ATTACHMENT 3: STATUS OF GWMP

The member agencies of the Deer Creek and Tule River Authority (Authority) implemented a Groundwater Management Plan to collectively monitor, manage, and implement groundwater activities by the member participants of the DCTRA. The original Groundwater Management Plan was adopted by the DCTRA Board on March 24, 1995. This Plan was then updated in July 2006 and the last update was on 18 May 2012 (*see attached Board meeting minutes accepting Plan update*). The latest update provided a list of updated basin objectives and goals (*Copy enclosed*).

The coverage area for the Groundwater Management Plan is within the Tule Basin (Basin), as defined per Department of Water Resources (DWR) Bulletin 118 Groundwater Basins of the San Joaquin Valley Hydrologic Study Area *(see Figure 3.1: TULE BASIN).* The DCTRA member districts make up the Plan area within the Tule Basin *(unless noted otherwise).*

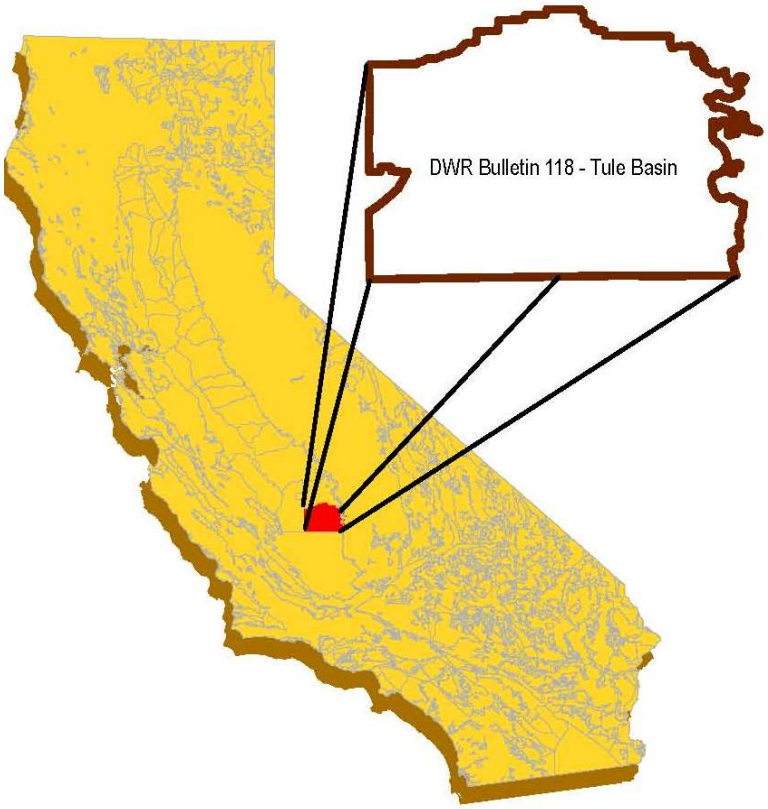


FIGURE 3.1: TULE BASIN

ENCLOSURES:

- Meeting Minutes from the 18 May 2012 Deer Creek and Tule River Authority Board of Directors Meeting
- Copy of DCTRA Groundwater Management Plan Update – May 2012

MINUTES OF A MEETING OF THE
BOARD OF DIRECTORS OF THE DEER CREEK
AND TULE RIVER AUTHORITY

The members of the Board of Directors of the Deer Creek and Tule River Authority met in a regular session on the 18th day of May, 2012 at 10:00 a.m. at the office of the Authority in Tipton, California. Attendance is listed in Exhibit "A".

The meeting was called to order by Chairman Lombardi.

BOARD ADMINISTRATION

Upon a motion by Director DeGroot, seconded by Director Doyel and unanimously passed, the agenda was approved as posted.

Upon a motion by Director Simms, seconded by Director McCloskey and unanimously passed, the minutes of 16 March were approved as mailed.

The Board was informed that the next regular board meeting is scheduled to be held Friday, July 20, 2012.

WATER REPORT

The Board discussed the water supply conditions. Mr. Limas reported that the Corps has approved an amended, higher storage limit for the 2012 season of 645 feet of elevation. Storage at that elevation is 65,500 acre-feet. The increased storage allowance will likely allow the districts to delay releases until LTRID's run planned for the last week of June. Given the current water supply conditions, LTRID's delivery schedule is likely to consist of two three week runs.

Inflow to Success Reservoir was reported to be running at about 200 cfs. Current storage is approximately 62,500 acre-feet.

The Board was informed that the Bureau's declaration for the Friant Unit is now at 50% Class 1.

DWR's April-July runoff forecasts for both the San Joaquin River and the Tule River have dropped slightly during the first two weeks of the month. At the 50% exceedence level the forecasts for the San Joaquin and the Tule are currently 52% and 69% of normal, respectively.

AUTHORITY OPERATIONS

Financial Matters - The Board reviewed the financial reports for 30 April and the bills paid or payable. Director Doyel moved that payment of the bills be approved and the financial reports be accepted and ordered placed on file. The motion was seconded by Director DeGroot and unanimously passed.

Treasurer Limas reviewed the audited Financial Statements for the years ending December 31, 2011 and 2010 with the Board. The Statements had been distributed to the Board members by mail prior to the meeting for review. Director Sherwood moved that the audited Financial Statements be accepted and ordered placed on file. The motion was seconded by Director Doyel and unanimously passed.

PROJECTS

IRWMP Update - Mr. Hoffman reported that the Kaweah group has filed an application for an IRWMP planning grant. The grant would be used to produce a more comprehensive plan than had been previously planned. The first concern to be addressed in the planning process would be the merger of the plan regions, as urged by the DWR.

Groundwater Management Plan - David DeGroot of 4Creeks reviewed the draft five year update of the Authority's Groundwater Management Plan with the board. Mr. DeGroot gave a detailed presentation of the history of the Authority's Plan and of the plan elements contained in the five year update. Director Sherwood moved that the five year update to the Authority's Groundwater Management Plan be approved. The motion was seconded by Director DeGroot and passed on a unanimous vote with Director Simms abstaining.

David DeGroot reported that there is a Local Groundwater Assistance Grant Program currently open to application that could provide funds for developing one or more programs under the Authority's GMP and suggested that the Authority consider authorizing the drafting of an application. It was the consensus of the Board that Mr. DeGroot should work with the Advisory Committee to evaluate the opportunity and determine whether the Authority should proceed with preparation of a grant application.

Irrigated Lands Program - Mr. DeGroot reported on the Irrigated Lands Program.

The history of the Program under the Ag Waiver was reviewed. Further, Mr. DeGroot discussed progress toward the development of a General Order that the Coalition would operate under in the future. Said General Order would include the expansion of the program to cover groundwater as well as surface water quality. The Southern San Joaquin Valley Water Quality Coalition's Technical Committee is currently meeting regularly with the staff of the Regional Water Quality Control Board in attempt to develop an acceptable General Order. It is anticipated that a proposed General Order may be released for public comment in February of 2013.

ADJOURNMENT

There being no further business to come before the Board, the meeting was adjourned.

David L. Hoffman,
Secretary

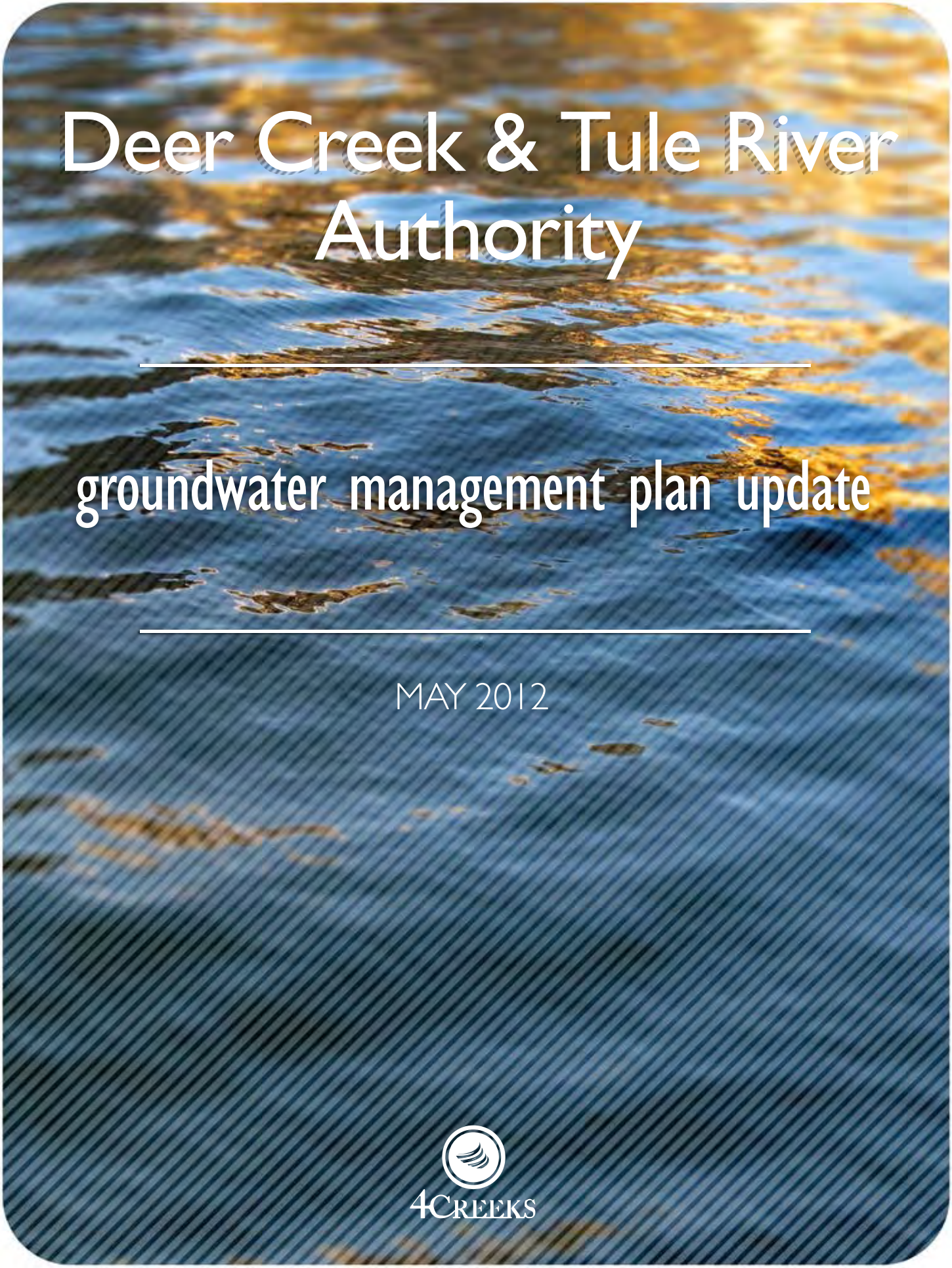
ATTENDANCE LIST

BOARD OF DIRECTORS OF THE
DEER CREEK & TULE RIVER AUTHORITY

MEETING DATE: May 18, 2012

MEMBER DISTRICT	BOARD MEMBER
LOWER TULE RIVER I.D.	
PIXLEY I.D.	Bill deGroot
PORTERVILLE I.D.	Guido Lombardi
SAUCELITO I.D.	Robert McCloskey
STONE CORRAL I.D.	George Simms
TEA POT DOME W.D.	Dave Sherwood
TERRA BELLA I.D.	Brent Doyel
VANDALIA I.D.	
MEMBER DISTRICT	**ALTERNATES**
LOWER TULE RIVER I.D.	
PIXLEY I.D.	Thewis Atsma
PORTERVILLE I.D.	David Gisler
SAUCELITO I.D.	
STONE CORRAL I.D.	
TEA POT DOME W.D.	Keith Norris
TERRA BELLA I.D.	
VANDALIA I.D.	
MEMBER DISTRICT	**ADVISORY COMMITTEE MEMBER**
LOWER TULE RIVER I.D.	
PIXLEY I.D.	
PORTERVILLE I.D.	
SAUCELITO I.D.	
STONE CORRAL I.D.	
TEA POT DOME W.D.	Keith Norris
TERRA BELLA I.D.	
VANDALIA I.D.	
	OTHERS PRESENT
DCTRA, Secretary	David Hoffman
area landowner	Gratian Bidart
LTRID landowner	Don McMillan

Exhibit "A"



Deer Creek & Tule River Authority

groundwater management plan update

MAY 2012

4CREEKS

Deer Creek and Tule River Authority

Groundwater Management Plan Update

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B. USGS Quadrangle Map
C. Soil Permeability Map
D. 2011 Groundwater Flow Direction Map
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APPENDIX

A. July 2006 DCTRA Groundwater Management Plan
B. Statutory Authority
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D. Basin Management Objectives Summary Table
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F. Alternative Dispute Resolution Policy

SECTION 1 – INTRODUCTION

1.1 Overview

The member agencies of the Deer Creek and Tule River Authority (DCTRA) implemented a Groundwater Management Plan ***(see Appendix A – Groundwater Management Plan 2006)*** to collectively monitor, manage, and implement groundwater activities by the participants of the DCTRA. The original Groundwater Management Plan was adopted by the DCTRA Board on March 24, 1995, and updated in July 2006. The DCTRA Board authorized on 15 November 2011 an update of the original Plan goals and objectives based upon the data collected during the past five years.

The DCTRA has long recognized the importance of groundwater for its service areas. The local economy, both for agriculture and domestic uses, has reliance, in whole or in part, on groundwater. Groundwater Management involves the planning and implementation required to provide an adequate, reliable, and acceptable quality of groundwater supply. The groundwater management program created a coordinated approach within the service area to monitor and collectively implement strategies to protect the groundwater pursuant to the requirements of the law.

1.2 Plan Coverage

The coverage area for the Groundwater Management Plan is within the Tule Basin (Basin), as defined per Department of Water Resources (DWR) Bulletin 118 Groundwater Basins of the San Joaquin Valley Hydrologic Study Area ***(see Figure 1-1: TULE BASIN)***. The DCTRA member districts make up the Plan area within the Tule Basin *(unless noted otherwise).* The area included within the Plan is described in more detail in **Section 2 – Basin Conditions.**

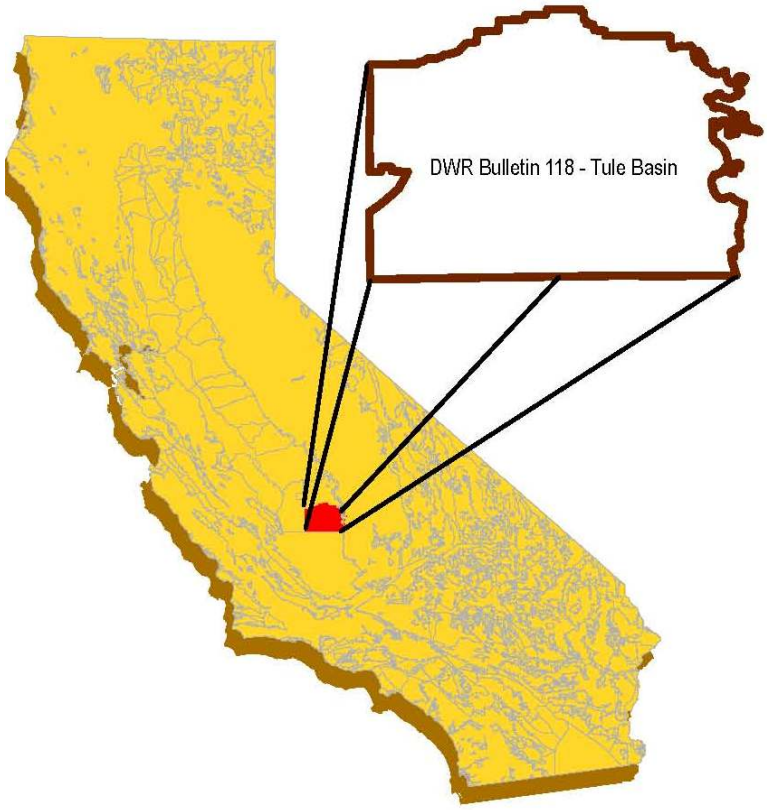


Figure 1-1 – TULE BASIN

1.3 Plan Participants, Stakeholders, and Advisory Committee

The DCTRA is a Joint Powers Authority comprised of eight members. Attachment A identifies the location of the DCTRA members within the Basin. Stone Corral Irrigation District is a member agency outside the Basin. The members within the coverage area of the Groundwater Management Plan are listed in **Table 1-1: DCTRA PARTICIPANT MEMBERS, page 1-2**:

Table 1-1: DCTRA PARTICIPANT MEMBERS

DCTRA Participant Member	**Total Area** (acres)
Lower Tule River Irrigation District	103,034
Pixley Irrigation District	69,014
Porterville Irrigation District	16,997
Terra Bella Irrigation District	15,053
Saucelito Irrigation District	19,702
Tea Pot Dome Irrigation District	3,481
Vandalia Irrigation District	1,379
DCTRA Participant Members Total Area:	**228,660**
Public Agencies (CSD, PUD, Cities):	*13,352*
Remaining Areas within DCTRA Plan Boundary:	*47,436*
Total DCTRA Plan Boundary Area:	**289,448**

As part of the Groundwater Management Plan, the stakeholders are defined as any individual, group, or entity withIN the DCTRA Plan area that may be affected by the implementation of the Plan. **Table 1-2: DCTRA STAKEHOLDERS** identifies the stakeholders within the DCTRA Plan Boundary area.

Table 1-2: DCTRA STAKEHOLDERS

STAKEHOLDER	***INTEREST***	**STAKEHOLDER**	***INTEREST***
Lower Tule River Irrigation District	*District Landowners*	**Pixley Community Services District**	*Domestic Water Use/Supply*
Pixley Irrigation District	*District Landowners*	**Pixley Wildlife Refuge**	*Wildlife*
Porterville Irrigation District	*District Landowners*	**Bureau of Reclamation**	*Surface Water Supplies*
Saucelito Irrigation District	*District Landowners*	**Friant Water Authority**	*Surface Water Supplies*
Stone Corral Irrigation District	*District Landowners (Note – Not in Basin)*	**National Resources Conservation Service**	*Natural Resources*
Vandalia Irrigation District	*District Landowners*	**Audubon Society**	*Wildlife/Monitoring*
Tea Pot Dome Water District	*District Landowners*	**Tulare County**	*Land Use/Planning*
Terra Bella Irrigation District	*District Landowners, Domestic Water Use/Supply*	**Vandalia Irrigation District**	*District Landowners*
Tipton Community Services District	*Domestic Water Use/Supply*	**Teviston Community Services District**	*Domestic Water Use/Supply*
Poplar Community Services District	*Domestic Water Use/Supply*	**City of Porterville**	*Domestic Water Use/Supply*
Woodville Public Utility District	*Domestic Water Use/Supply*		

The DCTRA established a Plan Advisory Committee to oversee the development, implementation, and refinement of the Plan. The members of the Advisory Committee are as follows:

Advisory Committee

- Dan Vink – General Manager representing Lower Tule Irrigation District and Pixley Irrigation District
- Dave Hoffman – Consultant for DCTRA
- Keith Norris – Manager representing Tea Pot Dome Water District
- Sean Geivet – General Manager representing Terra Bella Irrigation District, Saucelito Irrigation District, and Porterville Irrigation District
- Steve Drumright –Manager representing Vandalia Irrigation District
- William West – Manager representing Stone Corral Irrigation District

1.4 Statutory Authority

In 1989 The California State Legislature passed Assembly Bill 255 (AB 255), allowing local public agencies in any of the 11 groundwater basins that were identified by DWR Bulletin 118-80, as critically overdrafted to undertake management of groundwater. On January 1, 1993, AB 3030 became effective, superseding AB 255. AB 3030 authorized local agencies that are within groundwater basins, as defined by DWR Bulletin 118, to prepare and adopt groundwater management plans. The DWR Bulletin 118-80 identified the Tule Basin to be a Basin subject to critical overdraft. The Legislature found and declared that additional study of groundwater is necessary to better understand how to manage groundwater effectively to ensure the safe production, quality and proper storage of groundwater.

In September of 2002, the California State Legislature adopted Senate Bill 1938, which amended California Water Code Section 10750 requiring new groundwater management plans to include documentation "describing the manner in which interested parties may participate in developing the groundwater management plan" which may include the appointment of a technical advisory committee. SB 1938 also requires that an agency developing a Groundwater Management Plan, work cooperatively with other public agencies or private parties whose service area or boundary overlie the same groundwater basin. In 2003, DWR Bulletin 118, Appendix C was updated to include recommended components for a Groundwater Management Plan *(**see Appendix B – Statutory Authority – Excerpts from AB 3030, SB 1938, Water Code Section 10750.9, DWR Bulletin 118**).*

The original DCTRA Groundwater Management Plan was adopted in 1995 per AB 3030 and updated to meet the requirements of SB 1938 and DWR Bulletin 118 in 2006.

1.5 Purpose & Goals

The purpose of the Groundwater Management Plan update (Plan) is to evaluate the monitoring data and information collected compared to the management goals and objectives. The continued efforts for the Plan are to document the existing groundwater management activities of the DCTRA and to formalize other actions that will be used in implementing a monitoring and management program for conjunctive use, replenishment and preservation of the quantity and quality of groundwater within the Basin for long term beneficial uses.

The primary action items in the Plan will be gathering and evaluating additional data concerning the quantity and quality of groundwater, allowing for strategic development and implementation of the management objectives. Following is a list of the highest priority goals for the Plan:

1. Continue to monitor groundwater levels annually during the Spring within the DCTRA boundary by measuring the depth to groundwater of existing wells.
2. Prepare annual map of Lines of Equal Elevation of Groundwater and Lines of Equal Depth of Groundwater based on field measured data.
3. Publish an updated tabulation of the average depth to groundwater for each participant member and for the DCTRA service area.
4. Continue the acquisition and importation of available, supplemental surface water for crop irrigation and in-lieu groundwater recharge
5. Establish additional groundwater re-charge facilities for groundwater banking.
6. Obtain existing land use within the DCTRA boundary area for determination of the applied irrigation water demands.
7. Investigate potential groundwater banking opportunities, and continue to monitor and evaluate existing groundwater banking projects.
8. Develop a groundwater quality program using data on file with the Tulare County Department of Health Services, and by collecting groundwater quality data from a select group of wells within the DCTRA service area.
9. Continue collaboration with other agencies within the Basin for the collection of quality and quantity data for the establishment of groundwater policies.
10. Encourage public outreach and participation.

These goals highlight the core activities and objectives included within the DCTRA Groundwater Management Plan and are discussed in further detail through the provisions of **Section 3: Basin Management Objectives and Strategies**.

1.6 Authority of the DCTRA

In order to manage the quality and quantity of groundwater, the DCTRA is granted the powers of a water replenishment district *(Part 4, Division 18, California Water Code)* upon the adoption of the Groundwater Management Plan. To the extent not already possessed by the entity, the DCTRA is entitled to the following powers:

1. The DCTRA may do any act necessary to replenish the groundwater in the Basin *(Water Code Section 60220 and 60221).* The Authority may do, but is not limited to, the following for the purposes of replenishing groundwater:
    a. Buy and sell water
    b. Exchange water
    c. Distribute water to persons in exchange for ceasing or reducing groundwater extractions
    d. Spread, sink and inject water into the underground
    e. Store, transport, recapture, recycle, purify, treat or otherwise manage and control water for the beneficial use of persons or property within the district
    f. Build the necessary works to achieve groundwater replenishment
2. The DCTRA may take any action necessary to protect or prevent interference with water, the quality thereof, or water rights of persons or property within the Basin. *(Water Code Section 60230)*
3. For the purpose of replenishing water, the DCTRA may take any action necessary to put water under its control for beneficial uses. *(Water Code Section 60223)*
4. Pursuant to Water Code Section 60224, the Authority may take any action needed for the protection and preservation of groundwater supplies within the Basin for beneficial uses including:

a. Preventing contaminants from entering the groundwater supplies of the Basin, whether or not the threat is immediate
b. Remove contaminants from the groundwater supplies of the Basin
c. Determine the existence , extent and location of contaminants in, or which may enter, the groundwater supplies of the Basin
d. Determine persons, whether natural persons or public entities, responsible for those contaminants
e. Perform or obtain engineering, hydrologic, and scientific studies for any of the foregoing purposes

5. The DCTRA may take any action outside the Basin, including, but not limited to, those set forth in Section 60224, provided the Board finds both of the following pursuant to Water Code Section 60225:
    a. The action is reasonably necessary to protect groundwater supplies within the Basin
    b. There is a direct, material relationship between the groundwater supply where the action is to be taken and the groundwater supply within the Basin
6. The DCTRA may sue and recover the amount of any DCTRA expenditures under Section 60224 from the person or persons responsible for the contaminants causing the expenditures. *(Water Code Section 60226)*
7. Pursuant to Water Code Section 60230, the DCTRA is granted additional powers of a replenishment district, which allow the DCTRA to do the following:
    a. Construct, purchase, lease or acquire and to operate and maintain waterworks, machinery and facilities, canals, conduits, water and water rights, spreading grounds and lands needed to replenish the groundwater supplies of the Basin
    b. Store water in groundwater basins or reservoirs, to appropriate and acquire water and water rights, import water into the Basin, and conserve water
    c. Participate in legal proceedings as required to defend the water rights and supplies of the DCTRA members, and to prevent unlawful exportation of water from the Basin
    d. Under certain conditions, to exercise the right of eminent domain
    e. Act jointly with other entities in order to economically perform required activities
    f. Carry out investigations required to implement the program
    g. Fix rates for water for replenishment purposes
    h. Fix the terms and condition for contracts for use of surface water in lieu of groundwater
8. The DCTRA shall investigate and consider the use of existing facilities of other agencies to carry out the Ground Water Management Program, and if economically feasible and in the best interest of the Basin, an attempt shall be made to enter into a contract with the agency for use of their facility. *(Water Code Section 60231)*
9. The DCTRA may fix and collect fees for the extraction of groundwater to pay for the expenses incurred by the DCTRA for the purposes of groundwater management including, but not limited to administrative expenses and real costs associated with the acquisition of replenishment water. *(Water Code Section 10759)*
10. The DCTRA may also levy a water replenishment assessment; however, before any fees may be levied and collected, a majority of the voters in the DCTRA must ratify the assessment. *(Water Code 10760)*

1.7 Plan Elements

The DCTRA Groundwater Management Plan update includes both the required and recommended components of a Groundwater Management plan as established by the California Water Code Section 10753. The plan also includes the recommended elements for a Groundwater Management Plan as described in DWR Bulletin 118 (2003 Update), Appendix C.

The California Water Code Section 10753.7, added by SB 1938, (statutes of 2002, Chapter 603) provides that a Groundwater Management Plan shall contain the following components to be eligible for funding administered by the DWR for the construction of groundwater projects..

Required Components of a Groundwater Management Plan
(Water Code Section 10750)

1. The Plan shall include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality.
2. For the purpose of carrying out paragraph (1), the local agency shall prepare a plan that involves other agencies and public entities within the groundwater basin.
3. The Plan should include a map that details the area of the groundwater basin, per DWR Bulletin 118, and the area of the local agency subject to the plan, incorporating the boundaries of participants and stakeholders within the Plan area.
4. The Plan should identify monitoring protocols to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence, and flow and quality of surface water. The monitoring protocols should be designed to generate information which promotes efficient and effective groundwater management.

