Plan Area. The District will continue its efforts to monitor the amounts of such groundwater outflow annually. Monitoring will be used to assess changes to groundwater outflow resulting from influences outside the Plan Area.

3.5.2.4 Additional Water Supply and Storage

As previously noted, groundwater overdraft is the result of inadequate water supplies. One of the most effective means to overcome this shortfall is acquiring additional supplies of water. These supplies can be obtained from external water sources or be produced as a result of additional storage. Development of

additional water supply and storage is a crucial element in the Plan's efforts to mitigate groundwater overdraft.

A supplemental source of surface water necessary to conduct extensive programs is normally available in wet years when floodwaters are available on the Kaweah River or additional water supplies are available from other sources. The District has historically made beneficial use of floodwaters and excess waters for recharging groundwater supplies and will continue to do so in the future. Further, the District will continue to seek opportunities to purchase and import water into the District for groundwater recharge purposes.

Additional water supplies would enhance the local groundwater. Present political and environmental realities discourage developing additional water supplies by building dams and large water storage projects. Yet through the cooperative efforts of Plan participants, the District was able to promote an enlargement project for Lake Kaweah that provides over 42,000 acre-feet of additional storage in Terminus Reservoir. The enlargement project took the United States Army Corps of Engineers over 20 years from the initial study until completion. Water was first stored to the new gross pool elevation in 2005. The District will continue to pursue feasible efforts to secure additional water supply and storage that will be beneficial to the Plan Area.

3.5.2.5 Pumping Restrictions

The progress of those measures taken in mitigating groundwater overdraft will require ongoing evaluation as to their effectiveness. Upon a determination that the measures are not accomplishing desired results, restriction of groundwater pumping could be considered. Pumping restrictions could reduce the amount of groundwater use. Restricting groundwater pumping is highly controversial and would currently be considered as the last alternative to be implemented in mitigating groundwater overdraft.

Implementation of this step could have severe implications to a local economy that relies on unrestricted access to groundwater. Initially, any program requiring pumping restrictions would be voluntary rather than mandatory. From a practical standpoint, when restrictions on urban groundwater water supplies are implemented, mandatory agricultural pumping restrictions would be considered.

Only under special circumstances would pumping restrictions be imposed. The District Board of Directors will not impose such restrictions until consulting with local agencies and holding a mandatory public hearing at least sixty (60) days prior to the effective date of such restrictions. The District Board of Directors could impose such action only by resolution.

3.5.3 Conjunctive Use

Conjunctive use is defined as the coordinated and planned management of both surface and groundwater resources in order to maximize the efficient use of the resource. The District began conjunctive use activities in the 1930's, starting with the construction of groundwater recharge basins for the capture of available Kaweah River water. Facilities Use Agreements accompanied basin development enabling the District to convey and sink water throughout the delta of the Kaweah River. After the completion of Terminus Dam in 1962, conjunctive use was increased as a result of the ability to annually store and regulate river flows.

Conjunctive use within the Plan Area takes place through the distribution of surface water for irrigation and groundwater recharge, with groundwater being used when and where surface waters are unable to fully meet demands, either in time or area. Since the early 1970's, water entities have worked together through a formal association to use available water to its greatest benefit. The Plan will continue to foster and facilitate conjunctive use with an objective toward mitigating groundwater overdraft conditions.

3.6 Stakeholder Involvement

The management of groundwater resources is based upon serving the public interest in a responsible manner. The Plan fulfills this purpose through the involvement of entities with a permanent stake in the availability of the groundwater source. These stakeholder groups consist of various water entities like ditch companies, irrigation districts, water districts and urban water service purveyors. Local government agencies are also included as Plan stakeholders. Interactive participation by stakeholders in the review and planning process is a fundamental element in carrying out the Plan's purpose. The Plan offers a forum for stakeholders through the following elements.

3.6.1 Memorandum of Understanding

The Plan officially recognizes stakeholders through the execution of a Memorandum of Understanding (MOU) between the District and the interested entity. The purpose of the MOU is to document the interests and responsibilities of participants in the adoption and implementation of the Plan. The MOU also promotes the sharing of information, the development of a course of action and the resolving of differences that may arise regarding the Plan. Since the Plan's inception in 1995, the number of stakeholders has regularly grown to the present number of thirteen (13). It is foreseen that stakeholder involvement will increase with time. The District will continue to pursue new stakeholder involvement and shall endeavor to enter into an agreement with other local agencies in the form of a Memorandum of Understanding in compliance with California Water Code § 10750.8. A sample of one form of Memorandum of Understanding is included in Appendix "B".

One of the initial Plan participants was Tulare Irrigation District (TID), who adopted a groundwater management program in accordance with AB 255 in 1992, the first agency in the state to adopt such a program and plan. In 1996, the District and TID executed a MOU obligating both districts to coordinate their respective plan efforts and groundwater management activities within areas of overlap. It is the District's understanding that TID intends to update and amend its plan in accordance with AB 3030 provisions and as may be modified by other state legislation.

3.6.2 Advisory Committee

The Advisory Committee offers one of the primary means that stakeholders are given to participate in the Plan. This committee is open to stakeholders that have been recognized as a Plan participant through a MOU. The Advisory Committee helps guide the development and implementation of the Plan and provides a forum for resolution of controversial issues. Meetings are held annually, at a minimum, for the purpose of review and discussion of past, present and future Plan activities.

3.6.3 Relationships with Other Agencies

The Plan acknowledges that there are interests in the groundwater resource that reach beyond the area covered by the Plan. State and Federal agencies' participation in managing groundwater is an important element to the Plan. The development and enhancement of relationships with other agencies benefits the Plan through the exchange of information and resources that progress toward a better understanding and management of groundwater.

Such agencies not only have regulations that influence the Plan, but extend opportunities by sharing information, providing relevant programs and allocating funds that can be used for programs and projects within the Plan. The Plan has historically tapped into these valuable sources and it is expected to continue to do so in the future. California Water Code § 10753.8 authorizes the District to include components in its groundwater management plan for the development of relationships with state and federal agencies. Notwithstanding the foregoing, the District reserves the right to decide whether or not it will be involved in each of the activities authorized by the aforementioned statute.

3.7 Planning and Management

The establishment of an organized structure is necessary in order for the Plan to fulfill its intended purpose. The Plan is structured to function in such a way that numerous elements relating to or influencing groundwater conditions are brought together and managed for meeting Plan objectives. The planning process also plays an important role in developing such objectives and providing direction in

accomplishing goals. Both the process of planning and management combined afford the opportunity to produce the most beneficial use of the groundwater resource.

3.7.1 Land Use Planning

The District has long-standing relationships with both city and county agencies within the Plan Area that oversee land use and zoning activities. The connection between land use and the groundwater resource is reflected in the differing water demands related to land classifications and the need to supply those demands from groundwater. Land use planning coordination enables the Plan to participate in decisions that will affect future groundwater conditions. Coordination also supplies the Plan participants with information pertinent to forming programs that could address forecasted changes to groundwater. Involvement with land use planning essentially affords the Plan the opportunity to be proactive instead of reactive.

California Water Code § 10753.8 authorizes the District to include components in its groundwater management plan for the review of land use plans and coordination with land use planning agencies to assess activities that create a reasonable risk for groundwater contamination. Notwithstanding the foregoing, the District reserves the right to decide whether or not it will be involved in each of the activities authorized by the aforementioned statue.

3.7.2 Groundwater Model

An important planning and management tool that was recently implemented is the District's numerical groundwater flow model. In 2005, utilizing a cooperative grant from the State Department of Water Resources, the District developed a groundwater model to calculate future changes in groundwater conditions that could occur based upon major influences such as changes in population growth, water supply and distribution. The model is able to calculate quantifiable changes to groundwater levels and flow conditions. This analytical tool can be applied to assess how existing and proposed groundwater management actions, changes in cultural practices or changes in hydrologic conditions may influence groundwater sustainability. The knowledge gained from the model will be applied in the development and evaluation of new and existing programs. The expected result will be the progression of programs and policies that will efficiently use available resources to affect the most beneficial influence to groundwater supplies.

3.7.3 Groundwater Reports

Adequate information is a vital element of planning and management of the groundwater resource. The Plan will produce, at a minimum, annual reports summarizing groundwater basin conditions and

management activities. These annual reports will include the following presentations as they pertain to the Plan.

- ✓ Summary of monitoring results, including a discussion of historical trends
- ✓ Summary of management actions during the period covered by the report
- ✓ A discussion, supported by monitoring results, of whether management actions are achieving progress in meeting management objectives
- ✓ Summary of proposed management actions for the future
- ✓ Summary of any plan component changes, including addition or modification of management objectives, during the period covered by the report
- ✓ Summary of actions taken to coordinate with other water management and land use agencies, and other government agencies

3.7.4 Plan Re-evaluation

An essential task in determining the value of management activities and goals is a periodic re-evaluation of the entire Plan. The effectiveness of the Plan is a reflection of the success and failure of measures taken in attempts to change or maintain groundwater conditions. Reviews will be focused on identifying potential changes to the Plan that could be beneficial to the groundwater resource. Additionally, assessing changing conditions in the Basin could warrant modifications of management objectives. Periodic Plan re-evaluation will occur at an interval of not more than five years apart. Separate from entire re-evaluations will be adjustments to Plan components on an ongoing basis, if necessary. The re-evaluations will focus on determining if actions under the Plan are meeting management objectives and if the management objectives are achieving the goal of sustaining the resource.

3.7.5 Dispute Resolution

The Plan acknowledges that controversial issues could arise concerning the groundwater resource. Stakeholders are encouraged to work through the Plan in addressing and resolving differences. When this process proves insufficient, the District has an applicable policy in place for dispute resolution. The Plan hereby adopts the District's "Alternative Dispute Resolution Policy", as included in Appendix "C" or the most current version of the policy.

3.7.6 Program Funding and Fees

Plan activities are funded through various sources relevant to the specific program. The District alone regularly performs recharge programs with capital budgeted for that purpose. The District also funds multiple other groundwater programs, such as facility development, operation and maintenance. Respectively, plan participants support their own individual programs from revenue derived from that

agency's budget. The Plan additionally fosters and supports multi-agency programs, where participants cooperatively combine funds and resources toward common objectives in a regional approach.

Future activities required to fully implement the Plan may require additional funding sources. Implementing legislation related to AB 3030 allows for the levying of groundwater assessments or fees under certain circumstances and according to specific procedures. Prior to instituting a groundwater assessment or fee structure, the District must hold an election on whether or not to proceed with the enactment of the assessments. A majority of the votes cast at the election is required to implement an additional funding assessment.

The District intends to exercise all of the authority given to a water replenishment district in California Water Code § 60220 through 60232 as may be necessary for the District to accomplish its purposes and goals for the Plan. A water replenishment district has the authority to fix and collect fees and assessments within the Plan Area for groundwater management in accordance with California Water Code § 60300 through 60352. The District reserves the right to decide whether or not it will be involved in this activity authorized by the aforementioned statutes.

