



FINAL REPORT

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

GRANT AGREEMENT NUMBER: 4600009132
SAFE DRINKING WATER, WATER QUALITY AND SUPPLY, FLOOD CONTROL,
RIVER AND COASTAL PROTECTION BOND ACT OF 2006 (PROPOSITION 84)
November 2010 through November 2014

AUGUST 2014

Prepared for:
County of Tulare

Final Submittal to:
Department of Water Resources
Division of Integrated Regional Water Management
South Central Region Office
3374 East Shields Avenue
Fresno, CA 93726

Prepared by:



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BOOK 1: SUMMARY REPORT

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Members of the Pilot Project Stakeholder Advisory Groups (PSAGs)

All community members and stakeholders who participated in the community review process

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DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Abbreviations

ABBREVIATIONS

AB	Assembly Bill
ACS.....	American Community Survey
AF.....	Acre-Feet
APWA.....	American Public Works Association
AWWA.....	American Water Works Association
BAT	Best Available Technology
BOD	Biochemical Oxygen Demand
CAA.....	Cleanup and Abatement Account
CalTAP.....	California Technical Assistance Providers
CBO	Community-Based Organization
CCR	California Code of Regulations
CDBG.....	Community Development Block Grant
CDPH.....	California Department of Public Health ¹
CEQA	California Environmental Quality Act
CFCC	California Financing Coordinating Committee
CFS.....	Cubic Feet per Second
CIP	Capital Improvement Program
CPUC.....	California Public Utilities Commission
CRWA	California Rural Water Association
CSA.....	County Service Area
CSD.....	Community Services District
CVP.....	Central Valley Project
CWA.....	Clean Water Act
CWD.....	County Water District

¹ The California Department of Public Health (CDPH), when referred to in this Study, pertains to the Drinking Water Program (DWP) which regulates public drinking water systems in California. Historically, the DWP has been administered through CDPH; however, as of July 1, 2014 the administration of the DWP has transferred from CDPH to the State Water Resources Control Board (SWRCB or State Water Board). Any reference to CDPH in this Study moving forward refers to the DWP now administered through the State Water Board.

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Abbreviations

CWS.....	Community Water System
CWSRF	State Revolving Fund (Clean Water)
DAC.....	Disadvantaged Community
DBCP	Dibromochloropropane
DBR(s)	Disinfection By-Product(s)
DWP.....	Drinking Water Program
DWR.....	Department of Water Resources
DWSAP	Drinking Water Source Assessment & Protection
EPA.....	United States Environmental Protection Agency
EDA.....	United States Economic Development Administration
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FRF	Fresno Regional Foundation
GAC	Granular Activated Carbon
GAMA.....	Groundwater Ambient Monitoring and Assessment Program
GIS.....	Geographic Information Systems
HHSA	Health and Human Services Agency
HUD	Department of Housing and Urban Development
IRWM	Integrated Regional Water Management
IRWMA.....	Integrated Regional Water Management Authority
IRWMP.....	Integrated Regional Water Management Plan
IUP	Intended Use Plan
JPA.....	Joint Powers Authority
KBWA.....	Kings Basin Water Authority
LAFCo	Local Agency Formation Commission
LPA	Local Primacy Agency
MCL.....	Maximum Contaminant Level
MHI.....	Median Household Income
MHP	Mobile Home Park
MOA	Memorandum of Agreement
MOU.....	Memorandum of Understanding
MSR	Municipal Service Review

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Abbreviations

MWC	Mutual Water Company
NCWS	Non-Community Water System
NGO	Non-Governmental Organization
NTNC	Non-Transient Non-Community Water System
O&M	Operation and Maintenance
OES	Office of Emergency Services
PCB	Polychlorinated Biphenyls
PHG	Public Health Goal
POE	Point of Entry
POU	Point of Use
PPB	Parts per Billion
PPM	Parts per Million
PPSAG or PSAG	Pilot Project Stakeholder Advisory Group
PUC	Public Utilities Commission
PUD	Public Utility District
PWS	Public Water System
RCAC	Rural Community Assistance Corporation
RMA	Resource Management Agency
RUS	Rural Utilities Service
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SDAC	Severely Disadvantaged Community
SDWA	Safe Drinking Water Act
SEP	Supplemental Environmental Project
SFY	State Fiscal Year
SMD	Sewer Maintenance District
SOAC	Stakeholder Oversight Advisory Committee
SRF or SDWSRF	State Revolving Fund (Safe Drinking Water)
SSWS	State Small Water System

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Abbreviations

SWP	State Water Project
SWRCB.....	State Water Resources Control Board ²
SWS	Small Water System
TCAG	Tulare County Association of Governments
TCP	1,2,3-Trichloropropane
TCR.....	Total Coliform Rule
TLB.....	Tulare Lake Basin
TMF	Technical Managerial & Financial
TNC.....	Transient Non-Community Water System
TSS	Total Suspended Solids
UCMR	Unregulated Contaminant Monitoring Rule
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WC	California Water Code
WD	Water District
WDR.....	Waste Discharge Requirements
WWD.....	Water Works District
ZOB.....	Zone of Benefit

² Reference to the State Water Resources Control Board (SWRCB or State Water Board) in this Study may include any of the programs administered by the State Water Board.

EXECUTIVE SUMMARY

Introduction

In partnership with the Department of Water Resources (DWR), the County of Tulare has undertaken the Tulare Lake Basin Disadvantaged Community Water Study (TLB Study) to develop an integrated water quality and wastewater treatment program plan to address the drinking water and wastewater needs of disadvantaged communities in the Tulare Lake Basin, as appropriated by Senate Bill SBX2 1 (California Water Code §83002(b)(3)(D)) (see **Appendix A**). The objectives of the TLB Study are defined within the grant agreement as follows:

- Develop a plan that provides rural, disadvantaged communities with a safe, clean and affordable potable water supply and effective and affordable wastewater treatment and disposal.
- The plan will include recommendations for planning, infrastructure, and other water management actions, as well as specific recommendations for regional drinking water facilities, regional wastewater treatment facilities, conjunctive use sites and groundwater recharge, groundwater for surface water exchanges, related infrastructure, project sustainability, and cost sharing mechanisms.
- Identify projects and programs that will create long-term reliability, while optimizing the ongoing operation and maintenance and management costs for small water and wastewater systems.

The Tulare Lake Basin Study Area encompasses most of the four-county area, including Fresno, Kern, Kings, and Tulare Counties. The Tulare Lake Basin Study Area boundary is shown in **Figure 1-1**. The TLB Study focused on the drinking water and wastewater needs of rural and unincorporated communities that meet the Proposition 84 definition of “disadvantaged community”, which is a community whose median household income is 80 percent or less of the statewide median household income. The TLB Study includes community water systems, wastewater systems, and rural communities with private wells and septic systems. Approximately 353 of the 530 communities identified within the Tulare Lake Basin Study Area are considered to be disadvantaged or severely disadvantaged.

In order to meet the objectives of this Study, the following five tasks were performed, in accordance with the tasks outlined in the grant agreement from DWR (**Appendix B**):

1. Baseline Data Gathering, Mapping, and Database Creation of Disadvantaged Communities in the Tulare Lake Basin
2. Stakeholder Consultation and Community Outreach
3. Selection of Pilot Projects and Studies to Develop Representative Solutions to Priority Issues
4. Implementation of Pilot Project Stakeholder Process to Develop Studies and Representative Solutions to Priority Issues

5. Preparation of Final Report

Database

The County of Tulare and project team developed a database of all disadvantaged communities in the Tulare Lake Basin. The project team coordinated with other local, state, and federal agencies as well as appropriate organizations to collect existing data and create the database. The project team utilized Geographic Information Systems (GIS) to map the location of disadvantaged communities in the Tulare Lake Basin and other available and relevant data in order to identify regional challenges and opportunities.

The database is a collection of information from PolicyLink, CDPH, Self-Help Enterprises, County of Fresno, and County of Tulare, Carolina Balazs, Provost & Pritchard GIS data resources, as well as other sources. The database has been reviewed to evaluate the water quality and supply source issues as well as wastewater treatment and disposal issues within the Study Area. The database will continue to be maintained and updated by the County of Tulare after completion of this Study.

Based on the database collected for this Study, there are 353 disadvantaged communities (DACs) identified within the Tulare Lake Basin Study Area, of which 201 are severely disadvantaged communities (SDACs). Collectively, disadvantaged and severely disadvantaged communities are referred to as DACs. Many water and wastewater systems serving these DACs face challenges meeting drinking water and wastewater regulations. Disadvantaged communities within the Study Area are shown in **Figure 1-2** through **Figure 1-5**.

Approximately 196 of the 353 DACs in the Study Area had water quality data available. Of those DACs with water quality data available, approximately 89 were considered to have a water quality issue, based on an exceedance of a drinking water maximum contaminant level (MCL) of a primary constituent more than one time between 2008 and 2010. While not all of these systems were in violation of a drinking water regulation, an exceedance indicates there may be a potential issue. Many communities (approximately 96) also rely on a single source of water supply, typically a single well. This puts the system at risk if that well were to fail. Communities with the various water quality and supply issues are presented in **Figure 3-1** through **Figure 3-4**.

In addition to water supply issues facing DACs, there are also challenges related to the treatment and disposal of wastewater. Of the 353 DACs in the Study Area, 38 communities have their own wastewater treatment facility (WWTF). Some of the communities not having their own wastewater treatment facility may have their wastewater treated at a nearby WWTF operated by another community or city, or they may rely on individual septic systems. Of these 38 DACs with WWTFs, 25 are listed as having a violation of their waste discharge requirements.

Stakeholder Process

The County of Tulare established a basin-wide Stakeholder Oversight Advisory Committee (SOAC) comprised of community representatives, as well as regulatory and funding agency representatives and other organizations that work on and are familiar

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with disadvantaged community water and wastewater needs. The SOAC worked with the project team to identify priority issues, potential pilot projects, and review project recommendations.

The project team also conducted outreach to community representatives, including residents and local water board members that were the subject of individual pilot projects. These community representatives assisted the project team in confirming the viability of the proposed solutions.

In order to ensure that each pilot project was developed with input from stakeholders, a separate Pilot Project Stakeholder Advisory Group (PSAG) was convened for each of the four pilot studies. Each group was comprised of members of impacted communities, regulatory and funding agencies, local water or wastewater providers, and other agencies and organizations as appropriate, in order to provide input and recommendations to the project team.

An evaluation of each stakeholder process was conducted to learn from the process and develop conclusions and recommendations for improvements to stakeholder involvement processes. A Stakeholder Involvement Report describing the stakeholder processes conducted, evaluation criteria, and lessons learned is provided in **Appendix H**.

Project Focus and Goals

The main goals of the Study were: (1) to provide useful information and tools that can function as a roadmap or guidelines for multiple audiences, and (2) to provide recommendations for legislation, funding opportunities, and other support that Federal, State, and local agencies can provide to address the water and wastewater issues in the Study Area.

The information presented in this study includes descriptions of actual community efforts toward solving water supply, water quality, wastewater treatment and disposal, and/or system efficiency challenges. The information may also include recommendations for other communities to consider regarding:

- a) Steps toward solving remaining existing water supply and wastewater collection or treatment challenges,
- b) Identifying obstacles interfering with solving remaining existing water supply and wastewater collection or treatment challenges, and
- c) Steps toward minimizing or mitigating future water supply and wastewater collection or treatment issues.

Identification of Issues and Potential Solutions

In consultation with the SOAC, the project team utilized the database to identify common problems associated with providing safe, reliable water and wastewater services to disadvantaged communities. Using this list of common problems, the project team worked with the SOAC to identify priority issues facing disadvantaged communities in the Tulare Lake Basin. From the list of common issues that was

Executive Summary

developed, five (5) priority issues were identified through the SOAC. The five priority issues included:

- Lack of funding to offset increasingly expensive operations and maintenance costs in large part due to lack of economies of scale;
- Lack of technical, managerial, and financial (TMF) capacity by water and wastewater providers;
- Poor water quality;
- Inadequate or unaffordable funding or funding constraints to make improvements; and
- Lack of informed, empowered, or engaged residents.

The project team developed a list of potential solution sets or alternatives to address each of the priority issues identified. Using the list of potential alternatives to address the identified priority issues, the SOAC selected a final roster of representative pilot projects and studies that are the focus of this Final Report. Four (4) pilot studies were selected, including:

1. Management and Non-Infrastructure Solutions to Reduce Costs and Improve Efficiency;
2. Technical Solutions to Improve Efficiency and Reduce Operation & Maintenance;
3. New Source Development; and
4. Individual Household Solutions.

Four Pilot Projects

The project team further developed and evaluated the possible solutions recommended under each of the four (4) pilot studies identified. Recommendations and roadmaps for each pilot study were developed in consultation with the Pilot Project Stakeholder Advisory Groups as well as pilot specific Community Review groups. Full reports of the four pilot studies are included in **Books 2-5** of this Final Report. Recommendations developed through each of the pilot studies are included in the plan recommendations described in Section 13.

Decision trees were also developed for each of the pilot studies (**Appendix J**). The decision trees are intended to be a tool or roadmap for community leaders (or private well owners in the case of the Individual Households pilot study) to use to assist them in developing appropriate solutions to their water and wastewater challenges.

Recommendations developed for each of the four pilot studies include the following:

- A description of the particular problem being addressed;
- A description of the solution(s) recommended by the pilot project;
- Funding opportunities available to implement the recommended solutions;

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- A discussion of steps that may be taken to ensure long-term sustainability of the implemented solution;
- Identification of any obstacles or barriers to implementation of the recommended solution; and
- Recommendations for how to eliminate those obstacles or barriers.

Funding Opportunities

State regulators and funders can begin encouraging solutions to drinking water and wastewater needs by providing educational material as well as funding opportunities. Existing funding opportunities and proposed drinking water legislation are presented in this Study. Traditional drinking water funding programs include the Safe Drinking Water State Revolving Fund (SDWSRF), Proposition 84, Department of Water Resources Integrated Regional Water Management Program (IRWM), Community Development Block Grant Program (CDBG), and United States Department of Agriculture (USDA) Rural Development. Some wastewater funding opportunities include the Clean Water State Revolving Fund (CWSRF), the Small Community Wastewater Grant program (SCWG), Community Development Block Grant Program, and United States Department of Agriculture Rural Development.

Conclusions and Recommendations

In order to meet the objectives of this Study, baseline data was gathered, stakeholder consultation and community outreach was conducted, priority issues were identified, pilot studies were developed to address those priority issues, and this Final Report was prepared to document the process and develop recommendations for a plan to implement solutions identified through the pilot studies.

Each of the pilot studies evaluated various solution types and alternatives to help address the different water and wastewater issues identified for the Study Area. However, there were barriers identified through various stakeholder efforts that make implementation of such alternatives challenging. The purpose of the recommendations presented in this Final Report is to provide a plan to address the priority issues and barriers identified through the stakeholder processes and pilot studies. Implementation of the recommendations discussed herein would enable water and sewer service providers in rural, disadvantaged communities to provide safe, clean and affordable potable water supply and effective and affordable wastewater treatment and disposal.

Summary of Findings

Upon completion of the Study, several major successes of the project were noted:

- A comprehensive inventory of DACs has been prepared;
- A “roadmap” or set of decision trees was developed to guide communities and funding agencies through some critical steps to selecting an appropriate alternative for their specific issues and situation;

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Executive Summary

- Through various stakeholder outreach efforts, the interest and awareness of communities related to water and wastewater issues within the Tulare Lake Basin was expanded;
- Priority issues common to communities throughout the Study Area, and various obstacles and barriers to address those issues, have been identified and acknowledged;
- Recommendations for local service providers, various regulatory and funding agencies, as well as the Legislature were developed to help overcome those obstacles and barriers so that the priority issues afflicting DACs within the Study Area can be adequately addressed;
- A database of DACs within the Tulare Lake Basin, and their water and wastewater challenges was compiled; and
- The Tulare Lake Basin Disadvantaged Water Study Final Report was compiled and made available on the Tulare County website.

For communities that are interested in pursuing any of the alternatives presented in this Study, action is recommended in addition to the plan recommendations below. To implement an alternative, communities should work on the following:

- Prepare a Self Assessment of the existing infrastructure, capacity, demands, and items that may impact any of the items (information may be available in recent sanitary surveys and inspection reports) (see **Appendix K**)
- Seek funding to conduct a feasibility study to evaluate alternatives
- Prepare a Technical, Managerial, and Financial Assessment (see **Appendix L**)
- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)
- Confirm that the solution will satisfy regulatory requirements

Plan Recommendations

Tulare County and the project team were tasked with preparing a plan to address the drinking water and wastewater needs of disadvantaged communities in the Tulare Lake Basin. Through the SOAC process and in consultation with the database developed through this Study, several common problems were identified as the major challenges faced by disadvantaged communities in the Study Area. Of the common problems identified, five (5) priority issues were selected through the SOAC, as discussed above.

Four pilot projects were selected which sought to identify: 1) solution alternatives to address those priority issues; 2) funding opportunities that are available to implement the recommended solutions; 3) steps to insure long-term sustainability of an implemented solution; 4) identification of obstacles and barriers to implementation of a recommended solution; and 5) a proposal for how to eliminate those obstacles or barriers. Those recommendations related to funding opportunities, long-term

sustainability, and overcoming obstacles and barriers to implementing solutions to the priority issues that have been identified, are the basis for the plan to address the drinking water and wastewater needs of DACs in the Study Area. Implementation of the recommendations presented herein will set the stage to start making progress toward resolution of the priority issues that are faced by DACs in the Tulare Lake Basin. These recommendations therefore serve as steps toward improving the drinking water and wastewater challenges of disadvantaged communities in the Tulare Lake Basin, and toward reducing the instances of perpetuating the circumstances that contribute to the creation of additional challenges.

Various state, federal, and local agencies are involved directly in the provision of drinking water and wastewater services, or provide regulatory oversight of drinking water and wastewater systems. This plan describes various recommendations on how the appropriate agencies at various levels can help the communities in the region address their water and wastewater challenges.

Recommendations were developed to facilitate and encourage potential solutions aimed at addressing the five (5) priority issues that were selected through the SOAC. Additionally, through the course of the Study, several other common problems that were previously identified also emerged as important issues to be addressed. Those additional common problems included the following:

- Lack of vision and integrated planning to develop solutions (ranked 6th by the SOAC on the list of common problems, see **Appendix G**);
- Inadequate existing infrastructure (ranked 7th by the SOAC);
- Lack of information on DACs (ranked 8th by the SOAC);
- A changing regulatory environment (ranked 9th by the SOAC); and
- Insufficient quantity of water (ranked 10th by the SOAC).

Seven (7) main categories of recommendations were identified to address the five (5) priority issues as well as the additional common problems determined to be of high importance. The seven main categories of recommendations are as follows:

1. Improve Local Technical, Managerial and Financial Capacity
2. Improve Operation and Maintenance Funding
3. Improve Water Supply Quality and Reliability
4. Improve Funding for Disadvantaged Communities
5. Improve Disadvantaged Community Awareness and Participation
6. Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues
7. Develop and Maintain Information on DAC Water/Wastewater Needs

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Executive Summary

Complete recommendations are presented in Section 13 of this Final Report. A handout document of the recommendations is provided in **Appendix N**. A summary of the recommendations is provided below.

Recommendation	Lead Agency/Entity	Pg #
13.1 Improve Local TMF Capacity		
Priority Issue: Lack of Technical Managerial and Financial Capacity by Water and Wastewater Providers		
13.1.1 Enhance Internal Awareness		
A. Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and depth of private well or septic system facilities should be known by the property owner and maintained in a database by the county [See Recommendation 13.7.1.C].	Private well or septic owner	202
B. Ensure that specifics regarding existing water or wastewater system infrastructure are known. The location, size, condition, and capacity of facilities should be known and records maintained by the community services management personnel.	Water or wastewater system owner	203
C. Conduct a review of fiscal resources annually and determine the necessary levels of reserves for replacement and maintenance of infrastructure. Determine an appropriate time frame and funding plan to achieve the necessary levels of reserves.	Water or wastewater system owner	204
D. Consider adding a requirement for more frequent or comprehensive and standardized assessment of TMF capacity for local water and wastewater providers, as well as updating regulatory and permit requirements for water and wastewater systems to clarify that providers must meet TMF requirements to maintain a permit to operate.	State Agencies and Local Primacy Agencies	205
13.1.2. Provide Assistance and Training		
A. Attend training programs and encourage or require staff and board members to attend training programs.	Water or wastewater system owner	206
B. Create a single local point of contact for local service providers and private well owners to obtain information and access resources to provide guidance related to water and wastewater challenges.	Counties and State Agencies	207
C. Consider providing regular Special District Board training opportunities, including leadership and ethics training.	Counties	208
D. Continue to convene a DAC focused stakeholder group for the Tulare Lake Basin, and expand outreach to further enhance DAC, County, IRWM, and other local stakeholder engagement and participation.	Non-profit organizations, Counties, IRWMs, State Agencies	208

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

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Recommendation	Lead Agency/Entity	Pg #
E. Target existing technical assistance training programs to specific communities who have shown a need and interest, to focus on their needs and provide locally available and specialized training programs.	State Agencies and Technical Assistance Providers	210
F. Improve the operator certification process by providing more frequent testing, and offering certification tests in more locations.	State Agencies	210
G. Consider developing operator training programs at local community colleges to address the lack of licensed water and wastewater system operators.	Local Community Colleges	211
13.1.3. Encourage Sharing of Resources to Build TMF Capacity		
A. Even outside of larger infrastructure project development processes, alternatives such as sharing common resources, forming joint governmental agencies, or other forms of consolidation should be evaluated to determine if O&M costs could be reduced or TMF capacity improved. [Same as Recommendation 13.2.1.B]	Water or wastewater system owners, state and federal funding agencies, LAFCo	212
B. Establish local DAC coordinator(s) for the Tulare Lake Basin to support DAC outreach, help link communities to funding sources and training opportunities, and help integrate DACs into planning processes, including IRWMPs.	Existing Local Non-Profit Organizations, with support from State Agencies, Counties, IRWMPs	213
C. Support the evaluation and development of a regional entity or entities to provide regional operations, management, or other services in regions that are interested in exploring such services.	Local Non-Profit Organizations, Counties, LAFCo, Legislature	214
13.2 Improve O&M Funding		
Priority Issue: Lack of Funding to Offset Increasingly Expensive Operations and Maintenance Costs in Large Part due to Lack of Economies of Scale		
13.2.1 Reduce Costs		
A. Project alternatives should be analyzed to minimize ongoing costs. If O&M costs cannot be supported, other alternatives should be pursued.	Water or wastewater system owner	217
B. Even outside of larger infrastructure project development processes, alternatives such as sharing common resources, forming joint governmental agencies, or other forms of consolidation should be evaluated to determine if O&M costs could be reduced or TMF capacity improved. [Same as Recommendation 13.1.3.A]	Water or wastewater system owner, state and federal funding agencies, LAFCo	218
C. Consider providing increased funding for capital improvements for water (or wastewater) related projects when it would allow for reduced O&M costs over the long term.	State and Federal funding agencies	218
D. Support the development and implementation of water conservation policies/measures by providing incentives and technical assistance to DACs and promoting the use	State Agencies	219

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

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Recommendation	Lead Agency/Entity	Pg #
of water and energy efficient equipment upgrades, such as energy-efficient or solar powered pumps.		
13.2.2 Increase Revenues		
A. Evaluate water and sewer rates at least every three to five years and when any major improvements are constructed, and modify as appropriate to achieve the necessary financial resources for annual operations and reserves.	Water or wastewater system owner	219
B. Each local service provider (water or wastewater) should develop a single rate structure (which may include different categories, such as residential, commercial, and industrial), and no exceptions should be made to that structure. A tiered rate structure should be developed with appropriate base rates and water usage rates to encourage conservation while ensuring sufficient revenue.	Water or wastewater system owner	220
C. Seek funding to install or replace water meters. The replacement meters should be capable of being read remotely (if the system size or agreements with neighboring systems support it) to reduce labor costs.	Water or wastewater system owner, technical assistance providers	221
D. Establish appropriate connection fees for any new connections to support the capital improvements required to provide service to those new connections.	Water or wastewater system owner	221
E. Consider establishing a transitional funding program to assist with O&M costs on a temporary basis.	State agencies and the legislature	222
13.2.3 Provide Assistance, Training, and Information		
A. Develop an O&M plan that includes the types of ongoing O&M costs needed, O&M servicing and parts replacement schedule, and amount needed for O&M fund reserve to help the community plan ahead to address covering O&M adequately.	Water or wastewater system owner	223
B. Continue to provide, expand, and better publicize technical assistance training on developing rate studies and establishing rate policies, which should also include guidance on conducting a Prop 218 hearing.	State Agencies, Technical assistance providers	224
13.3 Improve Water Supply Quality and Reliability		
Priority Issues: Poor Water Quality, Inadequate Supply Reliability, Inadequate Existing Infrastructure, and Insufficient Quantity of Water		
13.3.1 Prevent Worsening of Problems		
A. Do not allow new connections if the service capacity is not confirmed. This may require imposition of a moratorium. Developing appropriate connection fees, as recommended above, is necessary to provide a means to ensure that capacity can be made available for planned new connections.	Water or wastewater system owner	225

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

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Recommendation	Lead Agency/Entity	Pg #
B. [See Recommendations under "Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues"]	County	226
C. Improve Groundwater Management Planning to address declining water levels and increased water quality contaminant levels, and evaluate ways the two trends may be exacerbating each other.	State Agencies	226
D. Clarify the interpretation of a well site control zone with a 50-foot radius, as referred to in Title 22, Chapter 16, Article, Section 64560 of the California Regulations Related to Drinking Water.	State Agencies	227
E. Consider ways to encourage and provide funding to sewer communities that rely on individual septic systems that are failing or are on inadequately sized lots.	SWRCB, RWQCB and other Funding Agencies	228
F. Allow drinking water funding agencies to fund infrastructure for fire flow requirements. Where affordability or feasibility of the project is jeopardized by meeting full fire flow requirements, also allow drinking water projects to be funded for domestic purposes provided a limited level of fire flow is available. Where a viable option, the feasibility of installing a dual water distribution system to meet domestic supply and fire flow requirements, should be considered (especially where irrigation demands can be accommodated through the non-potable system used for fire flow).	County Fire, County Board of Supervisors, Funding Agencies	228
13.3.2 Encourage Shared Solutions to Reduce Vulnerability		
A. Provide funding opportunities to encourage the development of regional cooperation, partnerships, and consolidation of services, where appropriate.	State Agencies	229
13.4 Improve Funding for DACs		
Priority Issue: Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements		
13.4.1 Improve Scoring Criteria and Guidelines		
A. Consider changes on Category E (insufficient source water capacity or delivery capability) project rankings, to make it easier to get funding for that category of projects.	State Agencies	230
B. Continue the Pre-Planning and Legal Entity Formation Assistance Program. Consider creation of similar programs for wastewater for areas currently on septic.	State Agencies	231
C. Continue the Consolidation Incentive Program, however, modify the system so that large systems do not obtain benefits that are significantly out of proportion to the benefits provided by consolidation. Also consider expanding the consolidation incentive program and make it available to larger systems seeking to assist communities of private well owners impacted by the drought and/or facing water quality challenges.	State Agencies	231

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Recommendation	Lead Agency/Entity	Pg #
D. Consider ways to expedite the funding process, so that communities applying for funding do not spend several years drinking water that does not meet primary drinking water standards, and/or relying on insufficient water supply.	State and Federal Funding Agencies	232
E. Streamline the process for payment of claims for state-funded projects, so that local water providers can receive more timely reimbursement.	State Funding Agencies	232
F. Require privately owned for-profit systems to conform to all requirements (including audits and other fiscal requirements) of publicly owned systems in order to receive public funding assistance.	State Agencies	233
13.4.2 Target Outreach and Technical Assistance		
A. Local service providers should attend existing grant application workshops, including CFCC Funding Fairs, and participate in other training opportunities provided through SWRCB, CWEA, CRWA, RCAC, and other resources.	Water or wastewater system owner	234
B. Participate in Integrated Regional Water Management Planning group meetings and consider becoming an “Interested Party” or “Member” of an IRWMP group.	Water or wastewater system owner	234
C. IRWM groups should consider organizing pre-application and grant application workshops or training opportunities for DACs that are “Interested Parties” or “Members” of the IRWM group, as well as prepare and distribute outreach and educational materials to those DACs as funding from DWR is made available.	IRWM groups	235
D. Consider ways to allow communities in IRWM “white areas” (areas not currently within and IRWM group boundary) to participate in the IRWM process.	DWR, IRWM groups	236
13.5 Improve DAC Awareness and Participation		
Priority Issue: Lack of Informed, Empowered, or Engaged Residents		
13.5.1 Provide Community Outreach and Engagement		
A. Provide the community as much information as possible on potential projects, and opportunity to provide input early on in the process.	Local water or wastewater providers	237
B. Attempt to use in-person, phone or mail outreach to DAC residents as much as possible; email and website should be utilized, but are not sufficient on their own.	Local water or wastewater providers	239
C. Expand community engagement in the development of projects. Funding to facilitate community engagement should be included in project budgets and standard approved scopes of work for project development at both the planning and construction phase.	Local water or wastewater providers and State Agencies	239

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Recommendation	Lead Agency/Entity	Pg #
13.6 Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues		
Priority Issue: Lack of Vision and Integrated Planning to Develop Solutions		
13.6.1 Restricting Permits for Development		
A. County planning departments should require any new development near an existing system (within 1-2 miles) to evaluate the feasibility of connecting to the existing system, rather than permit the creation of a new system.	County Planning Departments, LAFCos, State Agencies	241
B. Require and actively support investment in bringing existing systems into compliance and developing long-term sustainable and affordable solutions before allowing growth, and as part of permitting growth in communities where the existing water system cannot accommodate growth due to inadequate drinking or wastewater infrastructure.	County, LAFCo	241
C. In cases where there is a moratorium on connecting to a public water system, the county should not issue a permit to drill a private well on a property within the district boundary. Additionally, public water systems should consider implementing an ordinance prohibiting new well drilling within the PWS boundary and notify the county of this ordinance.	County, local service provider	242
D. In areas where there is no existing water system infrastructure available, building permits should only be issued if adequate supply and quality from a private well is confirmed to be available. This may include installation of a viable treatment system (POU or POE) with acceptable maintenance service.	County	243
E. Provide enforcement action when people do not obtain a permit for drilling of a new well or installation of an on-site wastewater system.	County	243
13.6.2 Planning and Zoning		
A. All counties shall identify areas where new growth should be directed based on the existence of public water and sewer governance and infrastructure. Counties shall only zone for residential development where there is safe and reliable water, except in situations where there are viable plans to provide safe and reliable drinking water, and additional growth will create more economy of scale and bring a greater rate payer base that will allow for a system to be sustained.	County Planning Departments, LAFCo	243
B. The water quality from private wells shall be analyzed and any contaminants exceeding primary drinking water quality standards should be disclosed to the buyer upon sale of a property.	State Agencies, Department of Real Estate, Legislature	244

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Executive Summary

Recommendation	Lead Agency/Entity	Pg #
C. Clarify conflicting policies related to farm worker housing. The policy that counties shall permit and encourage the development of sufficient farm labor housing (California Health and Safety Code Section 17021.6) can be inconsistent with the requirement to provide safe drinking water (in areas where water quality does not meet drinking water standards).	State Agencies	245
13.7 Develop & Maintain Information on DAC Water/Wastewater Needs		
Priority Issue: Lack of Information on DACs		
13.7.1 Improve Data Collection		
A. Tulare County should continue to update and maintain the database that was developed through this Study.	Tulare County (Lead), Fresno, Kern, and Kings Counties	246
B. Tulare County should track progress with respect to the priority issues identified in this Study. The current condition should be clearly identified. Monitor and measure the success of improving the circumstances through implementation of recommendations of this Study, relative condition of drinking water supplies, and condition of wastewater service.	Tulare County (Lead), Fresno, Kern, and Kings Counties	247
C. Improve County Environmental Health Department responsibilities, fee authorities, and requirements to permit and monitor on-site systems.	County Environmental Health Departments	247
13.7.2 Improve Data Management and Accessibility		
A. [See Recommendation 13.7.1.C]	County Environmental Health Departments	248
B. Develop a centralized reporting and data management system so that water supply related data can be shared and coordinated among agencies. For example, well logs retained by DWR can be correlated with water quality information retained by SWRCB. This will likely require confidentiality agreements between agencies.	State Agencies	248
C. Disclosure of water quality data – Require disclosure to the buyer of water quality on sale of property. In areas where there is a Public Water System, this may be in the form of recent Consumer Confidence Reports. For properties with private wells, this would be laboratory reports for samples collected from the private well.	State Agencies, Department of Real Estate	249

1 INTRODUCTION

1.1 Project Information

The County of Tulare received a California Department of Water Resources (DWR) grant executed in May 2011, which was appropriated through Senate Bill SBx2 1 (Perata, 2008) (Refer to **Appendix A** and **B**). This appropriation was the result of disadvantaged community leaders in the region raising the visibility of local water and wastewater challenges, and advocating for funding to develop more sustainable and affordable approaches to solving disadvantaged community water and wastewater issues in the Tulare Lake Basin. The goal of the Tulare Lake Basin Disadvantaged Community Water Study (TLB Study) was to develop an overall plan to address water needs including recommendations for planning, infrastructure, and other water management actions, as well as specific recommendations for regional drinking water treatment facilities, regional wastewater treatment facilities, conjunctive use sites and groundwater recharge, groundwater for surface water exchanges, related infrastructure, project sustainability, and cost-sharing mechanisms. The plan was intended to identify projects and programs that will create long-term reliability and regulatory compliance, while optimizing the ongoing operation and maintenance (O&M) and management costs for small water and wastewater systems. As the culmination of the TLB Study, recommendations are provided for legislation, funding opportunities, and other support that Federal, State, and local agencies can provide to help facilitate this plan.