The California Water Code Section 10753.7 states a groundwater management plan may include the following components:

Optional Components of a Groundwater Management Plan
(Water Code Section 10753.7)

1. The control of saline water intrusion.
2. Identification and management of wellhead protection areas and recharge areas.
3. Regulation of the migration of contaminated groundwater.
4. The Administration of well abandonment and well destruction programs.
5. Mitigation of conditions of overdraft.
6. Replenishment of groundwater levels and storage.
7. Monitoring of groundwater levels and storage.
8. Facilitating conjunctive use operations.
9. Identification of well construction policies.
10. The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.
11. The development of relationships with the state and federal regulatory agencies.
12. The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

The recommended and required components of the Groundwater Management Plan from DWR Bulletin 118, update 2003, Appendix C, are summarized in Appendix B of this plan. The components

included in the DCTRA Groundwater Management Plan are itemized in ***Table 1-3: GROUNDWATER MANAGEMENT PLAN COMPONENTS.*** The table also identifies the section, within which each component listed can be found in the Plan.

Table 1-3: GROUNDWATER MANAGEMENT PLAN COMPONENTS

Plan Component	Section Reference
Mandatory Plan Components (CWC Section 10753.7(a))	
(1) Basin Management Goals and Objectives	Section 1.5, Section 3
(2) Other Agency Involvement	Section 1.3, Section 3.5
(3) Plan Coverage	Section 1.2, Section 2
(4) Monitoring Protocols	Section 3.3, Section 4
Optional Plan Components (CWC Section 10753.8)	
(1) Saline Water Intrusion	Section 3.1
(2) Wellhead and Recharge Area Protection	Section 3.1
(3) Migration of Contaminated Groundwater Controls	Section 3.1
(4) Well Abandonment and Construction Policies	Section 3.1
(5) Well Construction Policies	Section 3.1
(6) Overdraft Mitigation	Section 3.2
(7) Groundwater Recharge Management	Section 3.2
(8) Groundwater Extraction Policies	Section 3.2
(9) Conjunctive Use of Water Resources Policies	Section 3.2
(10) Surface Water Management	Section 3.2
(11) Operation Faciliites	Section 3.2
(12) Groundwater Monitoring	Section 3.3
(13) Land Subsidence Monitoring	Section 3.4
(14) Land Use Planning	Section 3.4
(15) Groundwater Basin and Resource Reports	Section 3.5
(16) Local Agency and Stakeholder Involvement	Section 3.5
Recommended Plan Components (Bulletin 118 - Update 2003, Appendix C)	
(1) Stakeholder Participation	Section 5.1
(2) Plan Area Description	Section 1.2, Section 2
(3) Basin Description and Conditions	Section 2
(4) Management Plan Objectives	Section 1-5, Section 3
(5) Mandatory Protocols	Section 1
(6) Monitoring Program	Section 4
(7) Periodic Groundwater Reports	Section 5.3
(8) Periodic Plan Re-evaluation	Section 5.4

1.8 Plan Contact Information and Public Participation

Questions or requests for additional information regarding the DCTRA's Plan should be directed to the Program Manager at the following address:

Deer Creek and Tule River Authority
357 East Olive Street
Tipton, CA 93272
Phone: 559.686.4716
Fax: 559.686.0151

Business Hours: 8:00 am – 4:30 pm (Monday through Friday)

The DCTRA Board meets on the 3rd Friday of each odd-numbered month. DCTRA meetings are held at the above address and are open to the public.

SECTION 2 – BASIN CONDITIONS

2.1 General

The Tule Basin (Basin) has been defined by DWR Bulletin 118 as a groundwater basin that is critically overdrafted. The Tule Basin is bordered by Kern County to the South, Tulare Lake on the West, Kaweah Basin to the North and the foothills on the East. There are three major surface watersheds located within the boundary of the Tule Basin: Tule River, Deer Creek, and White River. The Tulare Lake Hydrologic Region is described in more detail in Appendix B: Tulare Lake Hydrologic Region, DWR Bulletin 118.

The Deer Creek and Tule River Authority (DCTRA) is located completely within the Tule Basin. The DCTRA Plan Boundary area (DCTRA Boundary) coverage includes the areas of the member districts and some additional land not within a particular member boundary. The DCTRA Boundary is located entirely within the County of Tulare and encompasses an area of approximately 289,000 acres bounded by:

East: Foothills of the Sierra Nevada Mountains
West: Kings/Tulare County Line
North: Northern boundary of Lower Tule Irrigation District and Porterville Irrigation District
South: Southern boundary of Pixley Irrigation District, Saucelito Irrigation District, and Terra Bella Irrigation District.

The City of Tulare is approximately 5 miles north of the Basin. Elevations range from approximately 250 feet above mean sea level in the western portion of the Basin to 500 feet above mean sea level in the eastern portion of the Basin (**Attachment B: USGS Quadrangle Map**). Two of the three major surface watersheds within the Tule Basin, the Tule River and Deer Creek, are within the DCTRA Boundary. **Attachment A** identifies the general location of the DCTRA Boundary within the Tule Basin along with the member agencies and stakeholders within the DCTRA Boundary.

2.2 Geology

The Tule Basin is located in the Central Valley of California, also known as the San Joaquin Valley. The San Joaquin Valley comprises the area from the Sacramento - San Joaquin Delta on the North and the Tehachapi Mountains on the South. The Basin is located in the Southern portion of the San Joaquin Valley.

The Basin slopes very gradually along the surface from the east to the west (**Attachment B: USGS Quadrangle Map)**. Alluvial sediments are found within the Basin, and are bounded on the east by the granite from the Sierra Nevada Mountains and bounded on the west by the Tulare Lake bed, which contains a layer of diatomaceous clay (E-Clay also known as the Corcoran Clay). The alluvium within the Basin is a heterogeneous mix of clay, silt, sand, and gravel. Throughout the Basin are isolated locations of coarse grained material with high percolation rates, typically found where old streambeds historically meandered through the valley (**Attachment C: Soil Map**).

Along the east side of the Basin, the unconfined aquifer is deeper with a higher specific yield. Along the western portion of the Basin, there are locations of both a confined aquifer and unconfined aquifer, primarily due to the E-Clay.

The groundwater flow direction typically follows the direction of the ground surface gradient, from the east to the west. The direction of groundwater flow from the Spring of 2011 groundwater level measurements is primarily east to west as identified in **Attachment D**.

2.3 Hydrology

The hydrology of the DCTRA Boundary area is greatly affected by the annual quantity of precipitation and snow that falls on the upper portion of the Tule River and Deer Creek Watershed. The Basin is composed of both confined and unconfined aquifers. Groundwater typically flows from the foothills to the western edge of the Basin. Groundwater is extracted for municipal, industrial and agricultural purposes. With reduced precipitation and surface water supply, groundwater extractions increase significantly to meet the demands, causing fluctuations in the depth to groundwater. When surface water is more readily available, the groundwater extractions are reduced and the demands supplemented with surface water.

2.3.1 Climate

The Climate of the region is semi-arid with mild winters and hot, dry summers. The average annual rainfall within the Basin is approximately 9 inches. The eastern edge of the Basin along the foothills experiences higher amounts of rainfall, while the western edge of the Basin is typically more arid and dry. Precipitation usually occurs from November to May. Snow typically melts during the spring months of April through June. From May through November, the area generally experiences dry summers where almost no rain occurs. A summary of the average monthly precipitation throughout the Basin as recorded by the Army Corps of Engineers (COE), California Irrigation Management Information System (CIMIS), and the Department of Water Resources (DWR) are shown in **Table 2-1: TULE BASIN PRECIPITATION AVERAGES, page 2-3.**

Table 2-1: TULE BASIN PRECIPITATION AVERAGES

Station Name	Success Reservoir (COE)	Porterville (CIMIS 169)	Alpaugh (CIMIS 203)	Delano (CIMIS 182)	Visalia (DWR VSL)
Data Range	1966 - 2011	2000 - 2012	2006 - 2012	2002 - 2012	1905 - 2012
Location within DCTRA Basin	Eastern Edge	East-Central	South Western Edge	Southern Boundary	Northern Boundary
Monthly Precipitation Averages (inches):					
January	2.36	1.44	1.11	1.14	1.94
February	2.18	1.28	0.93	1.05	1.80
March	2.24	1.05	0.68	0.99	1.61
April	1.15	1.13	0.53	1.00	0.94
May	0.38	0.47	0.17	0.35	0.36
June	0.10	0.02	0.11	0.06	0.08
July	0.03	0.01	0.01	0.00	0.01
August	0.03	0.00	0.00	0.00	0.01
September	0.30	0.05	0.06	0.01	0.12
October	0.60	0.49	0.23	0.63	0.47
November	1.33	0.80	0.50	0.89	0.93
December	1.94	1.77	1.40	1.34	1.61
Total Yearly Average:	**12.65**	**8.52**	**5.71**	**7.45**	**9.88**

2.3.2 Surface Water Supplies

The DCTRA members have several sources of surface water supply: local surface water supplies from the Tule River and Deer Creek, and the Central Valley Project (CVP) water supply obtained through the long-term contracts with the United States Bureau of Reclamation (Bureau).

The Tule River and Deer Creek naturally flow through the Basin. Surface water flow of the Tule River is controlled in Success Reservoir, which is owned and operated by the Army Corps of Engineers (COE). The Tule River run-off from snow melt and precipitation is controlled in Success Reservoir through flood control operations by the COE during the flood season (November – April). After the flood controlled season, the run-off may be stored or released to satisfy the demands of the member districts of the DCTRA that are a part of the Tule River Association (*Lower Tule Irrigation District, Porterville Irrigation District, Vandalia Irrigation District*).

Deer Creek is categorized as an ephemeral stream, wherein the run-off is seasonal based upon precipitation and snow melt from the Sierra Nevada Mountains. Recharge basins along Deer Creek help manage the seasonal flows. Typically, the timing of the seasonal flows does not correspond with the downstream irrigation water demands. Efforts to control Deer Creek for recharge has been underway as part of the implementation of this Plan.

The CVP water originates from the Friant Division, and the Cross Valley Canal Project of the Central Valley Project under long-term contracts with the Bureau. Additional CVP water may be

available to the member agencies in addition to the contracted amounts on a year to year basis depending upon the hydrologic conditions of the San Joaquin River.

Table 2-2: **DCTRA MEMBER SURFACE WATER SUPPLY SUMMARY** summarizes the average surface water supply and source of surface water for each member district of the DCTRA.

Table 2-2: DCTRA MEMBER SURFACE WATER SUPPLY SUMMARY

MEMBER DISTRICT	AVERAGE TULE RIVER SUPPLY (Acre-ft)	AVERAGE DEER CREEK SUPPLY (Acre-ft)	CVP/CVC SUPPLY CONTRACTS (Acre-ft)	AVERAGE YEARLY CVP SUPPLY (Acre-ft)	CONVEYANCE SYSTEM
Lower Tule River Irrigation District *(not including DKTRA)*	92,000	*N/A*	61,200 Class I 238,000 Class 2 31,102 CVC	156,240	163 miles of canal 47 miles of Tule River Channels 5 miles of pipeline
Pixley Irrigation District	*N/A*	4,645	31,102 CVC	33,000	46 miles of canal 14 miles of Deer Creek River Channel
Porterville Irrigation District	26,000	*N/A*	16,000 Class I 30,000 Class 2	27,320	13 miles of canal 7 miles of pipeline 12 miles of Tule River/ Porter Slough Channels
Saucelito Irrigation District	*N/A*	*N/A*	21,200 Class I 32,800 Class 2	33,300	All Pipeline
Terra Bella Irrigation District	*N/A*	*N/A*	29,000 Class I	26,680	All Pipeline
Tea Pot Dome Irrigation District	*N/A*	*N/A*	7,500 Class I	6,688	All Pipeline
Vandalia Irrigation District	6,582	*N/A*	*N/A*	*N/A*	8 miles of canal
TOTAL *(Within DCTRA BASIN)*:	***124,582***	***4,645***		***283,228***	
Stone Corral Irrigation District[1]	*N/A*	*N/A*	10,000 Class I	9,200	100% Pipeline

[1] *- Not in DCTRA Groundwater Basin*

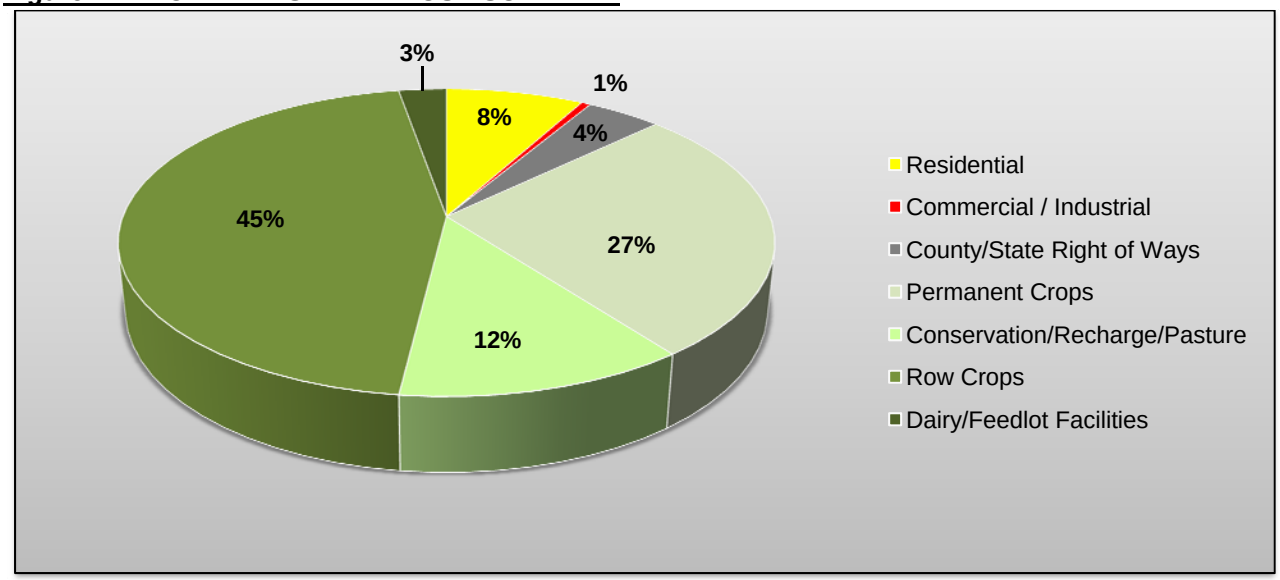
2.3.3 Surface Water Storage Facilities

Within the Tule Basin, there are approximately twenty eight (28) groundwater recharge basins covering a total area of approximately 2,100 acres. Some of these recharge basins have been set aside as part of groundwater banking projects. In addition to the recharge basins, there are approximately sixty (60) miles of unlined Tule River, forty (40) miles of unlined Deer Creek, sixteen (*16*) miles of unlined Porter Slough, and several hundred miles of unlined canals that provide groundwater recharge when water is delivered through the channels. **Attachment E** identifies the location of the recharge basins and unlined channels within the DCTRA Boundary.

2.4 Land Use

The DCTRA Boundary covers a total area of approximately 289,000 acres. The land uses within the DCTRA Boundary have historically been rural in nature, dominated by agricultural land use. Over the years, the communities within the DCTRA Boundary have developed agricultural lands to commercial and residential uses, but the pre-dominate land use continues to be agriculture. The primary demand for water in the Tule Basin is for irrigated agriculture, although there are continual changes in the types of agricultural crops grown within the Basin. Within the Annual Report, yearly changes in water demands based on land use changes are identified. The current land uses within the DCTRA Boundary are summarized in **Figure 2-1: DCTRA LAND USE SUMMARY**. A map identifying the land use locations and designations within the DCTRA Boundary are included in **Attachment F**.

Figure 2-1: DCTRA BASIN LAND USE SUMMARY



2.5 Population

There are six developed communities within the DCTRA Boundary area (**Attachment A**). The total population within the DCTRA Boundary has increased from 57,365 people to 74,305 people in the past decade, between year 2000 and year 2010, approximately a 30% increase. The historical population, 1960 through 2010, for each community within the DCTRA Boundary area is summarized in **Table 2-3: COMMUNITY POPULATION WITHIN DCTRA BOUNDARY, page 2-6.**

Table 2-3: COMMUNITY POPULATION WITHIN THE DCTRA BOUNDARY

Community	**2010 Census**	2000 Census	1990 Census	1980 Census	1970 Census	1960 Census
Porterville, including East Porterville Urban Area	**60,932**	46,346	35,353	24,910	21,309	16,164
Terra Bella	**3,310**	3,466	2,740	< 2,500	1,037	2,287
Tipton	**2,543**	1,790	1,383	< 2,500	< 1,000	1,045
Pixley	**3,310**	2,589	2,457	< 2,500	1,584	1,327
Woodville	**1,740**	1,678	1,557	< 2,500	1,031	1,045
Poplar / Cotton Center	**2,470**	1,496	1,901	< 2,500	1,239	1,478
Total Population:	**74,305**	57,365	45,391	29,801	26,200	23,346

SECTION 3 – BASIN MANAGEMENT OBJECTIVES & STRATEGIES

The DCTRA member agencies have developed five Basin Management Objectives (BMO) to guide the Plan implementation. These BMO's are the key Plan components to help provide a more reliable groundwater supply for long-term beneficial uses within the Basin are listed as follows:

1. To promote and realize groundwater resource protection;
2. To facilitate groundwater resource sustainability;
3. To develop groundwater resource understanding;
4. To develop groundwater basin understanding; and
5. To promote and facilitate information dissemination regarding the groundwater resource.

The original Groundwater Management Plan (**Appendix A**) identified strategies for implementation of each BMO within the Basin. The strategy and narrative description of each BMO is summarized below. A matrix summarizing the BMO's is included under **Appendix D**.

3.1 Groundwater Resource Protection

The principal focus of the groundwater resource protection BMO is to identify strategies to protect groundwater quality. The beneficial uses of groundwater within the Basin are primarily for agriculture and domestic uses, both of which require a certain level of groundwater quality to continue as a viable resource. DWR Bulletin 118, per Water Code Section 10753, identifies the following strategies to be included within the Plan to help achieve the objectives. A description and implementation strategy of each objective is summarized below.

3.1.1 Saline Water Intrusion

The western edge of the Tule Groundwater Sub-Basin is located about 90 miles east of the Pacific Ocean. A coastal mountain range physically separates the Basin from the Pacific Ocean as well. The DCTRA does not consider saline water intrusion control as a management strategy that warrants consideration.

3.1.2 Wellhead / Recharge Area Protection

The protection of the existing wells (both domestic and irrigation) and the recharge basins are essential to provide adequate protection to groundwater quality. Existing wells can provide a direct conduit to groundwater for septic waste, nutrients, fertilizers, and pesticides applied at or near the ground surface. Recharge basins are typically located and constructed in areas with high soil permeability, allowing surface water to quickly enter the groundwater aquifer.

The DCTRA will continue to promote protection of the wellheads and recharge basins within the DCTRA Boundary, focusing on:

1. Physical protective measures such as fencing or established setback distances and dirt berms to protect the wellhead from surface inundation or dumping of wastes at recharge basins.
2. Work with other regulatory agencies, such as the Tulare County Environmental Health Department, the Regional Water Quality Control Board, and the Department of Water Resources to verify wells are constructed, destructed, and maintained for adequate protection of groundwater quality.

3. Provide outreach to landowners and growers within the DCTRA Boundary for education of different ways to protect existing wells and recharge basins.

3.1.3 Migration of Contaminated Groundwater Controls

The regulations and controls for contaminated groundwater from source specific plumes of contamination, such as underground storage tanks, fall under the jurisdiction of various state and federal agencies. The DCTRA has not pursued regulations regarding unattributed groundwater contamination.

The DCTRA has developed protocols to obtain and compile information regarding contaminated groundwater, including a groundwater monitoring program. The DCTRA has monitored regulatory activities and available records on groundwater within the Basin and has begun creating a database to evaluate the available data.

The DCTRA will continue to collect and compile available information regarding the contaminated groundwater within the Basin from the different regulatory agencies. The data will be added to the database for determination of trends and problem areas that need to be addressed.

3.1.4 Well Abandonment and Destruction Policies

Improper well abandonment may allow contamination of groundwater by creating a direct or indirect conduit from the surface to the groundwater. Well abandonment must be conducted in conformance with standards adopted by Tulare County. The DCTRA will monitor these activities by reviewing abandonment records compiled by Tulare County. Appropriate information on proper abandonment of wells within the Plan area will be made available through the DCTRA. The DCTRA will pursue the conversion of abandoned production wells to monitoring wells if possible, in lieu of well abandonment.

3.1.5 Well Construction Policies

The increase in groundwater extractions resulting from the construction of additional wells affects the long-term balance of water in the Basin. Well construction may also allow contamination of groundwater if not constructed properly. Well construction must be conducted in conformance with standards adopted by the County of Tulare. The DCTRA will monitor these activities by reviewing well construction records compiled by the County. Appropriate information on proper construction of wells within the Plan area will be made available through the DCTRA.

Opportunities for additional groundwater monitoring wells may arise through the abandonment of existing production wells. The DCTRA will consider such a conversion to eliminate the construction of new monitoring wells.

The DCTRA has established plan activities regarding well construction, including establishing a protocol with Tulare County to create a database of constructed wells, establish public outreach and education with the stakeholders, and develop guidelines for converting an abandoned well to a monitoring well.

3.2 Groundwater Resource Sustainability

The principal purpose of the groundwater resource sustainability BMO is to identify strategies for maintaining adequate groundwater within the Basin to satisfy water use and water demands. Through a combination of groundwater and surface water supply, the users within the Basin are able to meet their water demands. The Basin has been identified as a critically overdrafted basin in the DWR Bulletin 118 evaluation. The goal of this BMO is to find ways for the DCTRA to provide a balance of the water quantity with the water demands.

This BMO will begin the process of quantifying the surface and groundwater supplies available to the DCTRA members and stakeholders and to define the interaction between these supplies. Groundwater storage is affected by groundwater pumping and groundwater recharge as water users meet their water demands. The net result of the use of the available water supplies, both surface and groundwater, and the water demand is a change in groundwater storage. This BMO is intended to provide the DCTRA member participants with the information and tools required to maintain and improve the total water supply through coordinated regional management of groundwater.

DWR Bulletin 118, per the Water Code Section 10753, identifies the following strategies to be included within the Plan to help achieve this objective. Descriptions of the existing and updated strategies are summarized as follows:

3.2.1 Overdraft Mitigation

The Basin has been identified by DWR Bulletin 118 as an overdrafted basin, which has been verified by the continued historical trend of declining groundwater levels. The purpose of the overdraft mitigation strategy is to find ways to balance water demands with available water supplies (surface water and groundwater) within the Basin for the stakeholders. This strategy has been companioned with other management strategies, namely: Groundwater Recharge/Management, Groundwater Extraction Policies, Conjunctive Use Policies, and Surface Water Management.

The goal of this overall strategy is to achieve a net hydrologic balance within the Basin, which would result in preventing additional groundwater overdraft.

3.2.2 Groundwater Recharge Management

The groundwater within the Basin is recharged both naturally and through deliberate controlled measures. Natural recharge is based upon the hydrologic conditions of a particular year which includes precipitation occurring within the Basin and from the adjacent Sierra Nevada snow melt. The natural recharge occurs in localized low points and in natural streams or waterways. Because the participants and stakeholders within the Basin are located throughout the entire Basin, in areas not adjacent to natural streams or localized low spots, they rely on groundwater as the sole source of water. But, through controlled measures, the DCTRA members have constructed canals and pipelines to distribute surface water to the areas otherwise reliant exclusively upon groundwater to minimize groundwater pumping. In addition to the canals and streams, recharge basins have been constructed within the Basin in areas that have high permeable soils.

The delivery of surface water for irrigation purposes reduces the need for water users to draw on groundwater. The available surface water fluctuates on a yearly basis, dry years

require more groundwater pumping to meet water demands, and wet years allow surface water to be discharged in recharge basins to replenish the groundwater and to be diverted through the canals to the water users to minimize groundwater pumping. The use of surface water in the place of groundwater is known as in-lieu recharge and is practiced by the DCTRA participants. An additional groundwater recharge benefit is also derived when irrigation water is applied in excess of the crop demands.

The DCTRA has implemented activities to maintain and expand the network of groundwater recharge facilities, maintain and expand the surface water delivery network within the DCTRA Boundary, and pursue additional surface water supplies that may be available, specifically for groundwater recharge.

3.2.3 Groundwater Extraction Management

A critical strategy in preventing groundwater overdraft is to minimize the extraction of groundwater and to maximize the use of available surface water. Within the Basin, the pumping of groundwater is principally by private wells for irrigation of agricultural crops.

The DCTRA members have strategized to provide economically priced surface water to the participants to encourage the use of surface water rather than pumping groundwater.

The DCTRA members have implemented activities to secure surface water supplies and pricing that encourages surface water use by the growers, developed and implemented educational programs focused on the time of use of groundwater and surface water, and developed grower incentive based banking programs.

3.2.4 Conjunctive Use Policies

Groundwater management in California is rooted in the conjunctive use of surface and groundwater resources. Use of the water from the two sources is integrated to accomplish the optimum utilization of each source.

In years of surface water shortage, the previously stored water is pumped to supplement the available surface water. DCTRA member districts will attempt to maximize the utilization of available facilities and resources for conjunctive use through cooperative management.

Conjunctive use opportunities motivated the DCTRA participants to enter into long-term contracts with the United States beginning in 1950 for the importation of supplemental surface water from the Friant Unit of the Central Valley Project.

Water transfers and exchanges are an integral part of the existing conjunctive use programs. Under the Plan, the DCTRA member districts will seek to preserve and enhance conjunctive use activities through coordinated use of available supplies made possible by water transfers and exchanges and through expansion of recharge facilities. Enhancement of conjunctive use activities could include the development of water banking arrangements with other agencies by utilizing available groundwater storage capacity for temporary storage of water.

The DCTRA management strategy for conjunctive use will result from the integration of the following Plan strategies including Groundwater Recharge Management, Groundwater Extraction Management, and Surface Water Management.

3.2.5 Operation of Facilities

The operation of the facilities is a management strategy which includes both the construction of new facilities and the operation of existing facilities to address groundwater recharge, extraction of stored water, conservation, contamination clean-up and water recycling. Current efforts primarily address groundwater recharge through recharge basins and unlined irrigation distribution canals. In general, the current operations are the result of the construction of facilities by the individual members of the DCTRA.

Additional facilities will be needed to sustain the groundwater resource as additional water demands are placed on the groundwater resource. The DCTRA participants will continue to evaluate potential projects which will allow surface water to be distributed and recharged throughout the Basin. The current scope of this strategy will be expanded as necessary. Opportunities to incorporate recycling and reclamation of water and water conservation may be possible through coordination with domestic utility providers.

The DCTRA participants have implemented Plan activities to encourage the use of unlined channels, maintain recharge basins, develop and implement protocol to identify operational projects, and upgrade and expand surface water conveyance facilities.

3.3 Groundwater Resource Understanding

The purpose of the Groundwater Resource Understanding BMO is to further develop knowledge about the groundwater of the Basin. With detailed information regarding the groundwater resource, improved characterization will lead to future groundwater management decisions. The primary Plan element strategy that will achieve this BMO is groundwater monitoring.

3.3.1 Groundwater Monitoring

Monitoring of groundwater levels annually will provide history of the change in storage which will reveal the effectiveness of other strategies, such as groundwater recharge efforts. Monitoring data developed over time will serve as the foundation of conclusions on groundwater reliability and management strategies effectiveness. The Groundwater Monitoring protocol and details are summarized in Section 4 of this Plan.

3.4 Groundwater Basin Understanding

This BMO involves the collection of information in the Basin to facilitate evaluations regarding Basin features and potential groundwater resource impacts.

Changes in the Basin's topographic, geologic, and hydrologic conditions may adversely impact the groundwater. Land use development can impact both the quantity and quality of groundwater. The availability of surface water reduces overall demand on the groundwater.