SECTION 4: RULES AND REGULATIONS

The below presented items in this section are the Groundwater Management Plan rules and regulations to implement the Groundwater Management Plan of Kaweah Delta Water Conservation District adopted August 1, 1995 and updated on November 7, 2006.

1. Water Monitoring: At least twice per year, the Kaweah Delta Water Conservation District (hereinafter the "District") shall provide staff at its expense to monitor and measure the depth to standing groundwater at well sites within the Plan Area. In its sole discretion, District shall select the number and location of well sites. District shall prepare charts as required by the Plan.

2. Channel Recharge: District shall endeavor to evaluate and utilize recharge from natural channels when appropriate, as determined by District. Natural channels with good recharge capabilities will be evaluated for potential use as groundwater recharge facilities to receive recharge water.

3. Basin Recharge: When feasible, District will consider delivery of water to recharge basins within the Plan Area. All such deliveries of recharge water shall be at the discretion of District Board of Directors ("District Board of Directors").

4. Water Conservation: District's policies and procedures promote the beneficial use of water. The District shall continue to promote policies that enhance water conservation policies. The District Board of Directors has the authority to adopt water conservation and water regulation policies for the District and, pursuant to its groundwater management plan, the Plan Area. If a local public agency adopts and enforces a water conservation plan within its boundaries, such Plan shall be effective to the extent it is not inconsistent with the District's Plan.

5. No Exportation of Groundwater: After the adoption hereof, there shall be no exportation of groundwater that results in any additional net loss to the Plan Area's total available water supplies. The District Board of Directors has the authority to institute any measures proposed to prevent such net loss.

6. Intra-district Water Transfers: Water transfers within the Plan Area are permissible and subject to the administration of the Kaweah River Watermaster under the direction of the Kaweah & St. Johns Rivers Association Board of Directors.

7. Inter-district Water Transfers: District shall endeavor to promote advantageous water transfers (water transfers that increase the water supply available within the Plan Area). The District Board of Directors has the authority to initiate such transfers.

8. Reduction in Groundwater Outflow: The District may monitor the outflow of groundwater from the Plan Area. Before the District takes any steps to prevent such outflow, such steps shall be approved by the District Board of Directors.

9. Pumping Restrictions: Only under special circumstances would pumping restrictions be imposed. The District Board of Directors shall not impose such restrictions until after consulting with local agencies and holding a mandatory public hearing at least sixty (60) days prior to the effective date of such restrictions. The District Board of Directors could impose such action only by resolution.

10. Additional Water Supply and Storage: The District will continue to actively review and evaluate potential new supplies of water and new storage facilities for water which may benefit the Plan Area. To the extent the District Board of Directors determines that it has the capability to do so, the District will fund projects which increase the water supply and water storage which benefit the Plan Area. The District's involvement in any project to increase water supply or water storage shall be approved by the Board of the Directors of the District.

11. <u>Redistribution of Surface Water:</u> The District, in its sole discretion, shall determine which sinking basin(s), natural channel(s), canal(s) or ditch(es) shall be used to sink any water which the District has available for such purpose.

GLOSSARY

A

acre-foot (af) The volume of water necessary to cover one acre to a depth of one foot; equal to 43,560 cubic feet or 325,851 gallons.

alluvial Of or pertaining to or composed of alluvium.

alluvium A general term for clay, silt, sand, gravel, or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water, as a sorted or semi sorted sediment in the bed of the stream or on it's floodplain or delta, as a cone or fan at the base of a mountain slope**.**

aquitard A confining bed and/or formation composed of rock or sediment that retards but does not prevent the flow of water to or from an adjacent aquifer. It does not readily yield water to wells or springs, but stores ground water.

aquifer A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs.

artificial recharge The addition of water to a groundwater reservoir by human activity, such as putting surface water into dug or constructed spreading basins or injecting water through wells.

average annual runoff The average value of total annual runoff volume calculated for a selected period of record, at a specified location, such as a dam or stream gage.

average year water demand Demand for water under average hydrologic conditions for a defined level of development.

B

basin management objectives (BMOs) See management objectives

beneficial use One of many ways that water can be used either directly by people or for their overall benefit. The State Water Resources Control Board recognizes 23 types of beneficial use with water quality criteria for those uses established by the Regional Water Quality Control Boards.

C

confined aquifer An aquifer that is bounded above and below by formations of distinctly lower permeability than that of the aquifer itself. An aquifer containing confined ground water. See artesian aquifer.

conjunctive use The coordinated and planned management of both surface and groundwater resources in order to maximize the efficient use of the resource; that is, the planned and managed operation of a groundwater basin and a surface water storage system combined through a coordinated conveyance infrastructure. Water is stored in the groundwater basin for later and planned use by intentionally recharging the basin during years of above-average surface water supply.

contaminant Any substance or property preventing the use or reducing the usability of the water for ordinary purposes such as drinking, preparing food, bathing washing, recreation, and cooling. Any solute or cause of change in physical properties that renders water unfit for a given use. (Generally considered synonymous with pollutant).

critical conditions of overdraft A groundwater basin in which continuation of present practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts. The definition was created after an extensive public input process during the development of the Bulletin 118-80 report.

D

dairy and related water demand The use of water from those facilities where herds of cows are managed for the production of milk.

deep percolation Percolation of water through the ground and beyond the lower limit of the root zone of plants into groundwater.

drought condition Hydrologic conditions during a defined period when rainfall and runoff are much less than average.

E

electrical conductivity (EC) The measure of the ability of water to conduct an electrical current, the magnitude of which depends on the dissolved mineral content of the water.

environmental water Water serving environmental purposes, including instream fishery flow needs, wild and scenic river flows, water needs of fresh-water wetlands, and Bay-Delta requirements.

evapotranspiration (ET) The quantity of water transpired (given off), retained in plant tissues, and evaporated from plant tissues and surrounding soil surfaces.

G

groundwater basin An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom.

groundwater budget A numerical accounting, the *groundwater equation*, of the recharge, discharge and changes in storage of an aquifer, part of an aquifer, or a system of aquifers.

groundwater in storage The quantity of water in the zone of saturation.

groundwater management The planned and coordinated management of a groundwater basin or portion of a groundwater basin with a goal of long-term sustainability of the resource.

groundwater management plan A comprehensive written document developed for the purpose of groundwater management and adopted by an agency having appropriate legal or statutory authority.

groundwater monitoring network A series of monitoring wells at appropriate locations and depths to effectively cover the area of interest. Scale and density of monitoring wells is dependent on the size and complexity of the area of interest, and the objective of monitoring.

groundwater overdraft The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.

groundwater recharge facility A structure that serves to conduct surface water into the ground for the purpose of replenishing groundwater. The facility may consist of dug or constructed spreading basins, pits, ditches, furrows, streambed modifications, or injection wells.

groundwater recharge The natural or intentional infiltration of surface water into the zone of saturation.

groundwater storage capacity volume of void space that can be occupied by water in a given volume of a formation, aquifer, or groundwater basin.

groundwater subbasin A subdivision of a groundwater basin created by dividing the basin using geologic and hydrologic conditions or institutional boundaries.

groundwater table The upper surface of the zone of saturation in an unconfined aquifer.

groundwater Water that occurs beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation in which it is situated. It excludes soil moisture, which refers to water held by capillary action in the upper unsaturated zones of soil or rock.

H

hydraulic conductivity A measure of the capacity for a rock or soil to transmit water; generally has the units of feet/day or cm/sec.

hydrograph A graph that shows some property of groundwater or surface water as a function of time.

hydrologic region A study area consisting of multiple planning subareas. California is divided into 10 hydrologic regions.

I

infiltration The flow of water downward from the land surface into and through the upper soil layers.

in-lieu recharge The practice of providing surplus surface water to historic groundwater users, thereby leaving groundwater in storage for later use.

L

land subsidence The lowering of the natural land surface due to groundwater (or oil and gas) extraction.

lithologic log A record of the lithology of the soils, sediments and/or rock encountered in a borehole from the surface to the bottom.

lithology The description of rocks, especially in hand specimen and in outcrop, on the basis of such characteristics as color, mineralogic composition, and grain size.

losing stream A stream or reach of a stream that is losing water by seepage into the ground.

M

management objectives Objectives that set forth the priorities and measurable criteria of local groundwater basin management.

N

natural recharge Natural replenishment of an aquifer generally from snowmelt and runoff; through seepage from the surface.

O

operational yield An optimal amount of groundwater that should be withdrawn from an aquifer system or a groundwater basin each year. It is a dynamic quantity that must be determined from a set of alternative groundwater management decisions subject to goals, objectives, and constraints of the management plan.

ordinance A law set forth by a governmental authority.

P

perched groundwater Groundwater supported by a zone of material of low permeability located above an underlying main body of groundwater.

perennial yield The maximum quantity of water that can be annually withdrawn from a groundwater basin over a long period of time (during which water supply conditions approximate average conditions) without developing an overdraft condition.

perforated interval The depth interval where slotted casing or screen is placed in a well to allow entry of water from the aquifer formation.

permeability The capability of soil or other geologic formations to transmit water. See hydraulic conductivity.

point source A specific site from which wastewater or polluted water is discharged into a water body.

public water system demand The use of water from small, regulated public water systems. Typical facility types included mutual water companies, schools, mobile home parks, golf courses, county facilities, motels, livestock sales yards, and miscellaneous industries such as nurseries, food processing facilities, packing houses, etc.

R

recharge Water added to an aquifer or the process of adding water to an aquifer. Ground water recharge occurs either naturally as the net gain from precipitation, or artificially as the result of human influence. See artificial recharge.

recharge basin A surface facility constructed to infiltrate surface water into a groundwater basin.

runoff The volume of surface flow from an area.

rural domestic water demand The use of water from residences not served by a municipal connection, mutual water company, or other small public water system.

S

safe yield The maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect.

salinity Generally, the concentration of mineral salts dissolved in water. Salinity may be expressed in terms of a concentration or as electrical conductivity. When describing salinity influenced by seawater, salinity often refers to the concentration of chlorides in the water. See also total dissolved solids.

saline intrusion The movement of salt water into a body of fresh water. It can occur in either surface water or groundwater bodies.

seepage The gradual movement of water into, through or from a porous medium. Also the loss of water by infiltration into the soil from a canal, ditches, laterals, watercourse, reservoir, storage facilities, or other body of water, or from a field.

semi-confined aquifer A semi-confined aquifer or leaky confined aquifer is an aquifer that has aquitards either above or below that allow water to leak into or out of the aquifer depending on the direction of the hydraulic gradient.

specific yield the ratio of the volume of water a rock or soil will yield by gravity drainage to the total volume of the rock or soil**.**

stakeholders Any individual or organization that has an interest in water management activities. In the broadest sense, everyone is a stakeholder, because water sustains life. Water resources stakeholders are typically those involved in protecting, supplying, or using water for any purpose, including environmental uses, who have a vested interest in a water-related decision.

surface supply Water supply obtained from streams, lakes, and reservoirs.

sustainability Of, relating to, or being a method of using a resource so that the resource is not depleted or permanently damaged.