The County of Tulare Administrative Office managed the TLB Study in conjunction with a team of consultants, pursuant to State of California, Natural Resources Agency, Department of Water Resources Grant Agreement Number 4600009132 (Grant), to develop an integrated water quality and wastewater treatment program plan to address the drinking water and wastewater needs of disadvantaged communities in the Tulare Lake Basin.

The objectives of the Study were defined within the grant agreement as follows:

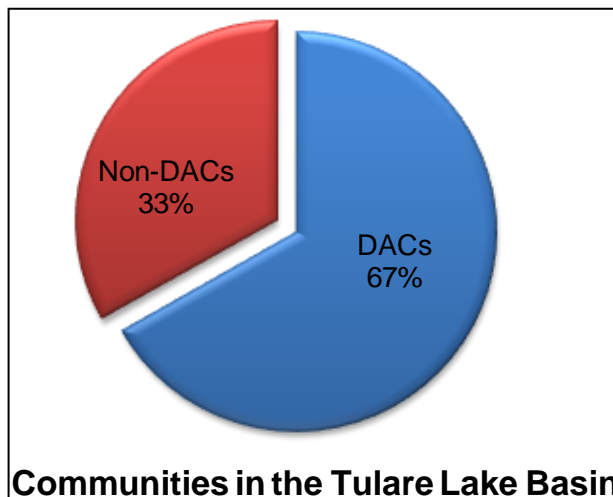
- Develop a plan that provides rural, disadvantaged communities with a safe, clean and affordable potable water supply and effective and affordable wastewater treatment and disposal.
- The plan will include recommendations for planning, infrastructure, and other water management actions, as well as specific recommendations for regional drinking water facilities, regional wastewater treatment facilities, conjunctive use sites and groundwater recharge, groundwater for surface water exchanges, related infrastructure, project sustainability, and cost sharing mechanisms.
- Identify projects and programs that will create long-term reliability, while optimizing the ongoing operation and maintenance and management costs for small water and wastewater systems.

The County of Tulare contracted with Provost & Pritchard Consulting Group to prepare the plan. Provost & Pritchard led a team of consultants, including Keller Wegley

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

Consulting Engineers, Self-Help Enterprises, Community Water Center, and McCormick, Kabot, Jenner & Lew (project team or consultant team). The TLB Study focuses on unincorporated communities within the Tulare Lake Basin (Study Area) that are classified as disadvantaged communities. A disadvantaged community is defined as a community whose median household income is 80 percent or less of the statewide median household income. The Study Area encompasses most of the four-county area, including Fresno, Kern, Kings, and Tulare Counties, and is generally rural in nature with much of the population widely dispersed throughout the region. The Tulare Lake Basin Study Area boundary is shown in **Figure 1-1**. Approximately 353 of 530 identified communities within the Tulare Lake Basin are disadvantaged or severely disadvantaged. The estimated population within these 353 communities is approximately 260,000³. **Figure 1-2**



through **Figure 1-5** show the disadvantaged communities within the Study Area.

These communities may face a variety of source water issues, including (1) poor water quality, (2) insufficient water supply, and (3) unreliable water system infrastructure. A source water quality issue, as defined in this Study, is considered to be an exceedance of a drinking water maximum contaminant level (MCL) of a primary constituent more than one time between 2008 and 2010. This does not necessarily constitute a formal violation, but is an indication that the system may be in jeopardy of having violations in the future and should be evaluated further. Evaluation of MCL exceedances was used to get a better understanding of where identified issues were present based on geography, community size, and other factors. Exceedance of maximum contaminant levels for arsenic, nitrates, and uranium are common in the Tulare Lake Basin Study Area.


Insufficient water supply, as described in this Study, is considered to be a characteristic of a water system with only one (1) active water supply well (e.g., no backup source). Communities with surface water as their single source of supply can also be vulnerable depending on the reliability of the surface water source and of backup systems integrated into the surface water treatment plant.


³ Database information that was collected and analyzed for the TLB Study originated from multiple sources. Refer to Section 13 - References.

Tulare Lake Basin
Disadvantaged Community
Water Study

FIGURE 1-1
Tulare Lake Basin Study Area

Legend

 Tulare Lake Basin

 County



EST. 1968

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CONSULTING GROUP

An Employee Owned Company

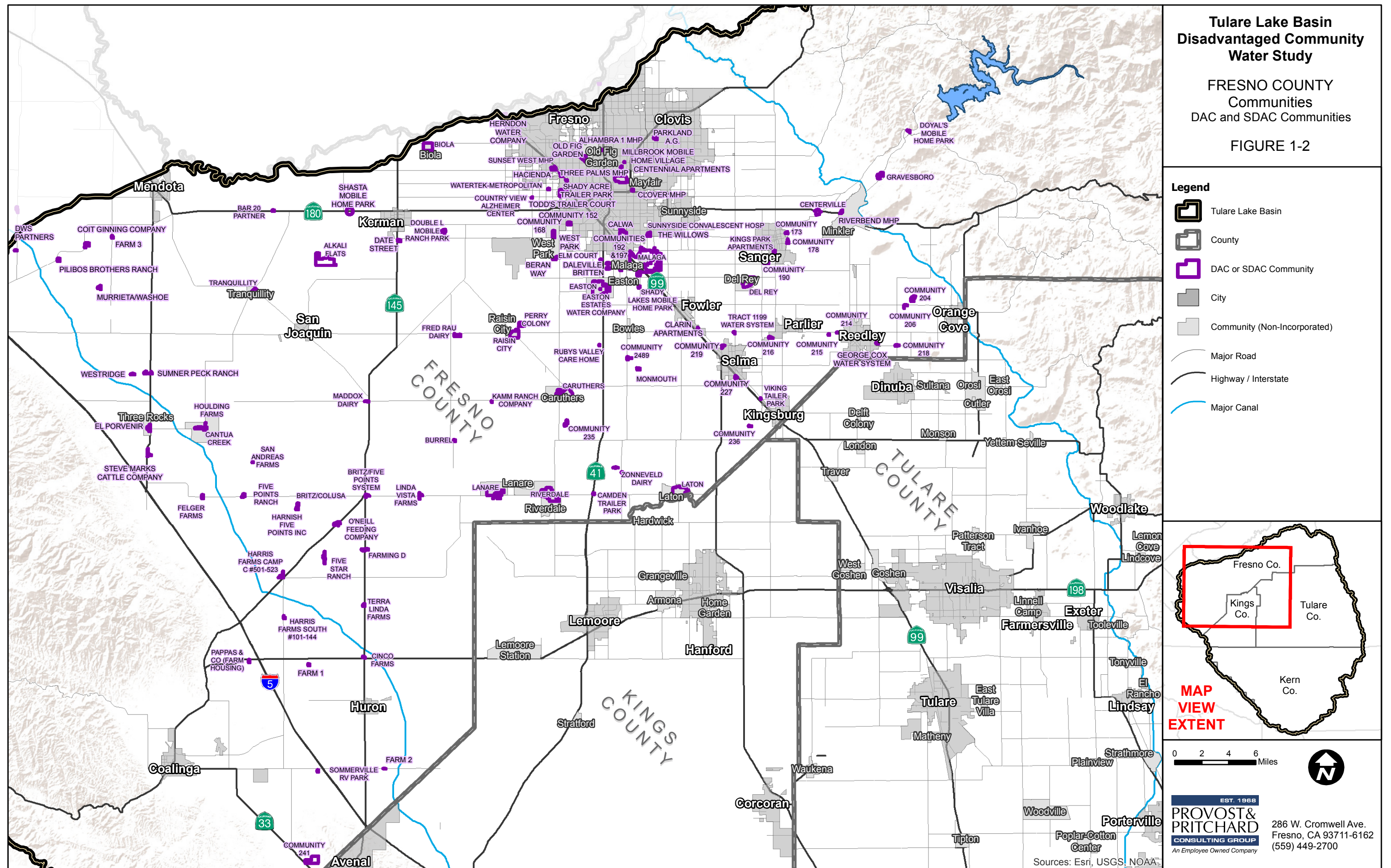
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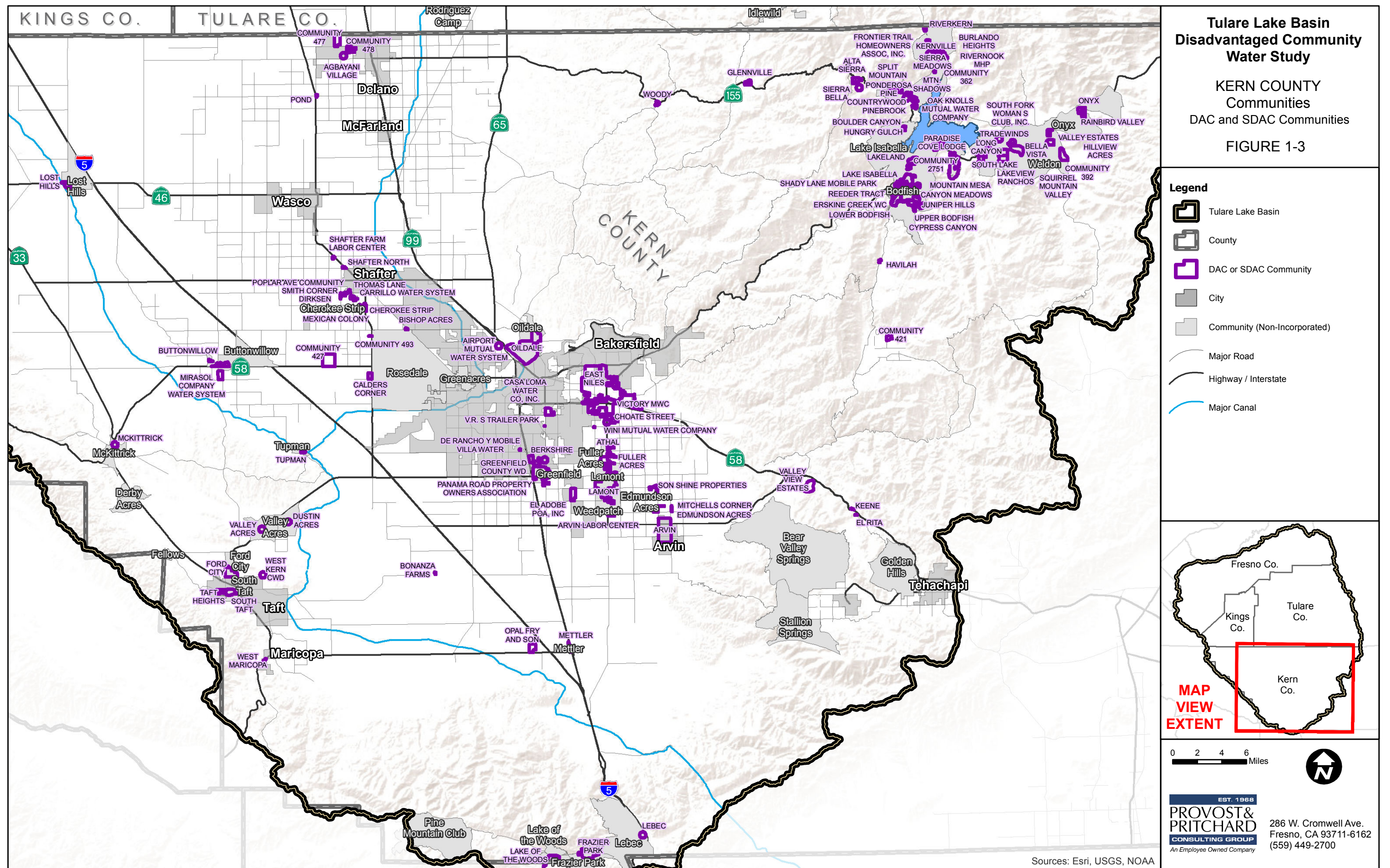
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

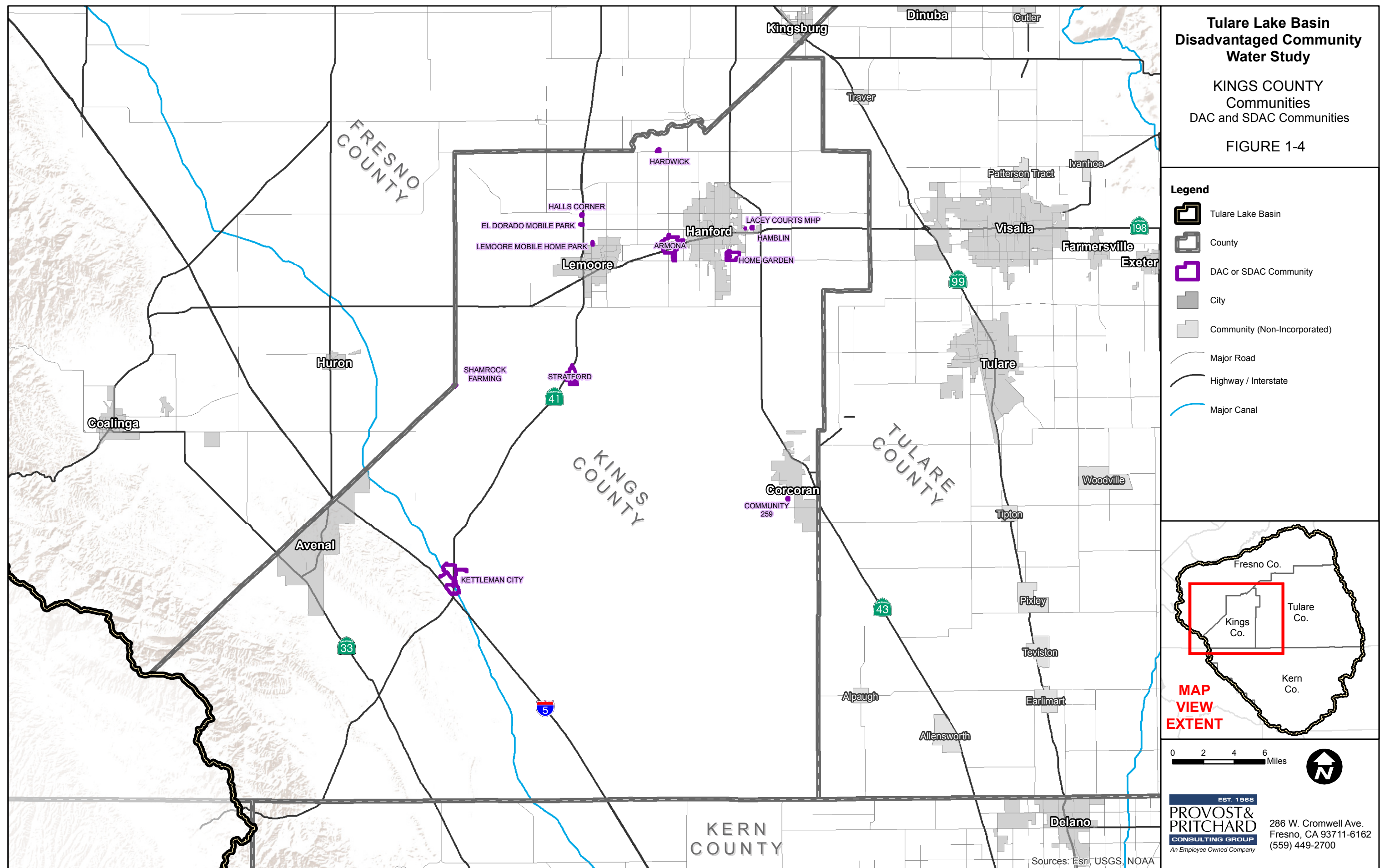
Tulare Lake Basin Disadvantaged Community Water Study

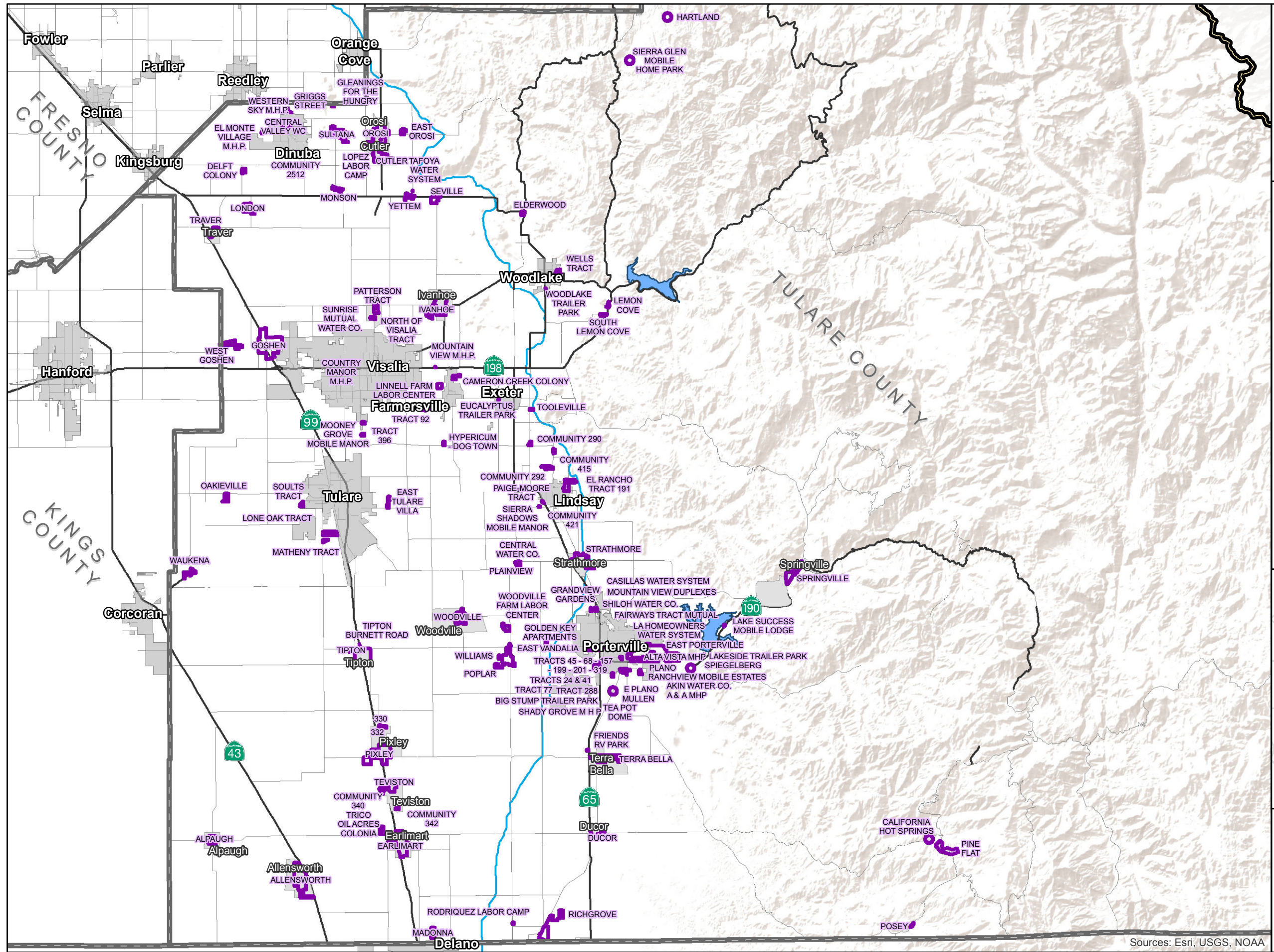
FRESNO COUNTY
Communities
DAC and SDAC Communities

FIGURE 1-2









Tulare Lake Basin Disadvantaged Community Water Study

TULARE COUNTY Communities DAC and SDAC Communities

FIGURE 1-5

Legend

- Tulare Lake Basin
- County
- DAC or SDAC Community
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

Additionally, the general depth to groundwater in the Tulare Lake Basin continues to decline, a condition known as overdraft. In 2009, the United States Geological Survey (USGS) performed a comprehensive evaluation of groundwater supplies in the Central Valley (USGS, 2009). The Central Valley was divided into four regions: Sacramento, Delta and Eastside Streams, San Joaquin Basin, and Tulare Basin. The USGS found that the Tulare Basin had the highest rate of groundwater overdraft of any region, and that fifty seven percent of groundwater pumping in the Central Valley occurs in the Tulare Basin. Groundwater storage in the Tulare Basin declined at a steady rate between 1962 and 2004. The total loss in storage due to un-replenished water stores was estimated to be 68 million acre-feet, which equates to an overdraft of about 1.6 million acre-feet/year.



The impacts of utilizing deeper groundwater, as necessitated by overdraft conditions, may include higher pumping costs and different constituents to be evaluated for treatment prior to distribution as a potable water source. For some communities, particularly those on private wells that are often utilizing more shallow aquifers, water supplies may dry up and require investment in constructing new sources or deepening of wells. These costs may be significant and may leave communities and households without water at all for some extended period if not proactively addressed.

Unreliable water system infrastructure is also a challenge for disadvantaged communities in the Study Area. Many systems have old and failing equipment and pipelines, lack of funds to proactively maintain their system, and lack of redundancy of system components. Systems with such limited reliability are more susceptible to system failures that may lead to emergency situations, where immediate repairs or replacement are necessary in order to deliver safe drinking water to customers.

In addition to the water supply issues faced by DACs in the Study Area, communities may also face issues with their wastewater. Wastewater challenges include reliance on septic systems that may be failing or are potentially contaminating the groundwater, failing or insufficient sewer collection systems, or wastewater treatment systems that are not capable of meeting the limitations set forth in the facility's Waste Discharge Requirements (WDRs).

Many disadvantaged communities with water supply or water quality issues have applied for and received funding for improvements to mitigate these problems. Report to the Legislature, Senate Bill X2 1 (2011), attached in **Appendix C**, provides a list of

some recently funded projects in the region. Systems that have received funding for water system capital improvements are usually on their way to resolving their water supply issues. While there are cases where the funded improvements resolve some, but not all of the system's water supply issues, a system with a funded project should be on the path toward the goal of delivering safe, sufficient, and sustainable potable water.

1.2 Overview of TLB Study

In order to meet the objectives of the Tulare Lake Basin Disadvantaged Community Water Study, the following five tasks were performed, in accordance with the tasks outlined in the grant agreement from DWR (**Appendix B**):

1. **Baseline Data Gathering, Mapping, and Database Creation of Disadvantaged Communities in the Tulare Lake Basin.** Data was gathered to form a database including information such as: community name and profile (population, connections, median household income, etc.); identified water (quality and supply) or wastewater problems; location; community water or wastewater provider; community representatives; status of eligibility for funding under existing government funding programs; and date last updated.
2. **Stakeholder Consultation and Community Outreach.** The project team consulted with stakeholders, including representatives of disadvantaged communities throughout the life of the project. The community representatives were involved in the development of solutions to address their water and wastewater problems. The feedback from stakeholders and community representatives was critical to the success of the project because the community members have a unique understanding of the problems facing their community. Since they will be impacted by the solutions generated by the pilot projects, it was important that communities have buy-in and understand what will be needed to implement, operate, and maintain any solutions to ensure that the recommendations can be successfully implemented.
3. **Selection of Pilot Projects and Studies to Develop Representative Solutions to Priority Issues.** In consultation with the Stakeholder Oversight Advisory Committee (SOAC), the consultants utilized the database to identify common problems associated with providing safe, reliable water and wastewater services to disadvantaged communities that could be effectively explored by further study, alternative solution development, and pilot projects. Using this list of common problems, the project team worked with the SOAC to identify the priority issues facing disadvantaged communities in the Tulare Lake Basin. For each priority issue identified through the stakeholder process, the project team developed potential solutions. Based on the list of potential solutions, and in consultation with the SOAC, the project team generated four representative pilot projects to further evaluate.

4. Implementation of Pilot Project Stakeholder Process to Develop Studies and Representative Solutions to Priority Issues. In consultation with the Pilot Project Stakeholder Advisory Group (PSAG) assembled for each pilot project, as well as Community Review Groups assembled for specific community outreach, the project team further developed and evaluated the possible solutions developed related to each of the four pilot projects. For each pilot project, the project team worked with the corresponding PPSAG and community review group(s) to develop final recommendations. Those recommendations are incorporated in this Final Report, and include the following:
 - a. A description of the particular problem(s) being addressed and identification of specific communities facing that problem in similar settings throughout the Tulare Lake Basin, for which these recommendations may also be applicable;
 - b. A description of the solutions recommended by the pilot project and any other lessons learned over the course of the study or project;
 - c. Funding opportunities available to implement the recommended solutions, including the preparation of funding applications when possible;
 - d. A discussion of steps that may be taken to ensure long-term sustainability of the implemented program for the Tulare Lake Basin; and
 - e. Identification of any obstacles or barriers to implementation of the recommended solution and suggestions for how to eliminate those obstacles or barriers.
5. Preparation of Final Report for submittal to DWR. The project team prepared this Final Report incorporating the results of each representative pilot project. Since various State, Federal, and local agencies are involved directly in the provision of drinking water and wastewater services, or provide regulatory oversight of drinking water and wastewater systems, this Final Report includes recommendations on how the Tulare Lake Basin Disadvantaged Community Water Plan can be integrated into these existing planning and funding processes and disseminated to the appropriate agencies. This Report also makes recommendations on how State, Federal, and local agencies can provide funding and other resources and support to assist communities with implementing the solutions presented in each of the pilot projects. This Final Report will be reviewed by the SOAC before finalizing the Report and submitting to the Department of Water Resources.

1.3 Definition of Terms

1.3.1 Types of Organizations

County Service Area (CSA): The County Service Area Law created in the 1950's allows residents or county supervisors to initiate the formation of a County Service Area. A CSA is authorized to provide a wide variety of services, including extended police

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

protection, fire protection, park and recreation facilities, libraries, low power television and translation facilities and services. CSAs also may provide other basic services such as water service and garbage collection if they are not already performed on a countywide basis. A CSA may span all unincorporated areas of a county or only selected portions.

Community Services District (CSD): A community services district is an entity formed by residents of an unincorporated community, which is authorized to provide a wide variety of services, including water, garbage collection, wastewater management, security, fire protection, public recreation, street lighting, ambulance services, and graffiti abatement. A CSD may span unincorporated areas of multiple cities and/or counties. A CSD may form bonds, or form an improvement district for the purpose of issuing bonds, as any City or County might do. Any bond issuance or other long-term debt will require a 2/3rds majority approval of registered voters residing within the CSD.