Through the strategies developed for this BMO, the DCTRA participants will improve and refine the understanding of the Basin topographic, geologic, and hydrologic conditions that may effect the

groundwater resource. The DCTRA participants will have the capability to react to proposed projects and changing conditions to avoid adverse groundwater impacts.

The original Groundwater Management Plan identified strategies to help implement each BMO within the DCTRA Basin. A description of each BMO along with the strategies associated is summarized below.

3.4.1 Land Subsidence Monitoring

The DCTRA participants have not collected information regarding land subsidence within the Basin. This management strategy requires the survey of a baseline control network and then periodically a resurvey of the control points for determination of the change or to determine land subsidence. Once the baseline data has been collected, this data can be used as comparison data for future subsidence evaluations.

The DCTRA will continue to participate with other agencies that may have funds available for land subsidence monitoring in order to establish an elevation control network throughout the Basin and conduct periodic resurveys of the control network to determine a presence of land subsidence. These efforts will continue to be implemented through this amended Plan.

3.4.2 Land Use Planning

The Land Use Planning management strategy consists of reviewing land use plans and coordination with local planning agencies. Under this strategy, the DCTRA participants will review projects and proposed activities within the Basin that may affect groundwater or surface water quality or quantity.

The DCTRA participants have planned to maintain protocols to participate in local land use planning efforts and continue the participation in the California Environmental Quality Act as a responsible agency.

3.4.3 Surface Water Management

The DCTRA participants have three main sources of surface water supply, the Tule River, Deer Creek, and the Central Valley Project (CVP) water as described previously under **Section 2: Basin Conditions**.

Under this Plan, the DCTRA participants will seek to preserve the existing water rights and contracts and will pursue opportunities to supplement these supplies through importation of additional water supplies through the DCTRA participants. Supplementary supplies may be obtained through the purchase of additional CVP water from other entities, “Section 215 water” from the United States and through other programs as may be available. Efficient water use and distribution within the management area will be encouraged through the use of transfers and exchanges among DCTRA participants.

Importation of affordable water supplies, in quantities sufficient to achieve a long-term water balance within the service area of the DCTRA participants, is a prerequisite for successful implementation of the recharge groundwater management strategy. All opportunities to supplement the regular supplies of the DCTRA participants through long-term water exchanges and banking agreements will be evaluated for compatibility with the goals of this Plan pursuant to an adopted evaluation process.

This evaluation process will consist of the following steps:

1. Submittal of a written proposal and technical report to the DCTRA
2. DCTRA Advisory Committee and consultant evaluation
3. Proponent and DCTRA coordination
4. DCTRA Advisory Committee recommendation and Board of Directors action

For any proposed project, the proponent will initiate the process through the transmittal of a written proposal describing the project, including the anticipated benefits. A technical report will be prepared by the proponent and evaluated by the DCTRA, which shall include:

1. Quantities and Sources of Water
2. Structures and other physical features of the project
3. Water accounting measures and methods
4. Funding
5. Schedule, including CEQA compliance
6. Anticipated Benefits
7. Proponents Evaluation of compliance with Plan's management objectives.

The DCTRA Advisory Committee will evaluate the Technical Report prior to any Board determination regarding the proposed project.

The DCTRA Advisory Committee will utilize outside consultants, as necessary, for further evaluations. The proposal and technical report will be reviewed for consistency with the Plan BMO's and utilization of adopted management strategies.

The resulting evaluation will be returned to the project proponent. The DCTRA Advisory Committee will coordinate with the Proponent to develop the final proposed project. Upon finalization of the proposed project, the DCTRA Board of Directors will act to determine the compatibility of the proposed project with the goals of this Plan. Similarly, water exchange and banking agreements among the DCTRA participants will be used where they may enable the DCTRA participants to distribute water to areas identified under this Plan suffering from groundwater depletion and as being suitable for groundwater storage.

The quality of the surface water is important to the Basin. Because of the different sources of surface water, the quality of the surface water varies. Imported surface water generally originates in the San Joaquin River watershed (*Friant-Kern Canal*). Local surface water generally originates in the Tule River and Deer Creek watersheds. These imported and local surface waters are subject to monitoring by various agencies. Under this management strategy, the DCTRA will review data from the existing monitoring programs identified in **Table 3-1: SURFACE WATER QUALITY MONITORING, page 3-8.**

TABLE 3-1: SURFACE WATER QUALITY MONITORING

SURFACE WATER	MONITORING AGENCY	FREQUENCY
Friant-Kern Canal	Reclamation District 770	Annually
	Terra Bella Irrigation District	Varies - month to annually
Tule River	Reclamation District 770	Annually
	Tule River Association	Seasonal
	Southern San Joaquin Valley Water Quality Coalition - ILRP Waiver Program	Varies - month to annually
Deer Creek	Southern San Joaquin Valley Water Quality Coalition - ILRP Waiver Program	Varies - month to annually

The DCTRA Plan has implemented activities to maintain or increase quantities of imported surface water, preserve existing surface water rights, promote efficient water use through the use of water exchanges and transfers, investigate potential for water banking opportunities within the Plan area, develop additional water storage capacity within the Plan area, and monitor existing surface water quality data developed by other agencies.

3.5 Information Dissemination

Groundwater resource and basin information will be developed through the active implementation of the Plan. The DCTRA participants will serve as the primary conduit of information regarding the Plan and the subsequent data and results.

Through the strategies from the BMO's, the Plan participants will compile various data and information regarding the Basin and the resources available. The DCTRA participants will compile, manage, and disseminate this information to facilitate improved coordination and use of the Plan's hydrologic resources. The Plan will identify various opportunities for the DCTRA stakeholders to respond to BMO's and efforts.

The original Groundwater Management Plan identified strategies to help implement each BMO within the Basin. A description of each existing and updated BMO, along with the strategies associated, is summarized below.

3.5.1 Groundwater Basin and Resource Information Management

The purpose of the groundwater basin and resource information management strategy utilized by the DCTRA participants for the Plan is to collect all available information for compilation into a standard database that is readily available for evaluation purposes. Many of the Plan efforts are completed by individual DCTRA participants or stakeholders. Creating a centralized database is critical to the Basin groundwater management.

Under this management strategy, the DCTRA participants will conduct assessments and evaluations of the data available. These efforts will serve as the basis of development for the DCTRA Annual Reports and other Plan documents.

In addition, a conjunctive use model for the Tule Basin was developed by the DWR Bulletin 118 evaluation in 2002. This model will be used as a part of the database for information of the DCTRA.

The DCTRA participants have implemented activities to better collect and organize the data, including establishing data management authority and responsibilities, develop and implement data collection and inventory protocols and standards, and conduct periodic refinement and use of groundwater models.

3.5.2 Groundwater Basin and Resource Reports

This management strategy consists of the preparation of reports and other documents used by the DCTRA participants to disseminate information and findings regarding its efforts under the Plan. Reports will be used to document Plan activities and subsequent effectiveness. These reports will also be used to present new and / or additional knowledge regarding the Basin characteristics and resources.

Detailed information regarding the DCTRA participants reporting efforts are identified in **Section 5: Plan Implementation and Reports**.

3.5.3 Local Agency and Stakeholder Involvement

The purpose of the Local Agency and Stakeholder involvement Management strategy is to engage the individuals and agencies within the Basin. Three primary elements will form the foundation of this management strategy: Plan participation, Advisory Committee, and Public Review.

The first element is plan participation. There are many agencies within the Basin that are not directly involved in the groundwater management planning but benefit from the Plan efforts. The current DCTRA participants will continue to engage the agencies not involved to encourage involvement. The additional participants would increase the extent of coordinated groundwater resource management and the amount of resources available for the Plan.

The second element of this strategy is the development and utilization of a Plan Advisory Committee to address the implementation of the Plan. The DCTRA Participants will establish the Advisory committee to have representatives of the various agencies and resource interests in the Plan.

The third element of this strategy consists of public participation and review. The meetings of the DCTRA Board are open to the public. Public Notification will be completed to encourage public participation. During Plan reporting efforts, the public will be given opportunity to review and publicly comment on the Plan and its implementation. The Plan will be considered a Public Document available for inspection upon request.

SECTION 4 – BASIN MONITORING

To effectively manage the groundwater in the Basin, hydrological data is collected per the established groundwater monitoring program. The purpose of this element of the DCTRA Groundwater Management Plan is to identify the hydrological conditions within the Basin that will be monitored. The data collected through the monitoring program will be used to provide a better and more complete understanding of the current and historical conditions and the trends within the Basin. The primary focus of the Monitoring Program is currently to measure the depth to groundwater to identify direction of groundwater flow and changes in groundwater depth year to year.

4.1 Monitoring Protocols

The goal of the Monitoring Program is to track the changes in conditions within the Basin for the purposes of meeting the Groundwater Management Plan objectives. Accuracy of this data is critical. Consistency should be reflected in factors such as location and reference elevation at sample points, sampling procedures, testing procedures, time of year and frequency of sample collection. Consequently, uniform data gathering procedures are required for reliability of analyses. Specific protocols for water level and water quality monitoring are set forth below:

General protocols for the groundwater level measurement program include:

- Perform all groundwater level measurements of the Plan wells in as short a time period as possible.
- Perform semi-annual groundwater measurements at the same time of the year each year (February and October)
- Document the measurement reference point for each well
- Document the date and time of each measurement
- Measure each well twice, or more if needed, until consistent results are obtained
- If there is reason to suspect groundwater contamination, water level measuring equipment should be decontaminated after the measurement
- Landowners will be contacted for permission to access their property for field measurement of their well(s)

General protocols for the groundwater quality monitoring program include:

- Adequate well pumping time prior to sample collection with documentation of stabilized parameters
- Proper sample containers, preservatives, and holding time
- Secure chain-of-custody procedures
- Testing shall be performed by an accredited, state-certified laboratory that uses proper quality control and quality assurance procedures
- Samples shall be given a quality assurance code, which represents the relative confidence in the sample
- Certain tests shall include spiked, duplicate and field-blank samples for comparison to genuine samples
- Proper handling procedures
- Documentation of all protocols and procedures that are used
- Uniform time of year for sampling
- Document the name, contact information, and qualifications of the individual taking the sample

- Landowners will be contacted for permission to access their property and sample the groundwater pumped from their well.

These protocols and new protocols may be adopted and implemented as required by the DCTRA.

4.2 Groundwater Levels

Data on groundwater levels are used to evaluate groundwater movement and storage conditions. Groundwater contour maps showing lines of equal elevation of the groundwater surface indicate the direction of groundwater movement and also can be used to develop estimates of groundwater flow entering or leaving the management area. Maps of depth to groundwater can provide insight into the distribution of pumping lifts and resultant energy cost for extraction. Maps showing changes in groundwater levels, when used in conjunction with data on specific yield, can also be used to estimate changes in groundwater storage.

The member districts of the DCTRA regularly measure groundwater levels in approximately 300 wells. These wells are shown on ***Attachment G: Well Location Map***. Measurements are taken twice a year, once in the Spring (February) and again in the Fall (October). The current monitoring networks will be maintained or enhanced to assure the availability of sufficient data for the preparation of groundwater level and depth contour maps. Measurement of groundwater levels will continue to be performed twice a year in order to show seasonal variations.

In addition to the wells measured by the DCTRA members, additional groundwater data is being collected from readily available sources such as the Tulare County and the Department of Water Resources. Although this data does not have the consistency and standardization of the wells measured by the member districts, this data is used for analyzing overall trends in groundwater levels.

The DCTRA Annual Report summarizes both the historical and current groundwater trends within the Basin, based upon data collected and made available each year.

4.3 Groundwater Quality

Monitoring of groundwater quality provides the information required to determine the suitability of groundwater for various beneficial uses. Compiled groundwater quality data for the Plan area does not currently exist. The DCTRA participants will develop protocols to obtain groundwater quality data from readily available regulatory agencies that collect this data from domestic water providers, farmers, and dairies. Currently data from the community water systems within the basin are collected through the Consumer Confidence Reports. Other additional data that is readily available will be analyzed and reported within the Annual Report each year.

The sampling of the DCTRA participant wells will be expanded, if needed, to provide sufficient data to allow identification of areas where water quality is of concern. Supplemental sampling may also be performed to better define localized areas of impaired water quality. Testing will typically include standard agricultural type analysis, but may also include additional constituents as required. The current strategy is to continue to find other sources of readily available data to begin monitoring yearly trends in groundwater quality throughout the Basin.

4.4 Additional Monitoring

Data related to the hydrologic inventory will be collected annually for quantification and analysis. Components of the hydrologic inventory include precipitation, runoff, imported supplies, amounts of groundwater replenished and quantities of groundwater extracted. Additional monitoring efforts will result from the following Plan management strategies: Groundwater Recharge Management, Groundwater Extraction Management, Surface Water Management, Land Use Planning, Well Abandonment/Destruction Policies, and Well Construction Policies.

SECTION 5 – PLAN IMPLEMENTATION & REPORTS

The DCTRA Groundwater Management Plan documents will be maintained at the office of the Lower Tule River Irrigation District. The office will act as the Plan's resource center and data clearinghouse. Monitoring Data and information gathered during the Plan implementation will be compiled and stored at the office. The DCTRA Advisory Committee will provide the lead for Plan activities, report preparation and information dissemination efforts.

5.1 Plan Participation

The Plan officially recognizes stakeholders through the execution of a Memorandum of Understanding (MOU). The original participants of the DCTRA executed a MOU to indicate their support of the original Plan. A copy of this MOU is presented in ***Appendix E.*** The purpose of the MOU is to document the interest and responsibilities of the participants in the adoption and implementation of the Plan. The MOU also promotes the sharing of information, the developing of courses of action and the resolution of differences that may arise regarding the Plan. It is anticipated that stakeholder involvement will increase with time. The DCTRA will continue to pursue new stakeholder involvement and shall endeavor to enter into agreements with other local agencies. The form of agreement shall be consistent with the existing MOU and shall also be in compliance with California Water Code Section 10750.8.

5.2 Dispute Resolution

The Plan acknowledges that controversial issues may arise concerning the groundwater and surface water resources. Stakeholders and Participants are encouraged to work through the Plan in addressing and resolving differences. When this process proves insufficient, the DCTRA has a policy in place that can be applied. The Plan adopted the DCTRA's Alternative Dispute Resolution Policy (***Appendix F***).

5.3 Annual Report

Documentation in the form of an annual report will be prepared as required to document the results of the management strategy activities and monitoring elements of the Plan. The contents of the report will include:

1. Maps and/or tables showing:
    a. Spring and Fall groundwater elevations
    b. Modifications to the monitoring well network
    c. Change in groundwater levels between subsequent spring readings
    d. Groundwater quality data
2. Estimation of the change in groundwater storage computed using specific yield data and maps of change in groundwater levels
3. Summary of water resource data
4. Assessment of the effectiveness of management activities completed during the year

The Plan will be re-evaluated annually subsequent to the findings of the Plan's Annual Report. The DCTRA Advisory Committee will be responsible for monitoring the Plan strategies and monitoring to make sure progress is made towards the Basin Management Objectives.

Additional reports and technical memoranda may be produced as a result of a particular Plan activity, due to grant funding requirements or need for more documentation or better understanding of the Basin.

5.4 Schedule

The schedule for the DCTRA Plan implementation and Annual Report will be structured to follow the schedule below:

Plan Management Strategies and Activities	Monthly (as required)
Advisory Committee	Monthly
DCTRA General Meeting	Bi-Monthly
Plan Annual Report	Annually
Plan Re-evaluation	Every 5 years
Groundwater Monitoring Levels	Semi-Annually – Spring and Fall
Groundwater Quality Levels	Annually

5.5 Program Funding and Fees

Implementation of the Plan will require dedicated funding through the DCTRA and the Plan Participants. Generally, the funding for the Plan and its activities will be derived from grants, in-lieu of contributions, cost sharing agreements and/or assessments.

The DCTRA will pursue opportunities to fund Plan activities through grants offered by the Bureau, the DWR, and other agencies. DCTRA Members may be asked to file a grant application on behalf of the DCTRA.

Cost for annual groundwater reports, Plan updates and other reporting efforts will be distributed and collected according to the cost-sharing agreements for DCTRA project activities. Additional cost-sharing agreements may be developed as necessary to fund other projects considered during the implementation of the plan.

Some Plan activities, such as groundwater level monitoring will be funded by the Districts' own operations.

Upon adoption of this Plan, the DCTRA has the ability to levy and collect general groundwater replenishment assessments, as well as water extraction fees based on the amount of groundwater extracted from the aquifer within the DCTRA Boundary. Any assessment or fees proposed to be collected by the DCTRA under this Plan for the purpose of groundwater management must be approved per the statutory provisions related to Assembly Bill 3030.

5.6 Plan Implementation

Portions of the Basin Management Objectives identified in the previous DCTRA Plan have been implemented during the past 6 years. Primarily the focus has been on organizing data, monitoring groundwater levels, and compiling available data. But during this period, several actual projects have been completed and several others have been listed as potential projects to be completed to help implement the goals and objectives of the Plan. **Table 5-1: DCTRA GROUNDWATER MANAGEMENT PROJECT LIST, page 5-3** lists the projects that are part of the DCTRA Plan implementation to date.

Table 5-1: DCTRA GROUNDWATER MANAGEMENT PROJECT LIST

Overall DCTRA Projects

1. Groundwater Banking Project at intersection of Deer Creek and Friant Kern Canal

Lower Tule River Irrigation District

1. 13 Existing Recharge Basins
2. Canal Inter-tie Project to more easily transport the available Tule River water throughout the district

Pixley Irrigation District

1. New Canal Project along Avenue 116 Alignment *(CEQA completed)*
2. 12 Existing Recharge Basins

Porterville Irrigation District

1. 2 Existing Recharge Basins

Tea Pot Dome Water District

1. 10 acre Groundwater Storage and Conjunctive Management of Surface Water and Groundwater Project

ATTACHMENTS

A. DCTRA Participant Member Districts

B. USGS Quadrangle Map

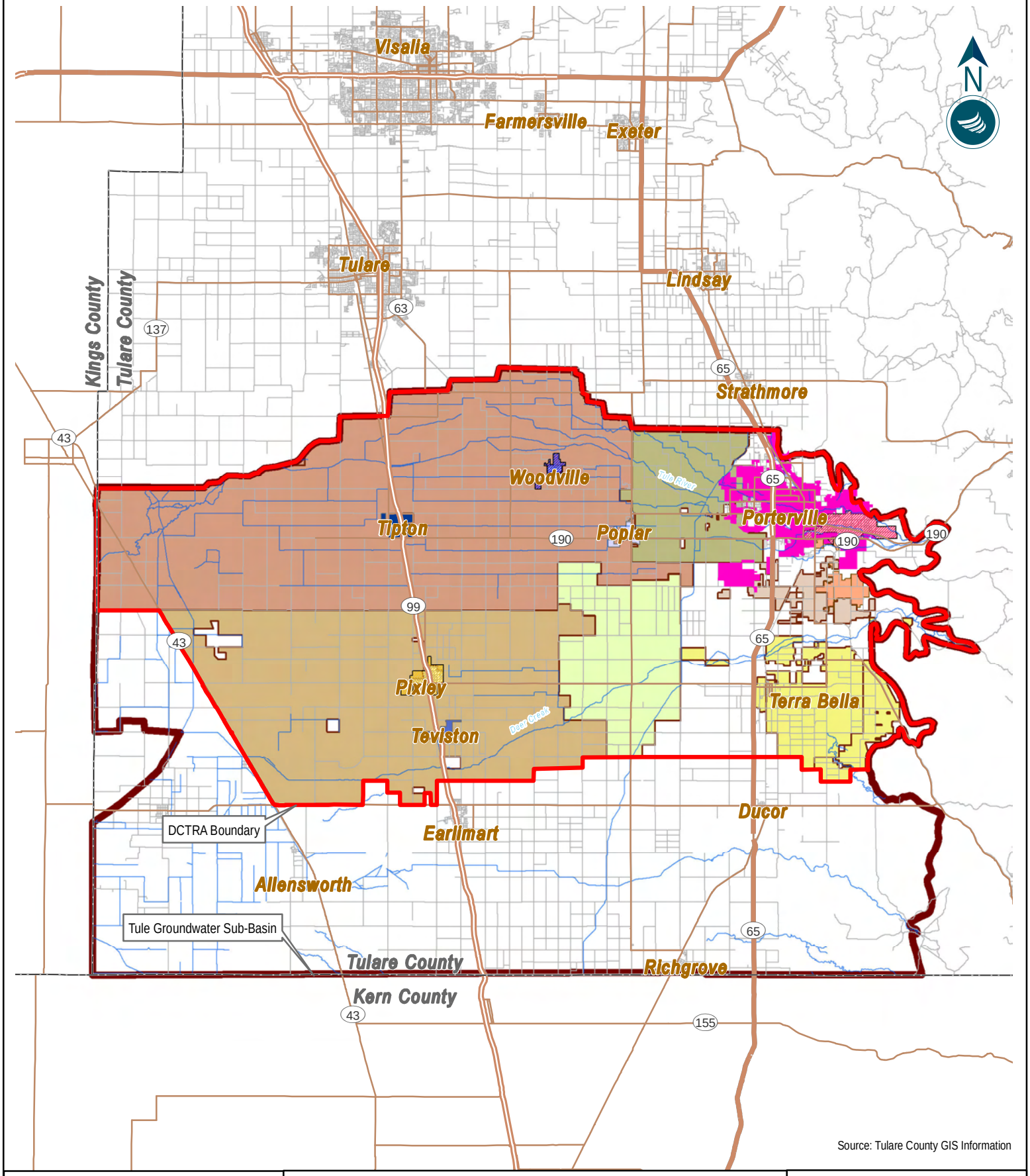
C. Soil Permeability Map

D. 2011 Groundwater Flow Direction Map

E. DCTRA Surface Water Distribution and Recharge Basins

F. DCTRA Land Use Map

G. DCTRA Well Location Map



4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

0 1.25 2.5 5 Miles

Legend

- County Boundary
- DCTRA Boundary (289,448 Ac.)

City/Communities

- Porterville (9,064 Ac.)
- Pixley PUD (896 Ac.)
- Porter Vista PUD (1,743 Ac.)
- Woodville PUD (348 Ac.)
- Poplar CSD (410 Ac.)
- Teviston CSD (199 Ac.)
- Tipton CSD (692 Ac.)

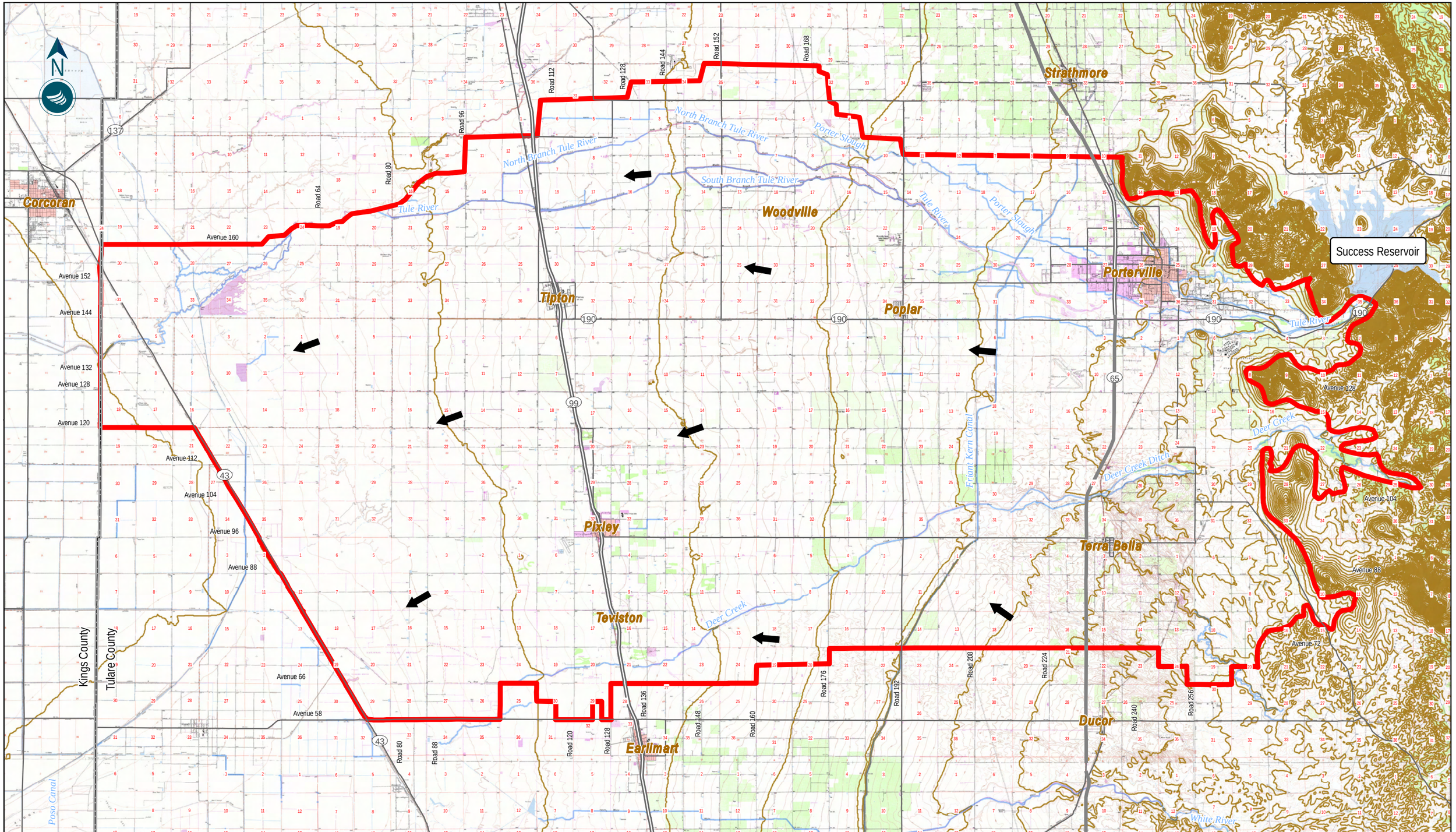
Member Districts

- Lower Tule River ID (103,034 Ac.)
- Pixley ID (69,014 Ac.)
- Porterville ID (16,997 Ac.)
- Saucelito ID (19,702 Ac.)
- Tea Pot Dome WD (3,481 Ac.)
- Terra Bella ID (15,053 Ac.)
- Vandalia ID (1,379 Ac.)