T

total dissolved solids (TDS) a quantitative measure of the residual minerals dissolved in water that remain after evaporation of a solution. Usually expressed in milligrams per liter. See also salinity

transmissivity The product of hydraulic conductivity and aquifer thickness; a measure of a volume of water to move through an aquifer. Transmissivity generally has the units of ft_2/day or gallons per day/foot. Transmissivity is a measure of the subsurface's ability to transmit groundwater horizontally through its entire saturated thickness and affects the potential yield of wells.

U

unconfined aquifer An aquifer which is not bounded on top by an aquitard. The upper surface of an unconfined aquifer is the water table.

unsaturated zone The zone below the land surface in which pore space contains both water and air.

urban water demand The use of water from incorporated cities (Visalia, Tulare, Farmersville, Exeter, Ivanhoe) and in the unincorporated areas served by a municipal water purveyor.

urban water management plan (UWMP) An UWMP is required for all urban water suppliers having more than 3,000 connections or supplying more than 3,000 acre-feet of water. The plans include discussions on water supply, supply reliability, water use, water conservation, and water shortage contingency and serve to assist urban water suppliers with their long-term water resources planning to ensure adequate water supplies for existing and future demands.

usable storage capacity The quantity of groundwater of acceptable quality that can be economically withdrawn from storage.

W

water quality Description of the chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose or use.

water year A continuous 12-month period for which hydrologic records are compiled and summarized. Different agencies may use different calendar periods for their water years.

watershed The land area from which water drains into a stream, river, or reservoir.

well completion report A required, confidential report detailing the construction, alteration, abandonment, or destruction of any water well, cathodic protection well, groundwater monitoring well, or geothermal heat exchange well. The reports were called *Water Well Drillers' Report* prior to 1991 and are often referred to as "driller's logs." The report requirements are described in the California Water Code commencing with Section 13750.

APPENDIX A

KAWEAH & ST. JOHNS RIVERS ASSOCIATION TRANSFER POLICY

KAWEAH & ST. JOHNS RIVERS ASSOCIATION
STATEMENT OF POLICY RE WATER TRANSFERS AND EXCHANGES
(Adopted September 8, 1994)

The purpose of this policy statement is to confirm the intent of the Association to retain waters of the Kaweah River and its tributaries in the Kaweah River hydrologic surface basin ("Basin") for beneficial use therein. The boundaries of the Basin are set forth on Exhibit A, appended hereto and made a part of this statement.

Each of the Member Units shall retain the right and privilege alter, amend, change or modify their respective service areas, without notice to or consent of the Association, provided that the expanded service area of the Member Unit does not extend beyond the boundary of the historical Basin. Should a Member Unit make such an adjustment to its service area, it shall so notify the Watermaster. Documentation shall be provided by the Member Unit, to the Watermaster, adequate to demonstrate that the expanded service area is within the Basin.

Water to which Member Units are entitled shall be utilized only within said Basin boundary except as provided hereinafter for periods of flood release. Transfer(s) of entitlement waters shall be allowed within the Basin upon proper notification to the Watermaster of such impending transfer(s). The Watermaster shall provide notification to the Board of Directors of any such transfer(s). Approval of the Board of Directors shall not be required for any transfer within the Basin. It is acknowledged that under certain flood release conditions, after irrigation and spreading demands have been fully satisfied and the capability of the Basin to retain flood release water has been fulfilled, flood water flows naturally to the historic Tulare Bed which lies within the Basin.

Member Units may enter into water exchange agreements which call for no net loss to the Basin of to any in-Basin water rights holder, subject to administrative rules and regulations adopted by the Board of Directors.

Transfer(s) of riparian waters or waters resulting from settlement of riparian entitlement negotiations shall not be allowed. Transfers of water received under contracts for water made available through the State Water Project, the Federal Central Valley Project or the Cross Valley Canal Exchange Program shall not be subject to these provisions.

This policy shall be implemented by the following additions to the rules and regulations effective upon adoption of the policy by the Board of Directors:

Transfers of water shall be allowed between entities for use within the Basin. Notice of an impending transfer shall be provided to the Watermaster in writing.

Exchanges of water out of the Basin shall be subject to approval of the Board of Directors. Such exchanges shall only be considered when the recipient of the water can demonstrate, to the satisfaction of the Board of Directors, that a hardship situation exists. The required information associated with the documentation of the hardship situation shall be established by the Board of Directors on a case by case basis.

An out-of-Basin water exchange agreement may be entered into by a member unit subject to approval of the Association Board of Directors. Any exchange approved by the Board of Directors shall be conditioned on the full execution of an exchange/return agreement submitted with the petition for approval. Such agreement(s) shall call for no net loss to the Basin or to any in-Basin water rights holder.

To this end, exchanges shall call for channel loss water to be withheld from the total quantity of water available for exchange in the year of the exchange.

The total quantity of water exchanged shall be returned to the Basin for further diversion to a headgate designated by the exchanger subject to coordination with the Watermaster.

To compliment the Terminus and in-Basin storage capabilities available to members of the Association, temporary out-of-Basin storage historically has been permitted on a case-by-case basis and may be permitted in the future. Authority to grant permission to store out-of-Basin shall reside with the Watermaster, subject to appeal to the Board of Directors. Permission shall be predicated on the ability of the requesting entity to demonstrate the eventual delivery within the Basin of waters temporarily stored out-of-Basin. Following removal from storage, documentation shall be provided that the water, less the normal losses, was delivered within the Basin.

APPROVED BY
THE KAWEAH AND ST. JOHNS RIVERS ASSOCIATION BOARD OF DIRECTORS
ON SEPTEMBER 8, 1994.

APPENDIX B

MEMORANDUM OF UNDERSTANDING (SAMPLE)

MEMORANDUM OF UNDERSTANDING BETWEEN KAWEAH DELTA WATER CONSERVATION DISTRICT AND CITY OF TULARE

ARTICLE I - AGREEMENT

The articles and provisions contained herein constitute a bilateral and binding agreement by and between KAWEAH DELTA WATER CONSERVATION DISTRICT (hereinafter the "District") and CITY OF TULARE (hereinafter "Agency").

ARTICLE II - RECOGNITION

The District has developed a Groundwater Management Plan (hereinafter the "Plan") with input from several local agencies located within the District. It is the intent of District to allow and encourage such agencies to coordinate efforts and be a part of the District's Plan by means of a separate Memorandum of Understanding (hereinafter the "MOU") between each agency and District.

ARTICLE III - PURPOSE

It is the purpose of the MOU, entered into willingly, between District and Agency, to document the interests and responsibilities of both parties in the adoption and implementation of the Plan. It is also hoped that such MOU will promote and provide a means to establish an orderly process to share information, develop a course of action and resolve any misunderstandings or differences that may arise regarding the Plan.

ARTICLE IV - COORDINATE

There shall be an annual coordinating meeting (hereinafter the "Meeting") between the District and the Agency. District shall give notice to the Agency thirty (30) days prior to date of the Meeting to discuss the manner in which the Plan is being implemented and other items related to the Plan. If there are concerns or questions regarding the Plan, Agency shall transmit its concerns in writing to District seven (7) days prior to the Meeting.

ARTICLE V - OBLIGATIONS

The Plan shall be binding on the parties hereto unless superseded by the MOU or amendment thereto.

ARTICLE VI - AREA OF PLAN.

The Plan shall be effective in all areas within the Agency boundaries. The Plan shall also be effective in any area annexed to the Agency subsequent to the adoption of the Plan.

ARTICLE VII - TERM

The initial term of the MOU shall commence on the date hereof and continue for five (5) years, and shall continue year to year thereafter, unless terminated by written notice given at least one (1) year prior to such termination.

This Memorandum of Understanding is made and entered into this _____ day of _____, 2004.

KAWEAH DELTA WATER CONSERVATION DISTRICT	**CITY OF TULARE**
By:_____	By:_____
Title:_____	Title:_____
By:_____	By:_____
Title:_____	Title:_____

APPENDIX C

KAWEAH DELTA WATER CONSERVATION DISTRICT
ALTERNATIVE DISPUTE RESOLUTION POLICY

KAWEAH DELTA WATER CONSERVATION DISTRICT
ALTERNATIVE DISPUTE RESOLUTION POLICY
(Adopted February 3, 2004)

Purpose. The District recognizes that defending or prosecuting lawsuits can be expensive and time-consuming, resulting in a drain on District resources that should be avoided, if reasonably possible. To that end, the District hereby implements this policy to encourage the resolution of disputes, claims and lawsuits through alternative dispute resolution procedures.

Procedures. Whenever the District is named in a lawsuit or receives a written claim or a serious threat of imminent litigation, the District staff shall immediately consult with the District General Counsel regarding the same. Together, the District staff and the District General Counsel shall formulate a recommended response to be considered by the Board of Directors at its next meeting.

Whenever the District becomes aware of any unasserted potential lawsuit, claim or dispute, with a reasonable likelihood of being asserted, against the District, the District staff shall consult with the District's counsel regarding the best method for responding to the same. Possible responses include, but are not limited to, the following:

1. Do nothing.

2. A verbal communication from the District or its general counsel.

3. A written communication from the District or its general counsel.

4. An offer to meet and discuss the matter with District personnel.

5. An offer to mediate the matter before a neutral third-party mediator.

6. An offer to arbitrate the matter before the American Arbitration Association.

7. An offer to arbitrate the matter using the rules of Judicial Arbitration found in California statutes.

District staff shall advise the Board of Directors of any unasserted lawsuit, claim or dispute, with a reasonable likelihood of being asserted, including the District's response to the same. The Board of Directors shall be advised whether or not the matter is resolved. If the potential lawsuit, claim or dispute becomes an actual lawsuit, claim or dispute, the response of the District shall be handled as set forth above in the previous paragraphs.

It shall be the practice of the District to encourage mediation of lawsuits, claims or disputes, whenever reasonably practical, in order to resolve such matters. Mediation shall be by a neutral third-party qualified to mediate such matters.

ATTACHMENT F

NOTICES OF DISTRICT EDUCATION PROGRAMS AND SERVICES AVAILABLE TO CUSTOMERS

FIVE YEAR UPDATE

WATER MANAGEMENT PLAN

EXETER IRRIGATION DISTRICT

EXETER IRRIGATION DISTRICT
150 South E Street
P. O. BOX 548
Exeter, California 93221-0548
Telephone (559) 592-2181
Facsimile (559) 592-4464

STANLEY L. COSART
PRESIDENT
THOMAS G. WEDDLE
SECRETARY/MANAGER
JEFFREY A. MEITH
ATTORNEY
JUDITH K. DAVENPORT
ASSISTANT SECRETARY/
TREASURER

DIRECTORS
STANLEY L. COSART
JOSEPH E. FERRARA
DAVID S. DUNGAN
GREGORY V. CROSSON
RALPH E. FULLER

January 10, 2013

TO: DISTRICT LANDOWNERS

FROM: EID BOARD OF DIRECTORS

RE: AGRICULTURAL PUMP EFFICIENCY TESTING COMPANIES

This memorandum is being distributed to inform Landowners within the Exeter Irrigation District of local companies which provide services related to pump efficiency testing. It should be noted that some of these companies are eligible for reimbursement through various programs or may conduct this service free of charge.