County Water District (CWD): This type of district establishes rules and regulations for the sale, distribution, and use of water. The district also stores and conserves water for present or future beneficial use, and is authorized to run recreational facilities, sanitation facilities, and fire protection.

Farm Labor Camp (Labor Camp): Residential facilities provided chiefly by government agencies for migratory or seasonal farm labor.

Integrated Regional Water Management (IRWM) Group: An IRWM group is a local group of agencies and communities dedicated to regionally managing the water resources in its area, including coordinating projects to maximize regional benefits to the groundwater and surface water resources. The IRWM groups within the Tulare Lake Basin Study Area are shown in **Figure 1-6**.

Irrigation District: An agency that manages the irrigation waters within its boundaries, including water deliveries, canals, and pipelines.

Joint Powers Authority (JPA): The Joint Exercise of Powers Act allows public agencies, ranging from federal government to the smallest special district, to enter into an agreement with each other to jointly exercise a common power.

Mutual Water Company: A mutual water company is a privately owned, public utility, regulated by the California Public Utilities Commission (CPUC). MWCs are most commonly formed as general corporations or as nonprofit mutual benefit corporations, although other structures are sometimes used for tax or other reasons.


Tulare Lake Basin Disadvantaged Community Water Study

STUDY AREA

IRWM Planning Groups


FIGURE 1-6


Legend


 Tulare Lake Basin


 County


IRWM Planning Groups (DWR 2012)


 (24) Poso Creek


 (38) Upper Kings Basin Water Forum

 (14) Kaweah River Basin

 (15) Kern County

 (33) Southern Sierra

 (35) Tule

 (44) Westside - San Joaquin

0 5 10 15
Miles



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DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

Principal Act: The principal act of a special district is the law that enables a district of that type to form and gives it authority to operate. Each special district type (for example, flood control, public utilities, or community services districts) has its own principal act. (See *Special Act definition*)

Public Utility District (PUD): This district type maintains the infrastructure for public service and provides public utility service such as electricity, natural gas, sewer, waste collection, wholesale telecommunications, water, etc., to the residents of that district.

Special Act: Special acts are laws that the Legislature passes to address the specific needs of a community and establishes a district to address those needs. These specific districts (rather than district types) are uniquely created by the Legislature. (See *Principal Act definition*)

Special District: Special districts are a form of local government created by a local community to meet a specific need (for example water or sewer service). When residents or landowners want new services or higher levels of existing services, they can form a district to pay for and administer those services.

Stakeholder Oversight Advisory Committee (SOAC): The Stakeholder Oversight Advisory Committee was formed in September 2011 to primarily direct the development of this Tulare Lake Basin Disadvantaged Community Water Study. The SOAC assisted the project team in identifying priority issues, determining selection criteria and selecting pilot studies, and reviewing the draft report and recommendations.

Water District: A water district is a district that performs at least one of three specific duties: water delivery, waste disposal (sanitation), and flood control and water conservation. A water special district can be created either by forming under a general water district act or through a special act of the Legislature.

1.3.2 Definition of Water Systems

The following are definitions from Title 22 California Code of Regulations, related to various categories of water systems. The emphasis of this Study is on small water systems, state small water systems, and community water systems. Non-community water systems, non-transient non-community water systems, and transient non-community water systems do exist within the Study Area, but are not a focus of this Study. A decision tree, published by the California Department of Public Health, illustrating the classification of water systems as defined below, is presented as **Figure 1-7**. The decision tree provides a visual depiction of the terms defined herein.

Constructed Conveyances: Any manmade conduit such as ditches, culverts, waterways, flumes, mine drains or canals.

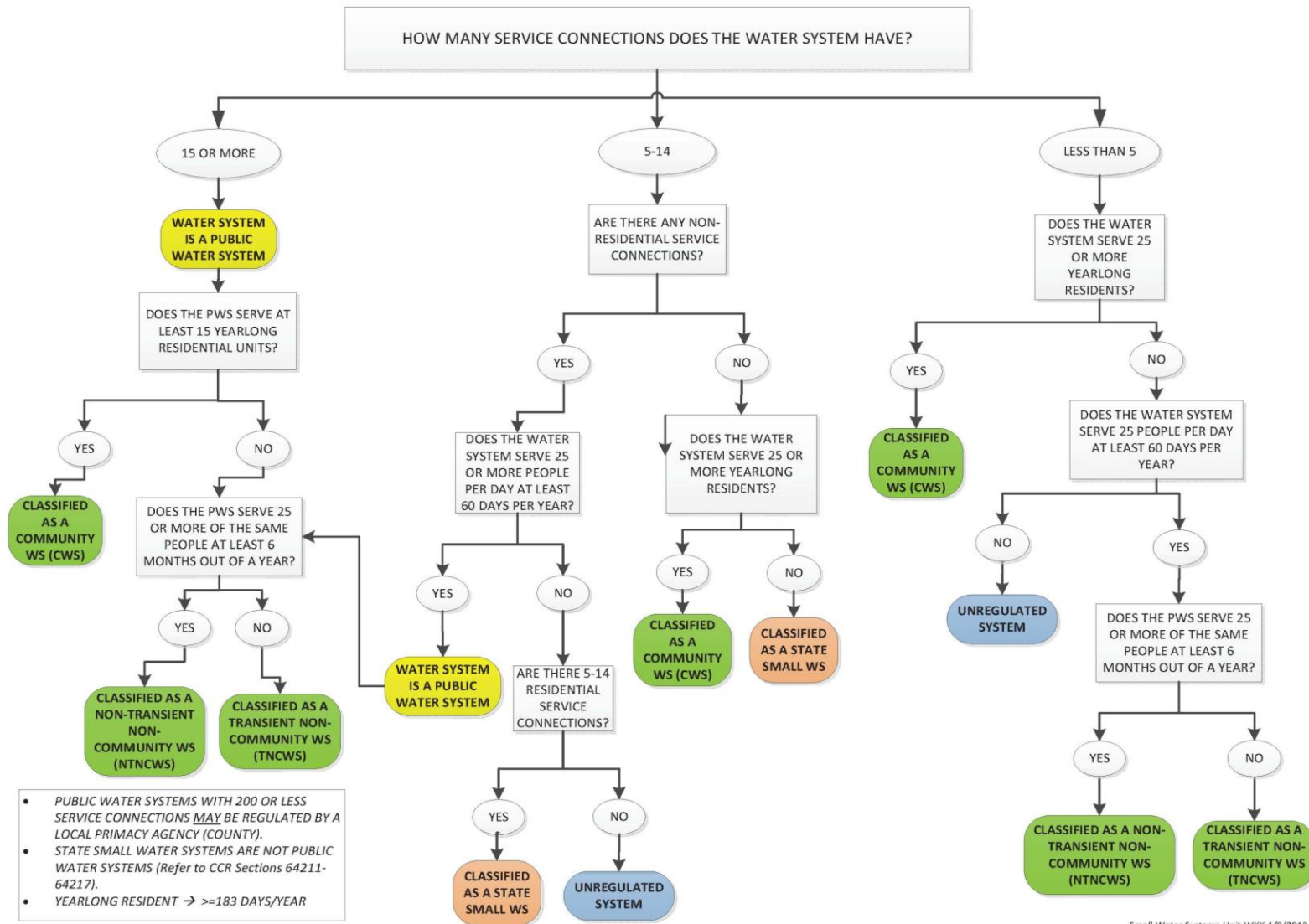
Community Water System (CWS): A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 year long residents of the area served by the system.

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

Figure 1-7. Decision Tree for Classification of Water Systems (CDPH)

DECISION TREE FOR CLASSIFICATION OF WATER SYSTEMS



DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

Non-Community Water System (NCWS): A public water system that is not a community water system. A NCWS can serve either a transient or a non-transient population (see *Non-Transient Non-Community Water System* and *Transient Non-Community Water System*)

Non-Transient Non-Community Water System (NTNC): A public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year. This may include local schools or hospitals with their own water system.

Public Water System (PWS): A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

Small Water System (SWS): A community water system, except those serving 200 or more service connections, or any non-community or non-transient non-community water system.

**It is noted that the U.S. Environmental Protection Agency (EPA) uses a different definition for small public water systems as follows: Public water systems with fewer than 1,000 service connections and a population served of less than 3,300.*

State Small Water System (SSWS): A system for the provision of piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year.

Transient Non-Community Water System (TNC): A non-community water system that does not regularly serve at least 25 of the same persons over six months per year.

1.3.3 Other Definitions

Affordability Level: CDPH considers 1.5% of the Median Household Income (MHI) as the affordability level for water service for disadvantaged communities. With a MHI of \$30,000, this would equate to \$450, or \$37.50 per month.

Affordability thresholds set by other organizations and used in other studies range from 1.5% to 3% of the MHI. For the purposes of this study, a threshold of 1.5% of the MHI is used.

Disadvantaged Community (DAC): A community whose median household income is 80 percent or less of the statewide median household income. For the purposes of this study, the American Community Survey (ACS) for 2006-2010 was used. The California Median Household Income for 2006-2010 was \$60,883. A DAC is therefore a community whose MHI for the 2006-2010 ACS dataset is \$48,706 or less.

Economy of Scale: The increased efficiencies inherent in providing services or delivering products by increasing the number of units over which the fixed costs are

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

spread. Often operational efficiency is improved with increasing scale, leading to lower variable and overall costs.

Local Agency Formation Commission (LAFCo): A local agency formation commission (LAFCo) is an independent commission working within the boundaries of each county to help control the borders of cities and special districts, to discourage sprawl and encourage orderly government. As part of this effort, LAFCOs conduct sphere of influence assessments and municipal service reviews. The Knox-Nisbet Act of 1963 established LAFCOs in law.

Memorandum of Agreement (MOA): A memorandum of agreement (MOA) or cooperative agreement is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective. The purpose of an MOA is to have a written understanding of the agreement between parties. The MOA can also be a legal document that is binding and hold the parties responsible to their commitment, or just a partnership agreement.

Memorandum of Understanding (MOU): A memorandum of understanding (MOU) is a written agreement between two or more parties. This document is not as binding as a contract, but it outlines a commitment between the parties to work together toward a common goal. MOUs do not generally discuss the exchange of money. Instead, MOUs are helpful for organizations that want to formulate partnerships and exchange supportive services. A MOU is a more formal alternative to a “gentleman’s agreement”, but generally lacks the bind power of a contract.

Non-Profit or Not-for-Profit Organization: An entity that is exempt from taxes under United States Internal Revenue Code Section 501(c), 26 U.S.C. 501(c). In the context of this Study, a non-profit organization generally refers to those that provide technical assistance to and advocacy for community water and wastewater providers.

Operator Certification Levels: (Distribution System Operators: D1-D5; Treatment Plant Operators: T1-T5)

Operator certification helps protect human health and the environment by establishing minimum professional standards for the operation and maintenance of public water systems. In 1999, EPA issued operator certification program guidelines specifying minimum standards for certification and recertification of the operators of community and non-transient non-community public water systems. These guidelines are implemented through State operator certification programs.

The California Regulations Related to Drinking Water, Title 22 Code of Regulations, Chapter 15 Domestic Water Quality and Monitoring Regulations, Article 2 General Requirements describes the classification of water treatment facilities and distribution systems.

Water treatment facilities are classified pursuant to Table 64412.1-A of the California Code of Regulations.

Table 1-1. California Code of Regulations Table 64413.1-A - Water Treatment Facility Class Designations

<i>Total Points</i>	<i>Class</i>
Less than 20	T1
20 through 39	T2
40 through 59	T3
60 through 79	T4
80 or more	T5

The calculation of total points for a water treatment facility is described in the California Code of Regulations, and depends on the water source, water quality, and treatment method.

Distribution systems are classified pursuant to Table 64413.3-A of the California Code of Regulations.

Table 1-2. California Code of Regulations Table 64413.3-A - Distribution System Classifications

<i>Population Served</i>	<i>Class</i>
1,000 or less	D1
1,001 through 10,000	D2
10,001 through 50,000	D3
50,001 through 5 million	D4
Greater than 5 million	D5

Primary Drinking Water Regulations: National primary drinking water regulations (primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water.

Proposition 218: Proposition 218, officially titled the “Right to Vote on Taxes Act”, was approved by California voters in 1996. It established additional substantive and procedural requirements and limitations on new and increased taxes, assessments, and property related fees and charges. When referred to in this Study, Proposition 218 refers to the requirements associated with changes to fees and charges imposed by an agency for water or sewer service (water/sewer rates). Prior to adopting or increasing a property-related fee or charge subject to Proposition 218 (such as a water or sewer rate increase), the agency must conduct a public hearing at which property owners can protest the rate change. The hearing must be held at least 45 days after the mailing of the notice of the proposed fee or change to record property owners. At the hearing, the

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Introduction

agency must consider all protests against the proposed fee or charge; however, when evaluating whether the number of protests defeats the imposition or increase of the fee or charge, only written protests are counted. “If written protests against the proposed fee or charge are presented by a majority of owners of the identified parcels, the agency shall not impose the fee or charge.” (California Constitution, Article XIID, § 6, Subdivision (a), Part (2).) If a majority (50% plus one) of owners or renters (utility rate payers) do not submit a written protest, the fee or charge proposed can be imposed.

Receivership: Whenever the [State Department of Public Health] determines that any public water system is unable or unwilling to adequately serve its users, has been actually or effectively abandoned by its owners, or is unresponsive to the rules or order of the department, the department may petition the superior court of the county within which the system has its principal office or place of business for the appointment of a receiver to assume possession of its property and to operate its system upon such terms and conditions as the court shall prescribe. The court may require, as a condition to the appointment of the receiver, that a sufficient bond be given by the receiver and be conditioned upon compliance with the orders of the court and the department, and the protection of all property rights involved. The court may provide, as a condition of its order, that the receiver appointed pursuant to the order shall not be held personally liable for any good faith, reasonable effort to assume possession of, and to operate, the system in compliance with the order (California Statutes Related to Drinking Water, Health & Safety Code, Division 104, Part 12, Chapter 4, Article 9, §116665).

Secondary Drinking Water Regulations: National secondary drinking water regulations (secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply.

Severely Disadvantaged Community (SDAC): A community whose median household income is 60 percent or less of the statewide median household income. For the purposes of this study, the American Community Survey for 2006-2010 was used. The California Median Household Income (MHI) for 2006-2010 was \$60,883. A SDAC is therefore a community whose MHI is \$36,530 or less, per the 2006-2010 ACS dataset.

Technical Assistance Provider: Technical Assistance Providers, as discussed in this Study, are those organization contracted through the State to provide onsite technical assistance, workshops and fairs, and other resources for other water professionals throughout the State. California Technical Assistance Providers (CalTAP) include California Department of Health (CDPH), California Rural Water Association (CRWA), Rural Community Assistance Corporation (RCAC), Self-Help Enterprises, EPA, California State University, Sacramento, and University of California, Davis.

2 BACKGROUND

2.1 Characteristics of the Tulare Lake Basin

2.1.1 Geographical Boundaries

The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin River. The Tulare Lake Basin Study Area (Study Area) includes all of Kings and Tulare counties and most of Fresno and Kern counties. The geographic boundary of the Study Area is illustrated in **Figure 1-1**.

According to the *Water Quality Control Plan for the Tulare Lake Basin* (Basin Plan), the Basin encompasses approximately 10.5 million acres, of which approximately 3.25 million acres are in federal ownership. Kings Canyon and Sequoia National Parks and substantial portions of Sierra, Sequoia, Inyo, and Los Padres National Forests are included in the Basin. Valley floor lands (i.e., those having a land slope of less than 200 feet per mile) make up slightly less than one-half of the total basin land area. The maximum length and width of the Basin are about 170 miles and 140 miles, respectively. The valley floor is approximately 40 miles in width near its southern end, widening to a maximum of 90 miles near the Kaweah River (Tulare Lake Basin Plan, Second Edition, 2004).

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 Tulare Basin has mild winters and hot dry summers. Despite transient Tule marsh areas, the area is dry and the valley summer heat is intense.

2.1.2 Land Use

Urban development is generally confined to the foothill and eastern valley floor areas. Major concentrations of population occur in or near the metropolitan areas of Bakersfield, Fresno, Porterville, Hanford, Tulare, and Visalia. The Basin is one of the most important agricultural centers of the world. Industries related to agriculture, such as food processing and packaging (including canning, drying, and wine making), are prominent throughout the area. Producing and refining petroleum lead non-agricultural industries in economic importance (Tulare Lake Basin Plan, Second Edition, 2004).

According to the *California Water Plan, Update 2005*, the Tulare Lake region is one of the nation's leading areas in agricultural production with a wide variety of crops on about million acres. The largest river is the Kings River, which flows west from the Sierra Nevada near the northern border of the region. The California Aqueduct extends the entire length of the west side of the region, delivering water to State Water Project (SWP) and Central Valley Project (CVP) contractors in the region and exporting water over the Tehachapi Mountains to Southern California. Significant rivers in the region include the Kings, Kaweah, Tule and Kern rivers, which drain into the valley floor of this

Background

hydrologically closed region. The Kings and Tule rivers historically terminated at the Tulare Lake, which was once the largest freshwater lake in the western United States. The Kern River historically terminated in two small lakes, Kern Lake and Buena Vista Lake. These lakes have been dry for many decades, and the waters that once fed them were long ago diverted for irrigation, such that the lake bottom lands are now heavily farmed. No significant rivers or creeks drain eastward from the Coast Ranges into the valley (California Water Plan, 2005).

The State and federal government agencies own about 30 percent of the land in the region, including about 1.7 million acres of national forest, 0.8 million acres of national parks and recreation areas, and 1 million acres of land managed by the U.S. Bureau of Land Management. The region's foothills border Kings Canyon and Sequoia National Parks and the Sierra National Forest. Privately owned land totals about 7.4 million acres. Irrigated agriculture accounts for more than 3 million acres of the private land, while urban areas take up over 350,000 acres. Other agricultural lands and areas with native vegetation represent an additional 1.4 million acres in the region (California Water Plan, 2005).

The climate and soils of the Tulare Lake region contribute significantly to the tremendous agricultural production of the farm lands and to the diversity of crops grown. Counties in the Tulare Lake region represent three of the top five agricultural counties in the state, as measured by total value of production. More than 250 varieties of crops and farm commodities are produced in the region. While cotton was the number one crop in many past years, grapes have recently outpaced cotton in terms of gross production receipts. More than 10 percent of the irrigated acreage in California and about 12 percent of the 3 million irrigated acres in the region is planted in alfalfa. Alfalfa acreage in the region has been rising in recent years in response to the needs of the expanding dairy industry. Tulare County, in the heart of the region, is currently the nation's richest dairy county. Deciduous and citrus trees are the main agricultural crops in the lower foothills, and livestock grazing and timber harvesting occur in the higher elevation areas (California Water Plan, 2005).

2.1.3 Water Supply

Urban water use accounts for about 5 percent of the total applied water in the Tulare Lake region. Until recently, many of the communities in the region have not used water meters, and customers are charged a flat rate for water use. However, urban communities are gradually working toward the installation of water meters as funding allows (California Water Plan, 2005).

The region receives most of its surface water runoff from four main rivers that flow out of the Sierra Nevada, which are the Kings, Kaweah, Tule, and Kern rivers. The development and use of water from these rivers has played a major role in the history and economic development of the region. Major water conveyance facilities in the region include the California Aqueduct, the Friant-Kern Canal, and the Cross Valley Canal. Water diversions from the San Joaquin River at Friant Dam are also a significant supply source for all uses in the Tulare Lake region. The water districts in the region

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Background

have developed an extensive network of canals, channels, and pipelines to deliver water supplies to customers. Water storage facilities and conveyance systems control and retain most of the surface water runoff from the watersheds in the region, except in extremely wet years when floodwaters may flow out of the region to the San Joaquin River. During flood years, excess water flows down the north fork of the Kings River toward Mendota Pool and on to the San Joaquin River. In the wettest years, Kings River floodwaters reach the normally dry Tulare Lake via the south fork of the river. Excess runoff from the Kaweah and Tule rivers might also flow into Tulare lakebed, flooding low-lying agricultural fields. This excess surface water is managed to the maximum extent for use in artificial groundwater recharge. In the rare event water leaves the basin, it is because the absorptive capacity of the groundwater systems in the region has been exceeded. Floodwater can also occasionally be diverted from the Kern River intertie into the California Aqueduct for use in other SWP service areas (California Water Plan, 2005).

Groundwater has historically been important for both urban and agricultural uses in the Tulare Lake region. Groundwater pumped from the basin's aquifers account for about 33 percent of the region's total annual water supply, and also account for 35 percent of all groundwater use in the state. Additionally, the region's groundwater supply represents about 10 percent of the state's overall developed water supply for agricultural and urban uses. Most towns and cities along the east side of the valley, including Fresno, Visalia and Bakersfield, rely primarily on groundwater. Bakersfield occasionally obtains supplemental water from local surface water and some imported SWP water. Fresno, Visalia, Bakersfield, and other cities also have groundwater recharge programs to help ensure that groundwater will continue to be a viable water supply in the future. On the valley's western side, smaller cities like Avenal, Huron, and Coalinga rely on imported surface water from the San Luis Canal to meet municipal demands. This surface water is of better quality than the local groundwater supplies on the western side, which often have poor water quality (California Water Plan, 2005).

According to the database developed for this Study, 38 of the 353 disadvantaged communities identified in the Study Area use surface water in their community water systems. It is assumed that the remaining DACs in the Study Area (nearly 90 percent) rely only on groundwater for their water supply needs.

In addition to the recharge programs employed by some valley cities, extensive groundwater recharge programs (known as water banks) are also operated by water districts and agencies, which have stored significant amounts of surplus water underground for future use and exchanges through water banking programs. For more than 100 years, water users throughout the region have implemented conjunctive use practices to maximize the water supply and maintain the groundwater basins (California Water Plan, 2005).

Conjunctive use is the deliberate combined use of groundwater and surface water, including actively managing the aquifer systems as an underground reservoir. Generally, during wet years, when more surface water is available, surface water is stored underground by recharging the aquifers with surplus surface water. During dry

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Background

years, the stored water is available in the aquifer system to supplement or replace diminished surface water supplies.

Due to the closed nature of the Tulare Lake Basin, there is little subsurface outflow. Thus, salts accumulate within the Basin due to importation and evaporative use of the water. The paramount water quality problem in the Basin is the accumulation of salts. This problem is compounded by the overdraft of ground water for municipal, agricultural, and industrial purposes, and the use of water from deeper formations and outside the basin which further concentrates salts within remaining ground water (Tulare Lake Basin Plan, Second Edition, 2004).

According to *California's Groundwater – Bulletin 118, Update 2003*, 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.

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 (Bulletin 118, Update 2003).

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 (Bulletin 118, Update 2003).

Background

Water Quality in Public Supply Wells

California drinking water regulations specify primary standards and secondary standards for water contaminants. The primary standard MCLs are health based standards. These standards are considered necessary for the immediate and long term protection of human health. Secondary MCLs are consumer acceptance contaminant levels. Secondary standards relate to the aesthetics of the water and include such parameters as turbidity, color, odor and total dissolved solids. This Study focuses on compliance with primary standards, which represent the minimum standard for human consumption. Some contaminants are considered to be acute contaminants because they can have an immediate effect on health. Other contaminants are chronic, meaning that their effect is cumulative over a long period of time.

A database of the communities in the Tulare Lake Basin Study Area was evaluated to determine those community water systems that have exceeded a primary drinking water maximum contaminant level. It was found that arsenic, nitrates and uranium are the most common contaminants of concern for drinking water in the Study Area. Communities with exceedances of a primary drinking water MCL in the raw water (meaning the quality of water before any treatment is provided) are shown in **Figure 2-1** through **Figure 2-4**. Raw water quality is shown to give an indication of the groundwater quality in a given area. More discussion of the water quality is discussed in the Database section of this report, and within the pilot studies.

Groundwater Levels

The general depth to groundwater in the Tulare Lake Basin continues to decline, a condition known as overdraft. In 2009, the United States Geological Survey (USGS) performed a comprehensive evaluation of groundwater supplies in the Central Valley (USGS, 2009). The Central Valley was divided into four regions: Sacramento, Delta and Eastside Streams, San Joaquin Basin, and Tulare Basin. The USGS found that the Tulare Basin had the highest rate of groundwater overdraft of any region, and that fifty seven percent of groundwater pumping in the Central Valley occurs in the Tulare Basin. Groundwater storage in the Tulare Basin had declined at a steady rate between 1962 and 2004. The total loss in storage due to un-replenished water stores was estimated to be 68 million acre-feet, which equates to an overdraft of about 1.6 million acre-feet/year.













**Tulare Lake Basin
Disadvantaged Community
Water Study**

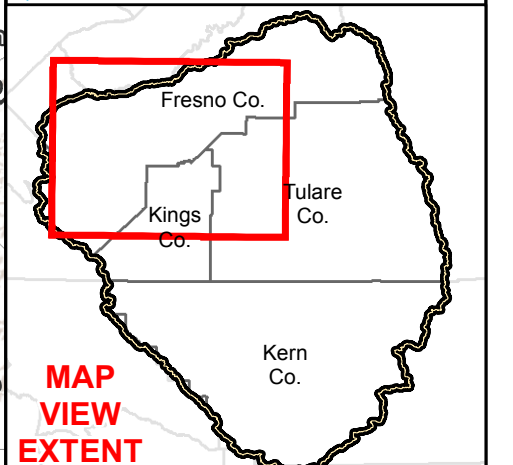
**FRESNO COUNTY
Communities**

DAC and SDAC Communities
*Raw Water Quality Issues

FIGURE 2-1

Legend

-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value >=20 pC/l)
-  Arsenic (Source Max Value >=10 ug/l)
-  Nitrate as NO3 (Source Max Value >= 45 mg/l)
-  Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal



**MAP
VIEW
EXTENT**

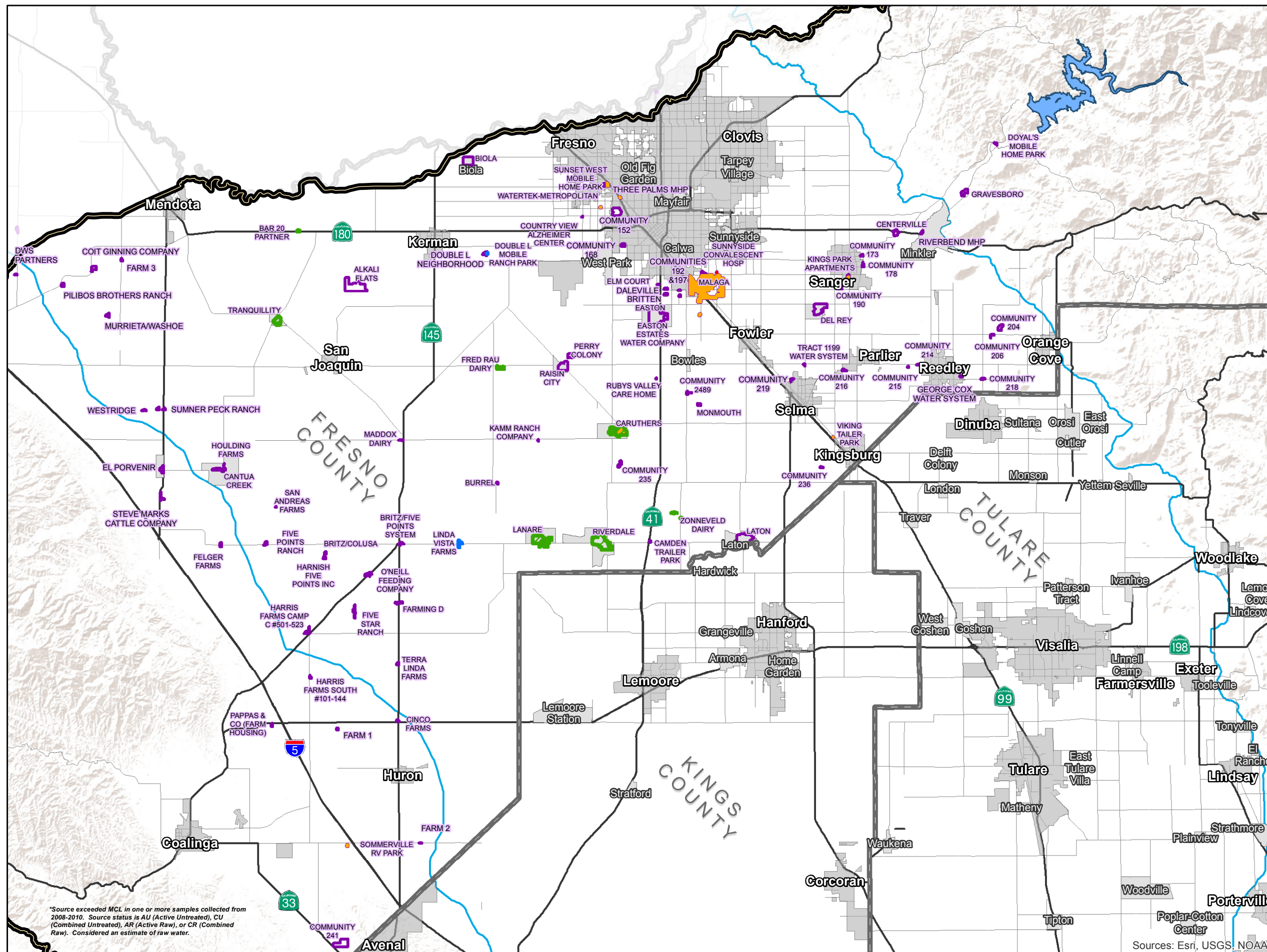
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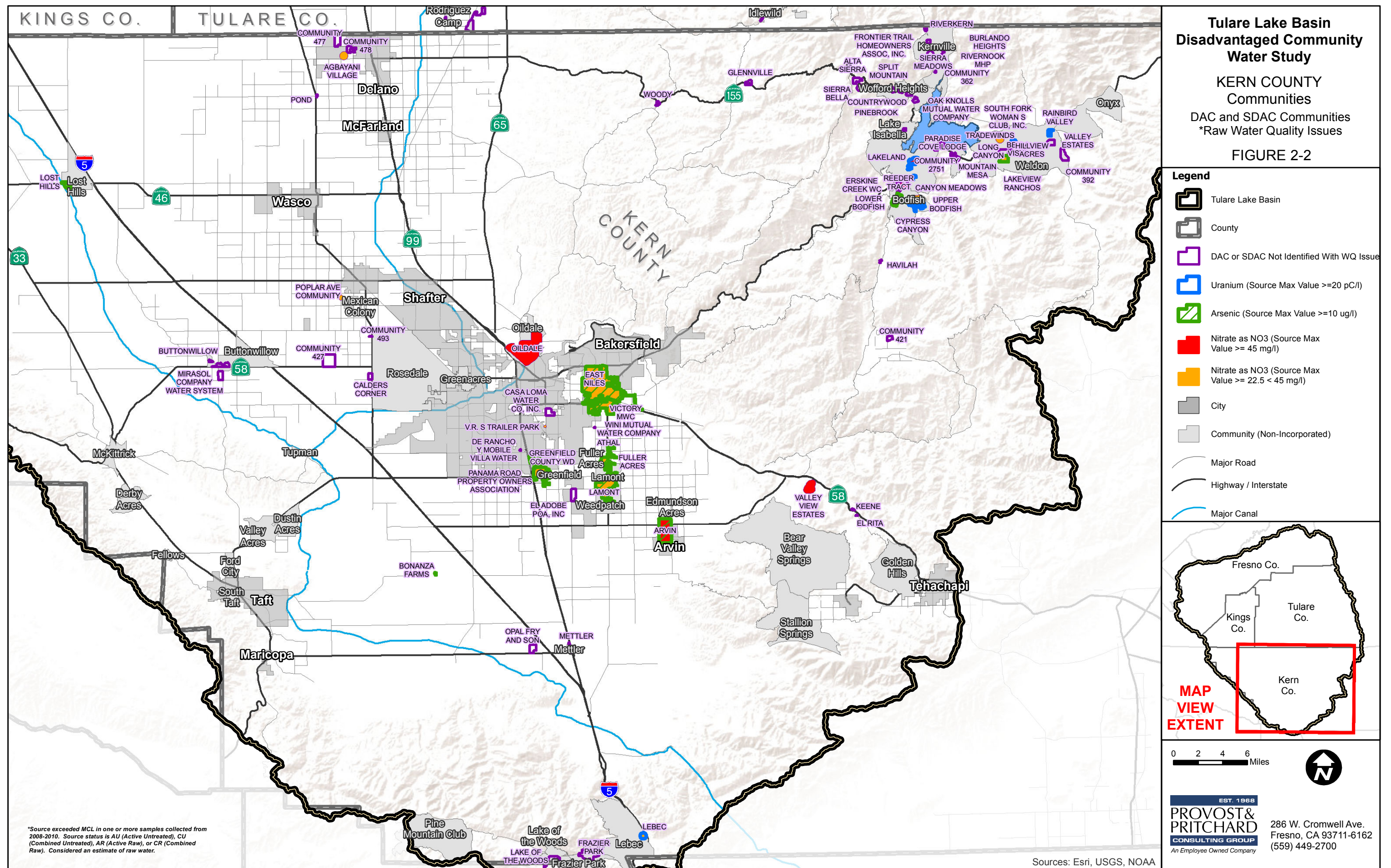
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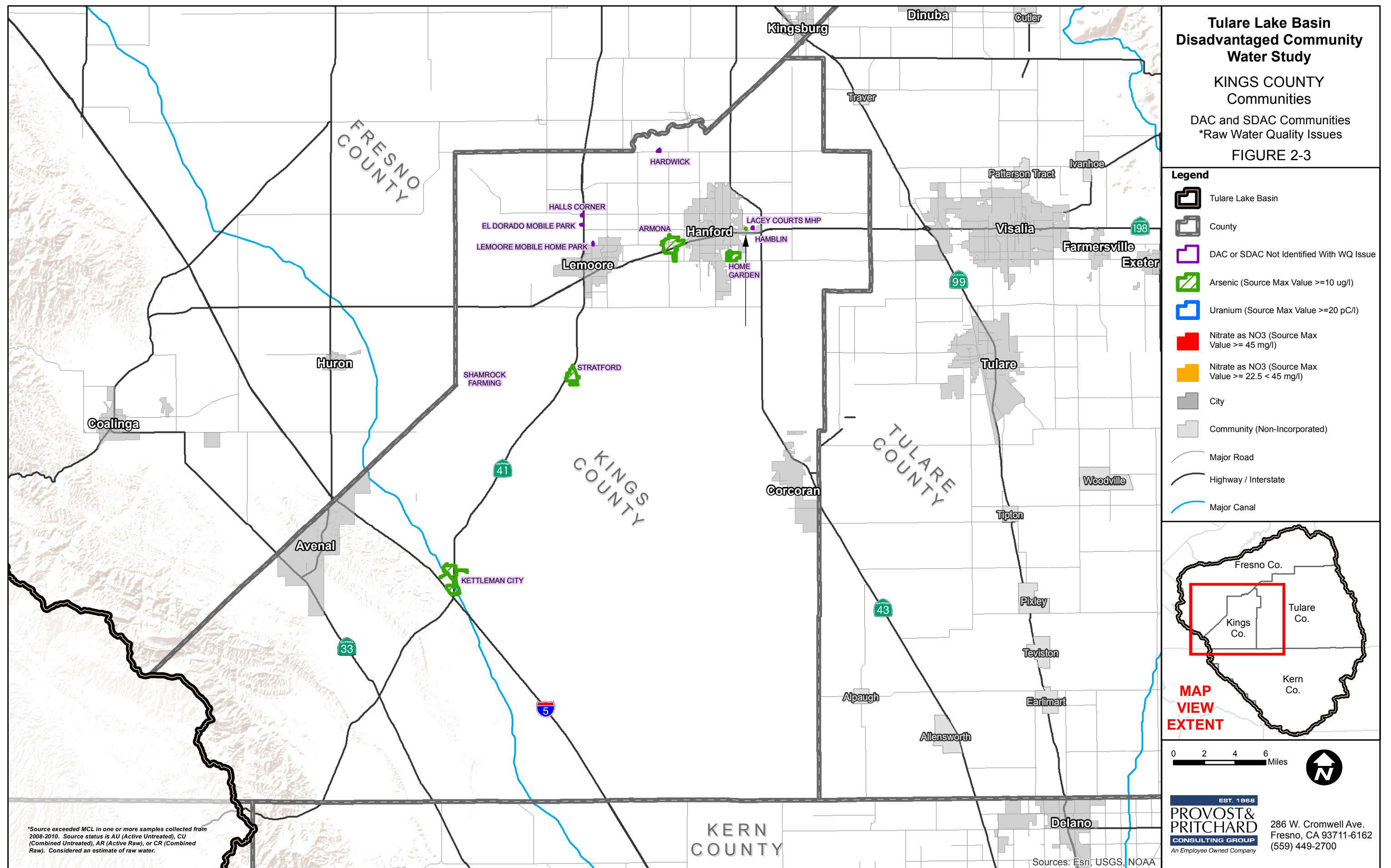
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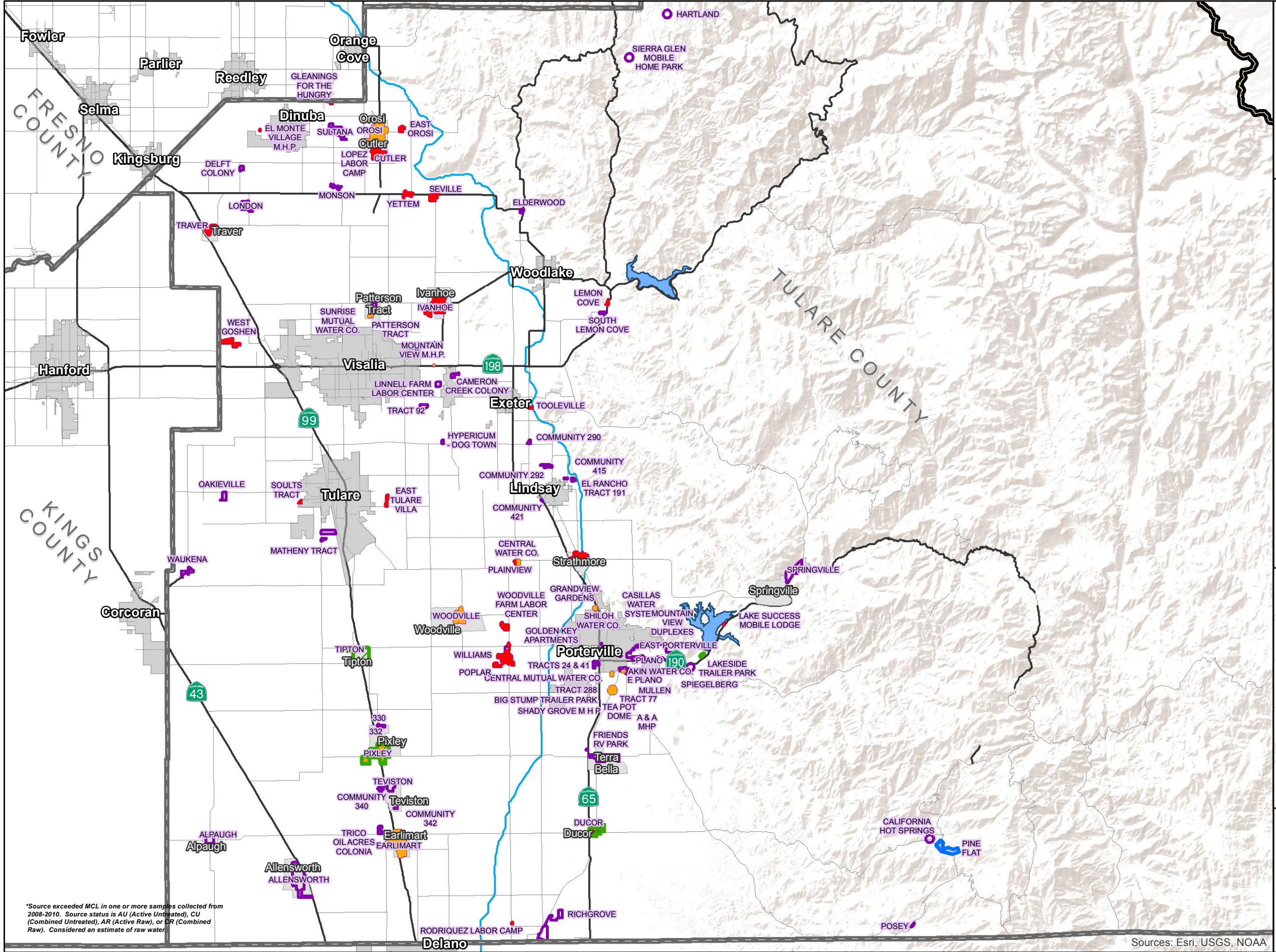
Sources: Esri, USGS, NOAA



*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AR (Active Raw), or CR (Combined Raw). Considered an estimate of raw water.







Tulare Lake Basin Disadvantaged Community Water Study

TULARE COUNTY Communities

DAC and SDAC Communities
*Raw Water Quality Issues

FIGURE 2-4

Legend

- Tulare Lake Basin
- County
- DAC or SDAC Not Identified With WQ Issue
- Uranium (Source Max Value >=20 pCi/l)
- Arsenic (Source Max Value >=10 ug/l)
- Nitrate as NO3 (Source Max Value >= 45 mg/l)
- Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AR (Active Raw), or DR (Combined Raw). Considered an estimate of raw water.

Sources: Esri, USGS, NOAA

Background

2.1.4 Population

Urban development is generally confined to the foothill and eastern valley floor areas. Major concentrations of population occur in or near the metropolitan areas of Bakersfield, Fresno, Porterville, Hanford, Tulare, and Visalia. (Tulare Lake Basin Plan, Second Edition, 2004)

The total population within the Study Area including cities and unincorporated areas is estimated to be about 2,240,000, based on Department of Finance data from 2011. Based on the database developed for this Study, there is a population of about 340,000 within the 530 unincorporated communities identified in the Study Area, of which approximately 260,000 are within the 353 communities identified as DACs.

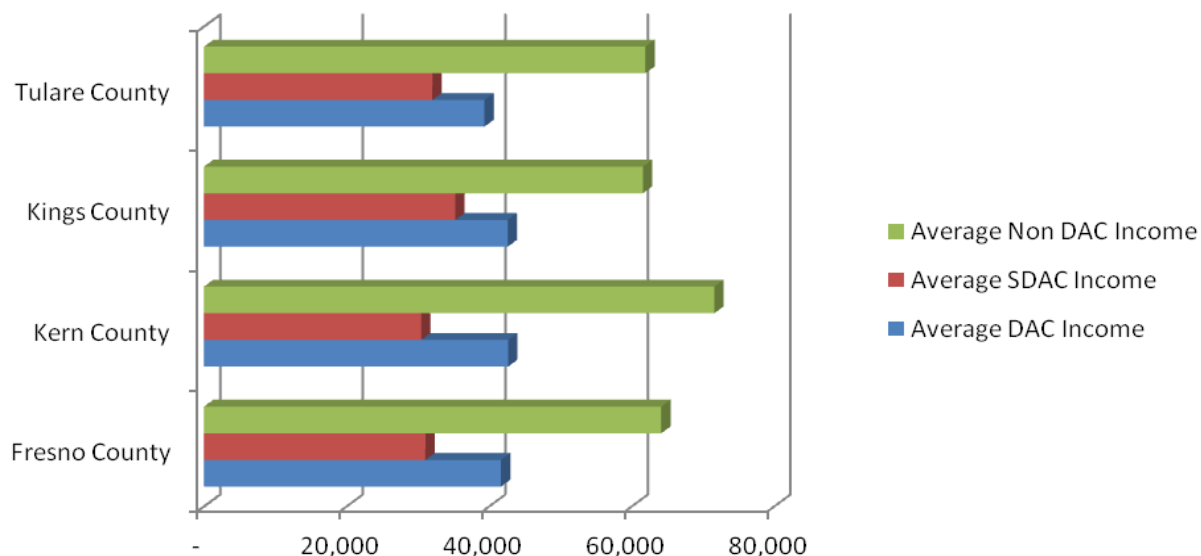
2.1.5 Income

A disadvantaged community is a community whose median household income is 80 percent or less of the statewide median household income. For the purposes of this study, the American Community Survey (ACS) for 2006-2010 was used. The California Median Household Income for 2006-2010 was \$60,883. A DAC is therefore a community whose MHI for the 2006-2010 ACS dataset is \$48,706 or less.

A severely disadvantaged community is a community whose median household income is 60 percent or less of the statewide median household income. For the purposes of this study, the American Community Survey for 2006-2010 was used. The California Median Household Income for 2006-2010 was \$60,883. A SDAC is therefore a community whose MHI is \$36,530 or less, per the 2006-2010 ACS dataset.

Due to the lower income levels generally found in the San Joaquin Valley, most communities in the Tulare Lake Basin Region meet the definition of a DAC. Approximately 353 of 530 (67%) identified communities within the Tulare Lake Basin are disadvantaged or severely disadvantaged. It should be noted that there are challenges with calculating the MHI for small communities that are less than a census tract. A technical assistance provider, such as Self-Help Enterprises may need to do door-to-door household surveys to get a more accurate characteristic of the community income level. In some cases, communities did not show up as disadvantaged based on census data alone, because the communities were too small and may be near higher income areas. Surveys have revealed them to be disadvantaged or severely disadvantaged.

Figure 2-5 shows the average MHI for DAC, SDAC and Non-DAC communities in each county.

Figure 2-5. Average Income by County

DACs have many limiting characteristics beyond income level including: inability to achieve economy of scale; low revenues; small or nonexistent reserve funds; dependence on a single source of water or reliant on contaminated or inadequate backup sources; limited pool of informed/educated individuals; lack of equipment; lack of access to technology in an increasingly technological world; limited ability to hire paid staff or consultants; limited understanding of regional or state dialogue concerning water policy; and lack of office space and a secure location for board meetings, records storage and computer equipment. In addition to DACs, many rural schools were found to have similar problems with water infrastructure that were located within or near DACs. These schools were included in the inventory process for the purposes of this Study, but the TLB Study focused on the issue of residential water supply and wastewater service.

2.2 Legislative Authority

In 2006, Proposition 84, The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Act), was established and incorporated into California Public Resources Code §75001-75009. Proposition 84 was the declaration of the people of California that protecting the state's drinking water and resources is vital to the public health, the state's economy, and the environment. The Act further declared that the state's waters are vulnerable to contamination by dangerous bacteria, polluted runoff, toxic chemicals, damage from catastrophic floods and the demands of a growing population. Therefore, actions must be taken to ensure safe drinking water and a reliable supply of water for farms, cities and businesses, as well as to protect California's rivers, lakes, streams, beaches, bays and coastal waters, for this and future generations.

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Through Proposition 84, the people of California further declared that it is necessary and in the public interest to do all of the following:

1. Ensure that safe drinking water is available to all Californians by:
 - a. Providing for emergency assistance to communities with contaminated sources of drinking water;
 - b. Assisting small communities in making the improvements needed in their water systems to clean up and protect their drinking water from contamination;
 - c. Providing grants and loans for safe drinking water and water pollution prevention projects;
 - d. Protecting the water quality of the Sacramento – San Joaquin Delta, a key source of drinking water for 23 million Californians;
 - e. Assisting each region of the state in improving local water supply reliability and water quality; and,
 - f. Resolving water-related conflicts, improving local and regional water self-sufficiency and reducing reliance on imported water.
2. Protect the public from catastrophic floods by identifying and mapping areas most at risk, inspecting and repairing levees and flood control facilities, and reducing the long-term costs of flood management, reducing future flood risk and maximizing public benefits by planning, designing and implementing multi-objective flood corridor projects.
3. Protect the rivers, lakes and streams of the state from pollution, loss of water quality, destruction of fish and wildlife habitat.
4. Protect the beaches, bays and coastal waters of the state for future generations.
5. Revitalize our communities and make them more sustainable and livable by investing in sound land use planning, local parks and urban greening.

The Act further declares that the growth in population of the state and the impacts of climate change pose significant challenges (§75003.5). These challenges must be addressed through careful planning and improvements in land use and water management that both reduce contributions to global warming and improve the adaptability of our water and flood control systems. Improvements include better integration of water supply, water quality, flood control and ecosystem protection, as well as greater water use efficiency and conservation to reduce energy consumption.

2.2.1 Drinking Water Regulations

The Safe Drinking Water Act was originally passed by Congress in 1974 and amended in 1986 and 1996, to protect public health by regulating the nation's public drinking water supply. The Safe Drinking Water Act affects every public water system (PWS) in the United States. It is noted that any supplier delivering water for human consumption

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to less than 15 service connections or less than 25 regularly served persons is not considered to be a PWS, as defined by the Safe Drinking Water Act. The key provisions of the Safe Drinking Water Act are the National Primary Drinking Water Regulations, which are national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. Early on, the Safe Drinking Water Act primarily focused on treatment as a means of protecting drinking water, but in 1996 the Act was amended to include source water protection, operator training, funding for water system improvements, and public information as important components of protection.

Compliance with the Safe Drinking Water Act at the federal and state levels requires public water systems, regardless of size, to have (1) adequate and reliable sources of water that either are or can be made safe for human consumption; and (2) the financial resources and technical ability to provide services effectively, reliably, and safely for workers, customers, and the environment. Small public water systems must meet the same requirements as larger utilities, but with fewer financial resources available to them due to their smaller customer base. The ability of users to cover system costs is further reduced in disadvantaged communities where household incomes are less, resulting in increased challenges to meet their financial responsibility. Federal and state programs do provide these small public water systems with extra assistance, such as training and technical assistance, but operational subsidies are almost nonexistent and many small and disadvantaged community water systems continue to struggle to remain in compliance.

A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 year long residents is considered by CDPH as a Community Water System (CWS), and is regulated either by CDPH or the Local Primacy Agency (LPA). The EPA has designated CDPH as the Primacy Agency responsible for the administration and enforcement of the Safe Drinking Water Act (SDWA) requirements in California. CDPH has adopted statutes and regulations to implement the requirements of the SDWA. CDPH has regulatory responsibility over water systems including tasks such as issuance of operating permits, conducting inspections, monitoring for compliance with regulations and taking enforcement action to compel compliance when violations are identified.

CDPH has delegated the drinking water program regulatory authority for small public water systems serving less than 200 service connections to 31 counties in California. The delegated counties (Local Primacy Agencies or LPAs) are responsible for regulating approximately 5,500 small public water systems statewide. CDPH retains the regulatory authority over water systems serving 200 or more service connections and any small water systems not delegated to an LPA.

Kings County is the Local Primacy Agency under the California Department of Public Health in monitoring compliance for and in enforcing EPA's Safe Drinking Water Act in that county. Communities in Kings County with less than 200 connections are therefore monitored by the Kings County Department of Public Health, Environmental Health Services.

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Tulare County has been the LPA responsible for regulating small public water systems in that county. However, as of July 1, 2014 Tulare County relinquished Local Primacy to CDPH, and will no longer serve as the LPA for that county.

In Fresno and Kern Counties, CDPH maintains responsibility for regulating small public water systems.

State Small Systems (State Smalls) (systems with between 5-14 connections) and communities without PWSs are regulated by their respective county. Each county sets its own regulations regarding State Smalls, and the regulations vary by county.

2.2.2 Wastewater Regulations

The State Water Resources Control Board (SWRCB) was created by the Legislature in 1967, with the goal of ensuring the highest reasonable quality of waters of the State. The SWRCB allocates water rights, adjudicates water rights disputes, develops statewide water protection plans, establishes water quality standards, and guides the Regional Water Quality Control Boards (RWQCB or Regional Boards) located in the major watersheds of the State. There are nine (9) RWQCBs under the SWRCB. The RWQCBs develop and enforce water quality objectives and implementation plans to protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. The Regional Boards develop "Basin Plans" for their hydrologic areas, issue waste discharge permits for wastewater treatment facilities, take enforcement action against violators, and monitor water quality.

Together with the Regional Boards, the SWRCB is authorized to implement the Federal Water Pollution Control Act (Clean Water Act) in California. The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. The Clean Water Act gives the EPA the authority to set effluent limits to ensure protection of the receiving water. Pollutants regulated under the Clean Water Act include priority pollutants, conventional pollutants such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH, and non-conventional pollutants including any pollutants not identified as either conventional or priority.

2.2.3 Changes to the Regulatory Setting

As of July 1, 2014, the drinking water division of CDPH is operated under the SWRCB.

The California Environmental Protection Agency and the California Health and Human Services Agency held a public meeting on January 15, 2014 to obtain input on the proposed transfer of the Drinking Water Program from the California Department of Public Health to the State Water Resources Control Board.

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The Drinking Water Reorganization Transition Plan was developed in March 2014, to describe the proposed transfer that is effective as of July 1, 2014. http://www.swrcb.ca.gov/drinkingwater/docs/transition_plan_fullversion.pdf

According to the Transition Plan, The Administration's goal in transferring the Drinking Water Program is to align the state's water quality programs in an organizational structure that:

1. Consolidates all water quality regulation throughout the hydrologic cycle to protect public health and promote comprehensive water quality protection for drinking water, irrigation, industrial, and other beneficial uses;
2. Maximizes the efficiency and effectiveness of drinking water, groundwater, and water quality programs by organizing them in a single agency whose primary mission is to protect water quality for beneficial uses including the protection and preservation of public and environmental health;
3. Continues focused attention on providing technical and financial assistance to small, disadvantaged communities to address their drinking water needs;
4. Consolidates financial assistance programs into a single state agency that is focused on protecting and restoring California water quality, protecting public health, and supporting communities in meeting their water infrastructure needs;
5. Establishes a one-stop agency for financing water quality and supply infrastructure projects;
6. Enhances water recycling, a state goal, through integrated water quality management; and
7. Promotes a comprehensive approach to communities' strategies for drinking water, wastewater, water recycling, pollution prevention, desalination, and storm water.

The Drinking Water Program is responsible for enforcing the federal and state Safe Drinking Water Acts. The main responsibilities are to: (1) issue permits to drinking water systems, (2) inspect water systems, (3) monitor drinking water quality, (4) set and enforce drinking water standards and requirements, and (5) award infrastructure loans and grants.

Under the proposed transfer, Drinking Water Program regulatory staff would be organized under a new ***Division of Drinking Water*** within the State Water Board. Headquarters staff for the Division would be relocated to the CalEPA building with other State Water Board staff. The remainder of the staff would continue to be locally-based in district offices and would continue their close working relationships with water system personnel and other interested community groups.

Federal law requires a single agency at the state level to carry out the federal Public Water System Supervision Program implementing the Safe Drinking Water Act. The Department of Public Health had been granted primacy for implementing the federal program. The Administration will work with U.S. EPA to ensure that the transfer of

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primacy from the Department of Public Health to the State Water Board occurs simultaneously with the transfer of the Drinking Water Division.

2.3 Regulatory Setting

2.3.1 Relevant Agencies

Community water and wastewater systems within the Tulare Lake Basin are regulated by various different agencies, including the EPA, DWR, CDPH, SWRCB, RWQCB, and County Environmental Health Departments.

United States Environmental Protection Agency: The United States Environmental Protection Agency (EPA) began operation on December 2, 1970, after President Nixon signed an executive order. It was created to protect human health and the environment by writing and enforcing regulations based on laws passed by Congress. The EPA uses the best available scientific information to develop and enforce federal regulations to reduce environmental risk. When Congress passes an environmental law, EPA writes regulations that set national standards. The EPA uses approximately half of its budget as grant funding for further environmental studies, environmental programs, non-profit organizations, and educational institutes.

For many years, drinking water was not regulated, and raw sewage was discharged into rivers. Hazardous materials would seep into the soils and the aquifers, contaminating the water. With the birth of EPA came many new environmental laws, including the Water Resources Planning Act of 1977 and the Water Resources Research Act of 1977. The EPA sets the regulations for maintaining safe water supply and wastewater services.

The United States Environmental Protection Agency was established in 1970 to consolidate into one agency a variety of federal research, monitoring, standard-setting, and enforcement activities to ensure environmental protection. Since its inception, EPA has been working for a cleaner, healthier environment for the American people.

EPA's purpose is to ensure that:

- All Americans are protected from significant risks to human health and the environment where they live, learn and work;
- National efforts to reduce environmental risk are based on the best available scientific information;
- Federal laws protecting human health and the environment are enforced fairly and effectively;
- Environmental protection is an integral consideration in U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy;

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- All parts of society -- communities, individuals, businesses, and state, local and tribal governments -- have access to accurate information sufficient to effectively participate in managing human health and environmental risks;
- Environmental protection contributes to making our communities and ecosystems diverse, sustainable and economically productive; and
- The United States plays a leadership role in working with other nations to protect the global environment.

In order to accomplish these objectives, EPA:

- Develops and enforces regulations;
- Provides grants;
- Studies environmental issues;
- Sponsors partnerships;
- Teaches people about the environment; and
- Publish information.

California Department of Water Resources: The California Department of Water Resources (DWR) was created in 1956 when the Legislature passed a bill creating the DWR and charging it to plan, design, construct, and oversee the building of the nation's largest state-built water development and conveyance system.

DWR now serves to protect, conserve, develop, and manage much of California's water supply including the State Water Project which provides water for 25 million residents, farms, and businesses.

Together with other agencies and the public, DWR develops goals, and short-term and long-term actions to conserve, manage, develop, and sustain California's watershed, water resources, and water management systems. DWR also works to prevent and respond to floods, droughts, and other catastrophic events that pose a threat to public safety, water resources, and the environment.

California Department of Public Health: The California Department of Public Health (CDPH) is a subdivision of the California Health and Human Service Agency that works to promote healthy lifestyles and prevent disease, disability, and premature death. CDPH works to protect the public from unhealthy and unsafe environments by providing access to quality health service and producing data to evaluate public health status, strategies, and programs.

CDPH receives funding from the state budget and the federal government that they disperse to local health-related entities to promote better health for Californians. One of the entities that receive funding from CDPH is the Drinking Water System Fund. This includes the Safe Drinking Water State Revolving Fund and the implementation of sections of Proposition 84, the Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Act of 2006.

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The California Department of Health was re-established in 2007 as a stand-alone department, after over three decades within the Department of Health Services, to be the lead entity in California providing core public health functions and essential services. Its mission is to optimize the health and well-being of the people in California, primarily through programs, strategies, and initiatives oriented to improve health at the community level. It achieves this mission through:

- Promoting healthy lifestyles for individuals and families in their communities and workplaces;
- Preventing disease, disability, and premature death and reducing or eliminating health disparities;
- Protecting the public from unhealthy and unsafe environments;
- Providing or ensuring access to quality community health services;
- Preparing for, and responding to, public health emergencies;
- Producing and disseminating data to inform and to evaluate public health status, strategies, and programs; and
- Improving the quality of the workforce and workplace; and promoting and maintaining an efficient and effective organization.

As of July 1, 2014, the Drinking Water Program transitioned from the California Department of Public Health to the State Water Board (See Section 2.2.3 Changes to the Regulatory Setting).

State Water Resources Control Board: The State Water Resources Control Board (SWRCB) was created by the Legislature in 1967, with the goal of ensuring the highest reasonable quality of waters of the State. The SWRCB allocates water rights, adjudicates water rights disputes, develops statewide water protection plans, establishes water quality standards, and guides the Regional Water Quality Control Boards located in the major watersheds of the State. There are nine (9) RWQCBs under the SWRCB. The RWQCBs develop and enforce water quality objectives and implementation plans to protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. The Regional Boards develop "Basin Plans" for their hydrologic areas, issue waste discharge permits for wastewater treatment facilities, take enforcement action against violators, and monitor water quality.