Attachment A

DCTRA Member Districts

Deer Creek Tule River Authority
Groundwater Management Plan



0 0.75 1.5 3 Miles

4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

Legend

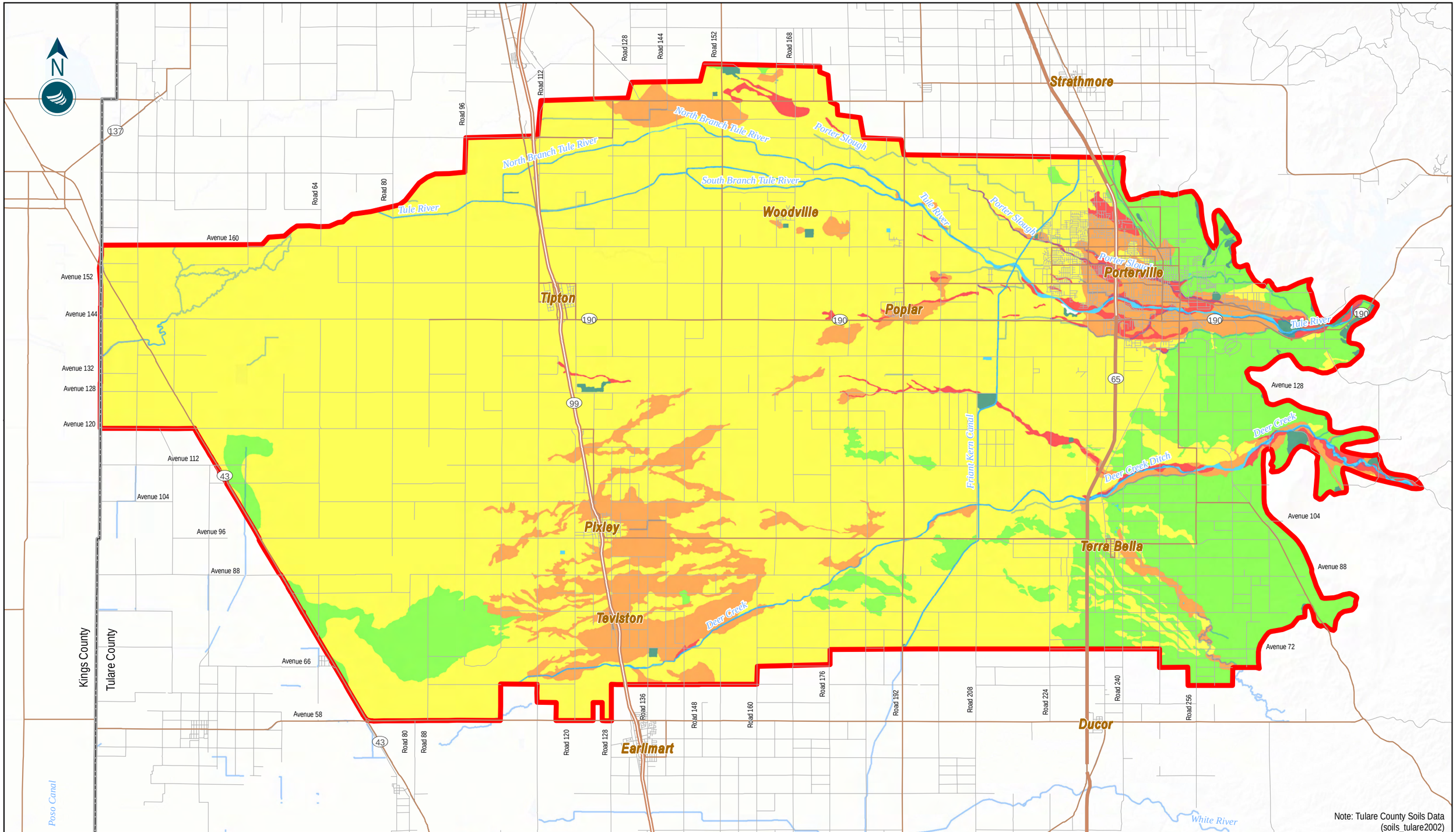
- DCTRA Boundary
- County Boundary
- General Direction of Ground Surface Gradient

USGS Quadrangle Maps

Cairns Corner
Tulare
Success Dam
Porterville
Woodville
Tipton
Taylor Weir
Corcoran
Fountain Springs
Ducor
Sausalito School
Pixley
Alpaugh

Attachment B
USGS Quadrangle Map

Deer Creek Tule River Authority
Groundwater Management Plan



Note: Tulare County Soils Data (soils_tulare2002)

0 0.75 1.5 3 Miles

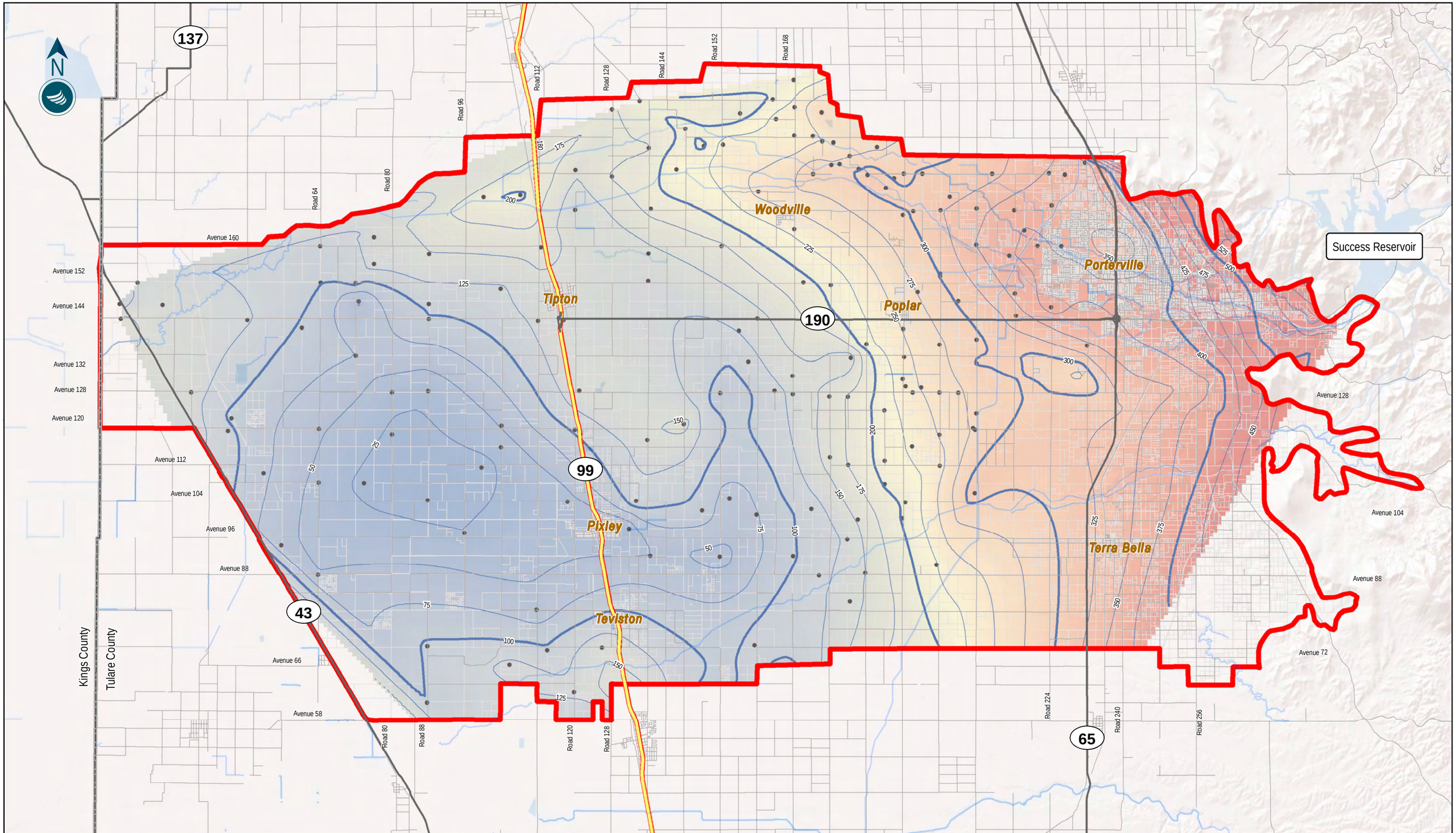
4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

Legend

- Rock
- Slow
- Moderate
- Rapid
- Very Rapid
- Under Water

Attachment C
Soil Permeability Map

Deer Creek Tule River Authority
Groundwater Management Plan



0 0.75 1.5 3 Miles

4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

Legend

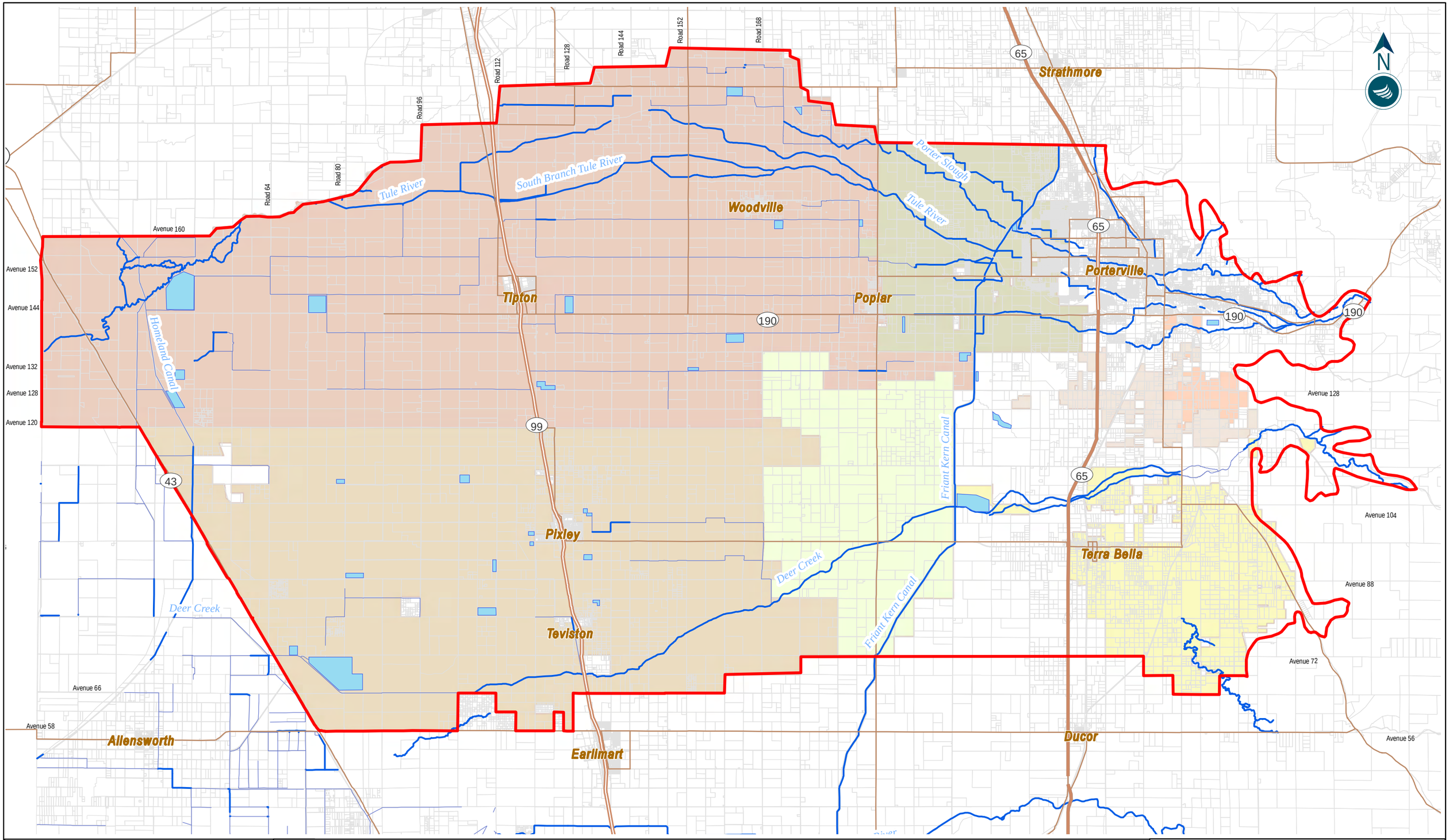
- DCTRA Boundary
- Minor Contour (25' Interval)
- Major Contour (100' Interval)
- Well Locations

Gound Water Surface Elevation

- High : 709.7'
- Low : 13.2'

Note: Ground Elevations are based on the North American Vertical Datum of 1988 (NAVD88)

Attachment D
Groundwater Elevation Map
February 2011
Deer Creek Tule River Authority
Groundwater Management Plan



0 0.5 1 2 Miles

4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

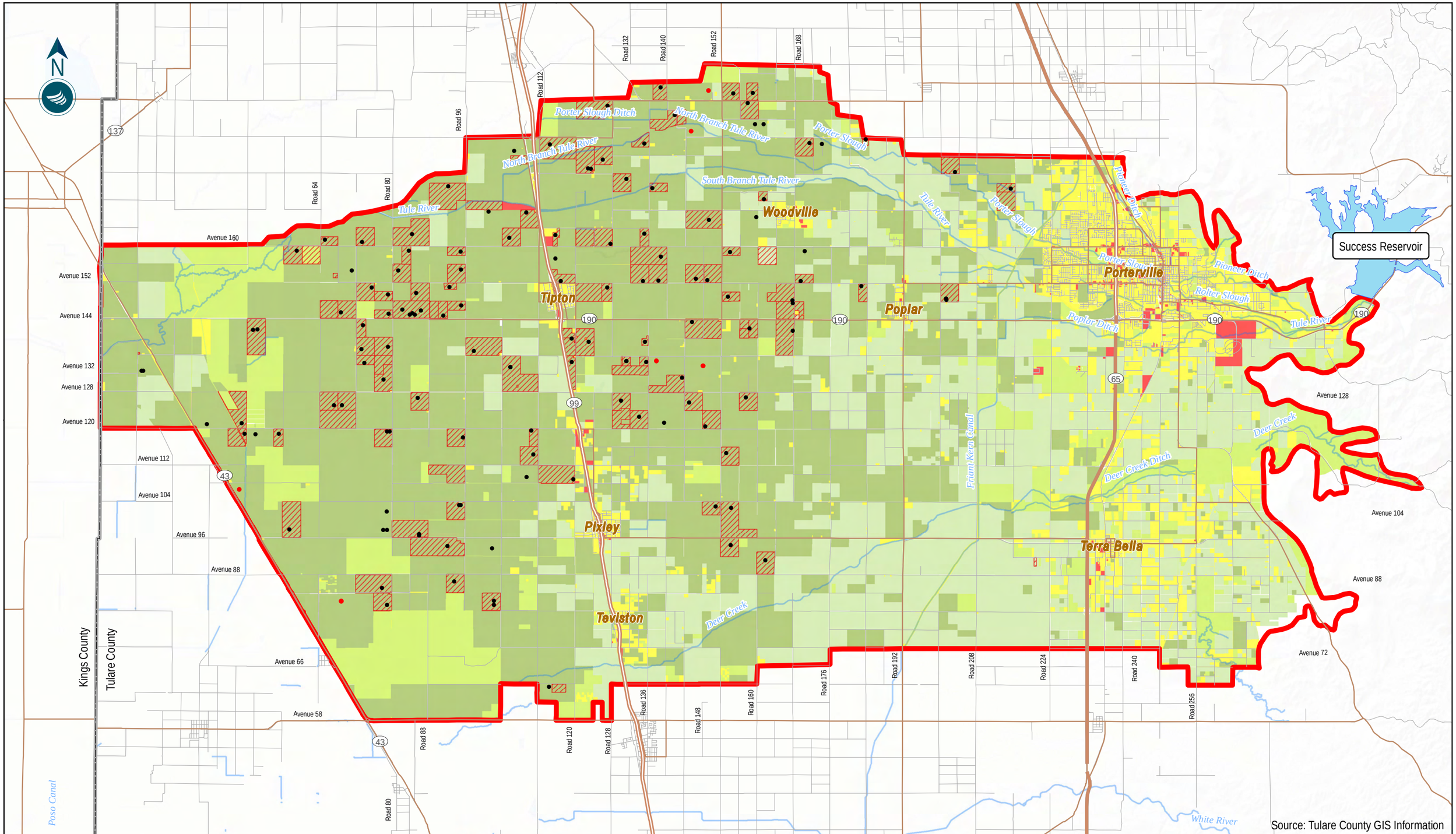
Legend

- Recharge Basins (2,082.8 ac)
- DCTRA Boundary
- Lower Tule River ID (103,034 Ac.)
- Pixley ID (69,014 Ac.)
- Porterville ID (16,997 Ac.)
- Saucelito ID (19,702 Ac.)
- Tea Pot Dome WD (3,481 Ac.)
- Terra Bella ID (15,053 Ac.)
- Vandalia ID (1,379 Ac.)
- Irrigation Canals
- Tule River (58.6 Miles)
- Deer Creek (39.6 Miles)
- Porter Slough (15.5 Miles)

Attachment E

DCTRA Recharge Basins
(LTRID & Pixley ID Distribution Systems)

Deer Creek Tule River Authority
Groundwater Management Plan



Source: Tulare County GIS Information

0 0.75 1.5 3 Miles

4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

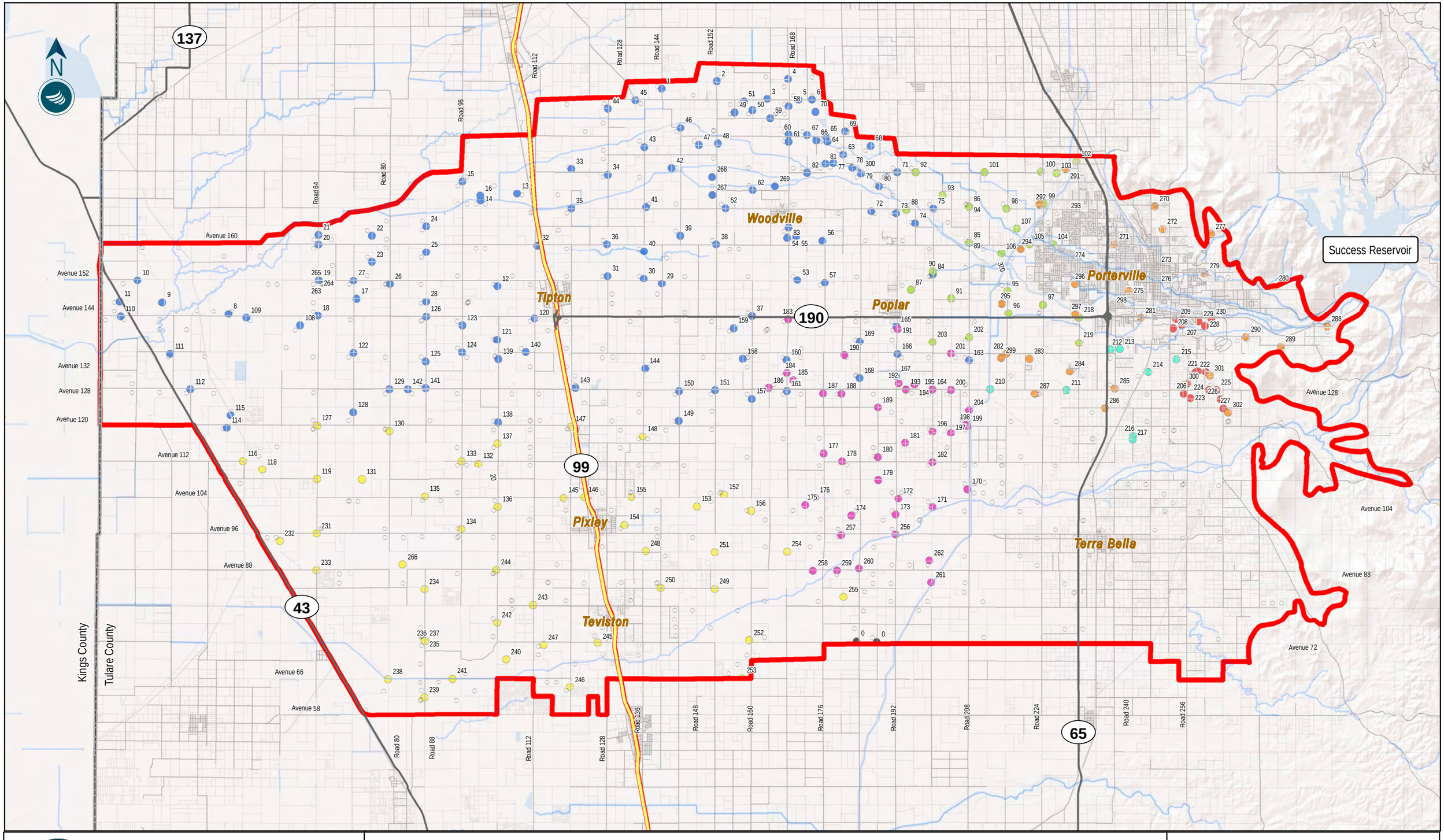
Legend

- DCTRA Boundary (289,448 ac.)
- County Boundary
- Tulare County Dairy Facility
- Residential (23,072.0 ac)
- Commercial/Industrial (1,546.7 ac)
- Ag-Permanent Crops (77,640.2 ac)
- Conservation/Recharge/Pasture (35,503.9 ac)
- Ag-Row Crops (138,282.0 ac)
- Dairy Milk Barn Location (136 Total)
- Feed Lot Locations

Attachment F

DCTRA Land Use Map

Deer Creek Tule River Authority
Groundwater Management Plan



0 0.75 1.5 3 Miles

4CREEKS
2929 W. Main St., Ste. A
Visalia, California 93291
(559) 802-3052

Legend

- DCTRA Boundary
- County Boundary
- Historical County Well Data
- DEID
- LTRID
- PID
- PIX ID
- SID
- TDWD
- TRA
- VID

Attachment G

DCTRA Well Location Map

Deer Creek Tule River Authority
Groundwater Management Plan

APPENDIX A

JULY 2006

DEER CREEK AND TULE RIVER AUTHORITY
GROUNDWATER MANAGEMENT PLAN

DENNIS KELLER & ASSOCIATES

GROUNDWATER MANAGEMENT PLAN

DEER CREEK AND TULE RIVER AUTHORITY

JULY 2006

DENNIS R. KELLER / JAMES H. WEGLEY
CONSULTING CIVIL ENGINEERS

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SECTION 1
PURPOSE
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 1
PURPOSE
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

PLAN OBJECTIVE

The members of the Deer Creek and Tule River Authority (Authority) desire to formalize their existing groundwater management practices for the continuance of local management and to enhance existing monitoring activities in a coordinated manner. Through this Groundwater Management Plan (Plan) the Authority will identify and implement modifications to ongoing practices in order to preserve and enhance groundwater resources. The Authority will organize existing and expanded groundwater management activities to facilitate the implementation of the Plan.

Preservation and enhancement of the groundwater resource is vital to sustaining the local economics which have been built up in reliance, in whole or in part, on this resource. The Authority's objective is to preserve the utility of the groundwater resource, both in terms of quantity and quality at the least possible cost. Enhancement or augmentation of the resource is necessary to mitigate the present level of overdraft and the attendant long-term decline in groundwater levels in the overall groundwater basin. The Plan objectives can be accomplished, at least cost, by joint implementation of the Plan through the Authority as opposed to individual implementation by the Authority members.

AUTHORITY

The Authority is organizing current and proposed groundwater management activities

under provision of Part 2.75 of Division 6 of the California Water Code commencing with Section 10750, otherwise known as AB3030, the Groundwater Management Act of 1992. The 1992 Act was amended in 2002 and 2004 to describe specific requirements for the Plan.

For the purpose of groundwater management, powers granted to an entity which adopts a Plan include the powers of a water replenishment district (Part 4, Division 18, California Water Code), to the extent not already possessed by the entity, but not limited to the following:

1. Acquire and operate facilities, waters and rights needed to replenish the groundwater supplies;
2. Store water in groundwater basins, acquire water rights, import water into the Authority and conserve water;
3.. Participate in legal proceedings as required to protect and defend water rights and water supplies and to prevent unlawful exportation of water from the Authority.
4. Under certain conditions to exercise the right of eminent domain;
5. Act jointly with other entities in order to economically perform required activities;
6. Carry out investigations required to implement the Plan;
7. Fix rates for water for replenishment purposes; and
8. Fix the terms and conditions of contracts for use of surface water in-lieu of groundwater.

PLAN ELEMENTS

Part 2.75, Groundwater Management, of the Water Code establishes required (§10753.7) and recommended (§10753.8) elements of a groundwater management plan. Bulletin 118 prepared by the Department of Water Resources (DWR) also provides recommendations for groundwater management plans.

The Authority's Plan has been prepared to address the requirements and recommendations for groundwater management plans. Table 1-1 summarizes these elements and their respective location within the Authority's Plan.

TABLE 1-1
PLAN SUMMARY
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION REFERENCE	SUBJECT	PLAN LOCATION
REQUIRED PLAN ELEMENTS (Water Code §10753.7 (a))		
(1)	Basin management objectives	Section 4
(1)	Monitoring and Management: – groundwater levels – groundwater quality – land surface subsidence – changes of surface water flow and quality	 Section 5, Section 6 Section 5, Section 6 Section 5, Section 6 Section 5, Section 6
(2)	Plan to involve other agencies	Section 2, Section 5, Section 7
(3)	Map of groundwater basin and local agencies	Section 2
(4)	Monitoring protocols	Section 6
RECOMMENDED PLAN ELEMENTS (Water Code §10753.8)		
a.	Saline Water Intrusion	Section 5
b.	Wellhead Protection (Recharge Areas)	Section 5
c.	Migration of Contaminated Water	Section 5
d.	Well Abandonment/Destruction	Section 5
e.	Overdraft Mitigation	Section 5
f.	Groundwater Replenishment	Section 5
g.	Groundwater Extractions	Section 5
h.	Groundwater Monitoring	Section 5, Section 6
i.	Conjunctive Use	Section 5
j.	Well Construction Policies	Section 5
k.	Operation of Facilities	Section 5, Section 7
l.	Relationships with Other Agencies	Section 5
m.	Land Use Planning	Section 5

TABLE 1-1 (cont'd)
PLAN SUMMARY
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

ADDITIONAL PLAN ELEMENTS (DWR Bulletin 118, Appendix C) (1)		
(4)	Advisory Committee of Stakeholders	Section 7, Appendix A
(5)	Groundwater basin description: – physical features and characteristics – historical data – issues of concern – historical and project water demands and supplies	Section 2
(8)	Existing and planned management actions	Section 5, Section 6
(10)	Monitoring program features: – map of monitoring sites – type and frequency of monitoring	Section 6
(12)	Groundwater Management Reports	Section 7
(13)	Plan re-evaluation	Section 7

Note: (1) DWR Bulletin 118, Appendix C outlines 14 required and recommended components for groundwater management plans. Required elements have been documented.

PLAN CONTACT INFORMATION

Questions or requests for additional information regarding the Authority's Plan should be directed to the Program Manager at the following address:

Deer Creek and Tule River Authority
357 East Olive Ave.
Tipton, CA 93272
Phone: 559/686-4716 FAX: 559/686-0151

Business Hours: 8:00 a.m. - 4:30 p.m.
Monday through Friday

The Authority meets on the 3rd Friday of each odd-numbered month. Authority meetings are held at above address and are open to the public.

SECTION 2
GENERAL
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 2
GENERAL
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

DESCRIPTION OF AUTHORITY

The Deer Creek and Tule River Authority (Authority) is a joint powers Authority comprised of the following members: Lower Tule River Irrigation District, Pixley Irrigation District, Porterville Irrigation District, Saucelito Irrigation District, Stone Corral Irrigation District, Tea Pot Dome Water District and Terra Bella Irrigation District (Districts). The Authority's primary purpose is the joint exercise of the powers of the Authority members in order to facilitate more efficient operations and management of their activities. Integral to this purpose is the joint conjunctive management of the Authority members surface and groundwater supplies. The Authority will work with its members and other water entities to insure an adequate water supply.

The Districts were originally organized to provide a reliable water supply to their landowners. AB 3030 provides a means for local districts to jointly manage their individual supplies. In order to preserve local management and enhance existing groundwater management programs operated over many years by the Districts, the Board of Directors of the Authority on March 24, 1995, adopted a Groundwater Management Plan (Plan) under provisions of AB 3030. The 1994 Plan enabled the Authority to establish policies that served to enhance the overall management of the water supplies available to the Authority members.

In 2002 and 2004, Senate Bill (SB) 1938 and Assembly Bill (AB) 105, respectively, amended the requirements of groundwater management plans. This Plan incorporates the necessary elements to update the Authority's original 1994 Plan.