Allied Energy & Field Services, Inc.
P.O. Box 2606
Visalia, CA 93279
Office: (559) 622-9082

Farm Pump & Irrigation Co., Inc
535 N. Shafter Avenue
Shafter, CA 93263
Office: (661) 746-3376

Irrigation Concepts
32151 Elmo Highway
McFarland, CA 93250
Office: (661) 792-1886

Kaweah Pump
15499 Avenue 280
Visalia, CA 93292
Office: (559) 747-0755

Kemble Hydro Tech
1111 Norboe Avenue
Corcoran, CA 93212
Office: (559) 992-3166

Mid Valley Pump Testing
P.O. Box 1751
Tulare, CA 93275
Office: (559) 684-7867

Pacific Irrigation, Inc.
11845 School Street
Bakersfield, CA 93307
Office: (661) 366-5555

Pacific Gas & Electric Company
1918 H Street
Bakersfield, CA 93301
Office: (800) 743-5000

Provost & Pritchard Consulting Group
130 N. Garden Street
Visalia, CA 93291
Office: (661) 616-5900

SA Camp Pump Company
17876 Zerker Road
Bakersfield, CA 93308
Office: (661) 399-2976

Sam Jorgensen Pump Co., Inc.
1129 'F' Street
Reedley, CA 93654
Office: (559) 638-2235

Southern California Edison Company
www.sce.com/forms/RequestPumpTest.aspx

Valley Pump and Dairy Systems
2280 South "K" Street
Tulare, CA 93274
Office: (559) 686-2000

Willitts Equipment Company, Inc.
P.O. Box 1110
Exeter, CA 93221
Office: (559) 594-5020

FRIANT WATER AUTHORITY

April 2011

Volume 23, No. 206

FRIANT Waterline

Big Runoff Begins But Is Under Control

Bureau's Restoration Water Decision Boosts Friant Use

Peak snowmelt and runoff have begun with remaining snowpack water content within the San Joaquin River watershed double what it should normally be on May 1.

U.S. Bureau of Reclamation and Friant Water Authority water managers, however, are not particularly worried. A well-planned strategy of aggressive Friant Dam releases, coupled with cooler than average spring temperatures to date, has carved out a great deal of welcomed storage space in Millerton Lake.

STORAGE CUT IN HALF

As of May 2, the reservoir behind Friant Dam contained 223,674 acre-feet of water, less than half of what was in storage on March 26 during a late winter and early spring stretch of potent storms.

With the San Joaquin River's full natural flow and actual Millerton inflow remaining at least a few thousand cubic feet per second less than releases on each

Please see **Runoff**, Page 3

Arvin-Edison Water Storage District

Accident victim John Collins, former Bakersfield College President, is reached on his partially submerged car in the Arvin-Edison Canal April 13 by a Bakersfield emergency staff member suspended from a helicopter following a harrowing accident.

Arvin, Friant Staffs Help Save Driver

Friant Water Authority and Arvin-Edison Water Storage District canal operations staff members assisted with quick and effective emergency water management actions during a dramatic April 13 rescue of former Bakersfield College President John Collins, driver of a car that veered into the Arvin-Edison Canal in Bakersfield.

The car driven by the 93-year-old Collins drifted across Truxton Avenue, through a fence and into the canal not far below its headworks from the Friant-Kern Canal.

SNAGGED BY CABLE

By good fortune, the car landed backwards in the canal, its trunk sprung open. Although the rushing current rapidly pushed the car nearly a half mile downstream, the trunk lid jammed into a safety cable where the vehicle wedged in place.

Had the vehicle not been snagged, the car might have been swept further down the

Please see **Rescue**, Page 3

Restoration Leader

Alicia (Ali) Forsythe, the new San Joaquin River Management Program Manager, and her colleagues will be kept busy with the draft environmental study. *(For more on her appointment, please see Page 3.)*

Friant Water Authority / J. Randall McFarland

SAN JOAQUIN RIVER RESTORATION PROGRAM

Draft Environmental Study Issued

An 8,000-page environmental blueprint that is to guide San Joaquin River Restoration Program (SJRRP) planners and designers has been released for public review and comment.

The long-awaited series of documents – a draft federal program environmental impact statement and state environmental impact report (PEIS/R) was released April 22 by the U.S. Bureau of Reclamation and the California Department of Water Resources (DWR).

'UNAVOIDABLY' DELAYED

For the first time in so public a manner, the Bureau acknowledged that the program that is to restore flows and a salmon fishery to all San Joaquin River reaches between Friant Dam and the Merced River has run into delays.

"Reclamation recognizes that some actions required by the Settlement are unavoidably behind schedule," the Bureau stated in a news release. "This includes certain channel and structural improvement projects that may be beneficial for

Please see **Study**, back page

New Deputy Resources Chief Meral Meets Friant Leaders

Jerry Meral, Governor Brown's new State Resources Agency Deputy Director, has had a first-hand look at key San Joaquin River Restoration Program locations and has received a primer on Friant Division water issues, needs, programs and hopes explained by numerous Friant water leaders.

Meral's April 7 view of the central San Joaquin Valley was marked by heavy rain and flood releases that swelled the San Joaquin River's flows and obscured evidence of critically dry conditions which had prevailed until this winter's big storm events.

VIEWS SWOLLEN RIVER

Friant Water Authority leaders conducted a tour of portions of west valley reaches of the San Joaquin River and its associated flood control bypass channels.

"We had planned to show some of the in-channel challenges being faced by the

Please see **Meral**, back page

Deputy Resources Secretary Jerry Meral (left) with Tulare Irrigation District General Manager J. Paul Hendrix

Friant Water Authority

PRESORTED
STANDARD
US POSTAGE PAID
LINDSAY, CA
PERMIT No. 229

FRIANT WATER AUTHORITY
854 North Harvard Avenue • Lindsay, California 93247-1715
RETURN SERVICE REQUESTED

FRIANT
Waterline
April 2011
Page 2
Volume 23, No. 206
Published by the Friant Water Authority, as a review of issues and developments to inform those interested in water supplies along the East Side of the southern San Joaquin Valley. To comment or ask any questions, please write or call us at (559) 562-6305, visit our web site at www.Friantwater.org or contact your local irrigation district. This issue was printed May 3.

FRIANT WATER AUTHORITY
854 Harvard Avenue • Lindsay, California 93247-1715
Telephone: (559) 562-6305 • Facsimile: (559) 562-3496
Website: www.friantwater.org

HOUSE WATER AND POWER SUBCOMMITTEE

Hearing In Fresno Airs Valley Water Frustration

San Joaquin Valley water supply frustrations were the focus of an April 11 House Water and Power Subcommittee field hearing at Fresno City Hall.

The hearing's published theme – "Creating Jobs by Overcoming Man-Made Drought: Time for Congress to Listen and Act" – set the tone that one speaker after another followed.

One Friant Water Authority board member, Kaweah-Delta Water Conservation District Vice President Mark Watte, testified during the well-attended hearing.

Those attending armed themselves with signs linking water supply curtailments – such as those that plagued the valley in the years before the current above-average precipitation – with job losses, economic woes, social problems, higher food costs and environmental difficulties.

FEDS BLAMED

The overwhelming mood was one of placing blame on federal government agencies, bureaucrats, regulations and court decisions for the grief caused in cutting Central Valley Project water supplies in the west valley to as low as 5% in 2009. That resulted in thousands of job losses, hundreds of thousands of idle acres and millions of dollars in economic damage.

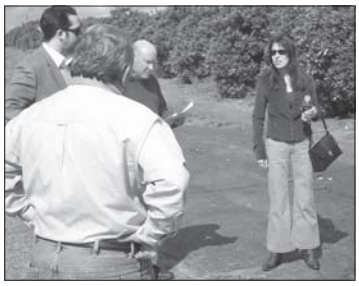
Water and Power Subcommittee Chairman Tom McClintock (*R-Elk Grove*) blamed the political left for advocating what he termed "politically motivated junk science."

"The House and Senate must act now," said a valley Congressman, Rep. Devin Nunes (*R-Visalia*) in commenting on the valley's water crisis and Delta pumping restraints. "The time for studying and talking is over."

Rep. Jim Costa (*D-Fresno*) told an interviewer after the hearing, "I think anytime you can continue to find greater awareness to the problems we're facing here. That's helpful."

One of the few dissenting voices was that of Larry Collins, Pacific Coast Federation of Fishermen's Associations Vice President, who defended

Please see **Hearing**, Page 3



Friant Water Authority

Assembly Member Makes Friant Visit

Assembly member Linda Halderman listens to a presentation by Orange Cove Irrigation District Manager Fergus Morrissey during an April 8 Friant Division tour. Also listening (left) is Assembly Republican Caucus Chief Consultant Doug Haaland and Friant Water Authority Assistant General Manager Mario Santoyo.

AROUND FRIANT

TULE RIVER

Corps Says No To Testing Higher Storage In Lake Success

Lake Success on the Tule River will remain less than half full in the wake of a U.S. Army Corps of Engineers decision to scrap a data gathering test this spring that would have increased permitted storage .

Had the plan been approved, the lake's maximum water surface elevation would have been increased 10 feet.

Storage in Lake Success has been restricted by the Corps since 2004 due to seismic safety concerns.

The surface level now is normally allowed no higher than 630 feet above sea level, or 40,000 acre-feet. That is 10 feet higher than the initial restriction.

The reservoir's as-built capacity is 82,300 acre-feet.

Corps officials for several years have been working on a solution to concerns that the dam's foundation and structure might be susceptible to failure in a major earthquake. The test had been intended to help the Corps find the highest safe level for water storage.

The Corps felt the risk was too high to undertake such a test..

Increased storage would have been beneficial to Tule River water users, and would have enhanced recreation.

Favoring the test were the Porterville Irrigation District, Tulare County, City of Porterville, Lower Tule River Irrigation District and Vandalia Irrigation District.

President Obama's 2012 budget includes funds to begin purchasing land below the dam, including a mobile home park. No funding is in place for replacing Success Dam. Published reports indicate the project cost is now estimated to be more than $450 million.

KERN RIVER

Isabella Dam Plans Expected

The U.S. Army Corps of Engineers is expected to conduct public meetings during May to explain how it believes problems with Isabella Dam can best be resolved.

The facility is now ranked among the Corps' most at-risk dams.

Seepage below the auxiliary dam, concerns over an earthquake fault running through the site and fears of insufficient spillway size have dogged the facility and led to restrictions on water storage.

A bigger auxiliary spillway will be proposed to be part of the solution so a greater spill could be handled without overtopping the earth-fill dams.

Lawsuit Will Challenge New Take Limits

State's Salmon Fishermen Are Gleeful Over 2011 Prospects, Long Season

While commercial salmon fishermen are ecstatic over prospects for what they believe could be their best season in years, a lawsuit is being prepared against two agencies over this season's expanded take limits.