Together with the Regional Boards, the SWRCB is authorized to implement the Federal Water Pollution Control Act (Clean Water Act) in California. The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. The Clean Water Act gives the EPA the authority to set effluent limits to ensure protection of the receiving water. Pollutants regulated under the Clean Water Act include priority pollutants, conventional

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pollutants such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH, and non-conventional pollutants including any pollutants not identified as either conventional or priority.

Regional Water Quality Control Board: Each of California's nine regional water quality control boards is required to formulate and adopt a basin plan for all areas within its region. The basin plans must conform with statewide policy set forth by the legislature and by the State Water Resources Control Board. Basin plans consist of designated beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives {California Water Code, Section 13050(j)}.

The RWQCBs develop and enforce water quality objectives and implementation plans to protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. The Regional Boards develop "Basin Plans" for their hydrologic areas, issue waste discharge permits for wastewater treatment facilities, take enforcement action against violators, and monitor water quality.

The Central Valley Regional Water Quality Control Board is the RWQCB that has jurisdiction over the Tulare Lake Basin. The Central Valley Region includes about 40% of the land in California and stretches from the Oregon border to the Kern County/Los Angeles County line. It is bound by the Sierra Nevada Mountains on the east and the Coast Range on the west. The Region is divided into three basins: the Sacramento River Basin, the San Joaquin River Basin, and the Tulare Lake Basin. The basin plan that covers the Study Area is the Water Quality Control Plan for the Tulare Lake Basin.

Fresno County Environmental Health: The Fresno County Environmental Health department provides a wide variety of public health services including regulating and permitting retail food facilities, hazardous material facilities, water well construction, substandard rental housing, public swimming pools, and solid waste sites. This department works to respond to complaints from the public about unsanitary or unhealthy conditions at public facilities regulated by the department.

It is the responsibility of the Fresno County Environmental Health department to issue well construction permits to licensed well drillers for the construction of new water wells and the reconstruction of existing water wells located in the unincorporated areas of Fresno County.

Kern County Environmental Health: The Kern County Environmental Health department was established in 1989 by the Board of Supervisors to provide a wide variety of public health services regarding food, land, water, hazardous waste, and solid waste. This department works to respond to complaints from the public about unsanitary or unhealthy conditions at public facilities regulated by the department.

It is the responsibility of the Kern County Environmental Health department to ensure the public is supplied with a quantity of water adequate to meet the needs of the community and safe to drink. The department staff evaluates permits to construct, reconstruct, and destroy water wells within the county. The department also ensures all

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backflow prevention assemblies are routinely tested to maintain the safety and integrity of the public water supply.

Kings County Environmental Health: The Kings County Environmental Health Services department is one of four divisions of the Kings County Department of Public Health. The goal of this department is to preserve and enhance the quality of life of the environment by working with the community to prevent, solve, or mitigate environmental health problems. The department staff is responsible for carrying out community education relating to environmental health, and enforcing various statutes, regulations and ordinance.

The Kings County Environmental Health Services department evaluates permits to construct, reconstruct, and destroy water wells within the county. The department ensures that all wells are disinfected before being put into use to maintain safe drinking water for the community.

Tulare County Environmental Health: The Tulare County Environmental Health Services division regulates retail food sales, hazardous waste storage and disposal, inspects contaminated sites, and monitors public water systems. By monitoring the public water systems, this department protects and reduces the degradation of groundwater. The goal of this department is to protect Tulare County's residents and guests by ensuring the environment is kept clean and healthy.

The department has a Tulare County Environmental Health Water Surveillance Program to ensure there is a safe, potable water supply provided to the community. This surveillance includes the inspection, sampling, and evaluation of the small public water systems within the county.

Tulare County has been the LPA responsible for regulating small public water systems in that county. However, as of July 1, 2014 Tulare County relinquished Local Primacy to CDPH, and will no longer serve as the LPA for that county.

2.3.2 Existing Regulations

California drinking water regulations specify primary standards and secondary standards for water contaminants. The primary standard maximum contaminant levels are health based standards. These standards are considered necessary for the immediate and long term protection of human health. Secondary MCLs are consumer acceptance contaminant levels. Secondary standards relate to the aesthetics of the water and include such parameters as turbidity, color, odor and total dissolved solids. This study focused on compliance with primary standards, which represent the minimum standard for human consumption. Some contaminants are considered to be acute contaminants because they can have an immediate effect on health. Other contaminants are chronic, meaning that their effect is cumulative over a long period of time.

Compliance for constituents that are chronic contaminants is determined on a running annual average. For example, a violation of the arsenic water quality standard is determined by the running average of 12 consecutive months (or four quarters) of

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sampling. A single quarterly or monthly sample which exceeds the MCL, does not in itself cause a violation of the standards. For nitrate, perchlorate and coliform, which are acute contaminants, an initial exceedance must be confirmed by a second sample. If the average of those two samples is in exceedance of the water quality standard, then the system is in violation. The term 'exceedance' used in this report implies that at least one sample for a single contaminant from a single source reported a constituent at a level above the MCL.

The most common primary MCL exceedances seen in the TLB Study Area were for arsenic, nitrates and uranium. Most arsenic in groundwater in the TLB is naturally occurring and comes from the dissolution of arsenic containing sediments. Until the 1950s, arsenic was also a major component of agricultural insecticide. Anthropogenic (resulting from the influence of human beings) arsenic sources are not considered a significant source of contamination in the TLB Study Area.

The EPA has classified arsenic as a human carcinogen, based primarily on skin cancer risks. Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of cancer. The current USEPA and California drinking water MCL for arsenic is 10 µg/L (ppb). The current MCL was effective in 2008. The previous MCL was 50 µg/L.

Nitrate (NO₃) is one of the major anions in natural waters and its background or natural levels in the TLB Study Area are believed to be well below the drinking water standard. However, according to basic information about nitrates in drinking water presented on the EPA website (<http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm>), and the report, Addressing Nitrate in California's Drinking Water (also known as the Harter Report - <http://groundwaternitrate.ucdavis.edu>), localized groundwater nitrate concentrations in the TLB are believed to be elevated due to leaching and oxidation of nitrogen from fertilizer application, dairies, feed lots, food processing wastes and/or septic systems and leach fields. Nitrate is of great concern because it is an acute contaminant.

Nitrate converted to nitrite in the body causes two chemical reactions that can lead to adverse health effects: induction of methemoglobinemia, and the potential formation of carcinogenic nitrosamides and nitrosamines. Infants, especially less than one year of age, who drink water containing nitrate in excess of the MCL may quickly become seriously ill, and if untreated, may die from methemoglobinemia. Methemoglobinemia is a medical condition in which high nitrate levels interfere with the capacity of the infant's blood to carry oxygen; symptoms include shortness of breath and blueness of the skin. Elevated nitrate concentrations may also affect the oxygen-carrying ability of the blood of pregnant women and the elderly. The current California drinking water MCL for nitrate is 45 mg/L as NO₃. The USEPA drinking water MCL for nitrate is 10 mg/L as N. The federal and state standards are equivalent when reported in the same units.

Uranium is a naturally-occurring radioactive element found at low levels in virtually all rock, soil, and water. About 99 percent of the uranium ingested in food or water will leave a person's body in feces, and the remainder will enter the blood. Intakes of

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uranium exceeding drinking water standards can lead to increased cancer risk, liver damage, or both.

In addition to the water treatment issues faced by DACs in the Tulare Lake Basin, many communities also face issues with their wastewater. The wastewater issues may stem from the community relying on failing septic systems or wastewater treatment systems that are not capable of meeting applicable effluent limitations. Thirty eight disadvantaged communities in the Study Area have their own wastewater treatment facility (WWTF). Of the 38 wastewater treatment facilities, 25 (65.8%) are listed as having a violation of their Regional Water Quality Control Board waste discharge requirements (WDRs) in the three year period from 2008 to 2010. All 38 treatment systems discharge to land in some form – percolation, evaporation, and/or leachfields. Most WDRs contain limitations on the discharge to land for biochemical oxygen demand (BOD), total suspended solids (TSS), and electrical conductivity (EC), although other limitations may be included depending on local requirements such as the Basin Plan. Many recent WDRs in the Tulare Lake Basin also have limitations on effluent nitrogen concentration.

2.3.3 Upcoming Regulations

Total Coliform Rule

The existing Total Coliform Rule (TCR) regulations will remain in effect until March 31, 2016. Starting on April 1, 2016, water systems must comply with the revised TCR requirements. The basic monitoring requirements will remain the same but the new regulation links monitoring frequency to water quality and system performance by:

- Providing criteria that well-operated small systems must meet to qualify and stay on reduced monitoring;
- Requiring increased monitoring for high-risk small systems with unacceptable compliance history; and
- Requiring some new monitoring requirements for seasonal systems such as campgrounds and some state and national parks.

The new regulation establishes a health goal and a MCL for *E. Coli* and eliminates the MCL for coliform, replacing it with a treatment technique for coliform that requires assessment and corrective action.

The revised rule establishes a health goal of zero for *E. Coli*, a more specific indicator of fecal contamination and potentially more harmful pathogens than total coliform. Many of the organisms detected by total coliform methods are not of fecal origin and do not have direct public health implication.

Under the new treatment technique for coliform, total coliform serves as an indicator of a potential pathway of contamination into the distribution system. A water system that exceeds a specified frequency of total coliform occurrence must conduct an assessment to determine if any sanitary defects exist and, if found, correct them. In addition, under

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the new treatment technique requirements, a water system that incurs an *E. Coli* MCL violation must conduct an assessment and correct any sanitary defects found.

1,2,3-Trichloropropane

There is currently no California or federal MCL for 1,2,3-trichloropropane (TCP). The State has developed a public health goal for TCP of 0.0007 µg/L and is in the process of developing an MCL. The public health goal is based on carcinogenic effects observed in animals. TCP has been used as a solvent and degreasing agent and in the synthesis of other compounds such as epichlorohydrin and certain polymers. TCP also occurs as a byproduct in the production of chemicals and certain pesticides (Telone II). Pesticide use appears to be the origin of most of the contamination throughout the TLB.

As of 2011, CDPH had identified 336 drinking water sources with TCP levels of 0.005 µg/L or higher. Most of the reported detections resulted from sampling required by the State's Unregulated Contaminant Monitoring Rule (UCMR) that was in effect from January 2001 through December 2003. The rule did not require that systems with fewer than 150 service connections perform the monitoring and systems that tested early in the UCMR period used analytical techniques with detection limits significantly higher than the current detection limit of 0.005 µg/L. Of the 336 identified contaminated sources, approximately 186 are located within the TLB Study Area. Because the smallest water systems were exempt from the rule and some of the systems that did comply used methods with high detection limits, it is anticipated that many more sources are contaminated than have been identified. There also appears to be a clear pattern of contamination where rural water systems located in agricultural areas (predominately DACs) are at greater risk of contamination than urban water systems.

CDPH anticipates releasing a draft MCL for TCP for public comment in 2014. Until then, utilities with contaminated sources face the challenges of not knowing what MCL they will need to comply with and not being provided with any guidance on best available treatment technologies (BATs) to remove TCP from the water. BATs are only identified when the MCL is established. Based on treatment research to date, only granular activated carbon (GAC) treatment will be feasible for TCP removal at most water systems. This regulatory uncertainty is of greatest concern for water systems that are currently faced with the need to treat for one or more other contaminants (e.g. arsenic). These utilities are being forced to take corrective action for one contaminant, often involving installation of treatment, knowing that they may need to modify their new treatment process within a few years to comply with the upcoming TCP regulation.

Hexavalent Chromium (Chromium-6)

On August 23, 2013 CDPH proposed a 10 µg/L MCL for chromium-6 for public comment. Chromium-6 has been regulated under the 50 µg/L MCL for total chromium, which was established in 1977. Public comments on the proposed chromium-6 MCL were due by October 11, 2013. The new MCL is effective as of July 1, 2014. (<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chromium6.aspx>).

CDPH estimates that there are 78 water systems in the state with less than 1,000 service connections that will need to treat for chromium-6. It is not known how many of

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these water systems are in the Study Area. Chromium-6 occurs in drinking water as a result of both natural and anthropogenic sources. Many anthropogenic sources have been identified including the manufacture of metal plating, paint pigments, and wood preservatives and leaching from hazardous materials sites. It is likely that most of the chromium-6 found in TLB drinking water is from naturally occurring deposits.

Chromium-6 has been widely detected throughout the state. Approximately one-third of all drinking water wells monitored as part of the CDPH UCMR regulation had levels of chromium-6 in excess of the 1 µg/L detection limit. Most detections occurred in Los Angeles, San Bernardino, and Fresno Counties. Similarly to TCP, water systems smaller than 150 service connections were exempt from the UCMR chromium-6 monitoring. However, unlike TCP, agricultural activity is not expected to be a significant source of chromium-6 contamination and therefore, the UCMR monitoring results should better represent the chromium-6 occurrence and distribution of levels in DAC water systems. Table 2-3 summarizes CDPH monitoring results from 2000 through November 13, 2012. The table shows that the majority of detections were at levels below 5 µg/L and 86% of detections were at levels below 10 µg/L. Within the TLB Study Area, the highest level detected was 34.6 µg/L at the East Niles CSD in Kern County. In general, the TLB accounts for a large percentage of the overall number of detections, but most detections were in the lower ranges with almost 90% falling into the 1 – 5 µg/L range.

Table 2-1. Chromium-6 Peak Detections in Drinking Water Sources (2000-2012)

Peak Level (µg/L)	No. of Sources	No. of TLB Sources
1 - 5	1,596	690
6 - 10	496	71
11 - 20	247	7
21 - 30	66	2
31 - 40	17	1
41 - 50	5	0
> 50	4	0

CDPH has determined that there are three best available technologies for chromium-6: reduction/coagulation/filtration, weak base anion exchange, and reverse osmosis. CDPH estimates that the annualized treatment (capital and O&M) costs would be approximately \$300,000 for water systems serving less than 1,000 service connections. CDPH estimates it will cost an additional \$500 annually for increased monitoring associated with the new MCL.

Background

Waste Discharge Requirements

The RWQCB has begun requiring some WDR permit holders to comply with a total nitrogen discharge limitation of the treated wastewater of 10 mg/L. The total nitrogen limitation is designed to limit nitrogen entering the groundwater. This limitation could have a significant impact on the WDR permitted wastewater treatment plants because most of these plants were not designed to meet a total nitrogen limitation of 10 mg/L. The existing plants would need to be upgraded to provide nitrification and denitrification to meet a 10 mg/l total nitrogen limit. Nitrification is a two step process where ammonia is converted to nitrites, and then nitrites are oxidized (oxygen is added) to form nitrate nitrogen. In denitrification, nitrates are then reduced to nitrites, and then the nitrites are reduced to nitrogen gas. (Reduction is the opposite of oxidation, meaning oxygen is removed.) Reduction of nitrites may create ammonia by a few bacteria organisms, but most of them carry the reduction the end product of nitrogen gas, which escapes into the atmosphere, thus reducing the total nitrogen concentration of the treated wastewater.

2.4 Existing Land Use and Planning Policies

This section provides a summary of the approaches to water resources and services needed to support land use development for each of the four counties in the Tulare Lake Basin Study Area. **Appendix E** contains a compendium of the goals, policies, objectives and implementation strategies excerpted from the four County General Plans related to water resources or services for land use development. The summary presented in this section is based upon each county's most currently adopted goals, policies, objectives and implementation strategies presented in **Appendix E**. The policy approaches consider a variety of attributes related to the provision of water services, some to a greater extent than others, including:

- Water Supply System (wells and delivery)
- Municipal Service Reviews
- Water Quality Control
- Sustainability of Supply (groundwater vs. surface water)
- Enhancing Supply
- Conservation / Reuse
- Reducing Demand
- Storm Drain / Flood Control
- Waste Water System (collection, treatment, disposal)
- Fire Protection
- Agriculture
- Urban Development / "Smart Growth" (communities vs. rural)

Background

- Financing
- Education
- Emergencies/Contingencies

2.4.1 Fresno County

NOTE TO READER: *The pertinent water resource and service policies of the current 2000 Fresno County General Plan are summarized immediately below. However, the County of Fresno is expected to adopt an update to 2000 General Plan in early 2014. Therefore, following the summary of the 2000 General Plan will be a summary synopsis of the pertinent implications of policy changes pertaining to water resources and services if they are adopted as currently drafted in the proposed General Plan Update.*

Two key goals of the current Fresno County General Plan is the timely development of public facilities to maintain adequate levels of service to meet the needs of existing and future development, and, specifically, to assure the availability of an adequate and safe water supply for domestic⁴ and agricultural consumption.

These goals are supported by a variety of policies and implementation programs directing that prior to approvals, new project proponents shall demonstrate adequate supply of water is available to support their development and that the development can “pay its own way” and will construct the necessary infrastructure to deliver that supply; this policy applies to sewer and stormwater facilities as well.

Fresno County also promotes engaging in efforts and supporting others in, retaining existing and maximizing import of flood, surplus or other available water supplies for recharge or banking beyond immediate service needs. The County supports use of surface water and water transfers to further reduce groundwater table reductions and maintain flexibility in meeting supply requirements. New development as well as agricultural operations are required and/or encouraged to utilize reclaimed water where possible and feasible, water conservation technologies, methods and practices, and adopt cost-effective urban best water conservation management practices updated by the California Urban Water Agencies, CA DWR or other appropriate agencies.

Groundwater quality management and safe wastewater disposal is supported by policies to install public wastewater treatment in communities experiencing repeated septic system failures and lack of sufficient area for replacement septic systems, and to limit growth in and/or expansion of communities not served by a public wastewater collection and treatment system.

⁴ This term applies to all non-agricultural water consumption – whether by residential, commercial, industrial or public facility uses, and including fire flow.

Background

Draft Fresno General Plan Update (2014):

The Draft Fresno County General Plan Update (2014) is a comprehensive, long-term framework for the protection of the county's agricultural, natural, and cultural resources and for development in the county. Designed to meet State general plan requirements, it outlines policies, standards, and programs and sets out plan proposals to guide day-to-day decisions concerning Fresno County's future.

The Vision Statement for the Draft Fresno County General Plan Update is expressed as follows:

This General Plan sets out a vision reflected in goals, policies, programs, and diagrams for Fresno County for the period 2000 to 2020 and beyond. This plan carries forward major policies that have been in place since the mid-1970s, but expands and strengthens them to meet the challenges of the 21st century.

The County sees its primary role to be the protector of prime agricultural lands, open space, recreational opportunities, and environmental quality, and the coordinator of countywide efforts to promote economic development.

The guiding principles of the proposed Draft Fresno County General Plan Update Vision are described by the following "themes":

GROWTH ACCOMMODATION

The plan is designed to accommodate population growth through the year 2020 consistent with the California Department of Finance projection of 1.1 million by 2020 (November 1998). This represents an additional population of approximately 344,000.

ECONOMIC DEVELOPMENT

The plan seeks to promote job growth and reduce unemployment through the enhancement and expansion of its traditional agricultural economic base and through the diversification of its economic base, and expanding such business clusters as information technology, industrial machinery, and tourism.

AGRICULTURAL LAND PROTECTION

The plan seeks to protect its productive agricultural land as the county's most valuable natural resource and the historical basis of its economy through directing new urban growth to cities and existing unincorporated communities and by limiting the encroachment of incompatible development upon agricultural areas.

URBAN-CENTERED GROWTH

The plan promotes compact growth by directing most new urban development to incorporated cities and existing urban communities that already have the infrastructure to accommodate such growth. This plan assumes over 93 percent of new population growth and new job growth will occur within incorporated city

Background

spheres of influence and seven 7 percent would occur in unincorporated areas while allowing for the orderly development of existing rural residential areas. Accordingly, this plan prohibits designation of new areas as Planned Rural Community, and restricts the designation of new areas for Rural Residential, and re-designation of land for Rural Residential development while allowing for the orderly development of existing rural residential areas.

SERVICE EFFICIENCY

The plan provides for the orderly and efficient extension of infrastructure such as roadways, water, wastewater, drainage, and expansion services to support the county's economic development goals and to facilitate compact growth patterns. The plan supports development of a multi-modal transportation system that meets community economic and freight mobility needs, improves air quality, and shifts travel away from single-occupant automobiles to less polluting transportation modes.

RECREATIONAL DEVELOPMENT

The plan supports the expansion of existing recreational opportunities and the development of new opportunities, particularly along the San Joaquin and Kings Rivers, in the foothills, and in the Sierras, for the employment of county residents and to increase tourism as part of the county's diversified economic base.

RESOURCE PROTECTION

The plan seeks to protect and promote the careful management of the county's natural resources, such as its soils, water, air quality, minerals, and wildlife and its habitat, to support the county's economic goals and to maintain the county's environmental quality.

HEALTH AND SAFETY PROTECTION

The plan seeks to protect county residents and visitors through mitigation of hazards and nuisances such as geological and seismic hazards, flooding, wildland fires, transportation hazards, hazardous materials, noise, and air pollution.

Health and Well Being: The plan seeks to promote the health and well-being of its residents, recognizing that the built environment affects patterns of living that influence health. The plan seeks to ensure long-term conservation of agricultural lands and environmentally sensitive landscapes; encourage walking and biking and provide linked transit systems; promote greater access to healthy foods and produce, particularly fresh locally -grown produce; and create community centers that provide access to employment, education, business, and recreation.

Enhanced Quality of Life: The plan strives throughout all its elements to improve the attractiveness of the county to existing residents, new

Background

residents, and visitors through increased prosperity, attractive forms of new development, protection of open space and view corridors, promotion of cultural facilities and activities, efficient delivery of services, and expansion of recreational opportunities.

Affordable Housing: The plan seeks to assure the opportunity for adequate and affordable housing for all residents in Fresno County. While directing most new growth to cities, the plan also seeks to provide for the maintenance of existing housing and for new construction in designated areas within the unincorporated area of the county.

2.4.2 Kern County

The Introduction of the Kern County General Plan states its purpose is intended to fulfill the following objectives:

- Encourage economic development that creates jobs and capital investments in urban and rural areas that benefits residents, businesses, and industries, as well as ensuring future governmental fiscal stability while encouraging new development to utilize existing infrastructure and services wherever feasible in the County's urban areas.
- Adopt policies and goals that reflect the County's on-going commitment to consult and cooperate with federal, State, regional, and local agencies to plan for the long term future of Kern County.
- Ensure the protection of environmental resources and the development of adequate infrastructure with specific emphasis on conserving agricultural areas, discouraging unplanned urban growth, ensuring water supplies and acceptable quality for future growth, and addressing air quality issues.
- Revise the County's General Plan to reflect ongoing activities, changes in laws and regulations, and demographic characteristics of the community to ensure that the interests of the County in the health, safety, and welfare of residents and visitors are reflected in current policies and goals.
- Maintain compliance with the provisions of State Planning and Zoning Laws as they relate to General Plan requirements.

The General Plan goals promote development/urban growth patterns where adequate facilities exist, or can be provided at costs equitably distributed among beneficiaries. The County also intends that assured water supplies be available in quantity and quality appropriate to the needs of all users--whether residential, commercial, industrial, or agricultural. The County supports the efficient and cost-effective delivery of water and other services by designating area for urban development within or adjacent to areas with adequate supply/facility capacity and means of delivery/service.

Kern County's implementation strategies acknowledge the close connection of these goals and objectives to carefully administered Capital Improvement Programs (CIP) and

Background

close coordination and collaboration with other public or private water or other utility providers to assure long term sustainability of services.

2.4.3 Kings County

Kings County's overarching land use policy is to direct urban growth within the "Urban Fringe" areas to cities for annexation, and accommodate new unincorporated growth within the four "Community Districts" that are served by special districts. "Rural Interface" areas will continue to exist as small pockets of urban uses and will remain limited to the extent of previously established residential uses. The County believes centralized and focused growth in established urban areas will ensure that growth does not occur beyond the planned service range of water and sewer service providers. Of the eight bulleted objectives of the Kings County General Plan, the following three (3) are the most supportive of water management:

- *Promote and concentrate residential, commercial and industrial growth within the Community Plan areas of Armona, Home Garden, Kettleman City and Stratford;*
- *Protect water, natural lands, agriculture, prime soils, native plant and animal habitat, threatened and endangered species, fishing, energy, mineral, and archeological, cultural and historical resources throughout the County;*
- *Establish open spaces throughout the County that promote the preservation of agriculture and scenic resources and provide outdoor recreation;*

Growth beyond these areas can present severe environmental and public health problems as well as costly service delivery problems. Increased coordination between the County, the cities, and community districts will avoid inefficient growth, while encouraging logical and orderly expansion of city and community district services while avoiding environmental and public health problems. Urban land use designations within these areas establish the development densities and intensities of the various land use types. A Consistency Matrix between the General Plan Land Use Designations and the County Zone Districts must be achieved. Land Use Designations identify areas allocated for a particular land use while the associated Zone District defines what land uses may take place on that particular parcel designated for a land use by the General Plan.

Kings County has a strongly stated goal to beneficially use, efficiently manage, and protect water resources while developing strategies to capture additional water sources that may become available to ensure long term sustainable water supplies for the region. This goal is supported by Objectives and Policies directed to maintaining and protecting existing supplies, conserving and reusing water to the extent feasible.

2.4.4 Tulare County

The Tulare County overarching land use policy is based upon five (5) values adopted by the Board:

Background

- 1. The beauty of the County and the health and safety of its residents will be protected and enhanced.*
- 2. The County will create and facilitate opportunities to improve the lives of all County residents.*
- 3. The County will protect its agricultural economy while diversifying employment opportunities.*
- 4. Every community will have the opportunity to prosper from economic growth.*
- 5. Growth will pay its own way providing sustainable, high quality infrastructure and services.*

The Tulare County General Plan focuses new growth into the County's Urban Development Boundaries, Hamlet Development Boundaries, Mountain Service Centers, and Corridors while encouraging economic development and protecting and facilitating the development of the County's extensive agricultural, scenic, cultural, historic, and natural resources.

Like the other three counties, Tulare County intends that new development contribute its proportionate fair share of the costs of providing infrastructure improvements required to serve the project but also states clearly that the County will generally give priority to the maintenance and upgrading of County-owned and operated facilities and services to existing development in order to prevent deterioration of existing levels of service.

Tulare County also clearly states that three (3) criteria must be met before any new development can be approved: 1) Applicant can demonstrate that all required infrastructure will be installed and adequately funded, 2) Improvements are consistent with adopted County infrastructure plans and standards, and 3) Funding mechanisms are assured to maintain, operate and upgrade the facilities throughout the life of the project.

2.4.5 Comparative Assessment of the Four Adopted County General Plans

One common conclusion that can be drawn from each of the four County General Plans is that they each intend, by various goals, policies, and implementation strategies, to prohibit new development unless sufficient documentation can be presented to show there is an adequate, long-term supply of water available to support the development, and if not, that the development must be able to "pay its own way" to assure the supply and delivery capacity (funding for infrastructure construction, operation and maintenance) to sustain it.

This type of policy position is fairly common throughout California now, and has been gaining stronger policy attention since the early 2000's; including but not limited to such actions as: in 2006 (AB 1881) with the enactment of updated water efficient landscape requirements; in the 2010 updated Urban Water Master Planning Act; followed by the passage in 2011 of SB 610 requiring new development to provide a Water Supply Assessment; and most recently in 2013 the Update of the California Water Plan.

Background

Of the four counties, Kings County seems to have the most definitive and clearly stated approach by identifying where the growth can occur based on the existence of an independent governing entity, i.e. City or service districts that are responsible for the supply and delivery infrastructure for both water and sewer. Kings County goes so far as to say *explicitly* that non-agricultural development should be annexed into these districts/cities.

All four of the counties have a three-tier hierarchy of Goals, Objectives/Policies; and Implementation Strategies or Programs, with some minor variation in the labeling or terminology. For instance, Kings County has Goals, Objectives and Policies while Kern and Fresno Counties have Goals, Policies and Implementation Measures/Programs. Organizationally, Fresno, Kern and Kings Counties' Goals, Objectives/Policies, Implementation Strategies/Programs all flow sequentially by Goal and Objectives/Policies. However, although Tulare County has the same essential three tiers, the implementation measures are contained in a separate standalone subsection, called Work Plan Implementation Measures at the end of each topical area. The Work Plan is formatted as a matrix, listing the various implementation measures in the far left column and associated policies it will implement in the next column; commonly one implementation measure is applicable to several policies. (Please refer to **Appendix E**)

Each of the counties use the term “encourage” frequently either in their Goals or in their Policies/Objectives. While this reads well or in a positive light, the sense of commitment to enforce the “encouragement” ultimately comes down to individual discretionary actions which may or may not fully enforce all policies of the General Plan and to some extent the ability of the Counties to fund needed capital improvements related to water and sewer services. Consequently each County has its own track record of success in achieving their water management/service goals.

2.4.6 Other Water Management Plans and Programs

Other critical tools companion to the General Plan that are critical to documenting baseline conditions, forecast projected growth and water supply and demand, and support self-sustaining development include: Urban Water Management Plans, Agricultural Water Management Plans, Integrated Regional Water Management Plans, and Municipal Service Reviews.

In addition to some changes in the Urban Water Management Planning Act, Governor Schwarzenegger in his 20x2020 Water Conservation Plan determined that for California to continue to have enough water to support its growing population, it needs to reduce the amount of water each person uses per day (Per Capita Daily Consumption, which is measured in gallons per capita per day). This reduction of 20 percent per capita use by the year 2020 is supported by legislation passed in November 2009 [SB X7-7 \(Steinberg\)](#). SB X7-7 has amended and repealed some sections of the Water Code and may affect reporting requirements under the Urban Water Management Planning Act and other government codes.

2.5 Existing Studies Associated with the Tulare Lake Basin

Several other studies have been published in recent years related to drinking water in or near the Tulare Lake Basin. This section provides a brief summary of some of the relevant studies that have been completed. These studies were not necessarily used as references for this project, but may have been utilized for general information, as a resource for data, and to verify concepts or data assumptions.