AB 3030 provides for the development of a groundwater management plan within the boundaries of the Authority members. The underlying groundwater basin is part of the larger Tulare Lake Basin as identified in State of California Bulletin 118. The management area for the Authority's Plan may include, by agreement, adjacent entities whose activities would influence the common groundwater resource. The Authority's member Districts and the Plan area is shown on Figure 2-1.

Plan Participants

The Authority will be responsible for the implementation of the Plan. The Authority's member Districts comprise the primary Plan Participants. The identification and involvement of additional Plan Participants will result from Plan activities.

The Plan Participants are presented in Appendix A. This Appendix will be revised accordingly to reflect the Plan's current participants.

Stakeholders

For the purposes of the Plan, a stakeholder will be defined as any individual, group, or entity located within the Plan Area that may be affected by the implementation of the Plan. Stakeholders can be Plan Participants.

An initial compilation of groundwater basin stakeholders is presented in Appendix A. Additional stakeholders may be identified through Plan activities.

Advisory Committee

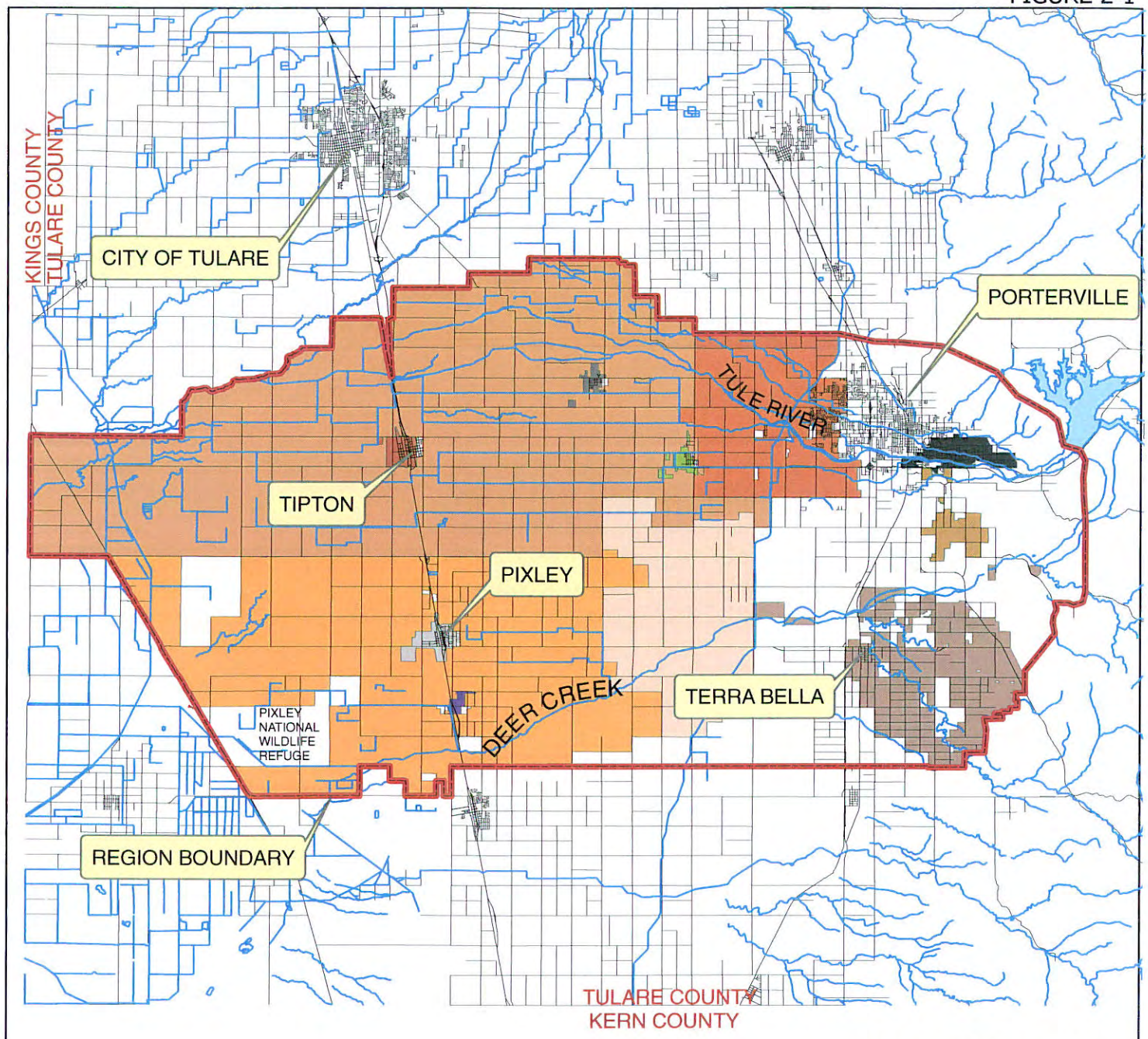
The Authority has created an Advisory Committee to oversee the development, implementation and subsequent refinement of the Plan. The members of the Advisory Committee are presented in Table 2-1.

TABLE 2-1
ADVISORY COMMITTEE MEMBERS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

NAME	TITLE	REPRESENTING DISTRICT
Dan Vink	General Manager	Lower Tule River Irrigation District
Dan Vink	General Manager	Pixley Irrigation District
Dave Hoffman	Manager	Porterville Irrigation District
Dave Hoffman	Manager	Saucelito Irrigation District
Keith Norris	Manager	Tea Pot Dome Water District
Sean Geivet	General Manager	Terra Bella Irrigation District
Dennis R. Keller	Consulting Civil Engineer	Authority Consultant

Additional Advisory Committee members may be identified and included during the implementation of the Authority's Plan.

FIGURE 2-1



SOURCE: TULARE COUNTY GRAPHICAL INFORMATION SYSTEM, 1999

LEGEND

GEOGRAPHICAL INFORMATION
- Boundary - Groundwater Management Plan
- Streams
- Streets
- Lake Success

PUBLIC UTILITY DISTRICTS
- Pixley Public Utility District
- Porter Vista Public Utility District
- Woodville Public Utility District

COMMUNITY SERVICES DISTRICTS
- Poplar Community Services District
- Teviston Community Services District
- Tipton Community Services District

IRRIGATION DISTRICTS
- Lower Tule River Irrigation District
- Pixley Irrigation District
- Porterville Irrigation District
- Saucelito Irrigation District
- Terra Bella Irrigation District
- Vandalia Irrigation District

N W E S

10 5 0 10 Miles

PLAN BOUNDARIES
GROUND WATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

KELLER/WEGLEY

SECTION 3
GROUNDWATER BASIN CHARACTERISTICS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 3
GROUNDWATER BASIN CHARACTERISTICS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

GENERAL

The Deer Creek and Tule River Authority (Authority) is located within the Tule River Sub-basin of the San Joaquin Valley Groundwater Basin (Basin No. 5-22.13). The Tule River Sub-basin is bounded by the following groundwater sub-basins; Kaweah River (north), Tulare Lake (west) and Kern County (south). The groundwater basin includes three major surface drainages: Tule River, Deer Creek and White River.

Typical annual rainfall in the basin is approximately 11 inches. The western portion of the Basin is typically more arid. The eastern edge of the Basin along the mountains experiences higher rainfall amounts.

The region encompassed by the Authority's Groundwater Management Plan (Plan) is shown on Figure 2-1 in Section 2. Table 3-1 summarizes the communities located in the basin and their respective populations.

TABLE 3-1
COMMUNITY POPULATIONS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

COMMUNITY	POPULATION (1)
Pixley	2,589
Poplar/Cotton Center	1,496
Porterville (2)	46,346
Terra Bella	3,466
Tipton	1,790
Woodville	1,678

NOTE: (1) Population based upon Census 2000
Census Designated Place (CDP).
(2) Includes East Porterville CDP (population, 6,730).

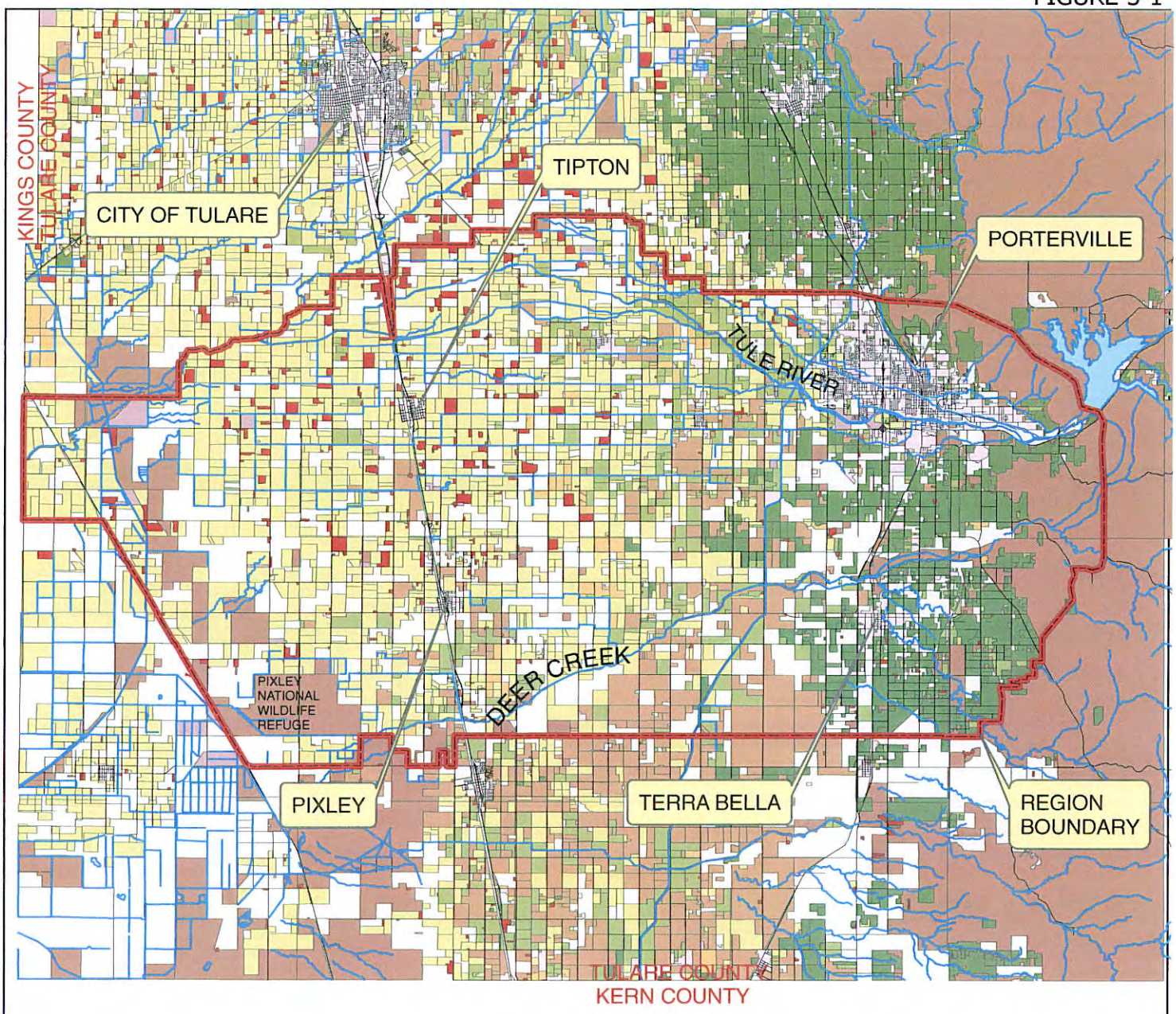
The Basin is rural in nature, dominated by agricultural land use as shown in Figure 3-1.

PHYSICAL CHARACTERISTICS

The physical characteristics of the groundwater basin influence the content of the Plan. In particular, the manner in which groundwater is replenished is directly affected by surface and subsurface characteristics, such as the permeability of the overlying and subsurface soils. The permeability of the soils within the groundwater basin is shown on Figure 3-2. In general, the soils having higher permeability rates are located adjacent to the main surface water drainages.

The Authority members overlie areas of both unconfined and confined aquifers. There are limited areas of perched water and shallow groundwater tables. These conditions result from subsurface geologic conditions. A general depiction of the aquifer and subsurface geologic conditions is presented on Figure 3-3. Figure 3-4 shows the groundwater elevations for spring, 2004, as compiled and prepared by the Department of Water Resources.

FIGURE 3-1



SOURCE: TULARE COUNTY GRAPHICAL INFORMATION SYSTEM, 1999

LEGEND

GEOGRAPHICAL INFORMATION

- Boundary - Groundwater Management Plan
- Streams
- Streets
- Lake Success

LAND USE

- Citrus
- Decdiduous Fruit and Nuts
- Field Crops
- Semi Agricultural: Livestock, Dairies, Etc.
- Truck, Nursery and Berry Crops
- Vineyards
- Native Vegetation
- Water Surfaces
- Urban

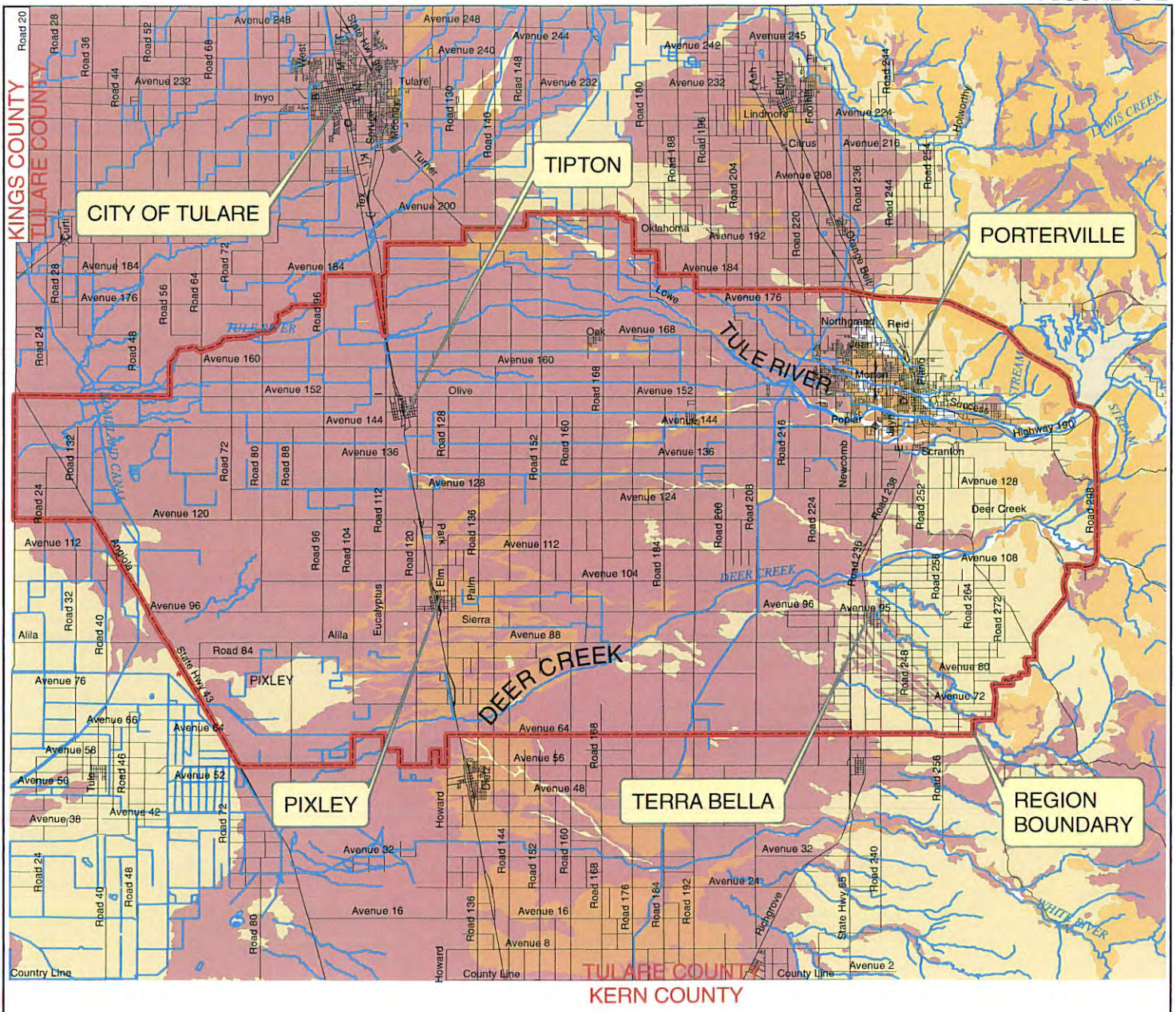
N W E S

10 5 0 10 Miles

LAND USE
GROUND WATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

KELLER/WEGLEY

FIGURE 3-2



SOURCE: TULARE COUNTY GRAPHICAL INFORMATION SYSTEM, 1999

LEGEND

GEOGRAPHICAL INFORMATION

- Boundary - Groundwater Management Plan
- Streams
- Streets
- Lake Success

PERMEABILITY

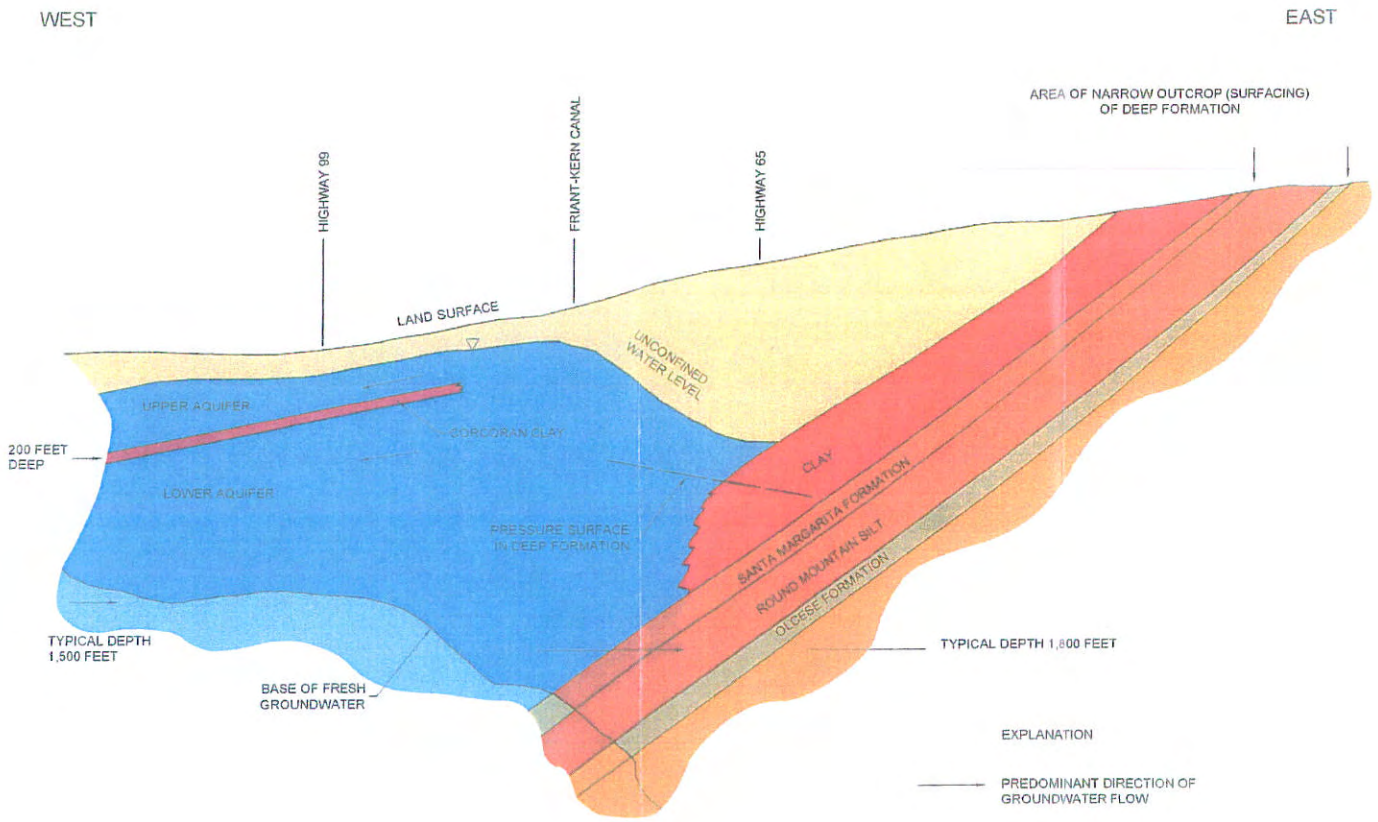
- Moderate
- Rapid
- Rock
- Slow
- Under Water

N W E S

10 5 0 10 Miles

SOIL PERMEABILITY
GROUND WATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

KELLER/WEGLEY

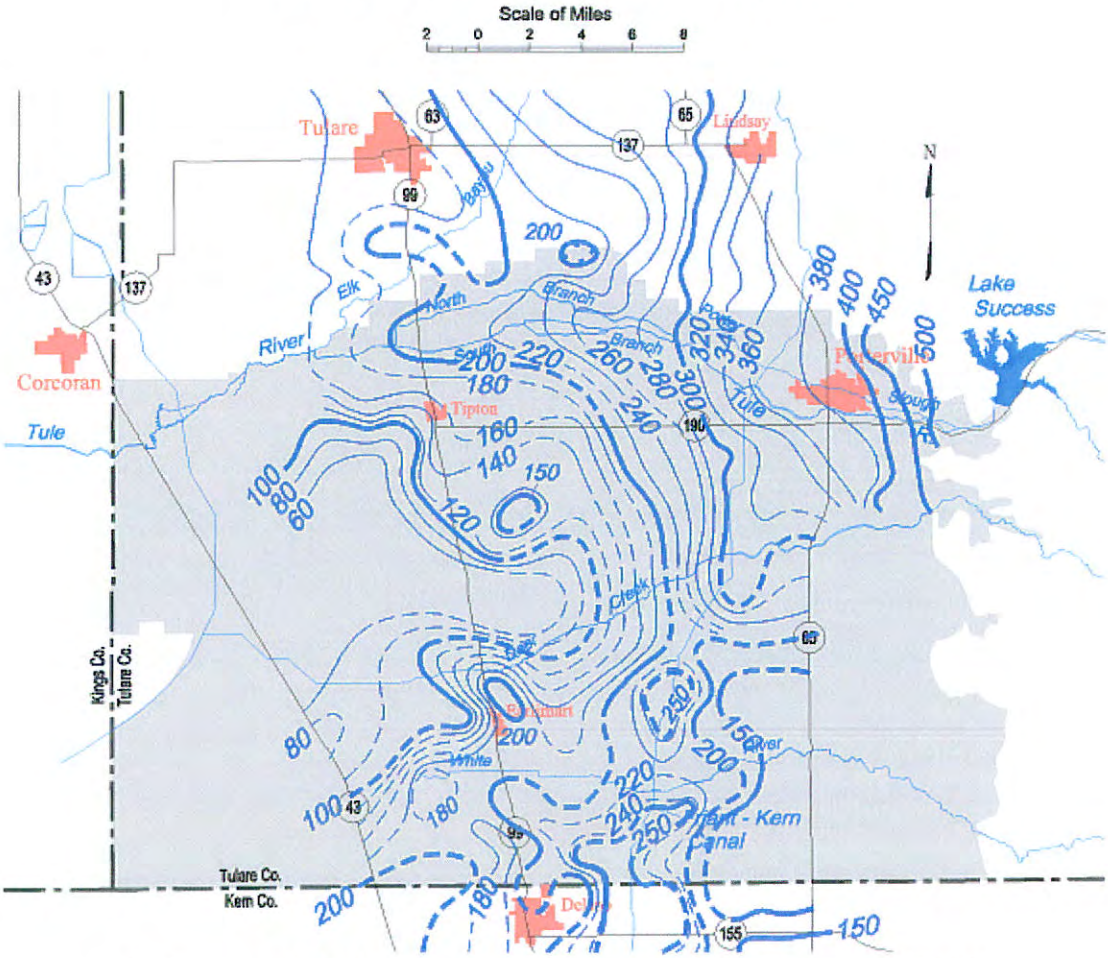


SOURCE: FIGURE 9, ANALYSIS OF GROUNDWATER RESOURCES
PROVOST AND PRITCHARD 2001.

SURFACE CONDITIONS
GROUND WATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

Tule Groundwater Basin

Spring 2004, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



Contours are dashed where inferred. Contour interval is 10, 20 and 50 feet.

SOURCE: DEPARTMENT OF WATER RESOURCES

GROUNDWATER ELEVATIONS
GROUND WATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 4
BASIN MANAGEMENT OBJECTIVES
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 4
BASIN MANAGEMENT OBJECTIVES
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

GENERAL

The Deer Creek and Tule River Authority (Authority) has developed five (5) basin management objectives to guide the implementation of the Groundwater Management Plan (Plan). By accomplishing these objectives, the Authority believes that a more reliable groundwater supply for long-term beneficial uses within the Plan area will be realized. The Authority's basin management objectives within the Plan area are:

1. To promote and realize groundwater resource protection;
2. To facilitate groundwater resource sustainability;
3. To develop groundwater resource understanding;
4. To develop groundwater basin understanding; and
5. To promote and facilitate information dissemination regarding the groundwater resource.

Each basin management objective is described below.

GROUNDWATER RESOURCE PROTECTION

Groundwater needs to have water quality that will sustain its beneficial uses to remain a viable water resource within the groundwater basin. This objective focuses the Authority's management strategies to maintain the good water quality of the Plan Area's groundwater. The Authority will utilize the following strategies to achieve this objective:

1. Wellhead/Recharge Area Protection;
2. Migration of Contaminated Water Controls;
3. Well Abandonment and Destruction Policies; and
4. Well Construction Policies.

Protection of the groundwater beneath the Plan Participants ensures that the maximum amount of groundwater remains available. Achieving this basin management objective minimizes the potential to lose groundwater volumes to contamination.

GROUNDWATER RESOURCE SUSTAINABILITY

Groundwater is the primary water supply in the Plan Area for both domestic and agricultural purposes. This objective emphasizes the maintenance and/or increase of the available groundwater supply. The following management strategies will be used toward achieving this objective:

1. Overdraft Mitigation;
2. Groundwater Recharge Policies;
3. Groundwater Extraction Management;
4. Conjunctive use Policies; and
5. Operation of Facilities.

This basin management objective of the Plan will identify and quantify the surface and groundwater supplies available to the Authority members and define the interaction between these supplies. Groundwater storage is affected by groundwater pumping and groundwater recharge as water users attempt to meet their water use demands. The net result of the

interactions between the available water supplies and the demands for water is a change in groundwater storage. This basin management objective is intended to provide the Authority with the information and tools required to maintain and improve the total water supply through coordinated management of groundwater.

GROUNDWATER RESOURCE UNDERSTANDING

The purpose of this basin management objective is to further develop knowledge regarding the Plan Area's groundwater. With detailed information regarding the groundwater resource, improved characterization will lead to future groundwater management decisions. The primary Plan element that will achieve this objective is groundwater monitoring.

Groundwater levels monitored at least annually will indicate the status (availability) of the resource. Groundwater levels also reveal the effectiveness of other strategies, such as groundwater recharge efforts. Monitoring data developed over time will serve as the foundation of conclusions regarding groundwater reliability and management strategy effectiveness.

GROUNDWATER BASIN UNDERSTANDING

This basin management objective garners basin information to facilitate evaluations regarding basin features and potential groundwater resource impacts.

Changes to the groundwater basin's topographic, geologic and hydrologic conditions may adversely affect the groundwater. Land use development can impact both the quantity and quality of groundwater. The availability of surface water reduces overall demand on the groundwater.