A complaint was expected to be filed in early May (after WATERLINE press time) on behalf of the San Joaquin River Group Authority, of which the Friant Water Authority is a member, against the National Marine Fisheries Service (NMFS) and Pacific Fishery Management Council (PFMC).

The San Joaquin River Group Authority (SJRGA) is a joint powers authority that includes irrigation and water districts in the San Joaquin River Basin.

TAKE LIMITS QUESTIONED

The lawsuit, expected to be filed in a U.S. District Court, will seek a court determination that the agencies were arbitrary in their permitting of this season's salmon take limits, and requiring that the agencies start over.

At the heart of the suit is an allegation that the large amount of ocean take of salmon to be allowed by the new limits will cause species recovery programs in California rivers to suffer, resulting in even fewer fish in the future.

With the salmon season opening, the lawsuit is not expected to be of much help to the SJRGA this year.

"There is nothing we can do to put a stop to the current fishing season. Federal law does not allow that," a SJRGA statement said. "The best we can do is hope that over harvesting salmon is not permitted again in the future."

The lawsuit will reportedly seek to show that the PFMC's forecasting model is flawed and that hatcheries are having too much harmful influence. The plaintiff believes hatchery fish are increasing in the proportion of the fall-run Chinook salmon stock, leading to progressively less genetic diversity, less species resilience, and greater vulnerability to catastrophic occurrences such as poor ocean conditions that existed from 2007-09.

SALMON RECOVERY

Ronald D. Jacobsma, Friant Water Authority General Manager, said the SJRGA, as well as many other state and federal agencies, is working hard to promote recovery of fall-run Chinook and spring-run Chinook salmon in the San Joaquin basin.

Spring-run is a "threatened" species under the Endangered Species Act. It was extirpated from the basin, but there are substantial on-going efforts now to reintroduce spring-run.

A major part of that effort is to be the San Joaquin River Restoration Program in which Friant Division contractors of Central Valley Project water are involved deeply. The SJRGA's Vernalis Adaptive Management Program is also aimed in restoring salmon in the San Joaquin River Basin.

Fall-run salmon are not listed, but are an ESA candidate species.

AGENCIES TARGETED

SJRGA officials point out that the same state agency – the Department of Fish and Game (DFG) – and federal agencies (NMFS and U.S. Fish and Wildlife Service [USFWS]) authorizing a substantial commercial harvest of salmon this year have acted in past years to stop or critically reduce Delta water export pumping from the Delta to, in part, protect spring and winter-run salmon.

"The amount of fishing those agencies are allowing this year will kill many, many times more salmon than the Delta pumps ever did," the SJRGA said in a statement. The same state and federal agencies continually demand higher flows and more water released from reser-

Please see **Lawsuit**, Page 3

Arvin-Edison Water Storage District

Even with lower post-rescue flows, water still poured over the car.

Rescue: Water Cut To Help Victim Escape From Canal

Continued from front page

canal to where its cold and rushing waters fall into a siphon that carries Arvin-Edison's water under the Kern River.

Collins was also able to open the car's sunroof and stand on a seat as the car filled with cold water.

Four Arvin-Edison Water Storage District staff members responded immediately as did Bakersfield police and fire rescuers, who initially reported having trouble locating the car in the high rushing water.

FWA STAFF CUTS FLOWS

Once at the scene, rescuers got a life vest to Collins that he put on but could not secure. With the water moving too fast to put a swimmer in the water, Arvin-Edison asked the Friant Water Authority staff for an emergency cutoff of flows from the Friant-Kern Canal.

Friant's staff was able to quickly reduce the diversion by 485 cubic feet per second to greatly ease the rescue effort.

A helicopter was used to lift Collins out of the vehicle and onto a gurney. He was rushed to a Bakersfield hospital. Collins was cold but not injured. The car was then lifted by crane from the canal.

Eric Quinley, Friant Water Authority Maintenance Manager, said the Authority coordinated with the City of Bakersfield and river operators but no spill into the Kern River from the Friant-Kern Canal's Terminal Check was necessary during the 45 minutes that water was cut off from the Arvin-Edison Canal.

Hearing: Fresno Frustration

Continued from Page 2

the government's role in salmon protection by saying, "The more water you take out of [the Delta], the more you guarantee the death spiral of my industry." Collins blamed "corporate billionaire agribusinesses" for the troubles of fishermen, an assertion that was aggressively challenged by Nunes.

BAKERSFIELD MEETING

Meanwhile, a Bakersfield meeting was held April 27 by Kern County farmers, the Kern County Water Agency and Rep. Kevin McCarthy to seek solutions to the water supply crisis, including easing Endangered Species Act restrictions to curtail water deliveries.

Means of resolving Delta problems, including new water conveyance facilities such as a user-financed canal or tunnel, were discussed.

"We are not asking the government to pay for it, we are just asking to find common sense regulations so we can get it into the ground and get it moving," said McCarthy.

Frustration was also expressed over difficulties in separately meeting similar state and federal regulations.

Delta Bypass Study Hits A Snag In Court

A San Joaquin County judge has thrown a monkey wrench into state plans to drill and take soil samples for a water conveyance bypass tunnel or canal through or around the Delta.

The court ruled access to private lands proposed by the state Department of Water Resources under the Bay Delta Conservation Plan is a taking of land.

The ruling is a major problem for the facility's planners but was cheered around Stockton where a modern-day version of the Peripheral Canal is strongly opposed.

State officials said they may appeal but will work toward obtaining access by using eminent domain.

The state wants to take core samples at hundreds of locations for facility planning and design.

Lawsuit: Salmon Actions Targeted

Continued from Page 2

voirs to preserve and enhance the salmon fishery.

A state and federal goal of doubling natural production of Chinook salmon "will not be achieved if high levels of salmon fishing are allowed to continue," the SJRGA said.

SALMON RETURNS UP

Meanwhile, it is estimated this year's Chinook salmon run will be the best since 2007, with an estimated 730,000 Chinook now expected to return to the Sacramento River.

In 2009, a record-low 39,500 Chinook returned to the river to spawn. The commercial salmon season is to last through September. California's salmon fishing season in recent years has been cancelled or greatly curtailed.

SAN JOAQUIN RIVER RESTORATION

Reclamation Names New Program Manager

The San Joaquin River Restoration Program has a new U.S. Bureau of Reclamation manager.

Alicia (Ali) Forsythe, who has been the Acting Program Manager since January 2011, was named earlier this spring to head the complex planning and implantation effort.

"Ali is a great selection to head the Restoration Program," said Friant Water Authority General Manager Ronald D. Jacobsma. "She is uniquely qualified and experienced to deal with the multi-faceted challenges the program is already facing. We look forward to working with her as the Program Manager."

IMPLEMENTATION

The Restoration Program is being implemented as a result of the San Joaquin River litigation Settlement agreed to nearly five years ago by the lawsuit's environmental plaintiffs, led by the Natural Resources Defense Council (NRDC); Friant Division water agencies; and the U.S. government.

Restoration of flows and fishery habitat, with an objective of restoring a salmon fishery between Friant Dam and the Merced River, are program objectives along with a co-equal Water Management Goal. Under the Settlement, the Settling Parties agreed to strive to return all or much of the water given up by Friant districts for river restoration.

The Bureau's Regional Director, Donald Glaser, said Forsythe "has been involved with San Joaquin River issues for many years and has gained the respect of the organizations and individuals who are working together to implement this important restoration program."

COORDINATION

Forsythe is to coordinate with:

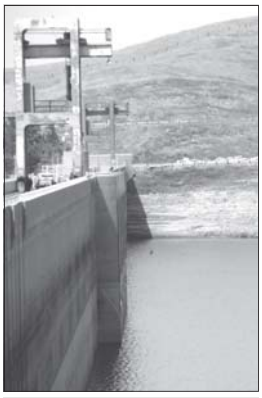
- The other SJRRP Implementing Agencies (U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Department of Water Resources, California Department of Fish and Game).
- The Settling Parties (NRDC and Friant Water Authority).
- The Restoration Administrator (selected jointly by NRDC and FWA to provide recommendations regarding specific elements of the Settlement).
- Downstream landowners and water districts, and many other entities.

BACKGROUND

Forsythe has managed various National Environmental Policy Act, California Environmental Quality Act, water rights and restoration projects in both the public and private sectors.

She began her federal career with Reclamation in 2009 on the SJRRP staff. Forsythe led the program's interim flow activities and three on-going site-specific channel and structural improvements projects, oversaw the program's budget and schedule, and helped establish and implement SJRRP policies and direction. Prior to joining the Mid-Pacific Region, she was a project manager with CH_2M Hill.

Forsythe holds Bachelor of Science degrees in Environmental Studies and Hydrologic Sciences from the University of California, Santa Barbara.



Friant Water Authority

Millerton Lake's level, which looked low in mid-April, has dropped even more since then.

Runoff: Millerton Storage Makes Room For Snowmelt

Continued from front page

day for well over a month, reservoir storage has continued to decline. Flood releases into the river, which briefly were near the channel capacity of 8,000 c.f.s., have been reduced as demands have increased and reservoir storage has dropped. Nearly all of that flood release water has flowed to the ocean.

Friant districts were slow to step up water orders, for irrigation or groundwater recharge purposes, because all local streams have also been handling flood release flows. Until recently, spring rains had made many fields too wet for cultural work or irrigation.

RECOVERED WATER

A help in creating demand in early April was a decision by the U.S. Bureau of Reclamation to make available 460,000 acre-feet of Recovered Water Account (RWA) water credits for Friant Division long-term contractors under the San Joaquin River Restoration Program's Water Management Goal.

RWA water is available at a cost of $10 per acre-foot to all Friant Division long-term contractors who experience a reduction in water deliveries due to the flows called for in the Settlement to restore the San Joaquin River.

"These advanced RWA water credits are being made available to take advantage of this year's unusually wet hydrologic conditions for the purpose of reducing or avoiding future water supply impacts," a Bureau statement said. "The additional 460,000 acre-feet of RWA water credits is based on projections of anticipated future water supply impacts as a direct result of the flows called for in the Settlement."

FULL SUPPLY FOR NOW

In addition, the current Friant "uncontrolled season" water supply conditions – featuring full supplies of Class 1 and Class 2 water – are to continue throughout May and possible into June, according to Michael Jackson, Reclamation's Area Director in Fresno.

Deliveries of "Section 215" (unstorable) water to non-Central Valley Project contractors will continue until demands fill the Madera and Friant-Kern canals, Bureau staff member Ed Salazar said. He explained that even with the big storage reduction, a huge snowpack remains and more water needs to be moved out of fairly small Millerton Lake.

The May 1 snow surveys of nine San Joaquin River watershed courses show snowpack water content that is 199% of the May 1 average, and 163% of what is considered normal for April 1, the date upon which snow conditions are assumed to peak.

San Joaquin River runoff is currently expected to be 164% of average in the April-through-July peak period, or 2,060,000 acre-feet.

Corps Faces Lawsuit Over Rules For Levees

At a time when one federal agency after another is striving for improved riparian and fishery habitats along and in California rivers, another agency is demanding that vegetation vanish from Central Valley levees.

The U.S. Army Corps of Engineers in 2007 began imposing a clear-off-the-levees policy across the nation.