2.5.1 Kings Basin Water Authority Disadvantaged Community Pilot Project Study (Provost & Pritchard, 2013)

The “Kings Basin Water Authority Disadvantaged Community Pilot Project Study” (KBWA Study) was commissioned to study the Kings Basin area, which overlaps much of the Tulare Lake Basin Study Area. The KBWA Study area included most of Fresno County, and portions of Kings and Tulare Counties. The Kings Basin Water Authority contracted with Provost & Pritchard to conduct the KBWA Study.

The objectives of the KBWA Study included:

1. Develop a comprehensive inventory of all disadvantaged communities and their water-related needs, initiate first-time intentional outreach to all identified DACs, and integrate contact info into the Kings Basin IRWMP mailing lists;
2. Engage and integrate DACs effectively into the Kings Basin IRWMP by developing subregion groups to conduct integrated regional water management planning to address priority DAC needs within the Kings Basin IRWMP; and
3. Develop conceptual [pilot] project descriptions and cost estimates to include in the Kings Basin IRWMP master project list and facilitate partnerships between DACs and other IRWMP Members and Interested Parties.

The KBWA Study resulted in five Pilot Project Reports, which helped 12 communities and involved more than 40 DACs.

The KBWA Study also provided recommendations on how other regional groups may be successful at approaching and engaging DACs in the IRWMP process. Some of the recommendations developed included staffing a Regional DAC Coordinator; using non-government organizations or community-based organizations for outreach and DAC contacts; providing technical and/or financial support for DACs to prepare funding applications; considering DAC characteristics when reviewing funding applications; including an inventory of private well communities in the scoping of future DAC studies; as deemed beneficial utilizing non-email forms of communication to DACs; and, conducting pre-application and grant application workshops or trainings.

2.5.2 Addressing Nitrate in California’s Drinking Water (Harter Report, 2012)

“Addressing Nitrate in California’s Drinking Water”, often referred to as the “Harter Report” in reference to its primary author, was written in response to the 2008 passage of Senate Bill SBx2-1. SBx2-1 required the State Water Resources Control Board to

Background

prepare a report to the legislature to improve the understanding of the causes of [nitrate] ground water contamination, identify potential remediate solutions and funding sources to recover costs expended by the State to clean up or treat groundwater, and ensure the provision of safe drinking water to all communities (Harter Report, 2012). The University of California was contracted to prepare the report with a focus on the nitrates in the groundwater of the Tulare Lake Basin and a portion of the Salinas Valley.

2.5.3 Communities that Rely on Contaminated Drinking Water (SWRCB Report, 2012)

“Communities that Rely on Contaminated Groundwater” is a report written in response to Assembly Bill (AB) 2222, which required the SWRCB to submit a report to the legislature that identifies: communities in California that rely on contaminated groundwater as a primary source of drinking water; the principal contaminants and constituents of concern; and potential solutions and funding sources to clean up or treat groundwater; or, provide alternative water supplies (SWRCB Report 2012). The report identifies 682 communities with contaminated groundwater as their primary source and focuses on groundwater quality, not necessarily the quality of water served to the populations within the identified communities. Due to the limited availability of data, the report does not discuss private water supplies or systems not regulated by the State. The proposed solutions in the report fall into three categories: pollution prevention, cleanup, and provision of safe drinking water through alternative water supplies or treatment.

2.5.4 Assessing Water Affordability: A Pilot Study in Two Regions of California (Christian-Smith et al, 2013)

“Assessing Water Affordability: A Pilot Study in Two Regions of California” explored the affordability of water in both urban and rural regions using multiple methods of measure. The urban region studied was the Sacramento metropolitan area, and the rural area studied was the Tulare Lake Basin. According to AB 685, “every human being has the right to safe, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” “Assessing Water Affordability” concluded that affordability may differ when different forms of measure are used.

“Assessing Water Affordability”, which defined affordability as 2 percent of the median household income, explored three (3) different measures of calculating water service affordability. The first measure of calculating water affordability took the average monthly water bill divided by the median household income within the boundary of each water system. In areas where safe drinking water is not provided by the water purveyor, a monthly replacement cost to account for the purchase of bottled or vended water was included in the monthly costs. The second measure of calculation used the average monthly water bill divided by the median household income of each census block. This method helped account for socio-economic heterogeneity throughout the water system. The third measure to the average monthly water bill for each household and divided by 2 percent. This method showed the number of households that spend more than 2 percent of their income on water services. In both regions, using the third measure

Background

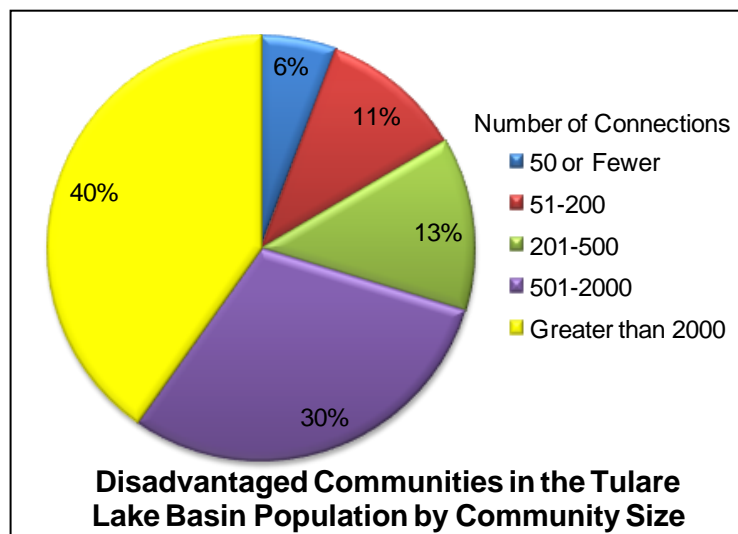
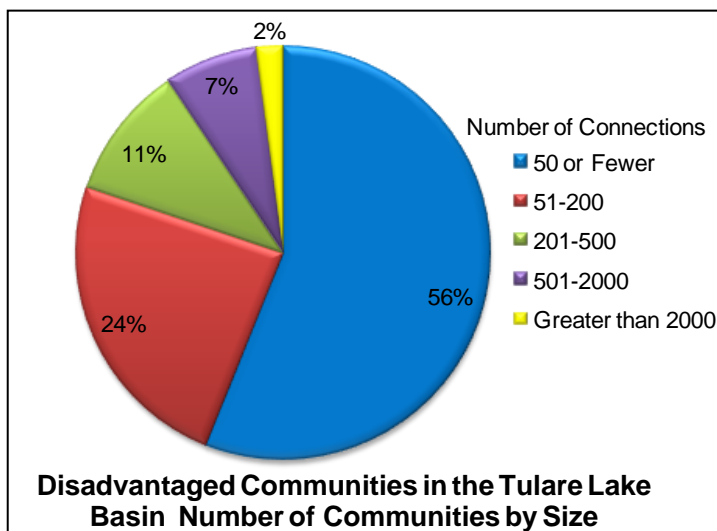
resulted in a higher percentage of households paying an unaffordable rate for water service. “Assessing Water Affordability” therefore concluded that, although water rates may be affordable within the boundaries of a water system based on traditional calculations, there may be individual users within that boundary for whom water rates are not affordable.

3 DATABASE

3.1 Database Summary

There are approximately 353 disadvantaged communities (DACs) within the Tulare Lake Basin Study Area. Of these 353 DACs, approximately 201 are severely disadvantaged communities (SDACs). **Table 3-1** through **Table 3-4** list the disadvantaged communities within each county.

The water and sewer systems in these unincorporated communities throughout the Tulare Lake Basin vary in size, from those with individual water wells and onsite septic systems, to community systems serving more than 2,000 connections. The number of connections as discussed in this Study is generally based on the number of residential units that receive service from a water system.



The majority (80%) of the communities range in size from less than 15 connections to 200 connections, although a large percentage (83%) of the overall population lives in communities with greater than 200 connections.

Many water systems serving these DACs face challenges related to the quality of their water and/or the number of supply sources available. The water quality primary constituent MCL exceedances reported in these communities include coliform bacteria, arsenic, nitrate, uranium,

fluoride, dibromochloropropane (DBCP), perchlorate, polychlorinated biphenyls (PCB), and disinfection by-products such as trihalomethanes. Based on the database information collected and analyzed, arsenic, nitrate, and uranium are the contaminants of greatest concern in the region since those constituents had the greatest number of exceedances reported. Coliform exceedances are also common, but coliform is readily treatable as discussed and documented in the Technical Solutions pilot study.

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Table 3-1. List of Disadvantaged Communities in Fresno County

NAME	COUNTY	TYPE	POPULATION ESTIMATE
ALHAMBRA 1 MOBILE HOME PARK	FRESNO	SDAC	50
ALKALI FLATS	FRESNO	SDAC	100
BAR 20 PARTNER	FRESNO	SDAC	60
BERAN WAY	FRESNO	DAC	100
BIOLA	FRESNO	SDAC	1,200
BRITTEN	FRESNO	SDAC	89
BRITZ/COLUSA	FRESNO	SDAC	106
BRITZ/FIVE POINTS SYSTEM	FRESNO	SDAC	150
BURREL	FRESNO	DAC	16
CALWA	FRESNO	DAC	227
CAMDEN TRAILER PARK	FRESNO	SDAC	100
CANTUA CREEK	FRESNO	SDAC	342
CARUTHERS	FRESNO	DAC	2,103
CENTENNIAL APARTMENTS	FRESNO	DAC	100
CENTERVILLE	FRESNO	DAC	14
CINCO FARMS	FRESNO	DAC	30
CLARIN APARTMENTS	FRESNO	SDAC	100
CLOVER MOBILE HOME PARK	FRESNO	SDAC	50
COIT GINNING COMPANY	FRESNO	SDAC	90
COMMUNITY 152	FRESNO	SDAC	877
COMMUNITY 168	FRESNO	SDAC	69
COMMUNITY 173	FRESNO	SDAC	49
COMMUNITY 178	FRESNO	SDAC	148
COMMUNITY 180	FRESNO	DAC	59
COMMUNITY 186	FRESNO	SDAC	59
COMMUNITY 190	FRESNO	DAC	178
COMMUNITY 192	FRESNO	DAC	33
COMMUNITY 197	FRESNO	DAC	49
COMMUNITY 204	FRESNO	SDAC	66
COMMUNITY 206	FRESNO	SDAC	56
COMMUNITY 214	FRESNO	DAC	42
COMMUNITY 215	FRESNO	DAC	53
COMMUNITY 216	FRESNO	SDAC	63
COMMUNITY 218	FRESNO	DAC	60
COMMUNITY 219	FRESNO	DAC	49
COMMUNITY 227	FRESNO	SDAC	35
COMMUNITY 235	FRESNO	DAC	72
COMMUNITY 236	FRESNO	DAC	35
COMMUNITY 241	FRESNO	SDAC	165

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

NAME	COUNTY	TYPE	POPULATION ESTIMATE
COMMUNITY 2489	FRESNO	DAC	59
COUNTRY VIEW ALZHEIMER CENTER	FRESNO	DAC	100
DALEVILLE	FRESNO	SDAC	138
DATE STREET	FRESNO	SDAC	22
DEL REY	FRESNO	DAC	950
DOUBLE L MOBILE RANCH PARK	FRESNO	SDAC	80
DOUBLE L NEIGHBORHOOD	FRESNO	SDAC	70
DOYAL'S MOBILE HOME PARK	FRESNO	SDAC	22
DWS PARTNERS	FRESNO	SDAC	16
EASTON	FRESNO	DAC	1,966
EASTON ESTATES WATER COMPANY	FRESNO	DAC	371
EL PORVENIR	FRESNO	SDAC	230
ELM COURT	FRESNO	SDAC	40
FARM 1	FRESNO	SDAC	50
FARM 2	FRESNO	SDAC	20
FARM 3	FRESNO	SDAC	20
FARMING D	FRESNO	DAC	100
FCSA #49	FRESNO	DAC	450
FELGER FARMS	FRESNO	SDAC	40
FIVE POINTS RANCH	FRESNO	SDAC	130
FIVE STAR RANCH	FRESNO	SDAC	120
FRED RAU DAIRY	FRESNO	SDAC	80
GEORGE COX WATER SYSTEM	FRESNO	DAC	40
GOLDEN STATE TRAILER PARK	FRESNO	SDAC	50
GRAVESBORO	FRESNO	SDAC	45
GREEN ACRES MOBILE HOME ESTATE	FRESNO	DAC	300
HACIENDA	FRESNO	SDAC	2
HARNISH FIVE POINTS INC	FRESNO	DAC	26
HARRIS FARMS CAMP C #501-523	FRESNO	SDAC	300
HARRIS FARMS SOUTH #101-144	FRESNO	DAC	160
HERNDON WATER COMPANY	FRESNO	DAC	260
HOULDING FARMS	FRESNO	SDAC	50
KAMM RANCH COMPANY	FRESNO	SDAC	20
KINGS PARK APARTMENTS	FRESNO	SDAC	120
LA JOLLA FARMS	FRESNO	SDAC	30
LANARE	FRESNO	DAC	300
LATON	FRESNO	DAC	1,236
LINDA VISTA FARMS	FRESNO	SDAC	40
MADDOX DAIRY	FRESNO	SDAC	50
MALAGA	FRESNO	DAC	448

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

NAME	COUNTY	TYPE	POPULATION ESTIMATE
MAYFAIR	FRESNO	DAC	1,300
MILLBROOK MOBILE HOME VILLAGE	FRESNO	DAC	50
MONMOUTH	FRESNO	DAC	120
MURRIETA/WASHOE	FRESNO	SDAC	25
OLD FIG GARDEN	FRESNO	DAC	290
PAPPAS & CO (FARM HOUSING)	FRESNO	SDAC	50
PARKLAND A.G.	FRESNO	SDAC	300
PERRY COLONY	FRESNO	DAC	50
PILIBOS BROTHERS RANCH	FRESNO	SDAC	35
RAISIN CITY	FRESNO	SDAC	288
RIVERBEND MOBILE HOME & RV PARK	FRESNO	DAC	200
RIVERDALE	FRESNO	DAC	3,000
RUBYS VALLEY CARE HOME	FRESNO	DAC	158
SAN ANDREAS FARMS	FRESNO	SDAC	53
SHADY ACRE TRAILER PARK	FRESNO	SDAC	50
SHADY LAKES MOBILE HOME PARK	FRESNO	DAC	130
SHAMROCK FARMING	FRESNO	SDAC	40
SHASTA MOBILE HOME PARK	FRESNO	SDAC	20
SOMMERVILLE RV PARK	FRESNO	SDAC	500
STEVE MARKS CATTLE COMPANY	FRESNO	SDAC	25
SUMNER PECK RANCH	FRESNO	SDAC	92
SUNNYSIDE CONVALESCENT HOSP	FRESNO	SDAC	116
SUNSET WEST MOBILE HOME PARK	FRESNO	DAC	239
TERRA LINDA FARMS	FRESNO	DAC	40
THE WILLOWS	FRESNO	DAC	10
THREE PALMS MOBILEHOME PARK	FRESNO	DAC	202
TODD'S TRAILER COURT	FRESNO	SDAC	50
TRACT 1199 WATER SYSTEM	FRESNO	DAC	39
TRANQUILLITY	FRESNO	DAC	820
VAQUERO FARMS	FRESNO	SDAC	70
VIKING TAILER PARK	FRESNO	DAC	80
WATERTEK-METROPOLITAN	FRESNO	SDAC	60
WEST PARK	FRESNO	DAC	250
WESTRIDGE	FRESNO	SDAC	30
WILLIAM HOPKINS WATER SYSTEM	FRESNO	DAC	25
WOODWARD BLUFFS MHP	FRESNO	DAC	300
ZONNEVELD DAIRY	FRESNO	SDAC	141

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN**Database**

Table 3-2. List of Disadvantaged Communities in Kern County

NAME	COUNTY	TYPE	POPULATION ESTIMATE
AGBAYANI VILLAGE	KERN	DAC	100
AIRPORT MUTUAL WATER SYSTEM	KERN	SDAC	280
ALTA SIERRA	KERN	SDAC	100
ARVIN	KERN	SDAC	14,713
ARVIN LABOR CENTER	KERN	SDAC	720
ATHAL	KERN	SDAC	150
BELLA VISTA	KERN	SDAC	72
BERKSHIRE	KERN	DAC	50
BERRENDA MESA	KERN	SDAC	90
BISHOP ACRES	KERN	DAC	60
BLACKWELLS CORNER	KERN	SDAC	148
BONANZA FARMS	KERN	SDAC	80
BOULDER CANYON	KERN	SDAC	30
BURLANDO HEIGHTS	KERN	DAC	85
BUTTONWILLOW	KERN	SDAC	1,266
CALDERS CORNER	KERN	DAC	261
CANYON MEADOWS	KERN	SDAC	325
CARRILLO WATER SYSTEM	KERN	DAC	37
CASA LOMA WATER CO, INC.	KERN	SDAC	600
CHEROKEE STRIP	KERN	DAC	132
CLARK STREET COMMUNITY WELL	KERN	SDAC	25
COMMUNITY 2751	KERN	SDAC	165
COMMUNITY 362	KERN	DAC	36
COMMUNITY 392	KERN	DAC	594
COMMUNITY 421	KERN	SDAC	132
COMMUNITY 427	KERN	DAC	2,475
COMMUNITY 477	KERN	SDAC	132
COMMUNITY 478	KERN	SDAC	792
COMMUNITY 493	KERN	DAC	33
COUNTRY ESTATES	KERN	DAC	364
COUNTRYWOOD	KERN	SDAC	238
CYPRESS CANYON	KERN	SDAC	50
DE RANCHO Y MOBILE VILLA WATER	KERN	DAC	200
DIRKSEN	KERN	DAC	53
DUSTIN ACRES	KERN	DAC	764
EAST NILES	KERN	DAC	24,900
EDMUNDSON ACRES	KERN	SDAC	550
EL ADOBE POA, INC	KERN	SDAC	330

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

NAME	COUNTY	TYPE	POPULATION ESTIMATE
EL RITA	KERN	DAC	43
ERSKINE CREEK WC	KERN	SDAC	2,500
FORD CITY	KERN	DAC	4,422
FRAZIER PARK	KERN	DAC	2,834
FRONTIER TRAIL HOMEOWNERS ASSOC	KERN	DAC	40
FULLER ACRES	KERN	SDAC	571
GLENNVILLE	KERN	DAC	198
GREENFIELD COUNTY WD	KERN	DAC	8,400
HAVILAH	KERN	SDAC	79
HILLVIEW ACRES	KERN	SDAC	35
HUNGRY GULCH	KERN	DAC	30
JUNIPER HILLS	KERN	SDAC	177
KEENE	KERN	DAC	50
KERN VALLEY MUTUAL WATER	KERN	SDAC	100
KERNVALE	KERN	SDAC	52
KERNVILLE	KERN	DAC	1,536
LAKE ISABELLA	KERN	SDAC	500
LAKE OF THE WOODS	KERN	DAC	953
LAKELAND	KERN	DAC	473
LAKEVIEW RANCHOS	KERN	DAC	59
LAMONT	KERN	SDAC	13,858
LEBEC	KERN	DAC	1,285
LINNS COURT	KERN	DAC	60
LONG CANYON	KERN	SDAC	197
LOST HILLS	KERN	DAC	1,991
LOWER BODFISH	KERN	SDAC	2,037
MCKITTRICK	KERN	DAC	146
METTLER	KERN	SDAC	157
MEXICAN COLONY	KERN	SDAC	320
MIRASOL COMPANY WATER SYSTEM	KERN	SDAC	30
MITCHELLS CORNER	KERN	SDAC	32
MOUNTAIN MESA	KERN	SDAC	1,015
MTN. SHADOWS	KERN	SDAC	115
OAK KNOLLS MUTUAL WATER COMPANY	KERN	SDAC	100
OILDALE	KERN	DAC	26,000
ONYX	KERN	SDAC	924
OPAL FRY AND SON	KERN	DAC	50
PANAMA ROAD PROPERTY OWNERS ASSOC	KERN	SDAC	50
PARADISE COVE LODGE	KERN	DAC	150

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

NAME	COUNTY	TYPE	POPULATION ESTIMATE
PINEBROOK	KERN	SDAC	100
POND	KERN	DAC	48
PONDEROSA PINE	KERN	SDAC	93
POPLAR AVE COMMUNITY	KERN	DAC	30
R.S. MUTUAL WATER COMPANY	KERN	SDAC	25
RAINBIRD VALLEY	KERN	SDAC	188
REEDER TRACT	KERN	DAC	500
RIVERKERN	KERN	SDAC	336
RIVERNOOK MHP	KERN	DAC	220
SAN JOAQUIN ESTATES	KERN	DAC	220
SHADY LANE MOBILE PARK	KERN	SDAC	30
SHAFTER FARM LABOR CENTER	KERN	SDAC	300
SHAFTER NORTH	KERN	SDAC	1,000
SIERRA BELLA	KERN	SDAC	160
SIERRA MEADOWS	KERN	DAC	60
SKI WEST VILLAGE WATER SYSTEM	KERN	DAC	100
SMITH CORNER	KERN	SDAC	544
SON SHINE PROPERTIES	KERN	DAC	250
SOUTH FORK WOMAN S CLUB, INC.	KERN	DAC	60
SOUTH LAKE	KERN	DAC	1,096
SOUTH TAFT	KERN	SDAC	1,062
SPLIT MOUNTAIN	KERN	SDAC	333
SQUIRREL MOUNTAIN VALLEY	KERN	SDAC	820
TAFT HEIGHTS	KERN	DAC	1,802
THOMAS LANE	KERN	DAC	132
TRADEWINDS	KERN	SDAC	450
TUPMAN	KERN	SDAC	153
UPPER BODFISH	KERN	SDAC	591
V.R. S TRAILER PARK	KERN	SDAC	30
VALLEY ACRES	KERN	DAC	336
VALLEY ESTATES	KERN	SDAC	275
VALLEY VIEW ESTATES	KERN	SDAC	81
VICTORY MWC	KERN	DAC	740
WEST KERN CWD	KERN	DAC	16,800
WEST MARICOPA	KERN	SDAC	125
WILSON ROAD	KERN	DAC	72
WINI MUTUAL WATER COMPANY	KERN	DAC	7
WOODY	KERN	DAC	116
CHOATE STREET	KERN	SDAC	153

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN**Database**

Table 3-3. List of Disadvantaged Communities in Kings County

NAME	COUNTY	TYPE	POPULATION ESTIMATE
COMMUNITY 259	KINGS	DAC	66
HALLS CORNER	KINGS	DAC	66
STRATFORD	KINGS	DAC	1215
LACEY COURTS MHP	KINGS	DAC	50
LEMOORE MOBILE HOME PARK	KINGS	DAC	125
ARMONA	KINGS	DAC	3239
HAMBLIN	KINGS	DAC	240
HARDWICK	KINGS	SDAC	40
KETTLEMAN CITY	KINGS	SDAC	1500
HOME GARDEN	KINGS	SDAC	1750
EL DORADO MOBILE PARK	KINGS	SDAC	297

Table 3-4. List of Disadvantaged Communities in Tulare County

NAME	COUNTY	TYPE	POPULATION ESTIMATE
A & A MHP	TULARE	DAC	200
AKIN WATER CO.	TULARE	SDAC	50
ALLENSWORTH	TULARE	SDAC	300
ALPAUGH	TULARE	SDAC	1,000
ALTA VISTA MHP	TULARE	SDAC	40
BEVERLY-GRAND MUTUAL WATER	TULARE	SDAC	108
BIG STUMP TRAILER PARK	TULARE	SDAC	175
CALIFORNIA HOT SPRINGS	TULARE	DAC	75
CAMERON CREEK COLONY	TULARE	SDAC	350
CASILLAS WATER SYSTEM	TULARE	SDAC	30
CENTRAL MUTUAL WATER CO	TULARE	SDAC	115
CENTRAL VALLEY WC	TULARE	SDAC	462
CENTRAL WATER CO.	TULARE	SDAC	170
COMMUNITY 2512	TULARE	DAC	16
COMMUNITY 290	TULARE	SDAC	69
COMMUNITY 292	TULARE	SDAC	158
COMMUNITY 330	TULARE	SDAC	63
COMMUNITY 332	TULARE	SDAC	59
COMMUNITY 340	TULARE	SDAC	116
COMMUNITY 342	TULARE	SDAC	36
COMMUNITY 415	TULARE	DAC	50
COMMUNITY 421	TULARE	SDAC	33

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

NAME	COUNTY	TYPE	POPULATION ESTIMATE
COUNTRY MANOR M.H.P.	TULARE	SDAC	250
CUTLER	TULARE	SDAC	6,300
DELFT COLONY	TULARE	SDAC	400
DUCOR	TULARE	SDAC	411
E PLANO	TULARE	SDAC	40
EARLIMART	TULARE	SDAC	5,531
EAST OROSI	TULARE	SDAC	426
EAST PORTERVILLE	TULARE	SDAC	5,528
EAST TULARE VILLA	TULARE	DAC	565
EAST VANDALIA	TULARE	SDAC	63
EL MONTE VILLAGE M.H.P.	TULARE	DAC	100
EL RANCHO - TRACT 191	TULARE	SDAC	124
ELDERWOOD	TULARE	DAC	59
EUCALYPTUS TRAILER PARK	TULARE	DAC	75
FAIRWAYS TRACT MUTUAL	TULARE	SDAC	275
FRIENDS RV PARK	TULARE	SDAC	24
GLEANINGS FOR THE HUNGRY	TULARE	DAC	31
GOLDEN KEY APARTMENTS	TULARE	DAC	48
GOSHEN	TULARE	SDAC	2,794
GRANDVIEW GARDENS	TULARE	SDAC	350
GRIGGS STREET	TULARE	DAC	28
HARTLAND	TULARE	SDAC	36
HYPERICUM - DOG TOWN	TULARE	SDAC	132
IVANHOE	TULARE	DAC	4,474
JONES CORNER	TULARE	SDAC	339
LA HOMEOWNERS WATER SYSTEM	TULARE	SDAC	92
LAKE SUCCESS MOBILE LODGE	TULARE	SDAC	20
LAKESIDE TRAILER PARK	TULARE	SDAC	500
LEMON COVE	TULARE	DAC	150
LINNELL FARM LABOR CENTER	TULARE	SDAC	896
LONDON	TULARE	DAC	1,638
LONE OAK TRACT	TULARE	SDAC	186
LOPEZ LABOR CAMP	TULARE	DAC	50
MADONNA	TULARE	DAC	70
MATHENY TRACT	TULARE	SDAC	1,980
MONSON	TULARE	SDAC	40
MOONEY GROVE MOBILE MANOR	TULARE	DAC	170
MOUNTAIN VIEW DUPLEXES	TULARE	SDAC	108
MOUNTAIN VIEW M.H.P.	TULARE	DAC	44

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

NAME	COUNTY	TYPE	POPULATION ESTIMATE
NORTH OF VISALIA TRACT	TULARE	DAC	70
OAKIEVILLE	TULARE	DAC	231
OROSI	TULARE	SDAC	7,318
PAIGE-MOORE TRACT	TULARE	DAC	954
PATTERSON TRACT	TULARE	DAC	550
PINE FLAT	TULARE	DAC	110
PIXLEY	TULARE	SDAC	3,500
PLAINVIEW	TULARE	SDAC	800
PLANO	TULARE	DAC	241
POPLAR	TULARE	SDAC	2,200
PORTERVILLE TRAILER PARK	TULARE	SDAC	80
POSEY	TULARE	SDAC	79
RANCHVIEW MOBILE ESTATES	TULARE	SDAC	495
RICHGROVE	TULARE	SDAC	2,700
RODRIGUEZ LABOR CAMP	TULARE	SDAC	150
SEVILLE	TULARE	SDAC	400
SHADY GROVE M H P	TULARE	SDAC	137
SHILOH WATER CO.	TULARE	SDAC	75
SIERRA GLEN MOBILE HOME PARK	TULARE	DAC	22
SIERRA SHADOWS MOBILE MANOR	TULARE	SDAC	75
SOULTS TRACT	TULARE	DAC	100
SOUTH LEMON COVE	TULARE	DAC	243
SPIEGELBERG	TULARE	DAC	25
SPRINGVILLE	TULARE	SDAC	1,300
STRATHMORE	TULARE	SDAC	2,352
STRATHMORE EAST	TULARE	SDAC	657
SULTANA	TULARE	DAC	650
SUNRISE MUTUAL WATER CO.	TULARE	DAC	140
TAFOYA WATER SYSTEM	TULARE	DAC	1
TEA POT DOME	TULARE	SDAC	25
TERRA BELLA	TULARE	SDAC	2,340
TEVISTON	TULARE	SDAC	300
TIPTON	TULARE	SDAC	1,792
TIPTON BURNETT ROAD	TULARE	SDAC	50
TONYVILLE	TULARE	DAC	250
TOOLEVILLE	TULARE	SDAC	350
TRACT 288	TULARE	SDAC	110
TRACT 396	TULARE	DAC	188
TRACT 92	TULARE	SDAC	500

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN***Database***

NAME	COUNTY	TYPE	POPULATION ESTIMATE
TRACTS 24 - 41	TULARE	DAC	393
TRACTS 45 - 68 - 157 - 199 - 201 - 319	TULARE	DAC	736
TRAVER	TULARE	DAC	500
TRICO OIL ACRES COLONIA	TULARE	DAC	89
WAUKENA	TULARE	SDAC	99
WELLS TRACT	TULARE	DAC	195
WEST GOSHEN	TULARE	DAC	200
WESTERN SKY M.H.P.	TULARE	DAC	108
WILLIAMS	TULARE	DAC	180
WOODLAKE TRAILER PARK	TULARE	DAC	53
WOODVILLE	TULARE	SDAC	1,542
WOODVILLE FARM LABOR CENTER	TULARE	SDAC	725
YETTEM	TULARE	DAC	350

3.1.1 Water Quality and Supply

There are approximately 218 DACs with water systems in the Study Area. Approximately 196 of the 218 DACs with water systems in the Study Area had water quality data available. Of those DACs with water quality data available, approximately 89 reported more than one exceedance of a drinking water maximum contaminant level in their delivered water between 2008 and 2010. An exceedance of an MCL does not always constitute a violation, but does indicate a potential issue. A breakdown of the water quality exceedances by contaminant is presented in the Technical Solutions pilot study.