This objective will be achieved through the following management strategies:

1. Land Subsidence Monitoring;
2. Land Use Planning; and
3. Surface Water Management.

Through these strategies, the Authority will remain familiar with the Plan Area's topographic, geologic and hydrologic conditions that may affect the groundwater resource. The Authority will have the capability to react to proposed projects and changing conditions and potentially avoid adverse groundwater impacts.

INFORMATION DISSEMINATION

Groundwater resource and basin information and knowledge will result from the active implementation of this Plan. The Authority will serve as the primary conduit of information regarding the Plan and subsequent results.

This Basin management objective will result from the following plan elements:

1. Groundwater Basin and Resource Information Management;
2. Groundwater Basin and Resource Reports; and
3. Local Agency and Stakeholder Involvement.

The Plan and its management strategies will result in the compilation of various data and information regarding the groundwater basin and its resources. The Authority will compile, manage and disseminate this information to facilitate improved coordination and use of the Plan Area's hydrologic resources. The Plan will also result in various opportunities for the Basin's stakeholders to respond to basin management efforts.

SECTION 5
MANAGEMENT STRATEGIES
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 5
MANAGEMENT STRATEGIES
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

GENERAL

California Water Code Sections 10753.7 and 10753.8 set forth required and recommended elements that establish strategies for groundwater management. Each strategy and the Deer Creek and Tule River Authority's (Authority) planned activities conducted in support of the strategy are described in this section. Some activities have been in use since the adoption of the previous 1994 Groundwater Management Plan (Plan). Planned activities describe proposed Authority efforts that will be utilized during the implementation of this Plan.

SALINE WATER INTRUSION CONTROL

The Tule River Groundwater Basin is a subbasin of the Tulare Lake Hydrologic Region. The western edge of the Plan Area is situated about 90 miles from the Pacific Ocean. The Authority does not consider saline water intrusion controls a management strategy that warrants consideration.

Plan Activities

None - The Authority reserves the right to decide whether or not it will be involved with this strategy in the future as authorized by Water Code Section 10753.8.

WELLHEAD AND RECHARGE AREA PROTECTION

The management strategy consists of the identification, establishment and management of wellhead and recharge protection areas. Areas where groundwater pumping and recharge occur warrant dedicated attention by the Authority. Wells represent a direct conduit to groundwater. Recharge area (basins) are typically constructed in areas exhibiting high soil permeability characteristics.

The Authority will monitor and participate in land use development activities within the Plan Area. The Authority will also consider structural measures such as fencing or land acquisition to protect wellhead or recharge areas.

Plan Activities

1. Land use and development monitoring;
2. Participation in pertinent land use/zoning planning procedures; and
3. Incorporation of security measures such as fencing, as necessary.

MIGRATION OF CONTAMINATED GROUNDWATER CONTROLS

This management strategy incorporates regulations and controls for contaminated groundwater. The Authority has not identified specific plumes of contaminated groundwater. Source specific plumes of contaminated groundwater, such as those from leaking underground storage tanks, fall under the jurisdiction of various state and federal agencies. The Authority is not in a position at this time to pursue regulations regarding unattributed groundwater contamination.

The Authority will develop and implement protocols to obtain and compile information regarding contaminated groundwater. Monitoring of groundwater quality will also be conducted.

Plan Activities

1. Monitoring of regulatory activities and records regarding contaminated groundwater within Plan Area; and
2. Complete an inventory and evaluate available groundwater quality data.

WELL ABANDONMENT/DESTRUCTION POLICIES

Improper well abandonment may allow contamination of the groundwater. Well abandonment must be conducted in conformance with standards adopted by the County of Tulare. The Authority will monitor these activities by reviewing abandonment records compiled by the County. Appropriate information on proper abandonment of wells within the Plan area will be made available through the Authority.

In lieu of well abandonment, the Authority will pursue the conversion of a production well to a monitoring well if such suitable opportunities arise and funding is available.

Plan Activities

1. Establish and maintain a protocol with Tulare County regarding review of well abandonment records;
2. Develop record keeping system/database of abandoned wells;
3. Establish public education activity to inform stakeholders of well standards and policies; and
4. Develop and implement program to convert abandoned production wells to monitoring wells.

WELL CONSTRUCTION POLICIES

The increase in groundwater extraction resulting from the construction of additional wells affects the long-term water balance of the region. Well construction may allow contamination of the groundwater if not done properly. Well construction must be conducted in conformance with standards adopted by the County of Tulare. The Authority will monitor these activities by reviewing well construction records compiled by the County. Appropriate information on proper construction of wells within the Plan area will be made available through the Authority.

Opportunities for additional groundwater monitoring wells may arise through the abandonment of existing production wells. The Authority will consider such a conversion to eliminate the construction of additional wells.

Plan Activities

1. Establish and maintain a protocol with Tulare County regarding review of well construction records;
2. Develop a record keeping system/database of constructed wells;
3. Establish public education activity to inform stakeholders of well construction standards and policies; and
4. Develop guidelines for monitoring well conversion.

OVERDRAFT MITIGATION

The groundwater basin is experiencing groundwater overdraft as evidenced by lower groundwater levels within the Plan Area.

This management strategy is best achieved through the implementation of several companion management strategies. Overdraft mitigation is accomplished through the integration of the following strategies:

1. Groundwater Recharge/Management;
2. Groundwater Extraction Policies;
3. Conjunctive Use Policies; and
4. Surface Water Management.

These strategies will be implemented to attempt to achieve a hydrologic balance within the Plan area, thereby reducing overdraft of the groundwater resource.

GROUNDWATER RECHARGE MANAGEMENT

The replenishment of the underlying groundwater occurs naturally and through deliberate, controlled means. The Authority's groundwater replenishment is achieved by controlled means principally through direct recharge to the underground and through the delivery of surface water, when available, to lands otherwise relying on the groundwater resource.

Direct recharge is achieved through the placement of surface water in channels or basins located on permeable soils for the express purpose of percolation to the underground. Within the area of the Authority, the members use natural channels, unlined ditches and canals and percolation basins for this purpose. It is the intention of the Authority members to expand the current network of recharge facilities. The monitoring of groundwater conditions under this Plan will enable the Authority to identify areas of need in this regard.

Delivery of surface water for irrigation purposes reduces the need for water users to draw on groundwater thereby conserving the water available in the aquifer for later use. The use of surface water in this manner is known as in-lieu recharge and is practiced by all Authority members. An additional benefit is derived when irrigation water applied beyond crop water needs percolates to the underground.

Plan Activities

1. Maintain and/or expand relationships involving networks of groundwater recharge facilities;
2. Maintain and/or expand surface water deliveries within the Plan area.; and
3. Pursue additional surface water supplies for specific purposes of groundwater recharge.

GROUNDWATER EXTRACTION POLICIES

Effective groundwater replenishment and maintenance of groundwater levels involves the management of water supplies available to the basin and extractions from the basin. Groundwater extractions within the management area are primarily by private wells. Management of groundwater extractions can best be achieved through economic incentives, rather than through the regulation of extractions. This current practice will continue to be implemented through the pricing of surface water at rates which encourage water users to use surface water in-lieu of pumping groundwater.

Plan Activities

1. Secure surface water quantities and establish subsequent pricing that encourages maximum surface water use;
2. Develop and implement an educational program focused on:
    a) Timing of use of groundwater;
    b) Timing of use of surface water; and
3. Evaluate grower incentive based banking program.

CONJUNCTIVE USE POLICIES

Groundwater management in California is rooted in the conjunctive use of surface and groundwater resources. Use of the water supplies from the two sources is integrated to accomplish the optimum utilization of each source.

In years of shortage, that previously stored water is pumped to supplement available surface water. Authority members will be encouraged to maximize the utilization of available facilities and resources for conjunctive use through cooperative management.

Conjunctive use opportunities motivated the Authority members to enter into long-term contracts with the United States beginning in the 1950's for the importation of supplemental surface water supply from the Friant Unit of the CVP.

Water transfers and exchanges are an integral part of the existing conjunctive use programs. Under the Plan, the Authority members will seek to preserve and enhance conjunctive use activities through coordinated use of available supplies made possible by water transfers and exchanges and through expansion of recharge facilities. Enhancement of conjunctive use activities could include the development of water banking arrangements with other agencies by utilizing available groundwater storage capacity for the temporary storage of water.

This management strategy will result from the integration of the following plan elements:

1. Groundwater Recharge Policies;
2. Groundwater Extraction Policies; and
3. Surface Water Management.

SURFACE WATER MANAGEMENT

Surface Water Quantity

The Authority members import surface water supplies from the Central Valley Project through the Friant Division and the Cross Valley Canal exchange program under long-term contracts with the United States and receive local surface supplies from the Tule River and Deer Creek. Also, the Authority members make short-term and year-to-year arrangements to secure additional Central Valley Project (CVP) water and other supplies. The Authority members have in place and operate an extensive system of conveyance, distribution and recharge facilities throughout their service area to make use of available surface supplies. Table 5-1 summarizes the water supply contract amounts of each member District of the Authority.

Under this Plan, the Authority will seek to preserve the existing water rights and contracts and will pursue opportunities to supplement these supplies through importation of additional water supplies for Authority members. Supplemental supplies may be obtained through purchase of additional CVP water from other entities, "Section 215 water" from the United States and through other programs as may be available. Efficient water use and distribution within the management area will be encouraged through the use of transfers and exchanges among Authority members.

Importation of affordable water supplies, in quantities sufficient to achieve a long-term water balance within the service area of the Authority members, is a prerequisite for successful implementation of the recharge groundwater management strategy. All opportunities to supplement the regular supplies of the Authority members through long-term water exchange and banking agreements, hereinafter referred to as Projects, will be evaluated for compatibility with the goals of this Plan pursuant to an adopted evaluation process.

TABLE 5-1
WATER SUPPLY
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

District	Acres	CVP Supply (AF)	Avg CVP Supply (AF)	Conveyance System	Other Notes
Lower Tule River ID	104,000	61,200 Class 1 238,000 Class 2 31,102 CVC	156,240	300 mi. Canals 25 mi. Rivers 5 mi. Piped	Local supply from Tule River 70,000 AF/y average
Pixley ID	70,000	31,102 CVC		46 mi. Canals 14 mi. River	Access to Deer Creek - minor supply
Porterville ID	17,000	16,000 Class 1 30,000 Class 2	27,320	13 mi. Unlined Canals 7 mi. Piped 12 mi. Rivers/Slough	Local supply from Tule River 10,600 AF/y average
Saucelito Irrigation District	19,500	21,200 Class 1 32,800 Class 2	33,300	100% Piped	
Stone Corral ID (1)	6,500	10,000 Class 1	9,200	100% Piped	GW storage is limited-Aquifer thickness ‹1600'
Terra Bella ID	13,300	29,000 Class 1	26,680	100% Piped	GW storage is limited-Aquifer thickness ‹1600'

Notes: (1) Not in groundwater basin.

This evaluation process will consist of the following steps:

1. Submittal of written proposal and technical report;
2. Authority Advisory Committee and consultant evaluation;
3. Proponent and Authority Coordination; and
4. Authority Advisory Committee recommendation and Board of Directors action.

For any proposed Project, the Proponent will initiate the process through the transmittal of a written proposal describing the Project, including the anticipated benefits. A technical report will be prepared by the Proponent and evaluated by the Authority. The report must describe:

1. Quantities and sources of water;
2. Structures and other physical features of the proposed Project;
3. Water accounting measures and/or methods;
4. Funding;
5. Schedule, including CEQA compliance;
6. Anticipated benefits; and
7. Proponent's evaluation of compliance with Plan's management objectives.

The Authority Advisory Committee will evaluate the Technical Report prior to any Board determination regarding the proposed Project.

The Authority Advisory Committee will utilize outside consultants, as necessary, for further evaluations. The proposal and technical report will be reviewed for consistency with the Plan's basin management objectives and utilization of adopted management strategies.

The resulting evaluation will be returned to the Project Proponent. The Authority Advisory Committee will coordinate with the Proponent to develop the final proposed Project.

Upon finalization of the proposed Project, the Authority Board of Directors will act to determine the compatibility of the proposed Project with the goals of this Plan. Similarly, water exchange and banking agreements among Authority members will be used where they may enable the Authority members to distribute water to areas identified under this Plan as suffering from groundwater depletion and as being suitable for groundwater storage.

Surface Water Quality

The surface waters of the Plan area are varied. Imported surface water originates in the San Joaquin River watershed (Friant-Kern Canal). Local surface water can be found in the Tule River and Deer Creek. These imported and local surface waters are subject to monitoring programs by various agencies. Current surface water monitoring programs are summarized in Table 5-2. Under this management strategy, the Authority will review results of existing monitoring programs. Additional surface water quality monitoring will be developed if deemed necessary.

Plan Activities

1. Maintain or increase quantities of imported surface water;
2. Preserve existing surface water rights;
3. Promote efficient water use through the use of water exchanges and transfers;
4. Investigate potential for water banking opportunities within the Plan area;
5. Develop additional water storage capacity within the Plan area; and
6. Monitor existing surface water quality testing efforts by other agencies.

TABLE 5-2
SURFACE WATER QUALITY MONITORING
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SURFACE WATER	MONITORING AGENCY	FREQUENCY
Friant-Kern Canal	Reclamation District 770	Annually
	Terra Bella Irrigation District	Varies - monthly to annually
Tule River	Reclamation District 770	Annually
	Tule River Association	Seasonal

OPERATION OF FACILITIES

This management strategy consists of the construction and operation of facilities that address groundwater recharge, storage extraction, conservation contamination clean-up and water recycling. Current efforts primarily address groundwater recharge through percolation basins and unlined irrigation distribution channels. In general, the current projects are implemented individually by member Districts.

Additional groundwater facilities will be needed to sustain the resource as demands placed on the groundwater resource increase. The Authority will evaluate potential projects that will address this need. The current scope of this strategy will be expanded as necessary. Opportunities to incorporate recycling and reclamation and water conservation may be possible through coordination with domestic utility providers.

Plan Activities

1. Maintain policy that encourages the use of unlined channels (where possible);
2. Maintain policy which facilitates maintenance of recharge basins;
3. Develop and implement protocol to identify operations projects; and
4. Upgrade and expand surface water conveyance facilities.

GROUNDWATER MONITORING

Groundwater monitoring will be used by the Authority to assess the quantity and quality of the groundwater resource. The details of this management strategy are described in Section 6.

Each member District of the Authority currently participates in biannual monitoring of groundwater levels. Additional groundwater level information is available from domestic water providers.

In general, regular groundwater quality assessments are conducted by domestic water providers within the region. The Authority will develop a protocol to compile groundwater quality data. Additional groundwater quality monitoring efforts will be developed as needed.

LAND SUBSIDENCE MONITORING

The Authority does not have any substantial information regarding land subsidence within the Plan area. This management strategy consists of developing and implementing monitoring protocols to determine the pressure of land subsidence. The Authority's efforts will establish a starting point for future evaluations.

Plan Activities

1. Identify and establish an elevation control network throughout the Plan area; and
2. Conduct periodic survey of control network to determine presence, if any, of land subsidence.

LAND USE PLANNING

This management strategy consists of reviewing land use plans and coordination with local planning agencies. Under this strategy, the Authority will review projects and basin activities that affect land use and the potential for groundwater resource impacts.

Plan Activities

1. Develop and maintain protocols to participate in local land use planning efforts; and
2. Continue participation in California Environmental Quality Act as a responsible agency.

GROUNDWATER BASIN AND RESOURCE INFORMATION MANAGEMENT

Many strategies to be utilized by the Authority will produce groundwater resource and basin data or information. This information will need to be completed and inventoried.

The purpose of this management strategy is to ensure that data and information gathered during the implementation of the Plan is readily available for evaluation purposes. Many Plan efforts could be implemented by Authority member Districts or other Plan Participants. Centralizing this data and information will be critical to groundwater management.

Under this management strategy, the Authority will also conduct assessments and evaluations of the implementation data. These efforts will serve as the basis of development for the Authority's annual reports and other Plan documents.

In addition, a conjunctive use model for the Tule groundwater basin area was developed for the Department of Water Resources in 2002. The model is a productive tool that is available to the Authority. This tool provides an additional method to evaluate Plan data and conduct groundwater resource assessments.

Plan Activities

1. Establish data management authority and responsibilities;
2. Develop and implement data collection and inventory protocols and standards; and
3. Conduct periodic refinement and use of predictive groundwater model.

GROUNDWATER BASIN AND RESOURCE REPORTS

This management element consists of the preparation of reports and other documents used by the Authority to disseminate information and findings regarding its efforts under the Plan. Reports will be used to document Plan activities and subsequent effectiveness. These reports will also be used to present new and/or additional knowledge regarding the Basin characteristics and resources.

Detailed information regarding the Authority's reporting efforts can be found in Section 7, Implementation.

Plan Activities

1. Prepare Annual Groundwater Management Plan Report; and
2. Prepare technical memoranda as necessary to disseminate information regarding Plan activities.

LOCAL AGENCY AND STAKEHOLDER INVOLVEMENT

This management strategy consists of efforts to engage individuals and agencies within the Plan area in Plan participation. Three primary elements will form the foundation of this management strategy: Plan participation, Advisory Committee and Public Review. The first element is Plan Participation. There exists many agencies within the Plan area that will realize benefits from the Authority's coordinated Plan efforts to manage the groundwater resource. The Authority will pursue opportunities to engage such agencies as Plan Participants. Additional Plan Participants increase the extent of coordinated groundwater resource management and the amount of resources available to implement the Plan.

The second element of this strategy is the development and utilization of a Plan Advisory Committee (Committee) to address the implementation of the Plan. The Authority will establish the criteria regarding Committee formation and participation. To be effective, the Committee must include individuals and agencies that represent the various resource interests of the Plan area. The Authority will endeavor to enlist sufficient representation for the Committee. Additional committees may be created as necessary to facilitate implementation of the Plan.

The third element of this strategy consists of public participation and review. The meetings of the Authority are open to the public. Public notification will be completed to encourage public participation. During Plan reporting efforts, the public will be afforded opportunity to review and publicly comment on the Plan and its implementation. The Plan will be considered public record and available for inspection.

Plan Activities

1. Pursue Plan participation by local agencies within Plan Area;
2. Maintain advisory committee of Plan Participants and Plan stakeholders; and
3. Establish and maintain public notification and participation procedures regarding Plan activities.

SECTION 6
MONITORING
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 6
MONITORING
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

GENERAL

Optimal use of the groundwater resource is dependent on the acquisition of good basic data respecting both geology and hydrology. The purpose of this element of the Deer Creek and Tule River Authority (Authority) Groundwater Management Plan (Plan) is to monitor conditions within the groundwater basin to identify changing conditions which may require attention. Monitoring includes gathering and analyzing basic data generated from Plan management activities to characterize the basin to provide the information necessary for future management decisions. Existing and proposed management activities in this regard may be enhanced to provide a more complete picture of the condition of the groundwater resource. The Plan's primary monitoring effort will be directed at the groundwater resource. Additional monitoring efforts will result from activities proposed by management strategies.

GROUNDWATER MONITORING

Groundwater monitoring will consist of two components which are groundwater levels and groundwater quality.

Groundwater Levels

Data regarding groundwater levels is used to evaluate groundwater movement and storage conditions. Groundwater contour maps showing lines of equal elevation of the water surface indicate the direction of groundwater movement and can be used to develop estimates of

groundwater flow entering or leaving the management area. Maps of depth to groundwater can provide insight into the distribution of pumping lifts and resulting energy costs for extraction. Maps showing changes in groundwater levels, when used in conjunction with data on specific yield, can also be used to estimate changes in groundwater storage.

The Authority members routinely measure groundwater levels in approximately 200 wells. (The location of these wells is presented in Figure 6-1.) Measurements are made in both spring (February) and fall (October). The present monitoring networks will be maintained or enhanced to assure the availability of sufficient data for the preparation of groundwater contour maps. Measurement of groundwater levels will continue to be performed in both spring and fall in order to show seasonal variations.

Groundwater Quality

Monitoring of groundwater quality provides the information required for determinations of the suitability of groundwater for various uses. Comprehensive groundwater quality data for the Plan area does not exist. The Authority will develop protocols to obtain groundwater quality data from domestic water providers and other sources and consolidate it for management purposes.

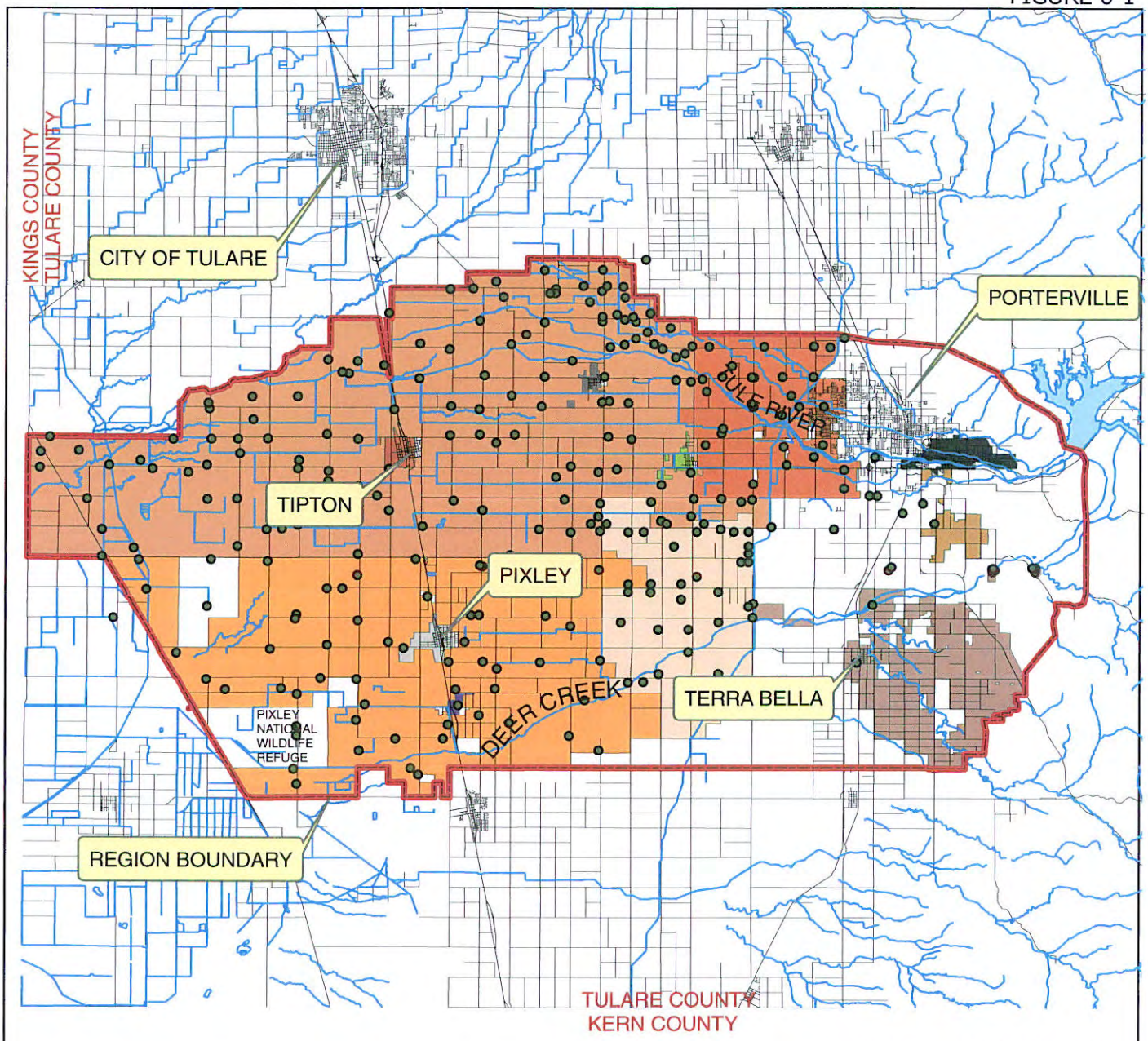
The sampling of the Authority's wells will be expanded, if necessary, to provide sufficient data to allow identification of water quality problem areas. Supplemental sampling may also be performed to better define localized areas of impaired water quality. Testing will typically include standard agricultural type analysis, but may also include additional testing, such as Title 22 parameters, as required.

ADDITIONAL MONITORING

Data related to the hydrologic inventory will be collected annually for quantification and analysis. Components of the inventory include precipitation, runoff, imported supplies, amounts of groundwater replenished and quantities of groundwater extracted. Additional monitoring efforts will result from the following Plan management strategies:

1. Groundwater Recharge Management;
2. Groundwater Extraction Policies;
3. Surface Water Management;
4. Land Use Planning;
5. Well Abandonment/Destruction Policies; and
6. Well Construction Policies.

FIGURE 6-1



SOURCE: TULARE COUNTY GRAPHICAL INFORMATION SYSTEM, 1999

LEGEND

GEOGRAPHICAL INFORMATION
- Boundary - Intergrated Regional Management Plan
- Streams
- Streets
- Lake Success

PUBLIC UTILITY DISTRICTS
- Pixley Public Utility District
- Porter Vista Public Utility District
- Woodville Public Utility District

COMMUNITY SERVICES DISTRICTS
- Poplar Community Services District
- Teviston Community Services District
- Tipton Community Services District

IRRIGATION DISTRICTS
- Lower Tule River Irrigation District
- Pixley Irrigation District
- Porterville Irrigation District
- Saucelito Irrigation District
- Terra Bella Irrigation District
- Vandalia Irrigation District
- Monitoring Well

N W E S

10 5 0 10 Miles

GROUND WATER MONITORING WELL LOCATIONS
GROUND WATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

KELLER/WEGLEY

SECTION 7
PLAN IMPLEMENTATION
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

SECTION 7
PLAN IMPLEMENTATION
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

GENERAL

The Deer Creek and Tule River Authority's (Authority) Groundwater Management Plan (Plan) documents will be maintained at the office of the Lower Tule River Irrigation District. The office will act as the Plan's resource center and data clearinghouse. Monitoring Data and information gathered during Plan implementation will be compiled and stored at the office. The Authority will lead Plan activity, report preparation and information dissemination efforts.

PLAN PARTICIPATION

The Plan officially recognizes stakeholders through the execution of a Memorandum of Understanding (MOU). The original stakeholders comprising the Authority executed a MOU to indicate their support of the original Plan. A copy of this MOU is presented in Appendix B. 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 developing of a course of action and the resolving of differences that may arise regarding the Plan. It is anticipated that stakeholder involvement will increase with time. The Authority will continue to pursue new stakeholder involvement and shall endeavor to enter into agreements with other local agencies. The form of agreement shall be consistent with the existing MOU and shall also be in compliance with California Water Code §10750.8.

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 Authority has a policy in place that can be applied by the Plan. The Plan hereby adopts the Authority's "Alternative Dispute Resolution Policy." Appendix C of the Plan includes the most current version of the policy.

ANNUAL REPORT

Documentation in the form of an annual report will be prepared as required to record the results of the management activities monitoring elements of the Plan. The contents of the annual report will include:

1. Maps and/or tables showing:
    a. Spring and fall groundwater elevations;
    b. Changes in the monitor well network;
    c. Changes in groundwater levels between subsequent spring readings; and
    d. Groundwater quality;
2. Estimation of the changes in groundwater storage computed using specific yield data and maps of change in groundwater levels;
3. Summary of water resource data; and
4. Assessment of the effectiveness of management activities.

PLAN EVALUATION

The Plan will be re-evaluated annually subsequent to the findings of the Plan's annual report. The Authority's Plan Advisory Committee will be responsible for monitoring the Plan's activities and progress towards its management objectives.

The re-evaluation of the Plan will include an assessment of the effectiveness of Plan activities and a determination of potential modification(s) to the Plan.