Now, two environmental organizations have served notice they will sue the Corps for violating the Endangered Species Act (ESA).

The Sacramento *Bee* reported that the Corps' rules do not state implicitly that all trees and vegetation – except for grass – must be eliminated but such is the practical effect.

Should levee operators not comply and a damaging flood were to occur, federal aid would not be forthcoming.

The Corps has suspended the rules from taking effect within the Central Valley until 2012.

ALLEGATIONS

Friends of the River and Defenders of Wildlife plan to sue against the rules. They allege the Corps failed to consult as required with other federal agencies to ensure the rules would not cause environmental harm. Nor did the Corps study environmental consequences, as required by the ESA, the organizations say.

Friant Water Authority / J. Randall McFarland

As the flood release-swollen San Joaquin River flows by at Sand Slough, north of Dos Palos, Friant Water Authority Water Resources Manager Stephen Ottemoeller points to a map to show state Deputy Resources Secretary Jerry Meral key locations in the San Joaquin River Restoration Program between Friant Dam and Merced River.

Study: Restoration's Impacts

Continued from front page

successful reintroduction of salmon." The latter is currently scheduled to occur by the end of 2012.

The schedule and projects were included in the Settlement of 18-year litigation reached several years ago by the plaintiffs – an environmental coalition led by the Natural Resources Defense Council – on one hand and the U.S. government along with the FWA and many of its member Friant Division districts on the other.

The Bureau says it "will promptly initiate consultation with the parties to the [San Joaquin River] Settlement to develop a new schedule based upon the PEIS/R that assures implementation of the Restoration Program in a manner that addresses the requirements of the Settlement for expeditious action while meeting the requirements of the legislation to minimize impacts on third party interests."

FOUR HEARINGS IN MAY

Four public hearings and open houses of 2½ hours each have been scheduled in valley locations during May to explain the PEIS/R, which took three years to compile, as part of a 60-day public comment period. (*Please see story, lower left.*)

Federal and state officials say the joint document describes direct, indirect and cumulative impacts of implementing the SJRRP. Agencies involved include Reclamation, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the California Department of Fish and Game and DWR.

General Manager Ronald D. Jacobsma said the Friant Water Authority's first task is to coordinate review and comment responsibilities among Authority and member district staff members. Comments on the massive document are due June 21.

The PEIS/R is required under federal and state laws, and is considered crucial to implementing the comprehensive, long-term effort to restore flows to the San Joaquin River below Friant Dam to restore a self-sustaining Chinook salmon fishery in the river. The SJRRP is also to reduce or avoid adverse water supply impacts from restoration flows.

Four Hearings Set On Restoration's Environmental Plan

Four public hearings will be held from May 24-26 around the Central Valley as the U.S. Bureau of Reclamation and California Department of Water Resources solicit input on the San Joaquin River Restoration Program's newly released draft program environmental impact statement and environmental impact report.

Each public hearing will include an open house portion during which the Restoration Program staff will be available to talk with public. Formal public hearings will follow to gather comments.

The meetings will be held:

In Visalia

- Tuesday, May 24, 10 a.m. - 12:30 p.m., Lampliter Inn, 3300 West Mineral King Avenue.

In Fresno

- Tuesday, May 24, 6 p.m. - 8:30 p.m., Piccadilly Inn-University, 4961 North Cedar Avenue.

In Los Banos

- Wednesday, May 25, 6 p.m. - 8:30 p.m., Merced County Fairgrounds, 403 F Street.

In Sacramento

- Thursday, May 26, 1:30 p.m. - 4 p.m., Holiday Inn-Capitol Plaza, 300 J Street.

Meral: Visits River, Friant

Continued from front page

Bureau of Reclamation and Department of Water Resources in implementing river restoration, but most of what we'd hoped to see was under water from the flood releases," said Ronald D. Jacobsma, Friant Water Authority General Manager.

STORAGE NEED

The extremely soggy condition had an upside, Jacobsma added, including an opportunity to view local West Side seepage under levees and resulting field-flooding problems, caused by high groundwater, of the sort that have occurred during early San Joaquin River Restoration Program interim flows.

"It also gave us a great opportunity to show the need for more storage – on the surface and underground – to capture high runoff flows when they are occurring, reduce flooding threats and gain longer-lasting water supply benefits for the environment and Friant users who are providing the river restoration flows," he said.

Meral in the past has expressed reservations on the need for new surface water storage projects.

The San Joaquin River has one proposed new reservoir project – Temperance Flat in the upper end of the CVP's Millerton Lake, northeast of Fresno.

'MUCH IN TOUCH'

Jacobsma noted that Meral, who served as Department of Water Resources Deputy Director during Brown's first administration from 1975-83, is well known for his support and involvement in the environment and its issues.

"Jerry Meral is also very much in touch with the practical problems and real needs that California water providers have to deal with for their customers," Jacobsma said.

> **'He was keenly interested in everything we showed him and points of view we presented'**
> —RONALD D. JACOBSMA

"He was keenly interested in everything we showed him and points of view we presented on surface water storage development, infrastructure needs, Delta solutions and conveyance, groundwater issues and river restoration."

TULARE MEETING

During a luncheon meeting later in Tulare hosted by the Friant Water Authority and Tulare Irrigation District, Meral listened intently as directors and managers from several Friant Division contractors of Central Valley Project water spoke.

They outlined past and present programs, along with future plans and desires.

All of the projects they discussed have been aimed at further improving beneficial water delivery and on-farm use efficiency, and the region's already extensive system of groundwater storage and water banking.

DELTA OVERSIGHT

Meral is in charge of the Bay-Delta Conservation Program, which is charged with finding solutions to the Delta's many infrastructure, environmental, water quality and water supply problems.

Meral, former Planning and Conservation League Executive Director, is again on the front line in debate over whether to build alternative water conveyance through or around the Delta. Even while many in the environmental community were opposing such a plan, Meral pushed for the construction of a controversial Peripheral Canal that was ultimately defeated by California voters in November 1982.

A renewed plan is now focusing increasingly on development of a large tunnel to bypass the fragile Delta in order to move north state water to the CVP and state Water Project pumps near Tracy.

Friant Water Authority / J. Randall McFarland

Harvey Bailey, Friant Water Authority Chairman and Orange Cove Irrigation District President, explains the importance of San Joaquin River water delivered to Orange Cove growers and city residents through the Friant-Kern Canal (background). Fifty-five participants in the Water Education Foundation's San Joaquin Valley tour also visited Friant Dam, the San Joaquin River and many other valley water features April 12-15.

FRIANT WATER AUTHORITY
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

		THIS YEAR 07/27/11	LAST WEEK	LAST YEAR 07/28/10
RESERVOIR STORAGE (A.F.)	CAPACITY		STORAGE	
Southern California Edison:				
Vermillion (Edison)	125,000	122,485	123,001	122,126
Florence	64,400	63,750	61,717	58,539
Huntington	89,000	87,177	87,162	87,421
Shaver	135,300	134,260	131,614	122,624
Sub-total (Big Creek)	413,700	407,672	403,494	390,710
Mammoth Pool	122,000	120,892	120,981	116,420
Redinger	26,100	24,168	24,235	24,270
Sub-total Southern California Edison	561,800	552,732	548,710	531,400
Pacific Gas & Electric:				
Crane Valley (Bass Lake)	45,400	34,557	34,620	34,370
Kerckhoff	4,200	4,157	3,621	3,630
Sub-total P G & E	49,600	38,714	38,241	38,000
TOTAL UPSTREAM STORAGE	611,400	591,446	586,951	569,400
MILLERTON LAKE	520,500	498,774	515,245	440,617
TOTAL STORAGE	1,131,900	1,090,220	1,102,196	1,010,017
INFLOW & RELEASE DATA (C.F.S.)				
Millerton Releases:				
Madera Canal		1,149	1,048	894
Friant-Kern Canal		4,195	4,111	3,608
San Joaquin River		347	349	349
Spillway		0	0	0
Total Millerton Releases		5,691	5,508	4,851
Actual Millerton Inflow		5,252	4,698	2,330
Computed Natural River (@Friant)		4,626	5,233	1,377
SAN JOAQUIN RIVER (A.F.)				
This Month:				
Actual to-date		434,059	366,678	228,648
Forecasted		840,000	840,000	300,000
April/July Period:				
Actual to-date		2,199,963	2,132,582	1,520,936
Forecasted		2,240,000	2,240,000	1,550,000
Last Year Actual				1,535,227
Water Year:				
Actual to-date		3,081,730	3,014,349	1,951,497
Forecasted		3,313,000	3,313,000	2,081,000
Last Year Actual				2,028,707
ESTIMATED WATER YET TO BE DELIVERED (A.F.)				
Contract Year Ending February 28		921,397*	1,046,245*	599,202

*Figure is based on 100% Class I, 20% Class II, plus estimated carry over of 63,390 AF, minus District usage and SJR releases.

Not included in estimated water to be delivered is the current uncontrolled season water now available.

FRIANT WATER AUTHORITY
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

PRECIPITATION DATA

REPORTING STATIONS:	AVERAGE (INCHES)	THIS YEAR 07/27/11 ACCUMULATIVE TO DATE (INCHES/PERCENT AVG)	LAST YEAR 07/28/10 ACCUMULATIVE TO DATE (INCHES/PERCENT AVG)
HUNTINGTON			
This Month	0.32	0.20 / 63	0.04 / 13
Seasonal Average*	0.32	0.20 / 63	0.04 / 13
Annual Average	42.73	0.20 / 0	0.04 / 0
CRANE VALLEY			
This Month	0.06	0.00 / 0	0.00 / 0
Seasonal Average*	0.06	0.00 / 0	0.00 / 0
Annual Average	40.62	0.00 / 0	0.00 / 0
FRIANT			
This Month	0.01	0.00 / 0	0.00 / 0
Seasonal Average*	0.01	0.00 / 0	0.00 / 0
Annual Average	14.33	0.00 / 0	0.00 / 0

* Seasonal Average (July - June) is through the current month

MISC RIVER/RESERVOI	CAPACITY (A.F.)	STORAGE (A.F.)	RELEASE (C.F.S.)	INFLOW (C.F.S.)
Chowchilla/Buchanan	150,000	136,746	170	37
Fresno/Hidden	90,000	49,798	285	0
Kings/Pine Flat	1,000,000	938,709	7,141	4,561
Kaweah/Terminus	185,000	149,942	2,225	859
Tule/Success	82,314	40,255	117	89
Kern/Isabella	570,000	339,597	2,464	1,848