Limited reliable water supply is also a concern within the region, since many communities only have a single source of water supply, usually from groundwater. Based on the database information available, approximately 96 out of the 353 DACs in the Study Area have a single supply source. Communities that rely on a single water source are especially vulnerable to drought and other water supply challenges, as well as changes in water quality. An entire community can go from having safe drinking water to not having access to safe water or not having water at all with the failure of a single source.

The communities with the various water supply and quality issues are illustrated on the maps shown as **Figure 3-1** through **Figure 3-4**. The water quality issues are based on delivered water quality (meaning what is delivered to the customer; when treatment is provided this is likely different than the raw water quality). The delivered water quality gives an indication of the condition of the system and its ability to provide safe drinking water. This serves a different purpose than the maps showing raw water quality (**Figure 2-1** through **Figure 2-4**), which give an indication of the quality of the underlying groundwater in a given area. **Table 3-5** through **Table 3-8** identify the disadvantaged communities with water systems, and those that have water supply or water quality issues. As noted, these systems are not all in violation of water quality standards. A list of compliance orders for the Fresno, Visalia and Tehachapi Districts of CDPH are presented in **Appendix D**.

3.1.2 System Consolidations

Through the course of this Study, it was found that several water systems had been consolidated into other larger systems. For the purposes of this Study, a community in which the water system had consolidated was still considered to be a community, although a separate water system no longer exists. The consolidated systems were identified by the project team based on either knowledge of a project that had been implemented, or research and field visits. The list of consolidated systems may not be complete, but shows some significant improvement in reducing the number of small water systems in recent years. **Figure 3-5** through **Figure 3-7** show the DAC water systems that have been assumed to be consolidated in Fresno, Kern, and Tulare County, respectively. No consolidations were identified in Kings County, although there are consolidation projects currently in progress.

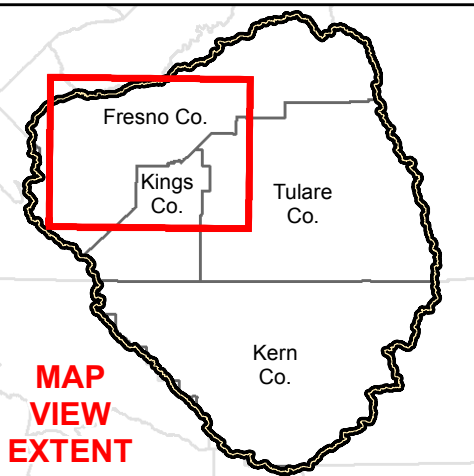
**Tulare Lake Basin
Disadvantaged Community
Water Study**
FRESNO COUNTY
Communities
DAC and SDAC Communities
With A Single Active Water Source
Or *Water Quality Issues

FIGURE 3-1

Legend

- Tulare Lake Basin
- County
- *Source Exceeded MCL for either Arsenic, Uranium, Nitrate or Half Nitrate (2008-10)
- 1 Active Water Source Identified
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AT (Active Treated), or CT (Combined Treated). Considered as delivered water. Communities with raw water samples that exceeded MCL are shown if no samples exist for the source codes listed above.



MAP VIEW EXTENT

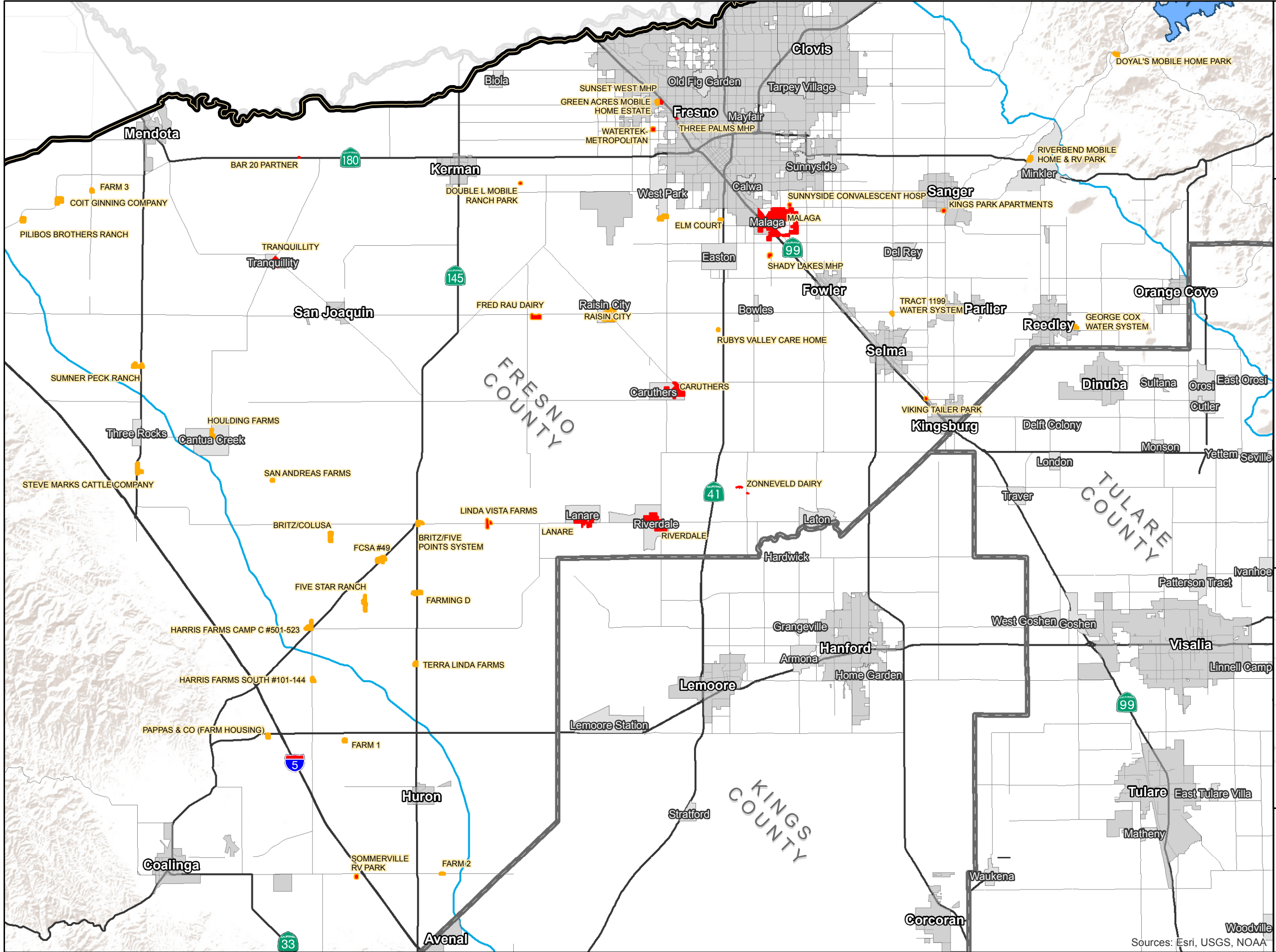
0 2 4 6 Miles

CENTRAL WATER CO.

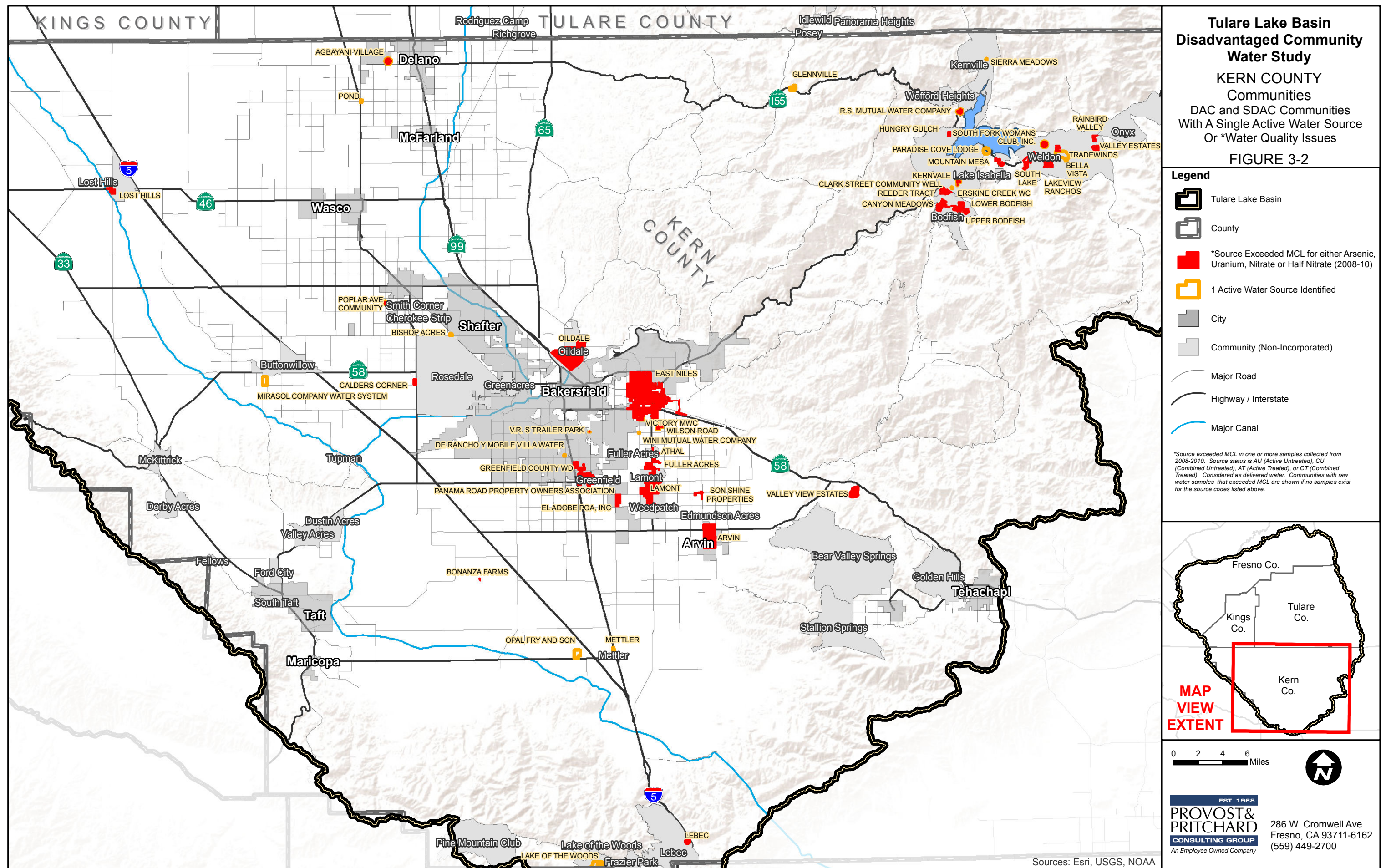
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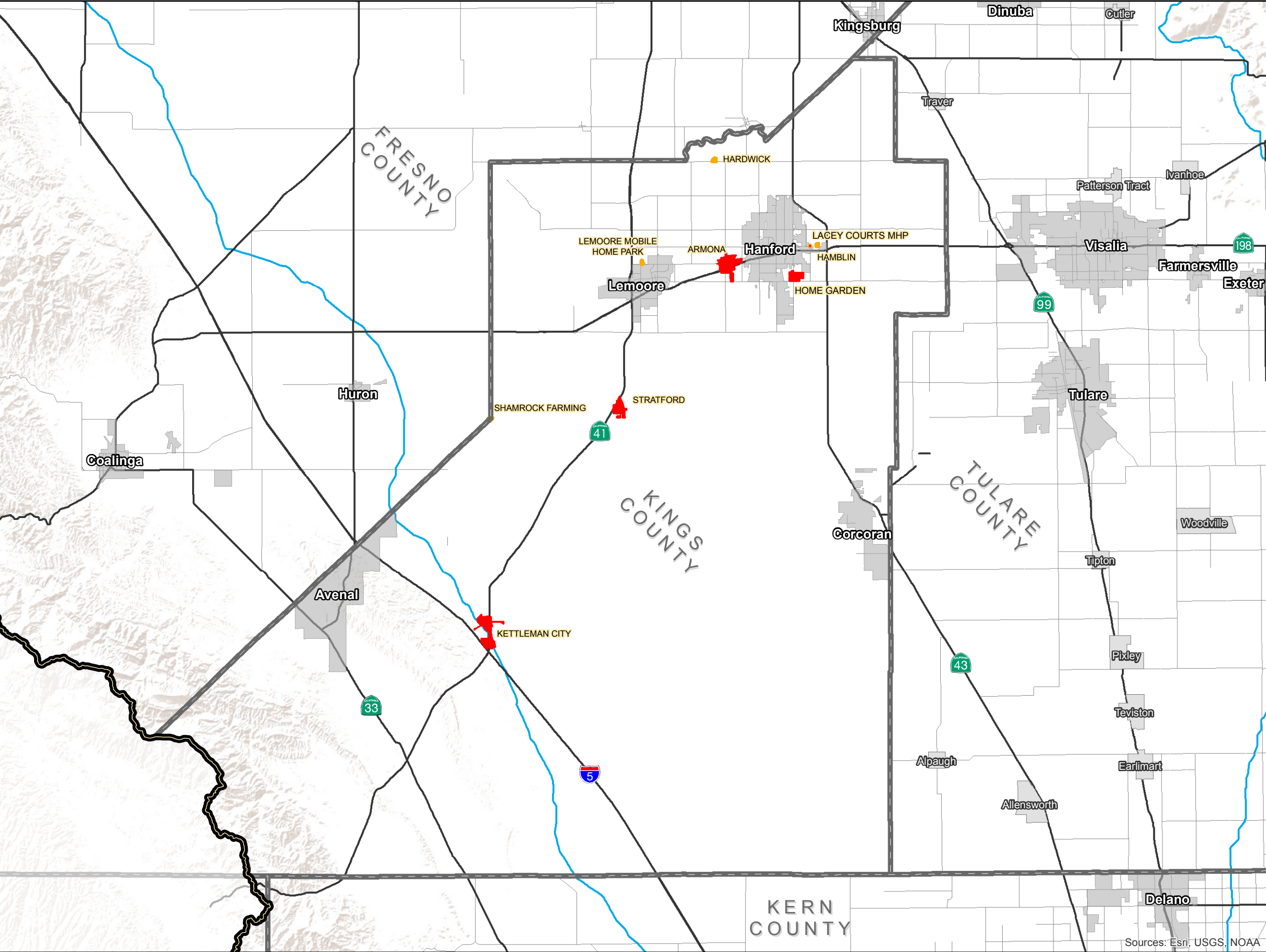
EST. 1968

286 W. Cromwell Ave.
Fresno, CA 93711-6162
(559) 449-2700



Sources: Esri, USGS, NOAA





Tulare Lake Basin Disadvantaged Community Water Study

KINGS COUNTY Communities

DAC and SDAC Communities
With A Single Active Water Source
Or *Water Quality Issues

FIGURE 3-3

Legend

- Tulare Lake Basin
- County
- *Source Exceeded MCL for either Arsenic, Uranium, Nitrate or Half Nitrate (2008-10)
- 1 Active Water Source Identified
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AT (Active Treated), or CT (Combined Treated). Considered as delivered water. Communities with raw water samples that exceeded MCL are shown if no samples exist for the source codes listed above.

**MAP
VIEW
EXTENT**

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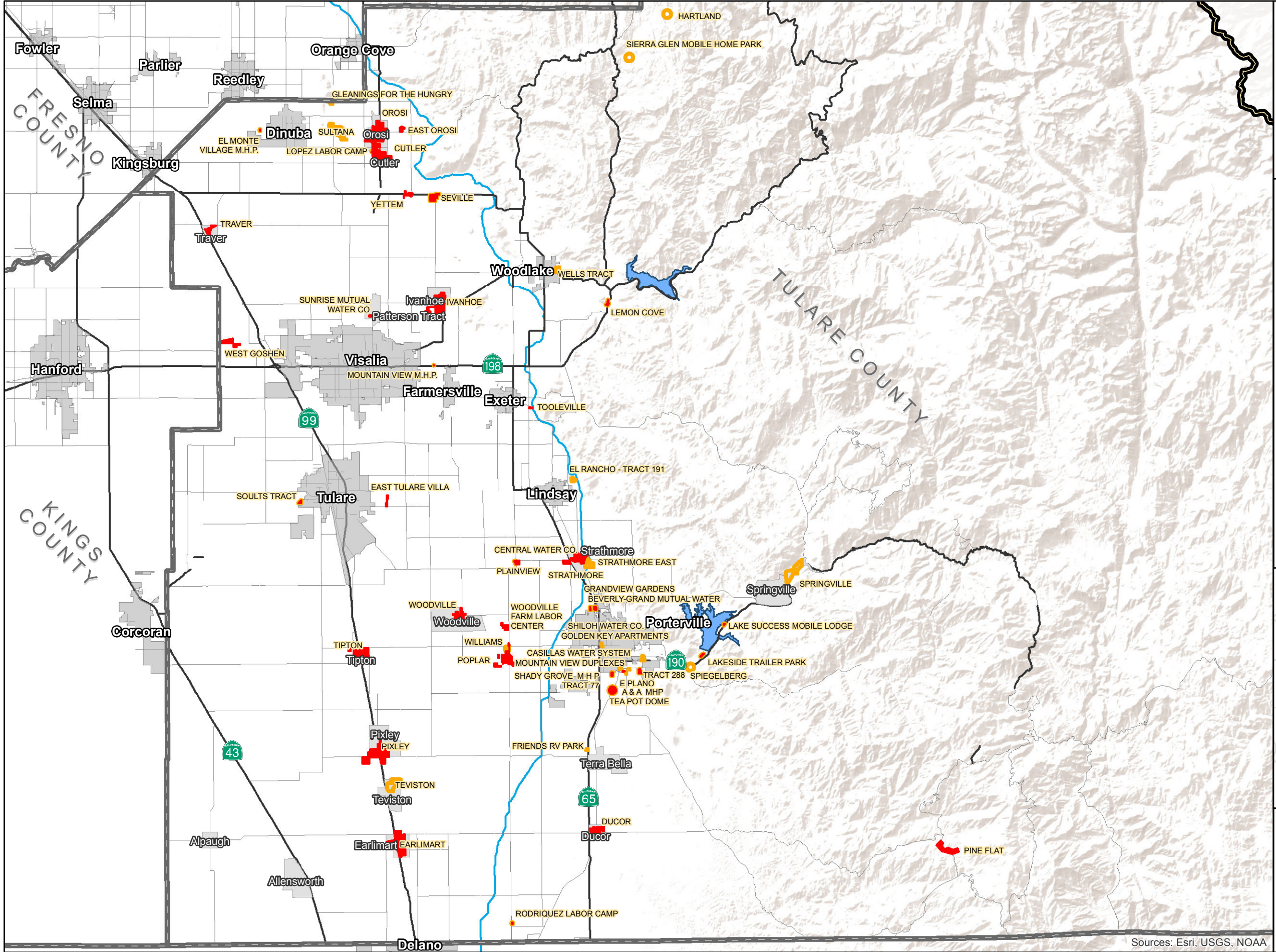
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Sources: Esri, USGS, NOAA

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Tulare Lake Basin Disadvantaged Community Water Study

TULARE COUNTY Communities

DAC and SDAC Communities
With A Single Active Water Source
Or *Water Quality Issues

FIGURE 3-4

Legend

- Tulare Lake Basin
- County
- *Source Exceeded MCL for either Arsenic, Uranium, Nitrate or Half Nitrate (2008-10)
- 1 Active Water Source Identified
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AT (Active Treated), or CT (Combined Treated). Considered as delivered water. Communities with raw water samples that exceeded MCL are shown if no samples exist for the source codes listed above.

**MAP
VIEW
EXTENT**

0 2 4 6 Miles

EST. 1968

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Sources: Esri, USGS, NOAA

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Table 3-5. List of Disadvantaged Communities with Water Systems in Fresno County

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
BAR 20 PARTNER	1000079	SDAC	60	15	0	Y
FCSA #39 A&B	1000471	DAC	100	41	0	
BIOLA CSD	1010049	SDAC	1200	206	2	
BRITZ/COLUSA	1009023	SDAC	106	29	1	
BRITZ/FIVE POINTS SYSTEM	1009179	SDAC	150	33	1	
CAMDEN TRAILER PARK	1000238	SDAC	100	25	2	Y
FCSA #32/CANTUA CREEK	1000359	SDAC	342	78	2	
CARUTHERS CSD	1010039	DAC	2103	672	4	Y
CINCO FARMS	1009206	DAC	30	9	0	
COIT GINNING COMPANY	1009131	SDAC	90	31	1	
COUNTRY VIEW ALZHEIMER CENTER	1000430	DAC	100	2	1	
DEL REY CSD	1010035	DAC	950	240	5	
DOUBLE L MOBILE RANCH PARK	1000248	SDAC	80	37	1	Y
DOYAL'S MOBILE HOME PARK	1000405	SDAC	22	15	1	
DWS PARTNERS	1009176	SDAC	16	5	0	
EASTON ESTATES WATER COMPANY	1000018	DAC	371	106	2	
FCSA #30/EL PORVENIR	1000019	SDAC	230	51	2	
ELM COURT	1000277	SDAC	40	14	1	
FARM 1		SDAC	50	18	1	
FARM 2		SDAC	20	8	1	
FARM 3		SDAC	20	8	1	
FARMING D	1009147	DAC	100	38	1	
FCSA #49/ FIVE POINTS	1000546	DAC	450	46	1	
FELGER FARMS	1009215	SDAC	40	12	0	
FIVE POINTS RANCH	1009020	SDAC	130	37	2	
FIVE STAR RANCH	1000175	SDAC	120	22	1	
FRED RAU DAIRY	1009120	SDAC	80	24	1	Y
GEORGE COX WATER SYSTEM	1000407	DAC	40	20	1	
GREEN ACRES MOBILE HOME ESTATE	1000229	DAC	300	112	1	

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
HARNISH FIVE POINTS INC	1009077	DAC	26	8	0	
HARRIS FARMS CAMP C #501-523	1009027	SDAC	300	77	1	
HARRIS FARMS SOUTH #101-144	1009028	DAC	160	41	1	
HOULDING FARMS	1009051	SDAC	50	15	1	
KAMM RANCH COMPANY	1009143	SDAC	20	3	0	
KINGS PARK APARTMENTS	1000295	SDAC	120	40	1	Y
LA JOLLA FARMS	1000493	SDAC	30	10	1	
LANARE CSD	1000053	DAC	300	120	2	Y
LATON CSD	1010020	DAC	1236	331	3	
LINDA VISTA FARMS	1000445	SDAC	40	26	1	Y
MADDOX DAIRY	1009177	SDAC	50	15	0	
MALAGA COUNTY WATER DISTRICT	1010042	DAC	448	448	6	Y
MURRIETA/WASHOE	1009013	SDAC	25	10	0	
PAPPAS & CO (FARM HOUSING)	1009006	SDAC	50	13	1	
PILIBOS BROTHERS RANCH	1009035	SDAC	35	15	1	
FCSA #43/RAISIN CITY	1000551	SDAC	288	64	1	
RIVERBEND MOBILE HOME & RV PARK	1000426	DAC	200	46	1	
RIVERDALE PUD	1010028	DAC	3000	930	2	Y
RUBYS VALLEY CARE HOME	1000200	DAC	158	1	1	
SAN ANDREAS FARMS	1009258	SDAC	53	16	1	
SHADY LAKES MOBILE HOME PARK	1000244	DAC	130	56	1	Y
SOMMERVILLE RV PARK	1000439	SDAC	500	1	1	Y
STEVE MARKS CATTLE COMPANY	1009214	SDAC	25	24	1	
SUMNER PECK RANCH	1009232	SDAC	92	28	1	
SUNNYSIDE CONVALESCENT HOSP	1000366	SDAC	116	3	1	Y
SUNSET WEST MOBILE HOME PARK	1000378	DAC	239	162	2	Y
TERRA LINDA FARMS	1009222	DAC	40	3	1	

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
THREE PALMS MOBILEHOME PARK	1000299	DAC	202	101	2	
TRACT 1199 WATER SYSTEM	1000075	DAC	39	13	1	
TRANQUILLITY ID	1010030	DAC	820	326	2	Y
VAQUERO FARMS	1009172	SDAC	70	17	1	Y
VIKING TRAILER PARK	1000454	DAC	80	48	1	
WATERTEK-METROPOLITAN	1000057	SDAC	60	29	1	Y
WESTRIDGE	1009034	SDAC	30	9	0	
WILLIAM HOPKINS WATER SYSTEM	1000354	DAC	25	12	0	
WOODWARD BLUFFS MHP	1000298	DAC	300	167	1	
ZONNEVELD DAIRY	1000369	SDAC	141	34	2	Y

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Table 3-6. List of Disadvantaged Communities with Water Systems in Kern County

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
AGBAYANI VILLAGE WATER SYSTEM	1500518	DAC	100	6	1	Y
ALTA SIERRA MUTUAL WATER CO.	1500209	SDAC	100	215	3	
CSD OF ARVIN	1510001	SDAC	14713	3536	7	Y
ATHAL	1500289	SDAC	150	62	2	Y
BELLA VISTA	1502653	SDAC	72	34	1	
BISHOP ACRES	1500434	DAC	60	28	1	
BONANZA FARMS WATER SYSTEM	1502482	SDAC	80	17	0	Y
BOULDER CANYON WATER ASSOC	1500521	SDAC	30	19	2	Y
BURLANDO HEIGHTS MWC	1500336	DAC	85	42	2	
BUTTONWILLOW CWD	1510011	SDAC	1266	472	3	
ENOS LANE PUD	1500544	DAC	261	79	2	Y
CANYON MEADOWS MUTUAL WATER	1500443	SDAC	325	142	4	Y
CASA LOMA WATER CO, INC.	1510004	SDAC	600	215	2	
CLARK STREET COMMUNITY WELL	1502056	SDAC	25	16	1	
CWS - COUNTRYWOOD	1500408	SDAC	238	68	2	
CYPRESS CANYON WATER SYSTEM	1502449	SDAC	50	34	2	
DE RANCHO Y MOBILE VILLA WATER	1500380	DAC	200	90	1	
EAST NILES CSD	1510006	DAC	24900	7338	6	Y
EL ADOBE POA, INC.	1500493	SDAC	330	100	2	Y
ERSKINE CREEK WC	1510009	SDAC	2500	1031	3	Y
FRAZIER PARK	1510007	DAC	2834	1296	6	
FRONTIER TRAIL HOMEOWNERS ASSOC, INC.	1500398	DAC	40	36	2	
FULLER ACRES	1500296	SDAC	571	200	2	Y
LINNS COURT MUTUAL WATER	1502162	DAC	198	60	1	
GREENFIELD COUNTY WD	1510024	DAC	8400	2411	5	Y
HILLVIEW ACRES	1500448	SDAC	35	47	2	
HUNGRY GULCH WATER SYSTEM	1500436	DAC	30	20	2	Y

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
KERN VALLEY MUTUAL WATER	1500252	SDAC	100	42	2	
KRVWC - KERNVALE MUTUAL WATER CO	1500364	SDAC	52	20	1	Y
CWS - KERNVILLE SYSTEM	1510033	DAC	1536	1247	13	
LAKE ISABELLA	1503270	SDAC	500	190	0	
LAKE OF THE WOODS MWC	1500459	DAC	953	397	1	
CWS - LAKELAND	1510049	DAC	473	215	3	
LAKEVIEW RANCHOS	1500525	DAC	59	49	3	Y
LAMONT PUBLIC UTILITY DIST	1510012	SDAC	13858	3381	7	Y
LEBEC COUNTY WATER DISTRICT	1510051	DAC	1285	243	3	Y
LONG CANYON	1500578	SDAC	197	65	2	
LOST HILLS	1510046	DAC	1991	434	2	Y
CWS - LOWER BODFISH WATER SYSTEM	1510056	SDAC	2037	558	6	Y
METTLER	1500401	SDAC	157	42	1	
MIRASOL COMPANY WATER SYSTEM	1500152	SDAC	30	13	1	
MOUNTAIN MESA WC	1510042	SDAC	1015	359	2	Y
OAK KNOLLS MUTUAL WATER COMPANY	1500465	SDAC	100	52	3	
OILDALE	1510015	DAC	26000	7820	6	Y
ONYX	1510043	SDAC	924	280	3	
OPAL FRY AND SON	1500216	DAC	50	13	1	
PANAMA ROAD PROPERTY OWNERS ASSOC	1502465	SDAC	50	16	1	
PARADISE COVE LODGE	1502213	DAC	150	3	1	
PINEBROOK COMMUNITY WATER	1500404	SDAC	100	42	2	
POND MWC	1502620	DAC	48	16	1	
POPLAR AVE COMMUNITY WATER	1502549	DAC	30	9	1	Y
R.S. MUTUAL WATER COMPANY	1500458	SDAC	25	22	1	Y
RAINBIRD VALLEY	1500393	SDAC	188	83	2	Y
ERSKINE CREEK WC	1510009	DAC	500	300	3	Y

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
RIVERKERN MUTUAL WATER CO	1500251	SDAC	336	102	2	
RIVERNOOK CAMPGROUND	1500481	DAC	220	152	4	
SAN JOAQUIN ESTATES MWC	1500575	DAC	220	59	0	Y
SIERRA BELLA MUTUAL WATER CO	1500341	SDAC	160	125	4	
SIERRA MEADOWS	1502564	DAC	60	42	1	
SON SHINE WS	1500588	DAC	250	106	2	Y
SOUTH FORK WOMAN S CLUB	1503373	DAC	60	1	1	Y
CWS - SOUTHLAKE SQUIRREL VALLEY	1510039	DAC	1096	501	8	Y
CWS - SPLIT MOUNTAIN WATER	1500407	SDAC	333	237	3	
TRADEWINDS	1500406	SDAC	450	214	2	Y
CWS - UPPER BODFISH WATER	1510026	SDAC	591	201	3	Y
V.R. S TRAILER PARK	1500511	SDAC	30	27	1	Y
VALLEY ESTATES POA, INC.	1500478	SDAC	275	115	2	Y
VALLEY VIEW ESTATES MWC	1500569	SDAC	81	39	6	Y
VICTORY MUTUAL WATER COMPANY	1500231	DAC	740	172	1	Y
WEST KERN CWD	1510022	DAC	16800	7589	13	
WILSON ROAD WATER COMMUNITY	1500494	DAC	72	20	1	Y
WINI MUTUAL WATER COMPANY	1503526	DAC	7	2	1	