ADDITIONAL REPORTS

Additional reports and technical memoranda may be produced as a result of Plan activity, grant funding requirements or other need for documentation. The content of any supplemental documents will address the informational requirements.

SCHEDULE

Implementation of the Authority's Plan will be structured according to the schedule presented in Table 7-1.

TABLE 7-1
IMPLEMENTATION SCHEDULE
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

PLAN ACTIVITY	OCCURRENCE
Plan Management Strategies and Activities	Monthly (As Required)
Advisory Committee	Bi-monthly
Authority General Meeting	Bi-monthly
Plan Report	Annually
Plan Re-evaluation	Annually
Groundwater Monitoring	Semi-Annually (Additional As Required)

PLAN FUNDING

Implementing the Plan will require dedicated funding through the Authority and the Plan Participants. In general, funding for the Plan and its activities will be derived from grants, in-lieu contributions, cost-sharing agreements and/or assessments.

Grants

The Authority will pursue opportunities to fund Plan activities through grants offered by DWR and other agencies. Member Districts may be asked to support grant applications on the Authority's behalf.

Cost-Sharing Agreements

Costs for annual groundwater reports, Plan updates and other reporting efforts will be distributed and collected according to any cost-sharing agreements for Authority project activities.

Additional cost-sharing agreements may be developed as necessary to fund other projects considered during the implementation of the Plan.

In-lieu Contributions

Some Plan activities, such as groundwater monitoring will be funded through the Districts' own operations.

Assessments

Upon adoption of this Plan, the Authority is authorized to levy and collect general groundwater replenishment assessments, as well as water extraction fees based on the amount of groundwater extracted from the aquifer within the Plan Area. Any assessment or fees proposed to be collected by the Authority under this Plan for the purpose of groundwater management must be approved by an area-wide election as provided in the implementing statutory provisions related to AB 3030.

APPENDIX A
PLAN PARTICIPANTS AND BASIN STAKEHOLDERS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

TABLE A-1
PLAN PARTICIPANTS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

PARTICIPANT
Lower Tule River Irrigation District
Pixley Irrigation District
Porterville Irrigation District
Saucelito Irrigation District
Tea Pot Dome Water District
Terra Bella Irrigation District
Vandalia Irrigation District

TABLE A-2
BASIN STAKEHOLDERS
GROUNDWATER MANAGEMENT PLAN
DEER CREEK AND TULE RIVER AUTHORITY

STAKEHOLDER	INTEREST
Lower Tule River Irrigation District	District Landowners
Pixley Irrigation District	District Landowners
Porterville Irrigation District	District Landowners
Saucelito Irrigation District	District Landowners
Tea Pot Dome Water District	District Landowners
Terra Bella Irrigation District	District Landowners
Vandalia Irrigation District	District Landowners
Tipton Community Services District	Domestic Water Supply/Use
Poplar Community Services District	Domestic Water Supply/Use
Woodville Public Utility District	Domestic Water Supply/Use
Terra Bella Irrigation District	Domestic Water Supply/Use
Pixley Community Services District	Domestic Water Supply/Use
Teviston Community Services District	Domestic Water Supply/Use
Pixley Wildlife Refuge	Wildlife
Bureau of Reclamation	Surface Water Supplies
Friant Water Authority	Surface Water Supplies
National Resources Conservation Service	Natural Resources
Audubon Society	Wildlife/Monitoring
Tulare County	Land Use/Planning
City of Porterville	Domestic Water Supply/Use

APPENDIX B

STATUTORY AUTHORITY

Assembly Bill 3030 *(June 28, 2002)*

Senate Bill 1938 *(September 16, 2002)*

California Water Code Section 10750

Department of Water Resources, Bulletin 118, Appendix C

Senate Bill No. 1938

CHAPTER 603

An act to amend Sections 10753.4 and 10795.4 of, to amend and renumber Sections 10753.7, 10753.8, and 10753.9 of, and to add Sections 10753.1 and 10753.7 to, the Water Code, relating to water.

[Approved by Governor September 15, 2002. Filed with Secretary of State September 16, 2002.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1938, Machado. Groundwater management: state funding.

Existing law authorizes a local agency to prepare and implement a groundwater management plan. Existing law establishes the Local Groundwater Assistance Fund and provides that, upon appropriation by the Legislature, money in the fund may be used by the Department of Water Resources to assist local public agencies by awarding grants to those agencies to conduct groundwater studies or to carry out groundwater monitoring and management activities.

This bill would require a local agency that elects to develop a groundwater management plan to make available to the public a written statement describing the manner in which interested parties would be allowed to participate in the development of that plan. The bill would require a local agency, for the purposes of qualifying as a groundwater management plan under certain provisions of law, or, with certain exceptions, for the purposes of receiving state funds administered by the department for the construction of groundwater projects or groundwater quality projects, to prepare and implement a plan that includes certain basin management objectives and components, and to adopt certain monitoring protocols. The bill would require the local agency to submit a copy of the plan to the department, in an electronic format, if practicable, approved by the department, and the department would be required to make copies available to the public. The bill would provide, that upon appropriation by the Legislature, money in the Local Groundwater Assistance Fund may be used by the department to assist local public agencies in the development of groundwater management plans.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares the following:

(a) Groundwater constitutes a major source of water for use by the state's citizens in many urban and rural areas. It is in the interest of those citizens, and of benefit to California's economy, that groundwater resources be protected and managed to optimize the available water supply.

(b) Protection and management include, but are not limited to, protection of recharge areas and source areas from contamination, protection of groundwater quality, artificial recharge, planned variation of pumping, and conjunctive management of both surface water and groundwater to optimize supplies.

(c) Groundwater is a crucial component of California's water supply and provides about 30 percent of California's agricultural and urban demand in an average year, and 40 percent or more in dry years.

(d) California has 515 groundwater basins and subbasins, many of which are the sole source of water supply for irrigation and drinking water and significant number of groundwater basins have been impaired by pollution or are threatened with impairment.

(e) A significant number of the state's groundwater basins are poorly understood, making proper management difficult.

(f) The preparation of groundwater management plans enables local agencies to address issues related to groundwater recharge and storage, which are crucial components for effective management of California's water supply.

(g) It is the intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions. The preparation of certain basin management objectives will assist local agencies in optimizing local resources while protecting groundwater and surface water resources. The preparation of basin management objectives also will facilitate an understanding of the basin or subbasin, thereby allowing local agencies, individually and cooperatively, to meet local, regional, and state water needs through conjunctive management, while ensuring that no particular water supply is jeopardized.

SEC. 2. Section 10753.1 is added to the Water Code, to read:

10753.1. Nothing in this part, or in any groundwater management plan adopted pursuant to this part, affects surface water rights or the procedures under common law or local groundwater authority, or any provision of law other than this part that determines or grants surface water rights.

SEC. 3. Section 10753.4 of the Water Code is amended to read:

10753.4. (a) The local agency shall prepare a groundwater management plan within two years of the date of the adoption of the resolution of intention. If the plan is not adopted within two years, the

resolution of intention expires, and no plan may be adopted except pursuant to a new resolution of intention adopted in accordance with this chapter.

(b) For the purposes of carrying out this part, the local agency shall make available to the public a written statement describing the manner in which interested parties may participate in developing the groundwater management plan. The local agency may appoint, and consult with, a technical advisory committee consisting of interested parties for the purposes of carrying out this part.

SEC. 4. Section 10753.7 of the Water Code is amended and renumbered to read:

10753.8. A groundwater management plan may include components relating to all of the following:

(a) The control of saline water intrusion.

(b) Identification and management of wellhead protection areas and recharge areas.

(c) Regulation of the migration of contaminated groundwater.

(d) The administration of a well abandonment and well destruction program.

(e) Mitigation of conditions of overdraft.

(f) Replenishment of groundwater extracted by water producers.

(g) Monitoring of groundwater levels and storage.

(h) Facilitating conjunctive use operations.

(i) Identification of well construction policies.

(j) The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.

(k) The development of relationships with state and federal regulatory agencies.

(*l*) The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

SEC. 5. Section 10753.7 is added to the Water Code, to read:

10753.7. (a) For the purposes of qualifying as a groundwater management plan under this part, a plan shall contain the components that are set forth in this section. In addition to the requirements of a specific funding program, any local agency seeking state funds administered by the department for the construction of groundwater projects or groundwater quality projects, excluding programs that are funded under Part 2.78 (commencing with Section 10795), shall do all of the following:

(1) Prepare and implement a groundwater management plan that includes basin management objectives for the groundwater basin that is

subject to the plan. The plan shall include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin.

(2) For the purposes of carrying out paragraph (1), the local agency shall prepare a plan to involve other agencies that enables the local agency to work cooperatively with other public entities whose service area or boundary overlies the groundwater basin.

(3) For the purposes of carrying out paragraph (1), the local agency shall prepare a map that details the area of the groundwater basin, as defined in the department's Bulletin No. 118, and the area of the local agency, that will be subject to the plan, as well as the boundaries of other local agencies that overlie the basin in which the agency is developing a groundwater management plan.

(4) The local agency shall adopt monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence for basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin. The monitoring protocols shall be designed to generate information that promotes efficient and effective groundwater management.

(5) Local agencies that are located in areas outside the groundwater basins delineated on the latest edition of the department's groundwater basin and subbasin map shall prepare groundwater management plans incorporating the components in this subdivision, and shall use geologic and hydrologic principles appropriate to those areas.

(b) (1) (A) A local agency may receive state funds administered by the department for the construction of groundwater projects or for other projects that directly affect groundwater levels or quality if it prepares and implements, participates in, or consents to be subject to, a groundwater management plan, a basinwide management plan, or other integrated regional water management program or plan that meets, or is in the process of meeting, the requirements of subdivision (a). A local agency with an existing groundwater management plan that meets the requirements of subdivision (a), or a local agency that completes an upgrade of its plan to meet the requirements of subdivision (a) within one year of applying for funds, shall be given priority consideration for state funds administered by the department over local agencies that are in the process of developing a groundwater management plan. The department

shall withhold funds from the project until the upgrade of the groundwater management plan is complete.

(B) Notwithstanding subparagraph (A), a local agency that manages groundwater under any other provision of existing law that meets the requirements of subdivision (a), or that completes an upgrade of its plan to meet the requirements of subdivision (a) within one year of applying for funding, shall be eligible for funding administered by the department. The department shall withhold funds from a project until the upgrade of the groundwater management plan is complete.

(C) Notwithstanding subparagraph (A), a local agency that conforms to the requirements of an adjudication of water rights in the groundwater basin is in compliance with subdivision (a). For purposes of this section, an ''adjudication'' includes an adjudication under Section 2101, an administrative adjudication, and an adjudication in state or federal court.

(D) Subparagraphs (A) and (B) do not apply to proposals for funding under Part 2.78 (commencing with Section 10795), or to funds authorized or appropriated prior to September 1, 2002.

(2) Upon the adoption of a groundwater management plan in accordance with this part, the local agency shall submit a copy of the plan to the department, in an electronic format, if practicable, approved by the department. The department shall make available to the public copies of the plan received pursuant to this part.

SEC. 6. Section 10753.8 of the Water Code is amended and renumbered to read:

10753.9. (a) A local agency shall adopt rules and regulations to implement and enforce a groundwater management plan adopted pursuant to this part.

(b) Nothing in this part shall be construed as authorizing the local agency to make a binding determination of the water rights of any person or entity.

(c) Nothing in this part shall be construed as authorizing the local agency to limit or suspend extractions unless the local agency has determined through study and investigation that groundwater replenishment programs or other alternative sources of water supply have proved insufficient or infeasible to lessen the demand for groundwater.

SEC. 7. Section 10753.9 of the Water Code is amended and renumbered to read:

10753.10. In adopting rules and regulations pursuant to Section 10753.9, the local agency shall consider the potential impact of those rules and regulations on business activities, including agricultural operations, and to the extent practicable and consistent with the

protection of the groundwater resources, minimize any adverse impacts on those business activities.

SEC. 8. Section 10795.4 of the Water Code is amended to read:

10795.4. Upon appropriation by the Legislature, the money in the fund may be used by the department to assist local public agencies by awarding grants to those agencies to conduct groundwater studies or to carry out groundwater monitoring and management activities in accordance with Part 2.75 (commencing with Section 10750) or other authority pursuant to which local public agencies manage groundwater resources, or both, including the development of groundwater management plans, as provided for in subdivision (a) of Section 10753.7.

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CALIFORNIA WATER CODE
PART 2.75. GROUNDWATER MANAGEMENT

CHAPTER 1.GENERAL PROVISIONS
CHAPTER 2.DEFINITIONS
CHAPTER 3.GROUNDWATER MANAGEMENT PLANS
CHAPTER 4. FINANCES
CHAPTER 5. MISCELLANEOUS

WATER CODE SECTION 10750-10750.10

10750. The Legislature finds and declares that groundwater is a valuable natural resource in California, and should be managed to ensure both its safe production and its quality. It is the intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions.
10750.2. (a) Subject to subdivision (b), this part applies to all groundwater basins in the state. (b) This part does not apply to any portion of a groundwater basin that is subject to groundwater management by a local agency or a watermaster pursuant to other provisions of law or a court order, judgment, or decree, unless the local agency or watermaster agrees to the application of this part.
10750.4. Nothing in this part requires a local agency overlying a groundwater basin to adopt or implement a groundwater management plan or groundwater management program pursuant to this part.
10750.6. Nothing in this part affects the authority of a local agency or a watermaster to manage groundwater pursuant to other provisions of law or a court order, judgment, or decree.
10750.7. (a) A local agency may not manage groundwater pursuant to this part within the service area of another local agency, a water corporation regulated by the Public Utilities Commission, or a mutual water company without the agreement of that other entity. (b) This section applies only to groundwater basins that are not critically overdrafted.
10750.8. (a) A local agency may not manage groundwater pursuant to this part within the service area of another local agency without the agreement of that other entity. (b) This section applies only to groundwater basins that are critically overdrafted.
10750.9. (a) A local agency that commences procedures, prior to January 1, 1993, to adopt an ordinance or resolution to establish a program for the management of groundwater pursuant to Part 2.75 (commencing with Section 10750), as added by Chapter 903 of the Statutes of 1991, may proceed to adopt the ordinance or resolution pursuant to Part 2.75, and the completion of those procedures is deemed to meet the requirements of this part. (b) A local agency that has adopted an ordinance or resolution pursuant to Part 2.75 (commencing with Section 10750), as added by Chapter 903 of the Statutes of 1991, may amend its groundwater management program by ordinance or resolution of the governing body of the local agency to include any of the plan

components set forth in Section 10753.7.
10750.10. This part is in addition to, and not a limitation on, the authority granted to a local agency pursuant to other provisions of law.

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WATER CODE SECTION 10752

10752. Unless the context otherwise requires, the following definitions govern the construction of this part: (a) "Groundwater" means all water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water which flows in known and definite channels. (b) "Groundwater basin" means any basin identified in the department's Bulletin No. 118, dated September 1975, and any amendments to that bulletin, but does not include a basin in which the average well yield is less than 100 gallons per minute. (c) "Groundwater extraction facility" means any device or method for the extraction of groundwater within a groundwater basin. (d) "Groundwater management plan" or "plan" means a document that describes the activities intended to be included in a groundwater management program. (e) "Groundwater management program" or "program" means a coordinated and ongoing activity undertaken for the benefit of a groundwater basin, or a portion of a groundwater basin, pursuant to a groundwater management plan adopted pursuant to this part. (f) "Groundwater recharge" means the augmentation of groundwater, by natural or artificial means, with surface water or recycled water. (g) "Local agency" means any local public agency that provides water service to all or a portion of its service area, and includes a joint powers authority formed by local public agencies that provide water service. (h) "Recharge area" means the area that supplies water to an aquifer in a groundwater basin and includes multiple wellhead protection areas. (i) "Watermaster" means a watermaster appointed by a court or pursuant to other provisions of law. (j) "Wellhead protection area" means the surface and subsurface area surrounding a water well or well field that supplies a public water system through which contaminants are reasonably likely to migrate toward the water well or well field.

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WATER CODE SECTIONS10753-10753.9

10753. (a) 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. (b) Notwithstanding subdivision (a), a local public agency, other than an agency defined in subdivision (g) of Section 10752, that provides flood control, groundwater management, or groundwater replenishment, or a local agency formed pursuant to this code for the principal purpose of providing water service that has not yet provided that service, may exercise the authority of this part within a groundwater basin that is located within its boundaries within areas that are either of the following: (1) Not served by a local agency. (2) Served by a local agency whose governing body, by a majority vote, declines to exercise the authority of this part and enters into an agreement with the local public agency

pursuant to Section 10750.7 or 10750.8.
10753.2. (a) Prior to adopting a resolution of intention to draft a groundwater management plan, a local agency shall hold a hearing, after publication of notice pursuant to Section 6066 of the Government Code, on whether or not to adopt a resolution of intention to draft a groundwater management plan pursuant to this part for the purposes of implementing the plan and establishing a groundwater management program. (b) At the conclusion of the hearing, the local agency may draft a resolution of intention to adopt a groundwater management plan pursuant to this part for the purposes of implementing the plan and establishing a groundwater management program.
10753.3. (a) After the conclusion of the hearing, and if the local agency adopts a resolution of intention, the local agency shall publish the resolution of intention in the same manner that notice for the hearing held under Section 10753.2 was published. (b) Upon written request, the local agency shall provide any interested person with a copy of the resolution of intention.
10753.4. The local agency shall prepare a groundwater management plan within two years of the date of the adoption of the resolution of intention. If the plan is not adopted within two years, the resolution of intention expires, and no plan may be adopted except pursuant to a new resolution of intention adopted in accordance with this chapter.
10753.5. (a) After a groundwater management plan is prepared, the local agency shall hold a second hearing to determine whether to adopt the plan. Notice of the hearing shall be given pursuant to Section 6066 of the Government Code. The notice shall include a summary of the plan and shall state that copies of the plan may be obtained for the cost of reproduction at the office of the local agency. (b) At the second hearing, the local agency shall consider protests to the adoption of the plan. At any time prior to the conclusion of the second hearing, any landowner within the local agency may file a written protest or withdraw a protest previously filed.
10753.6. (a) A written protest filed by a landowner shall include the landowner's signature and a description of the land owned sufficient to identify the land. A public agency owning land is deemed to be a landowner for the purpose of making a written protest. (b) The secretary of the local agency shall compare the names and property descriptions on the protest against the property ownership records of the county assessors. (c) (1) A majority protest shall be determined to exist if the governing board of the local agency finds that the protests filed and not withdrawn prior to the conclusion of the second hearing represent more than 50 percent of the assessed value of the land within the local agency subject to groundwater management pursuant to this part. (2) If the local agency determines that a majority protest exists, the groundwater plan may not be adopted and the local agency shall not consider adopting a plan for the area proposed to be included within the program for a period of one year after the date of the second hearing. (3) If a majority protest has not been filed, the local agency, within 35 days after the conclusion of the second hearing, may adopt the groundwater management plan.
10753.7. A groundwater management plan may include components relating to all of the following: (a) The control of saline water intrusion. (b) Identification and management of wellhead protection areas and recharge areas. (c) Regulation of the migration of contaminated groundwater. (d) The administration of a well abandonment and well destruction program. (e) Mitigation of conditions of overdraft. (f) Replenishment of groundwater extracted by water producers. (g) Monitoring of groundwater levels and storage. (h) Facilitating conjunctive use operations. (i) Identification of well construction policies. (j) The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects. (k) The development of relationships with state and federal regulatory agencies. (l) The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.
10753.8. (a) A local agency shall adopt rules and regulations to implement and enforce a

groundwater management plan adopted pursuant to this part. (b) Nothing in this part shall be construed as authorizing the local agency to make a binding determination of the water rights of any person or entity. (c) Nothing in this part shall be construed as authorizing the local agency to limit or suspend extractions unless the local agency has determined through study and investigation that groundwater replenishment programs or other alternative sources of water supply have proved insufficient or infeasible to lessen the demand for groundwater.
10753.9. In adopting rules and regulations pursuant to Section 10753.8, the local agency shall consider the potential impact of those rules and regulations on business activities, including agricultural operations, and to the extent practicable and consistent with the protection of the groundwater resources, minimize any adverse impacts on those business activities.

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WATER CODE SECTIONS 10754-10754.3

10754. For purposes of groundwater management, a local agency that adopts a groundwater management plan pursuant to this part has the authority of a water replenishment district pursuant to Part 4 (commencing with Section 60220) of Division 18 and may fix and collect fees and assessments for groundwater management in accordance with Part 6 (commencing with Section 60300) of Division 18. 10754.2. (a) Subject to Section 10754.3, except as specified in subdivision (b), a local agency that adopts a groundwater management plan pursuant to this part, may impose equitable annual fees and assessments for groundwater management based on the amount of groundwater extracted from the groundwater basin within the area included in the groundwater management plan to pay for costs incurred by the local agency for groundwater management, including, but not limited to, the costs associated with the acquisition of replenishment water, administrative and operating costs, and costs of construction of capital facilities necessary to implement the groundwater management plan. (b) The local agency may not impose fees or assessments on the extraction and replacement of groundwater pursuant to a groundwater remediation program required by other provisions of law or a groundwater storage contract with the local agency. 10754.3. Before a local agency may levy a water management assessment pursuant to Section 10754.2 or otherwise fix and collect fees for the replenishment or extraction of groundwater pursuant to this part, the local agency shall hold an election on the proposition of whether or not the local agency shall be authorized to levy a groundwater management assessment or fix and collect fees for the replenishment or extraction of groundwater. The local agency shall be so authorized if a majority of the votes cast at the election is in favor of the proposition. The election shall be conducted in the manner prescribed by the laws applicable to the local agency or, if there are no laws so applicable, then as prescribed by laws relating to local elections. The election shall be conducted only within the portion of the jurisdiction of the local agency subject to groundwater management pursuant to this part.

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WATER CODE SECTIONS 10755-10756

10755. (a) If a local agency annexes land subject to a groundwater management plan adopted pursuant to this part, the local agency annexing the land shall comply with the groundwater

management plan for the annexed property. (b) If a local agency subject to a groundwater management plan adopted pursuant to this part annexes land not subject to a groundwater management plan adopted pursuant to this part at the time of annexation, the annexed territory shall be subject to the groundwater management plan of the local agency annexing the land.
10755.2. (a) It is the intent of the Legislature to encourage local agencies, within the same groundwater basin, that are authorized to adopt groundwater management plans pursuant to this part, to adopt and implement a coordinated groundwater management plan. (b) For the purpose of adopting and implementing a coordinated groundwater management program pursuant to this part, a local agency may enter into a joint powers agreement pursuant to Chapter 5 (commencing with Section 6500) of Division 7 of Title 1 of the Government Code with public agencies, or a memorandum of understanding with public or private entities providing water service. (c) A local agency may enter into agreements with public entities or private parties for the purpose of implementing a coordinated groundwater management plan.
10755.3. Local agencies within the same groundwater basin that conduct groundwater management programs within that basin pursuant to this part, and cities and counties that either manage groundwater pursuant to this part or have ordinances relating to groundwater within that basin, shall, at least annually, meet to coordinate those programs.
10755.4. Except in those groundwater basins that are subject to critical conditions of groundwater overdraft, as identified in the department's Bulletin 118-80, revised on December 24, 1982, the requirements of a groundwater management plan that is implemented pursuant to this part do not apply to the extraction of groundwater by means of a groundwater extraction facility that is used to provide water for domestic purposes to a single-unit residence and, if applicable, any dwelling unit authorized to be constructed pursuant to Section 65852.1 or 65852.2 of the Government Code.
10756. (a) On or before April 1, 1998, the department shall prepare and publish, in a bulletin of the department published pursuant to Section 130, a report on the number of agencies that have adopted and implemented groundwater management plans, or that manage groundwater, pursuant to this part or pursuant to any of the following authorities: (1) Part 2.75 (commencing with Section 10750) as added by Chapter 903 of the Statutes of 1991. (2) Other statutory authority. (3) Adjudication. (4) Local ordinance. (b) The report shall also include all of the following information: (1) The number of agencies that do not overlie a groundwater basin or that overlie a basin with groundwater that is not usable. (2) The number of agencies whose groundwater is managed by another agency. (3) The number of agencies that have expressed no interest in initiating groundwater management. (c) The report may include any of the following information, if determined by the department to be available: (1) The volume or percentage of extracted groundwater that is managed in accordance with a groundwater management plan or other authority described in subdivision (a). (2) The extent of basinwide coordination. (3) The number of interstate basins for which a groundwater management plan has been adopted. (4) Any other information determined by the department to be relevant. (d) The department shall update the report periodically, as needed.

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Links President's Report

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Appendix C
Required and Recommended Components of Local Groundwater Management Plans

Section 10750 et seq. of the Water Code, commonly referred to as Assembly Bill 3030, stipulates certain procedures that must be followed in adopting a groundwater management plan under this section.

Amendments to Section 10750 et seq. added the requirement that new groundwater management plans prepared under Section 10750 et seq. must include component 1 below (SB1938 (Stats 2002, Ch 603)).

In addition, the amendments mandate that if the agency preparing the groundwater management plan intends to apply for funding administered by the California Department of Water Resources (DWR) for groundwater or groundwater quality projects, the agency must prepare and implement a groundwater management plan that includes components 2, 3, 6, 7 and 9 below. DWR recommends that all the components below be included in any groundwater management plan to be adopted and implemented by a local managing entity.

Consideration and development of these components for the specific conditions of the basin to be managed under the plan will help to ensure effective groundwater management. In developing these criteria, DWR recognizes that the goal of a groundwater management plan and the goal of an ordinance to manage groundwater should be the same—assurance of a long-term, sustainable, reliable, good quality groundwater supply. Such efforts can benefit greatly from cooperative management within the basin or region.

None of the suggested data reporting in the components below should be construed as recommending disclosure of information that is confidential under State law.

1. Include documentation that a written statement was provided to the public "describing the manner in which interested parties may participate in developing the groundwater management plan," which may include appointing a technical advisory committee (Water Code § 10753.4 (b)).
2. Include a plan by the managing entity to "involve other agencies that enables the local agency to work cooperatively with other public entities whose service area or boundary overlies the groundwater basin." (Water Code § 10753.7 (a)(2)). A local agency includes "any local public agency that provides water service to all or a portion of its service area"
(Water Code § 10752 (g)).
3. Provide a map showing the area of the groundwater basin, as defined by DWR Bulletin 118, with the area of the local agency subject to the plan as well as the boundaries of other local agencies that overlie the basin in which the agency is developing a groundwater management plan (Water Code § 10753.7 (a)(3)).
4. Establish an advisory committee of stakeholders (interested parties) within the plan area that will help guide the development and implementation of the plan and provide a forum for resolution of controversial issues.
5. Describe the area to be managed under the plan, including:
    a. The physical structure and characteristics of the aquifer system underlying the plan area in the context of the overall basin.

b. A summary of the availability of historical data including, but not limited to, the components in Section 7 below.

c. Issues of concern including, but not limited to, issues related to the components in Section 7 below.

d. A general discussion of historical and projected water demands and supplies.

6. Establish management objectives (MOs) for the groundwater basin that is subject to the plan. (Water Code § 10753.7 (a)(1)).

7. Include components relating to the monitoring and management of groundwater levels, groundwater quality, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping. (Water Code § 10753.7 (a)(1)). Consider additional components listed in Water Code § 10753.8 (a) through (l).

8. For each MO, describe how meeting the MO will contribute to a more reliable supply for long-term beneficial uses of groundwater in the plan area, and describe existing or planned management actions to achieve MOs.

9. Adopt monitoring protocols for the components in Section 7 (Water Code § 10753.7 (a)(4)). Monitoring protocols are not defined in the Water Code, but the section is interpreted to mean developing a monitoring program capable of tracking changes in conditions for the purpose of meeting MOs.