FRIANT WATER AUTHORITY
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

CVP/SWP SAN LUIS OPERATIONS

PUMPING INSTANTANEOUS	MAX. FLOWRATE (C.F.S.)	THIS YEAR 07/27/11	LAST WEEK FLOWRATE (C.F.S.)	LAST YEAR 07/28/10 Average
Tracy P.P.	4,600	4,191	4,067	4,248
Banks P.P.	10,000	7,095	7,112	6,010
MONTH TO DATE				
Tracy P.P.		215,157	157,173	220,421
Banks P.P.		362,659	263,267	281,208
SEASON TO DATE (Since October 1)				
Tracy P.P.		1,996,117	1,938,133	1,585,260
Banks P.P.		3,049,675	2,950,283	1,638,198
SAN LUIS RESERVOIR	CAPACITY (A.F.)		(A.F.)	
Federal	980,000	793,658	833,952	421,040
State	1,060,000	930,693	930,439	517,125
Total	2,040,000	1,724,351	1,764,391	938,165
SAN LUIS RESERVOIR		NET DAILY STORAGE CHANGE		
Federal		(8,556)	(4,697)	(8,114)
State		261	94	(1,701)

SACRAMENTO-SAN JOAQUIN DELTA FLOW INDICES

	FLOWRATE (C.F.S.)
Delta Outflow Index	8,598
Sacramento River @ Freeport	16,455
San Joaquin River @ Vernalis	5,449
Total Delta Inflow	24,476

FRIANT WATER AUTHORITY
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

CIMIS EVAPOTRANSPIRATION RATES

REPORTING STATION #	REPORTING STATION	YESTERDAY 7/26/2011 (Inches)	TOTAL PAST 7 DAYS (Inches)	NORMAL PAST 7 DAYS (Inches)	VARIANCE FROM NORMAL (%)	NORMAL NEXT 7 DAYS* (Inches)
5	Shafter/USDA	0.26	1.81	1.82	-1	1.78
15	Stratford	0.30	2.08	1.93	8	1.88
39	Parlier	0.25	1.78	1.77	1	1.71
80	Fresno State	0.28	2.01	1.91	5	1.87
86	Lindcove	0.26	1.83	1.80	2	1.75
125	Arvin-Edison	0.30	2.09	1.93	8	1.89
138	Famoso	0.26	1.83	1.94	-6	1.89
142	Orange Cove	0.29	2.10	1.93	9	1.88
145	Madera	0.28	1.99	2.14	-7	2.08
148	Merced	0.26	1.86	1.76	6	1.73
169	Porterville	0.25	1.83	1.86	-2	1.82
182	Delano	0.26	1.83	1.94	-6	1.89

FRIANT WATER AUTHORITY
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

CROP COEFFICIENTS 27-Jul-11

Crop (Description)	Today	Avg. Prev. 7 Days	Avg. Next 7 Days
Alfalfa (average)	0.95	0.95	0.95
Almonds (Feb. 20 leafout, Nov. 15 leafdrop)	0.96	0.97	0.95
Almonds (Mar. 1 leafout, Nov. 15 leafdrop)	0.97	0.97	0.96
Beans (Apr. 1 plant date, Aug. 1 harvest)	0.42	0.53	0.25
Beans (May 1 plant date, Aug. 15 harvest)	0.90	1.03	0.77
Beans (Jun. 1 plant date, Sep. 15 harvest)	1.09	1.08	1.09
Citrus (year round)	0.65	0.65	0.65
Corn (Apr. 15 plant date, Sep. 15 harvest)	1.10	1.10	1.10
Cotton (Apr. 1 plant date, Sep. 20 defoliate)	1.25	1.25	1.24
Cotton (Apr. 15 plant date, Oct. 1 defoliate)	1.27	1.28	1.26
Cotton (May 1 plant date, Oct. 1 defoliate)	1.28	1.29	1.27
Wheat, Oats, Barley (Dec. 1 plant date, Jun. 1 harvest)	0.00	0.00	0.00
Grapes, Raisin (Mar. 15 leafout, Oct. 15 leafdrop)	0.63	0.63	0.63
Grapes, Table (Mar. 15 leafout, Oct. 15 leafdrop)	0.80	0.80	0.80
Kiwi (Mar. 15 leafout, Nov. 1 leafdrop)	1.00	1.00	1.00
Melons (Apr. 1 plant date, Jul. 15 harvest)	0.00	0.00	0.00
Melons (May 1 plant date, Aug. 15 harvest)	0.90	0.90	0.73
Melons (Jun. 1 plant date, Sep. 20 harvest)	0.56	0.47	0.66
Melons (Jul. 1 plant date, Oct. 10 harvest)	0.16	0.16	0.16
Olives (year round)	0.75	0.75	0.75
Pasture Grass	0.84	0.83	0.85
Pistachio (Apr. 1 leafout, Nov. 15 leafdrop)	1.19	1.19	1.19
Safflower (Mar. 1 plant date, Aug. 1 harvest)	0.34	0.58	0.11
Low Chilling Stone Fruit (Feb. 15 leafout, Dec. 1 leafdrop)	0.95	0.95	0.95
Stone Fruit (Mar.1 leafout, Nov. 15 leafdrop)			
[Peach, Nectarine, Plum, Apricot]	0.95	0.95	0.95
Late Stone Fruit (Mar. 16 leafout, Nov. 1 leafdrop)	0.95	0.95	0.95
Soft Fruit (Apr. 1 leafout, Nov. 15 leafdrop)			
[Apple, Pear]	0.96	0.96	0.96
Tomato (Mar. 1 plant date, Jul. 20 harvest)	0.00	0.10	0.00
Tomato (Apr. 1 plant date, July 30 harvest)	0.76	0.88	0.20
Walnut, Early (Mar. 15 leafout, Nov. 1 leafdrop)	1.15	1.15	1.15
Walnut, Late (Apr. 1 leafout, Nov. 1 leafdrop)	1.15	1.15	1.15

NOTE: *This information is a reproduction of information compiled by Kings River Conservation District. This information is provided as a general guideline and may not exactly be reflective of all locations or varieties.*

March 22, 2010

INFORMATION BULLETIN TO AGRICULTURAL PROPERTY OWNERS AND WATER USERS

WATER SUPPLY - YEAR 2010-2011:

The Bureau of Reclamation has declared a preliminary water supply forecast, based upon March 1, 2010, water conditions, of 100% Class 1 and 10% Class 2 for the Friant unit of the Central Valley Project. Forecast run-off from the San Joaquin River water shed above Friant Dam into Millerton Lake for April-July is projected to be 1,100,000 acre-feet, or 90% of the historical water supply of 1,200,000 acre-feet.

Based on the projected water supply conditions at this time, a preliminary allocation of 1.1 acre-feet/acre is being declared for the District. This figure may be adjusted as the water supply conditions change. The District urges landowners to please use your allocation wisely.

District rainfall amounts for the period of July 1, 2009 to March 1, 2010, now measure 10.45 inches District wide, or 91% of normal. The normal seasonal rainfall total for the District is 11.48 inches, from July 1 to June 30.

WATER RATES – YEAR 2010-11:

The Board of Directors of the Exeter Irrigation District is keeping the water rates the same as last years, beginning March 1, 2010, at $70.00 per acre-foot and $75.00 per acre-foot, west and east of the Friant-Kern Canal, respectfully, for the upcoming year. This decision reflects the Boards concern with the current economic conditions. The water rate will be reviewed monthly by the Board as water conditions become more certain.

RRA CERTIFICATION FORMS – YEAR 2010-11:

RRA Certification (or verification) forms for the 2010-11 water year have been mailed and MUST BE SUBMITTED TO OUR OFFICE BEFORE THE BUREAU OF RECLAMATION will allow delivery of water to property owners with more than 240 acres of OWNED AND/OR LEASED LAND, westwide. If you have any questions, please contact the office as soon as possible.

EXETER IRRIGATION DISTRICT

150 South E Street
P. O. Box 546
Exeter, California 93221-0546
Telephone (559) 592-2181
Facsimile (559) 592-4464

INFORMATION BULLETIN TO AGRICULTURAL PROPERTY OWNERS AND WATER USERS

April 26, 2010

WATER SUPPLY ALLOCATION:

The April 1st forecast for runoff of the San Joaquin River above Millerton Lake for the April-July period is projected to be 1,370,000 acre-feet by the California Department of Water Resources. Based on this projected runoff, the United States Bureau of Reclamation has declared a 100% Class 1 and 15% uncontrolled Class 2 supply for all Friant long-term contractors. This amounts to 1.1 acre-feet/acre water allocation to each individual landowner in the Exeter Irrigation District.

The rainfall season for the District, which runs from July 1 to June 30, now measures 12.35 inches District wide, or 108% of the normal seasonal total.

OPERATIONS:

Effective Saturday, May 8, 2010, the District will commence its normal summer office hours for ordering water from 7:00 am to 8:30 am, Monday thru Saturday.

All water orders must be made 24 hours in advance of delivery. Again, this year by direction of the Board of Directors, there will be NO WATER TURN-ONS OR OFFS ON SUNDAYS, as District field staff will not be on duty, in an effort to reduce District operational costs. Landowners requesting water delivery must either place their order on Saturday to run until Monday, or on the following Monday for Tuesday.

HOLIDAY:

The District office will be closed for business transactions on Monday, May 31, 2010, in observance of Memorial Day. However, water orders will still be taken between 7:00am and 8:30am.

PLEASE USE WATER WISELY

Exeter Irrigation District

GROUNDWATER LEVELS:

Static groundwater levels of 52 wells were measured by the District field staff in early February 2010 and averaged 71.0 feet in depth. **Attached, please find the Historical averages since 1970 and selected comparison years of 1953 and 1963.**

OPERATIONS:

Remember, water orders must be made 24 hours in advance of actual delivery date between 7:00 am and 8:30 am., Monday through Friday. If you do not plan on using all of your allocated water supply, please contact the District office as soon as possible anytime between the hours of 7:00 am and 4:00 pm weekdays, so that we can assist you in finding other landowners in the District who can use the water

POTENTIALLY, a landowner may be charged for ALL UNUSED ALLOCATED WATER at the end of the season at the full price charged by the District.

REMINDER:

Please, if you are planning on changing crops, deep ripping, or leveling your land, call the District office so that we can help locate the Districts underground pipelines in advance, so that no damage or related costs for repair is incurred by the landowner or the District.

**** SURFACE WATER FROM THE DISTRIBUTION SYSTEM IS NOT TREATED AND IS NOT INTENDED FOR HUMAN CONSUMPTION. ****

****PLEASE USE WATER WISELY****

EXETER IRRIGATION DISTRICT
DEPTH TO STATIC GROUNDWATER

YEAR	SPRING (FEBRUARY) MEASUREMENTS			FALL (OCTOBER) MEASUREMENTS		
	North of Ave. 288 T18S Depth to G.W.(Ft.)	South of Ave. 288 T19S Depth to G.W.(Ft.)	DISTRICT Depth to G.W.(Ft.)	North of Ave. 288 T18S Depth to G.W.(Ft.)	South of Ave. 288 T19S Depth to G.W.(Ft.)	DISTRICT Depth to G.W.(Ft.)
1953			108.0			
1963			74.5			
1970	27.5	59.3	46.4	35.4	64.4	52.3
1971	30.7	59.0	47.5	39.3	64.6	54.1
1972	34.0	59.8	48.7	48.9	69.1	60.6
1973	39.6	61.8	52.2	40.8	61.1	53.3
1974	30.7	54.3	43.9	40.0	58.4	51.3
1975	34.0	53.2	44.6	40.8	59.9	51.9
1976	39.5	55.9	48.3	48.4	65.0	58.0
1977	45.1	59.8	53.2	66.4	79.1	73.5
1978	53.5	71.2	63.2	40.6	65.1	54.2
1979	36.3	58.2	48.3	46.2	61.4	55.2
1980	37.8	54.4	46.9	37.1	53.8	47.0
1981	35.0	50.2	43.7	45.5	60.3	53.6
1982	37.2	51.6	45.4	35.8	51.8	44.6
1983	28.2	45.1	37.4	27.2	39.1	33.8
1984	22.1	35.0	29.1	31.5	41.3	37.4
1985	27.6	36.5	32.4	38.8	47.5	43.7
1986	33.2	40.9	37.3	33.1	38.8	35.8
1987	32.0	37.5	34.9	44.1	49.0	46.6
1988	37.5	44.8	41.4	50.6	54.1	52.5
1989	45.6	52.2	49.2	56.8	60.9	59.0
1990	50.7	57.8	54.5	67.2	71.6	69.6
1991	61.0	68.9	65.2	65.8	74.5	70.4
1992	55.1	69.2	62.5	66.6	79.4	73.5
1993	56.3	73.7	65.5	53.1	73.9	63.6
1994	46.9	67.8	58.3	58.0	78.2	68.8
1995	48.8	72.8	61.5	41.3	69.1	56.0
1996	37.7	65.0	52.1	41.3	66.4	54.3
1997	34.9	61.5	48.9	37.1	63.0	50.0
1998	33.0	59.0	46.0	28.3	54.2	41.3
1999	25.0	50.4	38.6	30.9	53.3	42.1
2000	30.6	51.3	42.3	33.1	53.1	43.7
2001	30.7	50.9	41.2	40.1	59.3	50.3
2002	35.8	55.3	45.6	44.3	63.7	54.4
2003	40.2	59.3	50.1	48.4	68.5	58.9
2004	43.8	63.5	53.8	52.4	72.3	63.6
2005	48.0	68.9	58.8	51.0	73.3	62.8
2006	48.0	68.7	56.9	44.8	71.3	58.6
2007	50.0	73.4	61.9	57.1	79.9	68.5
2008	50.0	75.4	63.2	60.5	83.3	74.2
2009	51.4	78.9	65.9	67.1	91.9	81.0
2010	56.3	85.2	71.0			

"EXETER IRRIGATION DISTRICT"
INFORMATION BULLETIN TO AGRICULTURAL PROPERTY OWNERS AND WATER USERS
August 25, 2010

2010 UNUSED WATER:

****Landowners who wish to **RELEASE WATER BACK** to the District must do so by **MONDAY, SEPTEMBER 20, 2010,** without penalty, OTHERWISE THE SAME FEES BELOW WILL APPLY @ $70.00/ACRE-FOOT. This returned water will be combined into a common pool for use by other landowners in need of additional water for irrigation this season. Any landowner who wishes to obtain additional water for this season should contact the District office as soon as possible.***

As has been the case in the past, unused water remaining on any delinquent landowner account at the end of the irrigation season will be billed to that water user at the current District charge of $70.00 per acre-foot.

Therefore, to avoid a charge for unused allocated water, it is necessary to bring current any delinquent accounts and utilize and/or dispose of all allocated water prior to the end of the irrigation season.

DISTRICT OPERATIONS: Labor Day Holiday

The District office will be open Monday, September 6, 2010, for 7:00 am to 8:30 am for WATER ORDERS ONLY and then CLOSED for the remainder of the Labor Day Holiday. Water deliveries will be on the normal schedule for the day.

FRIANT KERN CANAL OPERATION:

The Friant Water Authority (FWA) has notified the District that the Friant-Kern Canal will be ***DEWATERED*** for routine maintenance and repairs this winter. The District will be able to deliver water until the week of November 8-12, 2010. The Authority has estimated that the necessary repairs will be completed and normal operations will resume by February 7, 2011.

*****THEREFORE,.....WATER FOR FROST PROTECTION WILL NOT BE AVAILABLE from the District this winter if needed by citrus landowners in the area. Please plan accordingly.*****

REMINDER:

All Stand-by Charges for the water year 2010 are due and payable without penalty by 4:00 pm on Monday, December 20, 2010

Water Conservation Information Bulletin

Vol. 1 Spring 2013

THE INFORMATION PROVIDED IN THIS BULLETIN IS PUT FORTH AS A TOOL TO ASSIST GROWERS IN DECISIONS RELATED TO WATER CONSERVATION AND WATER MANAGEMENT.

CONSERVING WATER SUPPLY

As farmers throughout the Friant Division of the Central Valley Project enter into the second year of "dry" conditions, securing an adequate water supply to meet crop demand becomes of top priority. Typically, when desiccated conditions are present, especially for concurrent years, crop demand is satisfied by groundwater, with surface water, where available, as a supplemental source. It is also noted that, during these extreme conditions, direct recharge activities are almost non-existent and replenishment to the groundwater aquifer comes only as a result of in-lieu events during on-farm irrigation.

Conservation tip: In-lieu recharge occurs when surface water deliveries are made to satisfy crop demand "in-lieu" of extracting groundwater. This effort allows an equal amount of surface water delivered to remain in storage within the groundwater aquifer.

In an effort to conserve both groundwater and surface water supplies, it is suggested that in "normal" and "below-normal" conditions, those growers with surface water allocations should rely initially on groundwater supplies to meet crop demand during the spring months (March – June), therefore reserving scheduling and delivery of their surface water allocations until needed in the summer to early fall months. The theory behind this suggestion being, given the unpredictable nature of weather patterns during the spring months, a greater percentage of crop demand will have the potential to be met through effective precipitation and that the remaining, demand, if present, is met through groundwater extraction, when depths to…*(cont. on pg. 2)*

WEBSITE SPOTLIGHT

Each quarter, we spotlight a website which we feel could provide helpful assistance in water conservation and water management to our growers. This quarter's spotlight is on:

CENTER FOR IRRIGATION TECHNOLOGY (*http://www.fresnostate.edu/jcast/cit/*)

The Center for Irrigation Technology (CIT), a center of the California Agricultural Technology Institute at California State University, Fresno, works in cooperation with the irrigation industry, local, state and federal agencies and irrigation users, to demonstrate new technology and develop performance specifications and standards for all types of irrigation equipment.

CIT offers the following services:

- Irrigation equipment testing/evaluation;
- Irrigation equipment selection;
- Improving irrigation efficiency; and
- Computer applications in irrigation

Conserving Water Supply … continued: groundwater are at its shallowest, which would also have the result of groundwater extraction costs being at their lowest of the year.

In runoff conditions such as those currently being experienced, an additional potential benefit can result from the early use of groundwater, reserving surface water for later use. The loss of a pump, driver or well can result in significant impacts to crop production and, in some cases, to the viability of permanent plantings. Scheduling of at least a portion of available surface water for delivery late in the irrigation season affords the insurance opportunity of some surface water being available in the event of a mechanical or well failure.

The District encourages farmers to take these considerations into account in their water scheduling procedures.

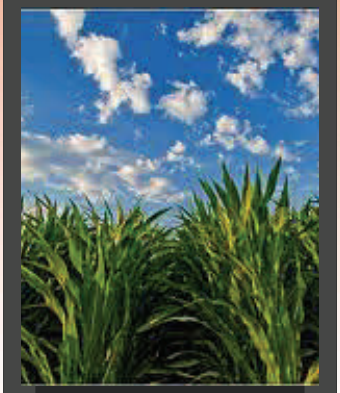
Exeter Irrigation District

150 S. E Street

Exeter, CA 93221-0546

Water Conservation Information Bulletin

Vol. 2 Summer 2013



THE INFORMATION PROVIDED IN THIS BULLETIN IS PUT FORTH AS A TOOL TO ASSIST GROWERS IN DECISIONS RELATED TO WATER CONSERVATION AND WATER MANAGEMENT.

CONSERVATION TILLAGE

Conservation Tillage is a term that covers a broad range of tillage systems that leave residue cover on the soil surface. Conservation Tillage systems are methods of soil tillage, either through chisel plow, disk, ridge-till, or no-till, which leave a minimum of 30 percent of crop residue on the soil surface or at least 1,000 lb/ac of residue on the surface during the critical soil erosion period. The process slows water movement, which reduces the amount of soil erosion. Soil erosion has four effects on cropland: nutrient loss, decreased water storage capacity, crop damage and decreased farm ability.

Conservation tip: Conservation tillage in the spring rather than the fall will leave the soil protected for a longer period of time, which could lead to higher crop yields during below-normal to dry water conditions.

Loss of topsoil due to erosion is important because it contains the richest supply of soil nutrients of any soil layer. The organic matter in the topsoil contains most of the micronutrients that are lost with excessive erosion. In addition, erosion reduces the amount of soil available to store moisture, while water that causes the erosion is lost and cannot be used to satisfy crop demand. Water erosion causes the majority of production loss, however, when conservation tillage practices are adopted, soil erosion is reduced by protecting the soil surface from water energy, principally through rain drops, that detaches soil particles from the soil surface. In addition, residue left on the soil surface also creates small dams that might have the potential…*(cont. on pg. 2)*

WEBSITE SPOTLIGHT

Each quarter, we spotlight a website which we feel could provide helpful assistance in water conservation and water management to our growers. This quarter's spotlight is on:

"The agricultural water stewardship is the use of water in a way that optimizes agricultural production while also addressing co-benefits for the environment and human health." The California Agricultural Water Stewardship Initiative (CAWSI) is managed by Ag Innovation Network and guided by an Editorial Board appointed by the California Roundtable on Water and Food Supply.

The website *www.agwaterstewards.org* is a "resource center for growers, ranchers, and others interested in sound farm water management." Information which can be found on the website includes: On-farm water stewardship practices, an interactive case study database and a technical resource and document library.

Conservation Tillage … continued: to store water so it can be absorbed by the soil at a later time. Conservation tillage systems also have the potential to benefit farmers by reducing fuel consumption and soil compaction. By reducing the number of times the farmer travels over the field, farmers have come to realize a significant savings in fuel and labor.

TIP ON MEASURING SOIL RESIDUE TO ENSURE CONSERVATION TILLAGE METHODS ARE WORKING

The standard method of measuring residue is with a 50-foot tape with markings every 6 inches. The tape is stretched diagonally across the rows and the number of points where soil residue is directly under the leading edge of the 6-inch marks is recorded. This number represents the percentage of soil residue coverage. This procedure is performed at three different places in a field to arrive at an average value. If rain is received after planting and before measuring, two things may happen. First, lightly incorporated soil residue will be uncovered by the rain, which will increase the soil residue reading. Second, a heavy rain will wash soil residue off of side slopes and reduce the residue reading.

*Information represented in this article was derived, in part, from a publication by Dr. Kris Kohl, Field Specialist—Agricultural Engineering Department, Iowa State University, entitled "Conservation Tillage—Effects on Soil Erosion".

Exeter Irrigation District

150 S. E Street

Exeter, CA 93221-0546