10. Describe the monitoring program, including:

a. A map indicating the general locations of any applicable monitoring sites for groundwater levels, groundwater quality, subsidence stations, or stream gages.

b. A summary of monitoring sites indicating the type (groundwater level, groundwater quality, subsidence, stream gage) and frequency of monitoring. For groundwater level and groundwater quality wells, indicate the depth interval(s) or aquifer zone monitored and the type of well (public, irrigation, domestic, industrial, monitoring).

11. Describe any current or planned actions by the local managing entity to coordinate with other land use, zoning, or water management planning agencies or activities (Water Code § 10753.8 (k), (l)).

12. Provide for periodic report(s) summarizing groundwater basin conditions and groundwater management activities. The report(s), prepared annually or at other frequencies as determined by the local management agency, should include:

a. Summary of monitoring results, including a discussion of historical trends.

b. Summary of management actions during the period covered by the report.

c. A discussion, supported by monitoring results, of whether management actions are achieving progress in meeting MOs.

d. Summary of proposed management actions for the future.

e. Summary of any plan component changes, including addition or modification of MOs, during the period covered by the report.

f. Summary of actions taken to coordinate with other water management and land use agencies, and other government agencies.

13. Provide for the periodic re-evaluation of the entire plan by the managing entity.

14. For local agencies not overlying groundwater basins, plans should be prepared including the above listed components and using geologic and hydrologic principles appropriate to those areas (Water Code § 10753.7 (a)(5)).

Groundwater Management

Assembly Bill 3030 (AB 3030)

Sections 10750-10756 of the California Water Code (AB 3030) provide a systematic procedure for an existing local agency to develop a groundwater management plan. This section of the code provides such an agency with the powers of a water replenishment district to raise revenue to pay for facilities to manage the basin (extraction, recharge, conveyance, quality). One hundred forty-nine agencies have adopted groundwater management plans in accordance with AB 3030. Other agencies have begun the process. In some basins, groundwater is managed under other statutory or juridical authority.

What is AB 3030?

AB 3030 (California Water Code Section 10750 et seq.) allows certain defined existing local agencies to develop a groundwater management plan in groundwater basins defined in DWR Bulletin 118. No new level of government is formed. Action is voluntary not mandatory.

Twelve technical components are identified in the Code and others may be included in the groundwater management plan. The plan can be developed only after a public hearing and adoption of a resolution of intention to adopt a groundwater management plan. If there is no majority opposition of assessed land value (no improvements), the plan can be adopted within 35 days. If the majority is opposed the plan can not be adopted and no new plan may be attempted for 1 year.

AB 3030 plans can not be adopted in adjudicated basins or in basins where groundwater is managed under other sections of the Water Code without the permission of the court or the other agency.

Once the plan is adopted, rules and regulations must be adopted to implement the program called for in the plan. Many plans that have been adopted are relatively simple and in some cases are a means of defining boundaries.

SB 1245 (Water Code Section 10756) requires DWR to publish a report to the Legislature that lists all agencies that have adopted groundwater management plans pursuant to any provision of the Water Code or to case law decided in court. Thus, groundwater management plans developed under AB 3030, adjudicated basins, groundwater management districts, city/county ordinances, and the other 22 types of local agencies are included in this report.

Procedures for Adopting an AB 3030 Plan

(Citations refer to relevant sections in the California Water Code.)

Procedures:

1. *The local agency must publish notice of a public hearing. Section 10753.2 (a)*
2. *Conduct a hearing on whether to adopt a groundwater management plan. Section 10753.2 (a)*
3. *The local agency may adopt a resolution of intention to adopt a groundwater management plan. Section 10753.2 (b)*
4. *They must publish the resolution of intention. Section 10753.3*
5. *They must prepare a groundwater management plan within 2 years. Secction 10753.4*
6. *If not, return to step 1. Section 10753.4*
7. *They must hold a 2d public hearing after the plan is prepared. Section 10753.5 (a)*
8. *Consider protests. Section 10753.5 (b)*
9. *A majority protest consists of more than 50% of the assessed value of the land within the agency. Section 10753.6 (c) (1)*
10. *If a majority protest exists, the plan shall not be adopted. Section 10753.6 (c) (2)*
11. *No newplan for the same area may be considered for 1 year. Section 10753.6 (c) (2)*
12. *If there is no majority protest, the groundwater management plan may be adopted within 35*

days after the 2d public hearing. Section 10753.6 (c) (3)
13. The local agency shall adopt rules and regulations for implementation and enforcement of the plan. Section 10753.8
14. They have the authority of a water replenishment district ($60220 et seq and $60300 et seq) to fix and assess fees and assessments for groundwater management. Section 10754
15. The local agency may impose equitable annual fees and assessments for groundwater management based on the amount of groundwater extracted to pay for costs of replenishment water, administration and operation, and capital facilities necessary to implement the groundwater management plan. Section 10754.2
16. They shall hold an election in the manner prescribed for the local agency and will be authorized to assess fees only if a majority vote is in favor. Section 10754.3
17. Local agencies in the same basin that adopt groundwater management plans must meet at least annually to coordinate. Section 10755.3

Technical components in AB 3030

Water Code Section 10753.7 states that a groundwater management plan may include components relating to all of the following:

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

APPENDIX C

TULARE LAKE HYDROLOGIC REGION

DEPARTMENT OF WATER RESOURCES, BULLETIN 118

CHAPTER 7

Tulare Lake Hydrologic Region

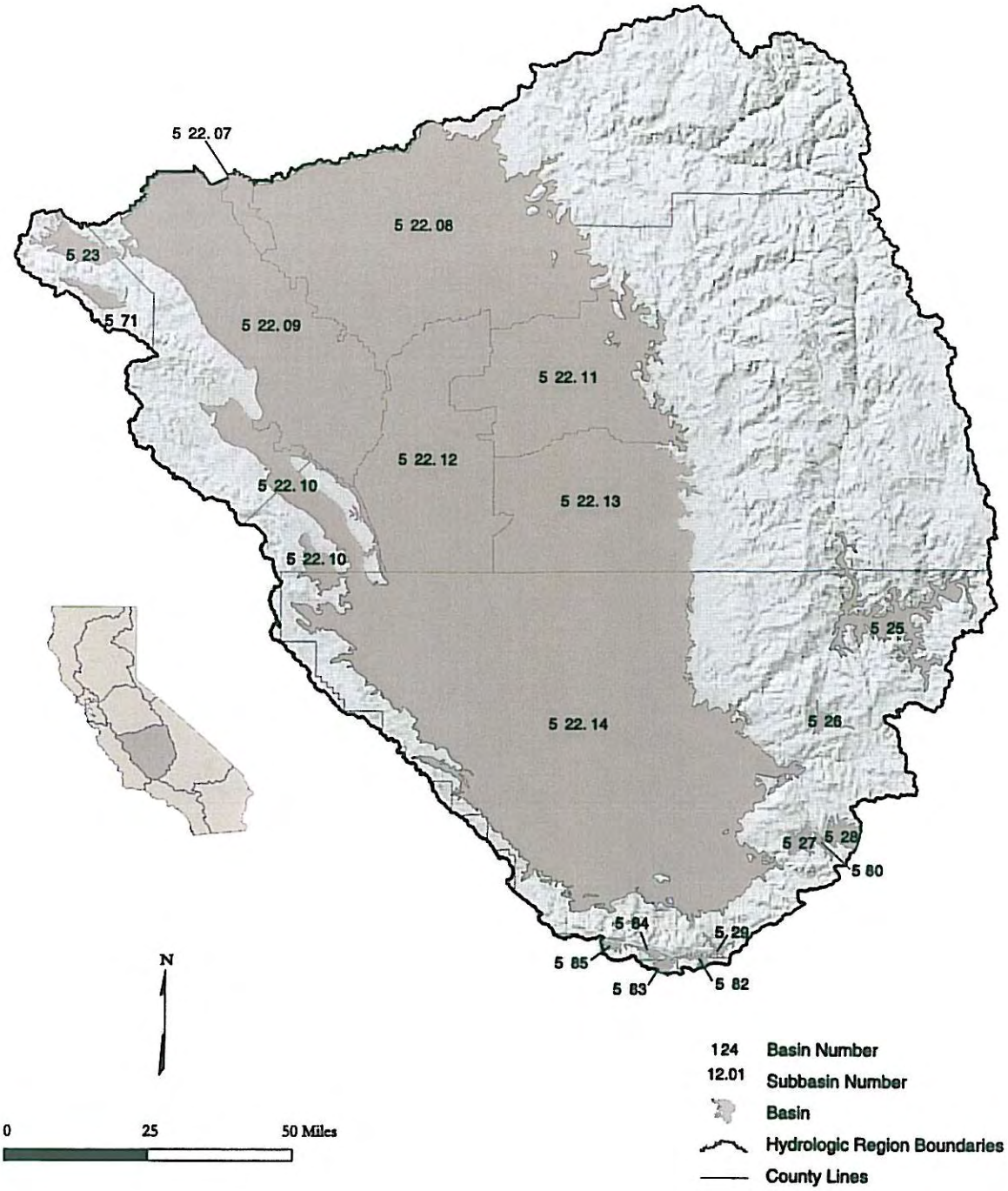

Figure 37 Tulare Lake Hydrologic Region

Basins and Subbasins of Tulare Lake Hydrologic Region

Basin/subbasin	Basin name
5-22	San Joaquin Valley
5-22.08	Kings
5-22.09	Westside
5-22.10	Pleasant Valley
5-22.11	Kaweah
5-22.12	Tulare Lake
5-22.13	Tule
5-22.14	Kern County
5-23	Panoche Valley
5-25	Kern River Valley
5-26	Walker Basin Creek Valley
5-27	Cummings Valley
5-28	Tehachapi Valley West
5-29	Castaic Lake Valley
5-71	Vallecitos Creek Valley
5-80	Brite Valley
5-82	Cuddy Canyon Valley
5-83	Cuddy Ranch Area
5-84	Cuddy Valley
5-85	Mil Potrero Area

Description of the Region

The Tulare Lake HR covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare counties and most of Fresno and Kern counties (Figure 37). The region corresponds to approximately the southern one-third of RWQCB 5. Significant geographic features include the southern half of the San Joaquin Valley, the Temblor Range to the west, the Tehachapi Mountains to the south, and the southern Sierra Nevada to the east. The region is home to more than 1.7 million people as of 1995 (DWR, 1998). Major population centers include Fresno, Bakersfield, and Visalia. The cities of Fresno and Visalia are entirely dependent on groundwater for their supply, with Fresno being the second largest city in the United States reliant solely on groundwater.

Groundwater Development

The region has 12 distinct groundwater basins and 7 subbasins of the San Joaquin Valley Groundwater Basin, which crosses north into the San Joaquin River HR. These basins underlie approximately 5.33 million acres (8,330 square miles) or 49 percent of the entire HR area.

Groundwater has historically been important to both urban and agricultural uses, accounting for 41 percent of the region's total annual supply and 35 percent of all groundwater use in the State. Groundwater use in the region represents about 10 percent of the State's overall supply for agricultural and urban uses (DWR 1998).

The aquifers are generally quite thick in the San Joaquin Valley subbasins with groundwater wells commonly exceeding 1,000 feet in depth. The maximum thickness of freshwater-bearing deposits (4,400 feet) occurs at the southern end of the San Joaquin Valley. Typical well yields in the San Joaquin Valley range from 300 gpm to 2,000 gpm with yields of 4,000 gpm possible. The smaller basins in the mountains surrounding the San Joaquin Valley have thinner aquifers and generally lower well yields averaging less than 500 gpm.

The cities of Fresno, Bakersfield, and Visalia have groundwater recharge programs to ensure that groundwater will continue to be a viable water supply in the future. Extensive groundwater recharge programs are also in place in the south valley where water districts have recharged several million acre-feet for future use and transfer through water banking programs.

The extensive use of groundwater in the San Joaquin Valley has historically caused subsidence of the land surface primarily along the west side and south end of the valley.

Groundwater Quality

In general, groundwater quality throughout the region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high TDS, nitrate, arsenic, and organic compounds.

The areas of high TDS content are primarily along the west side of the San Joaquin Valley and in the trough of the valley. High TDS content of west-side water is due to recharge of stream flow originating from marine sediments in the Coast Range. High TDS content in the trough of the valley is the result of concentration of salts because of evaporation and poor drainage. In the central and west-side portions of the valley, where the Corcoran Clay confining layer exists, water quality is generally better beneath the clay than above it. Nitrates may occur naturally or as a result of disposal of human and animal waste products and fertilizer. Areas of high nitrate concentrations are known to exist near the town of Shafter and other isolated areas in the San Joaquin Valley. High levels of arsenic occur locally and appear to be associated with lakebed areas. Elevated arsenic levels have been reported in the Tulare Lake, Kern Lake and Buena Vista Lake bed areas. Organic contaminants can be broken into two categories, agricultural and industrial. Agricultural pesticides and herbicides have been detected throughout the valley, but primarily along the east side where soil permeability is higher and depth to groundwater is shallower. The most notable agricultural contaminant is DBCP, a now-banned soil fumigant and known carcinogen once used extensively on grapes. Industrial organic contaminants include TCE, DCE, and other solvents. They are found in groundwater near airports, industrial areas, and landfills.

Water Quality in Public Supply Wells

From 1994 through 2000, 1,476 public supply water wells were sampled in 14 of the 19 groundwater basins and subbasins in the Tulare Lake HR. Evaluation of analyzed samples shows that 1,049 of the wells, or 71 percent, met the state primary MCLs for drinking water. Four-hundred-twenty-seven wells, or 29 percent, exceeded one or more MCL. Figure 38 shows the percentages of each contaminant group that exceeded MCLs in the 427 wells.

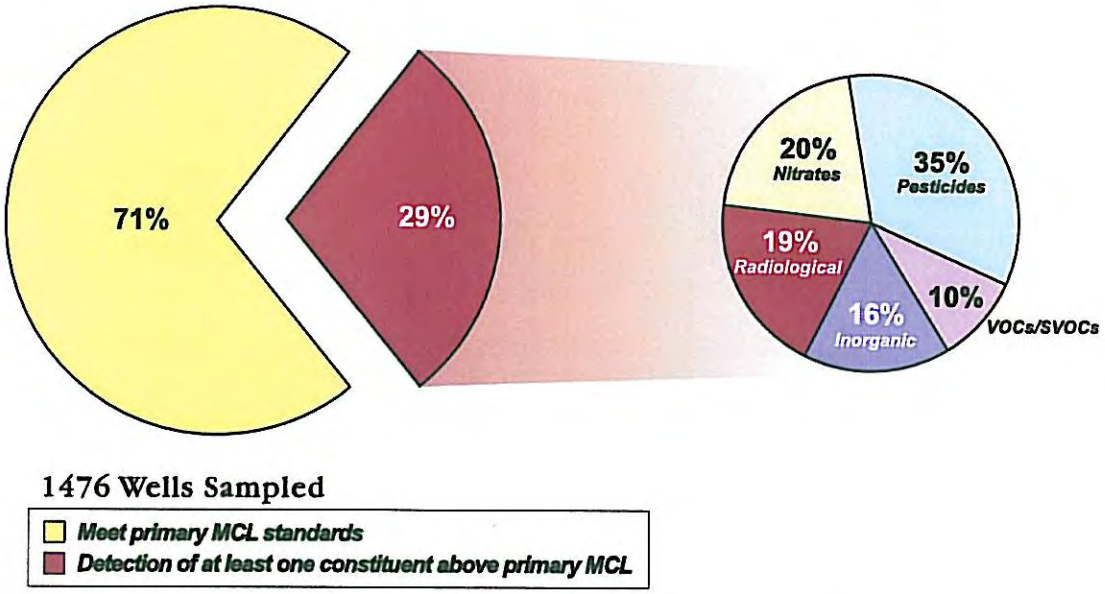

Figure 38 MCL exceedances by contaminant group in public supply wells in the Tulare Lake Hydrologic Region

Table 31 lists the three most frequently occurring contaminants in each of the six contaminant groups and shows the number of wells in the HR that exceeded the MCL for those contaminants.

Table 31 Most frequently occurring contaminants by contaminant group in the Tulare Lake Hydrologic Region

Contaminant group	Contaminant - # of wells	Contaminant - # of wells	Contaminant - # of wells
Inorganics - Primary	Fluoride – 32	Arsenic – 16	Aluminum – 13
Inorganics - Secondary	Iron – 155	Manganese – 82	TDS – 9
Radiological	Gross Alpha – 74	Uranium – 24	Radium 228 – 8
Nitrates	Nitrate(as NO_3) – 83	Nitrate + Nitrite – 14	Nitrite(as N) – 3
Pesticides	DBCP – 130	EDB – 24	Di(2-Ethylhexyl)phthalate – 7
VOCs/SVOCs	TCE – 17	PCE – 16	Benzene – 6 MTBE – 6

DBCP = Dibromochloropropane
EDB = Ethylenedibromide
TCE = Trichloroethylene
PCE = Tetrachloroehylene
VOC = Volatile organic compound
SVOC = Semivolatile organic compound

Changes from Bulletin 118-80

There are no newly defined basins since Bulletin 118-80. However, the subbasins of the San Joaquin Valley, which were delineated as part of the 118-80 update, are given their first numeric designation in this report (Table 32).

Table 32 Modifications since Bulletin 118-80 of groundwater basins and subbasins in Tulare Lake Hydrologic Region

Subbasin name	New number	Old number
Kings	5-22.08	5-22
Westside	5-22.09	5-22
Pleasant Valley	5-22.10	5-22
Kaweah	5-22.11	5-22
Tulare Lake	5-22.12	5-22
Tule	5-22.13	5-22
Kern County	5-22.14	5-22
Squaw Valley	deleted	5-24
Cedar Grove Area	deleted	5-72
Three Rivers Area	deleted	5-73
Springville Area	deleted	5-74
Templeton Mountain Area	deleted	5-75
Manache Meadow Area	deleted	5-76
Sacator Canyon Valley	deleted	5-77
Rockhouse Meadows Valley	deleted	5-78
Inns Valley	deleted	5-79
Bear Valley	deleted	5-81

Several basins have been deleted from the Bulletin 118-80 report. In Squaw Valley (5-24) all 118 wells are completed in hard rock. Cedar Grove Area (5-72) is a narrow river valley in Kings Canyon National Park with no wells. Three Rivers Area (5-73) has a thin alluvial terrace deposit but 128 of 130 wells are completed in hard rock. Springville Area (5-74) is this strip of alluvium adjacent to Tule River and all wells are completed in hard rock. Templeton Mountain Area (5-75), Manache Meadow Area (5-76), and Sacator Canyon Valley (5-77) are all at the crest of mountains with no wells. Rockhouse Meadows Valley (5-78) is in wilderness with no wells. Inns Valley (5-79) and Bear Valley (5-81) both have all wells completed in hard rock.

Table 33 Tulare Lake Hydrologic Region groundwater data

Basin/Subbasin	Basin Name	Area (acres)	Groundwater Budget Type	Well Yields (gpm)		Types of Monitoring			TDS (mg/L)	
				Maximum	Average	Levels	Quality	Title 22	Average	Range
5-22	SAN JOAQUIN VALLEY									
5-22.08	KINGS	976,000	C	3,000	500-1,500	909	-	722	200-700	40-2000
5-22.09	WESTSIDE	640,000	C	2,000	1,100	960	-	50	520	220-35,000
5-22.10	PLEASANT VALLEY	146,000	B	3,300	-	151	-	2	1,500	1000-3000
5-22.11	KAWEAH	446,000	B	2,500	1,000-2,000	568	-	270	189	35-580
5-22.12	TULARE LAKE	524,000	B	3,000	300-1,000	241	-	86	200-600	200-40,000
5-22.13	TULE	467,000	B	3,000	-	459	-	150	256	200-30,000
5-22.14	KERN COUNTY	1,950,000	A	4,000	1,200-1,500	2,258	249	476	400-450	150-5000
5-23	PANOCHE VALLEY	33,100	C	-	-	48	-	-	1,300	394-3530
5-25	KERN RIVER VALLEY	74,000	C	3,650	350	-	-	92	378	253-480
5-26	WALKER BASIN CREEK VALLEY	7,670	C	650	-	-	-	1	-	-
5-27	CUMMINGS VALLEY	10,000	A	150	56	51	-	15	344	-
5-28	TEHACHAPI VALLEY WEST	14,800	A	1,500	454	64	-	19	315	280-365
5-29	CASTAC LAKE VALLEY	3,600	C	400	375	-	-	3	583	570-605
5-71	VALLECITOS CREEK VALLEY	15,100	C	-	-	-	-	0	-	-
5-80	BRITE VALLEY	3,170	A	500	50	-	-	-	-	-
5-82	CUDDY CANYON VALLEY	3,300	C	500	400	-	-	3	693	695
5-83	CUDDY RANCH AREA	4,200	C	300	180	-	-	4	550	480-645
5-84	CUDDY VALLEY	3,500	A	160	135	3	-	3	407	325-645
5-85	MIL POTRERO AREA	2,300	C	3,200	240	7	-	7	460	372-657

gpm - gallons per minute
mg/L - milligram per liter
TDS -total dissolved solids

APPENDIX D

BASIN MANAGEMENT OBJECTIVES SUMMARY TABLE

DCTRA GROUNDWATER MANAGEMENT PLAN UPDATE

SUMMARY OF EXISTING OBJECTIVES AND STRATEGIES

OBJECTIVE:	ASSOCIATED PLAN COMPONENTS REQ'D:	STRATEGY/GOAL:	NOTES/STATUS:	PRIORITY:
GROUNDWATER RESOURCE PROTECTION	Saline Water Intrusion	*No Strategy, DCTRA Basin 90 miles from Pacific Ocean*	*n/a*	***n/a***
	Wellhead/Recharge Area Protection	Monitor New Development of Wells/Recharge within Basin	Collect data from County that is readily available, work with other regulatory agencies to monitor effectiveness	**LOW**
		Participate in Land Use/Zoning Procedures		**LOW**
		Incorporate Security Measures around Recharge Areas	Not Needed at this time	**LOW**
	Migration of Contaminated Groundwater	Monitor regulatory activities and available records	Locate existing Data available through Cities and Agencies, begin to compile and organize	**MEDIUM**
		Create Database with Existing Groundwater Quality Data (Cities, PUD, Dairies)		**MEDIUM**
	Well Abandonment and Construction Policies	Establish Protocol with Tulare County to review abandonment/construction records	Include Existing Rules and Regs in Report	**LOW**
		Create a Database of abandoned wells	Collect data from County that is easily located, have County continue to regulate and manage	**LOW**
		Establish Public Outreach	Use email blast outreach approach	**LOW**
		Convert abandoned wells to monitoring wells	May need in future, but focusing on reporting and data collection for now	**LOW**
GROUNDWATER SUSTAINABILITY	Overdraft Mitigation	(included within other Basin Plan Components)	n/a	**n/a**
	Groundwater Recharge Management	Expand the Network of Recharge Basins	Maintain Project Catalog List for each District	**MEDIUM**
		Expand the Network of Surface Water Deliveries		**MEDIUM**
		Pursue Additional Surface Water supplies for groundwater recharge purposes	Need to complete reports first to quantify on a DCTRA level additional water supply needed	**LOW**
	Groundwater Extraction Management	(included within other Basin Plan Components)	n/a	**n/a**
	Operation of Facilities	Upgrade and Expand existing canals and recharge basins	Create Project Catalog	**MEDIUM**
GROUNDWATER RESOURCE UNDERSTANDING	Groundwater Monitoring	Monitor Groundwater Levels Semi-Annually (February and October)	Continue Monitoring per Semi-annual schedule	**MEDIUM**
		Monitor Groundwater Quality	Use existing data available before doing adding groundwater monitoring	**LOW**
		Identify additional wells for monitoring	Focus on reporting existing well data	**LOW**
GROUNDWATER BASIN UNDERSTANDING	Land Subsidence Monitoring	Establish a Survey Control Network for basis of land subsidence	Hold until overdraft is quantified better based on existing and new monitoring data	**LOW**
		Periodically re-survey to calculate land subsidence		**LOW**
	Land Use Planning	Participate in local land use planning efforts	Provide letters annually to DCTRA database	**LOW**
		Provide comments to CEQA projects as the responsible agency	Districts respond individually, copy DCTRA on response	**LOW**
		Monitor changes in land use throughout the basin, Estimate total Water Demand in Basin per year	Use estimated demands based on land use of basin to determine overall basin deman	**HIGH**
	Surface Water Management	Increase quantities of imported surface water from the CVP	Continue to transfer and prepare agreements to increase available water in basin	**MEDIUM**
		Preserve Existing Surface Water Rights	Not a major focus at this time, other agencies are monitoring this for the member participants	**LOW**
		Investigate Potential Water Banking Opportunities	Project currently in progress	**MEDIUM**
		Develop additional water storage capacity with the DCTRA Basin	Projects currently in progress	**MEDIUM**
		Quantify Surface Water within DCTRA Basin on a yearly basis	Included within Annual Reports	**HIGH**
		Monitor Surface Water Quality and create a database which includes regulatory reports completed by other agency	Use Data from ILRP Surface Water Program, summarize in report	**LOW**
INFORMATION DISSEMINATION	Groundwater Basin and Resource Information Management	Establish Data Management Authority and Responsibilities	For now, use 4Creeks as clearing house, possibility of hiring project manager internally by DCTRA	**MEDIUM**
		Develop Inventory and Data Collection Protocols	Focus on organizing data available	**LOW**
		Conduct Periodic Audit of Groundwater Data		**LOW**
	Groundwater Basin and Resource Reports	Annual Report, including maps, tables, hydrologic summary, and historical summary of DCTRA Basin activities	Complete 2011 Annual Report	**HIGH**
	Local Agency and Stakeholder Involvement	Encourage Stakeholders within the DCTRA Basin to become Participants	Potential Discussions with DEID, review GW Plan	**LOW**
		Advisory Committee to review Plan and Annual Reports	Review Update and Annual Report April 2011	**HIGH**
		Encourage Public Participation and Outreach	Create Email distribution list for Email updates	**MEDIUM**

APPENDIX E

DCTRA MEMORANDUM OF UNDERSTANDING

MEMORANDUM OF UNDERSTANDING BETWEEN DEER CREEK AND TULE RIVER AUTHORITY AND _____

ARTICLE 1 - AGREEMENT

The articles and provisions contained herein constitute a bilateral and binding agreement by and between DEER CREEK AND TULE RIVER AUTHORITY (hereinafter the "Authority") and _____ (hereinafter "Agency").

ARTICLE II - RECOGNITION

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

ARTICLE III - PURPOSE

It is the purpose of the MOU, entered into willingly between Authority 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 Authority and the Agency. Authority 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 Authority 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 _____, 2007.

DEER CREEK AND TULE RIVER AUTHORITY

By: _____

Title: _____

By: _____

Title: _____

_____

By: _____

Title: _____

By: _____

Title: _____

APPENDIX F

ALTERNATIVE DISPUTE RESOLUTION POLICY

ALTERNATIVE DISPUTE RESOLUTION POLICY
DEER CREEK AND TULE RIVER AUTHORITY

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

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

Whenever the Authority becomes aware of any unasserted potential lawsuit, claim or dispute, with a reasonable likelihood of being asserted, against the Authority, the Authority staff shall consult with the Authority'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 Authority or its general counsel;

3. A written communication from the Authority or its general counsel;

4. An offer to meet and discuss the matter with Authority 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; or

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

Authority staff shall advise the Board of Directors of any unasserted lawsuit, claim or dispute, with a reasonable likelihood of being asserted, including the Authority'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 Authority shall be handled as set forth above in the previous paragraphs.

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