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN**Database**

Table 3-7. List of Disadvantaged Communities with Water Systems in Kings County

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
ARMONA CSD	1610001	DAC	3239	1179	2	Y
EL DORADO MOBILE PARK	1600002	SDAC	297	90	2	
HAMBLIN MWC	1600504	DAC	240	75	1	
HARDWICK	1600507	SDAC	40	40	1	
HOME GARDEN CSD	1610007	SDAC	1750	450	3	Y
KETTLEMAN CITY CSD	1610009	SDAC	1500	321	2	Y
LACEY COURTS MHP	1600010	DAC	50	21	1	Y
LEMOORE MOBILE HOME PARK	1600031	DAC	125	38	1	
SHAMROCK FARMING	1600301	SDAC	40	12	1	
STRATFORD PUD	1610006	DAC	1215	240	3	Y

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Table 3-8. List of Disadvantaged Communities with Water Systems in Tulare County

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
A & A MHP	5400504	DAC	200	60	1	
AKIN WATER CO.	5401038	SDAC	50	22	2	Y
ALLENSWORTH CSD	5400544	SDAC	300	96	2	
ALPAUGH JPA	5410050	SDAC	1000	340	2	Y
BEVERLY GRAND MUTUAL WATER	5400651	SDAC	108	28	1	Y
BIG STUMP TRAILER PARK	5400582	SDAC	175	51	2	
CAL HOT SPRINGS WATER CO	5400513	DAC	75	30	2	
CASILLAS WATER SYSTEM	5403047	SDAC	30	6	1	
CENTRAL MUTUAL WATER CO.	5400655	SDAC	115	23	1	Y
CENTRAL WATER CO.	5400682	SDAC	170	42	1	Y
CUTLER PUD	5410001	SDAC	6300	1197	3	Y
DELFT COLONY WATER	5403023	SDAC	400	103	2	
DUCOR CSD	5400542	SDAC	411	102	2	Y
E PLANO	5400767	SDAC	40	20	1	
EARLIMART PUD	5410021	SDAC	5531	1483	4	Y
EAST OROSI CSD	5401003	SDAC	426	102	2	Y
CWS – TULCO WATER CO	5410041	DAC	565	108	2	Y
EL MONTE VILLAGE M.H.P.	5400523	DAC	100	49	1	Y
LSID – EL RANCHO	5410052	SDAC	124	24	1	
FRIENDS RV PARK	5403051	SDAC	24	44	1	
GLEANINGS FOR THE HUNGRY	5402047	DAC	31	10	1	
GOLDEN KEY APARTMENTS	5400600	DAC	48	16	1	
GRANDVIEW GARDENS	5400666	SDAC	350	102	1	Y
HARTLAND	5403135	SDAC	36	20	1	
IVANHOE PUD	5410019	DAC	4474	1174	4	Y
PORTERVILLE – JONES CORNER	5410048	SDAC	339	112	2	
LAKE SUCCESS MOBILE LODGE	5400660	SDAC	20	18	1	Y
LAKESIDE TRAILER PARK	5400518	SDAC	500	91	1	Y
LEMON COVE WATER CO.	5400616	DAC	150	50	1	Y

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
LINNELL FARM LABOR CENTER	5400631	SDAC	896	190	2	
LONDON CSD	5410017	DAC	1638	450	3	
LOPEZ LABOR CAMP	5400546	DAC	50	25	1	
MOUNTAIN VIEW DUPLEXES	5400604	SDAC	108	27	1	
MOUNTAIN VIEW M.H.P.	5400819	DAC	44	24	1	Y
OROSI PUD	5410008	SDAC	7318	1678	5	Y
PATTERSON TRACT CSD	5402038	DAC	550	114	2	
PINE FLAT WATER COMPANY	5410034	DAC	110	223	4	Y
PIXLEY PUD	5410009	SDAC	3500	700	4	Y
PLAINVIEW MWC	5410039	SDAC	800	200	2	Y
POPLAR CSD	5410026	SDAC	2200	555	2	Y
PORTERVILLE TRAILER PART	5400611	SDAC	80	25	1	
RICHGROVE CSD	5410024	SDAC	2700	600	2	
RODRIQUEZ LABOR CAMP	5400735	SDAC	150	34	1	Y
SEVILLE WATER CO.	5400550	SDAC	400	89	1	Y
SHADY GROVE MHP	5400529	SDAC	137	40	1	
SHILOH WATER CO.	5400527	SDAC	75	20	1	
SIERRA GLEN MOBILE HOME PARK	5400551	DAC	22	14	1	
SOULTS MUTUAL WATER CO.	5400805	DAC	100	36	1	Y
SPIEGELBERG WATER SYSTEM	5403115	DAC	25	1	1	
SPRINGVILLE PUD	5410011	SDAC	1300	639	1	
STRATHMORE PUD	5410012	SDAC	2352	690	2	Y
LSID-STRATHMORE SYSTEM	5410036	SDAC	657	199	1	
SULTANA CSD	5400824	DAC	650	224	1	
SUNRISE MUTUAL WATER CO.	5400881	DAC	140	39	2	Y
TEA POT DOME WATER CO.	5403039	SDAC	25	4	1	Y
TERRA BELLA ID	5410013	SDAC	2340	714	0	
TEVISTON CSD	5400641	SDAC	300	70	1	
TIPTON CSD	5410014	SDAC	1792	587	2	Y
LSID - TONYVILLE	5410007	DAC	250	50	6	
TOOLEVILLE WATER CO.	5400567	SDAC	350	77	2	Y

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database










SYSTEM NAME	SYSTEM ID	TYPE	POPULATION ESTIMATE	CONNECTION ESTIMATE	ACTIVE SOURCES	WATER QUALITY ISSUE
CWS – MULLEN WATER COMPANY	5400935	SDAC	110	44	1	Y
TRACT 92 CSD	5400903	SDAC	500	91	2	
TRAVER WATER LLC	5400553	DAC	500	180	2	Y
WELLS TRACT	5410020	DAC	195	59	1	
WEST GOSHEN MUTUAL WATER CO.	5400957	DAC	200	69	2	Y
WILLIAMS MUTUAL WATER CO.	5400718	DAC	180	50	1	
WOODVILLE PUD	5410025	SDAC	1542	421	2	Y
WOODVILLE FARM LABOR CENTER	5400792	SDAC	725	181	2	Y
YETTEM	5403043	DAC	350	64	2	Y

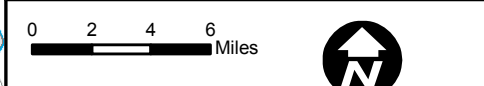
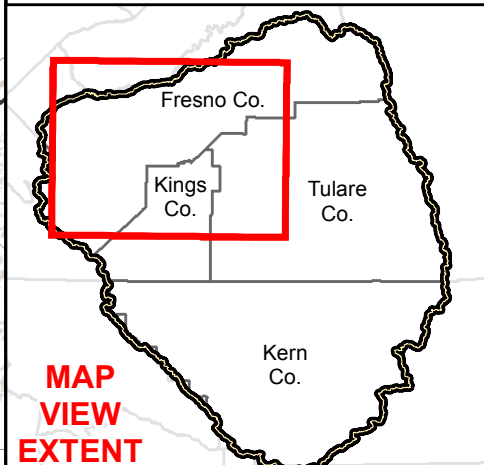
Tulare Lake Basin Disadvantaged Community Water Study

FRESNO COUNTY
Communities
DAC and SDAC Communities
Assumed Consolidated

FIGURE 3-5

Legend

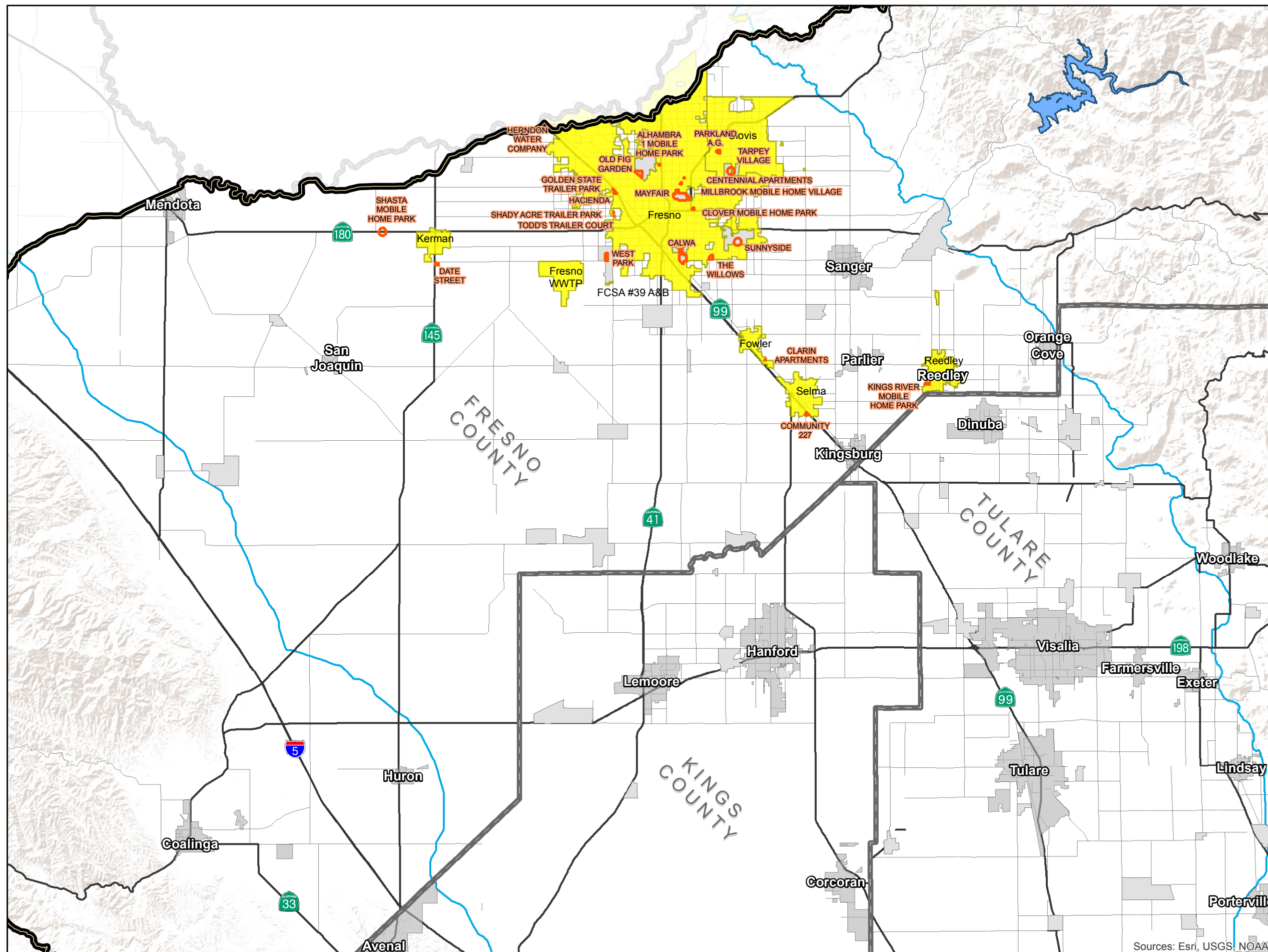
-  Tulare Lake Basin
-  County
-  Systems Assumed Consolidated
-  City/Districts Systems With Consolidation
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

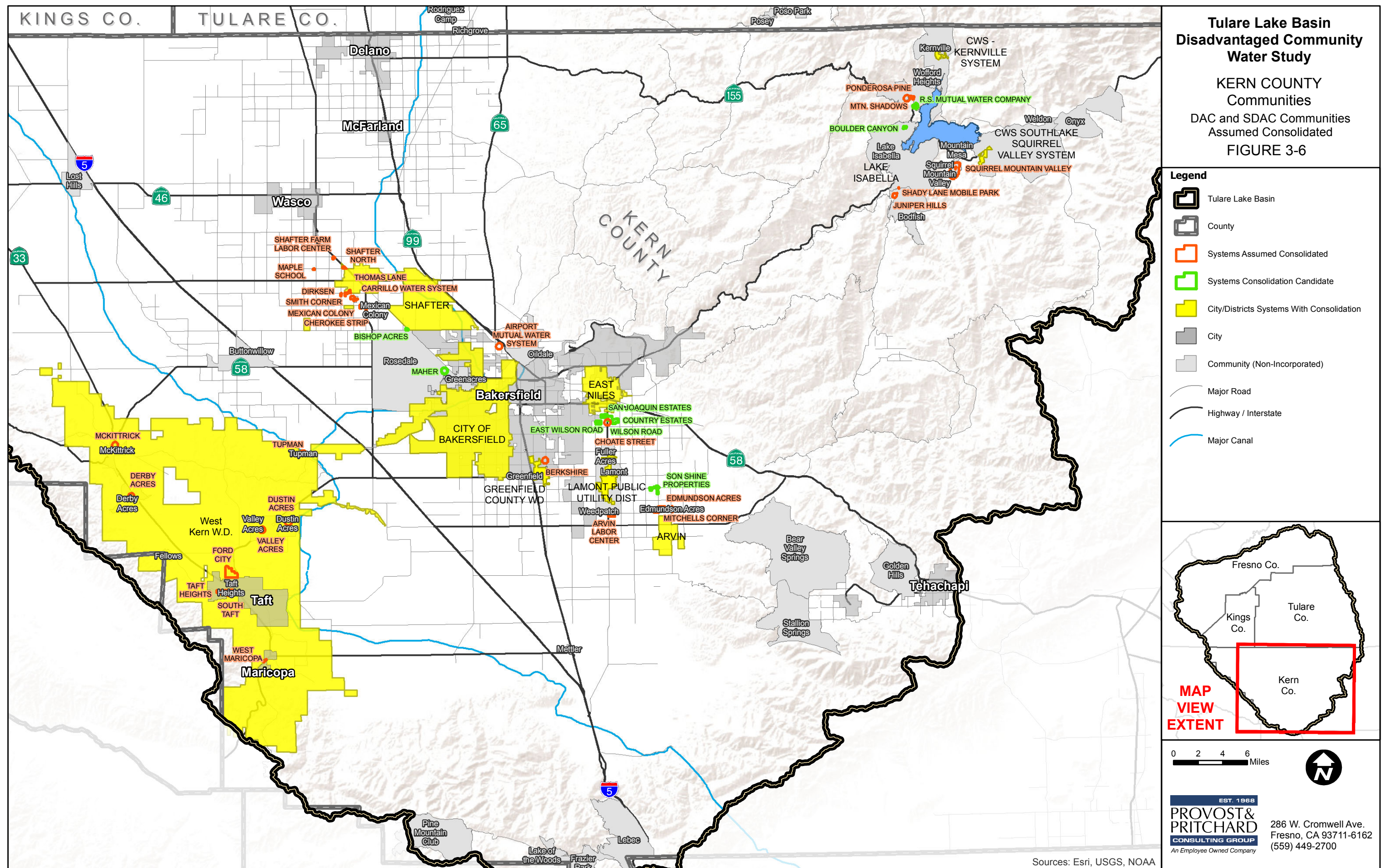


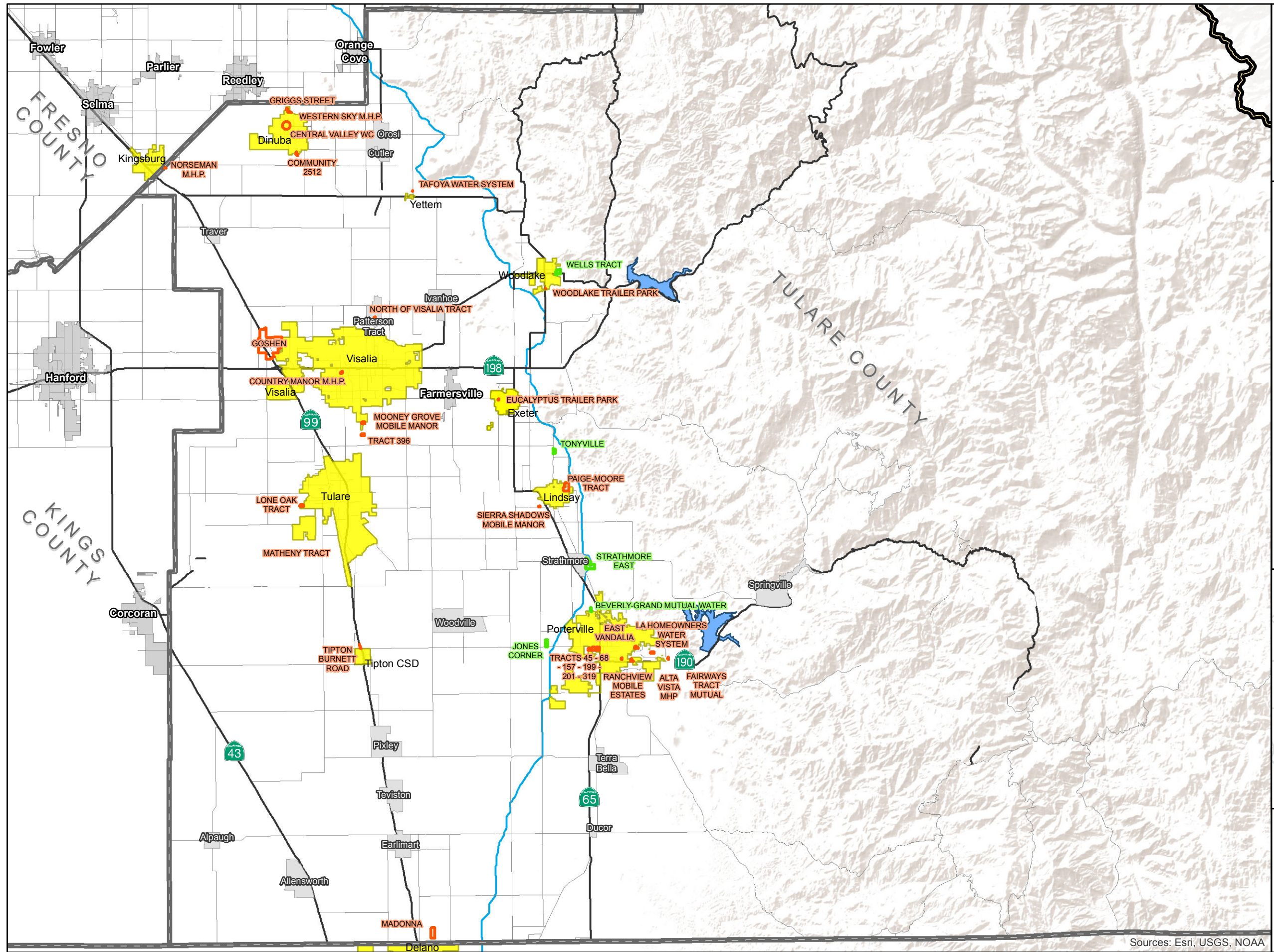
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Sources: Esri, USGS, NOAA







Tulare Lake Basin Disadvantaged Community Water Study

TULARE COUNTY
Communities
DAC and SDAC Communities
Assumed Consolidated
FIGURE 3-7

Legend

- Tulare Lake Basin
- County
- Systems Assumed Consolidated
- Systems Consolidation Candidate
- City/Districts Systems With Consolidation
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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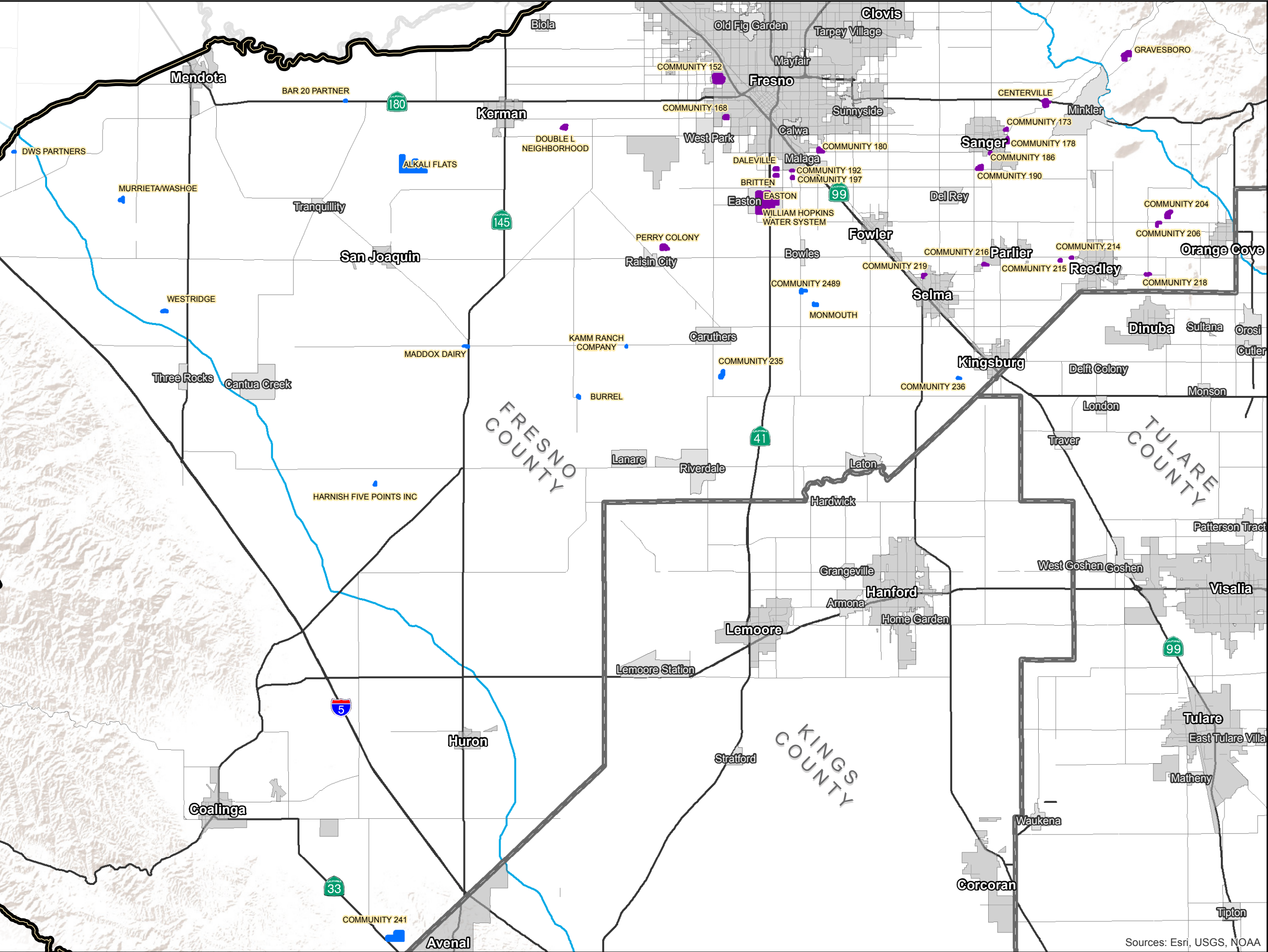
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(559) 449-2700

Sources: Esri, USGS, NOAA

3.1.3 Unknown Sources and Private Wells

Based on the database information available for this Study, the water source for many communities was not identified. Approximately 218 of the 353 DACs have water systems identified. Another 75 DACs were identified to be served by another public water system. The remaining DACs do not have a water supply source identified in the database. It is recommended that the water supply source be defined for each disadvantaged community so that if there are water sources that may not provide water in sufficient quantity or of appropriate quality for use by the community, an opportunity to develop a plan for corrective actions may be made available. It is noted that an unknown source of water supply does not necessarily correlate to a problem with the water supply source; this only indicates a lack of available data. A community with an unknown water source may: 1) be served by private wells, 2) be served by a State Small System, 3) be served by a neighboring system, 4) receive source water from a neighboring system, or 5) lack data for other reasons. The geographical location of the communities with an unknown water supply source and those known to be served by private wells is shown in **Figure 3-8** through **Figure 3-11**.



Tulare Lake Basin Disadvantaged Community Water Study

FRESNO COUNTY Communities

DAC and SDAC Communities
With Unknown Water Source

FIGURE 3-8

Legend

- Tulare Lake Basin
- Unknown Water Source
- Private Wells
- County
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

A community with an unknown water source does not necessarily have a problem, this only indicates a lack of available data. A community with an unknown water source may: 1) be served by private wells, 2) be served by a State Small Water System, 3) be served by a neighboring system, 4) receive source water from a neighboring system, or 5) lack data for other reasons.

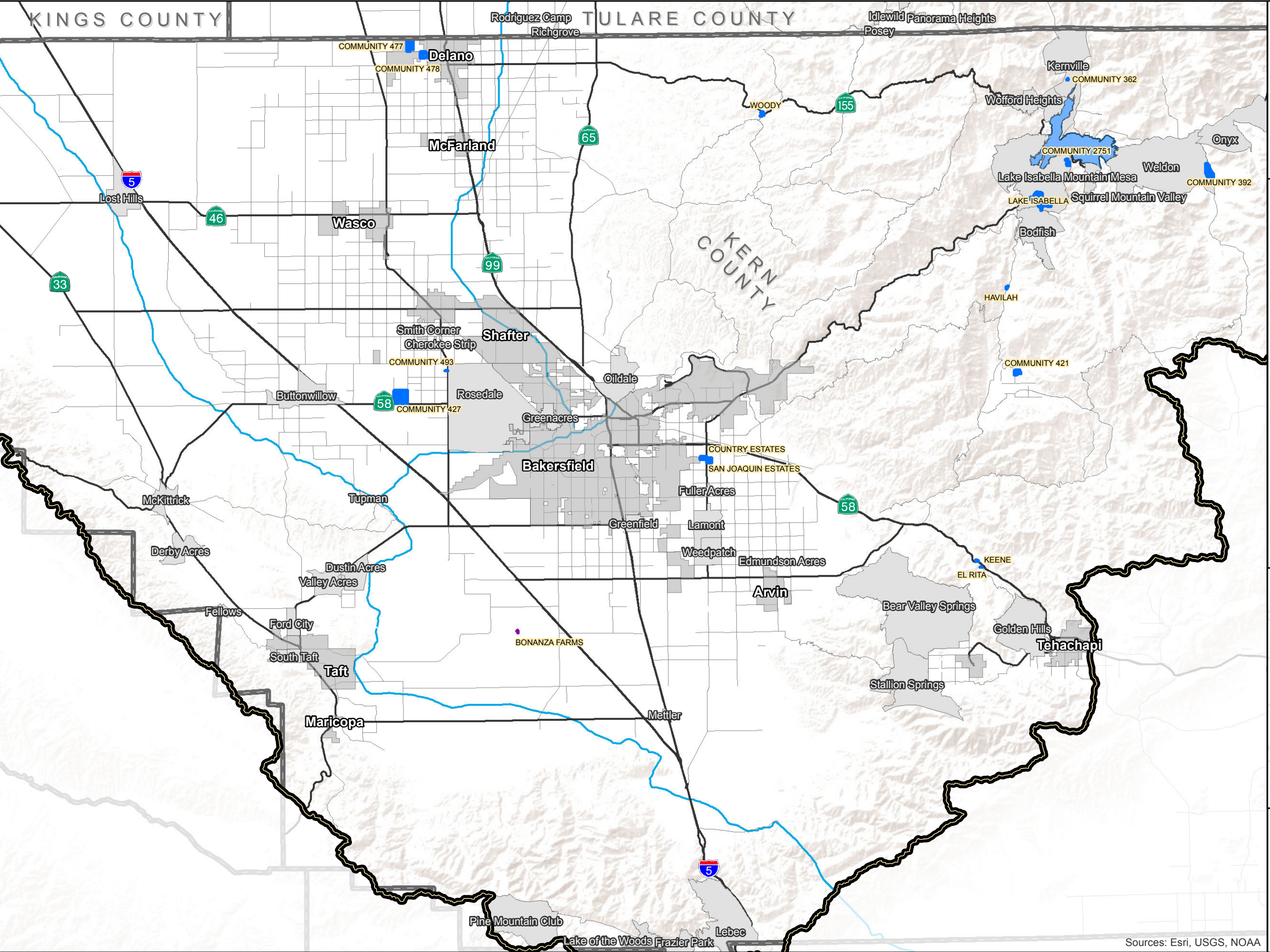
**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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**Tulare Lake Basin
Disadvantaged Community
Water Study**

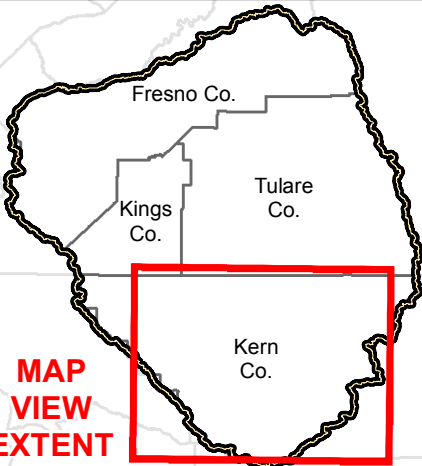
**KERN COUNTY
Communities
DAC and SDAC Communities
With Unknown Water Source**

FIGURE 3-9

Legend

- Tulare Lake Basin
- Private Wells
- Unknown Water Source
- County
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

A community with an unknown water source does not necessarily have a problem, this only indicates a lack of available data. A community with an unknown water source may: 1) be served by private wells, 2) be served by a State Small Water System, 3) be served by a neighboring system, 4) receive source water from a neighboring system, or 5) lack data for other reasons.



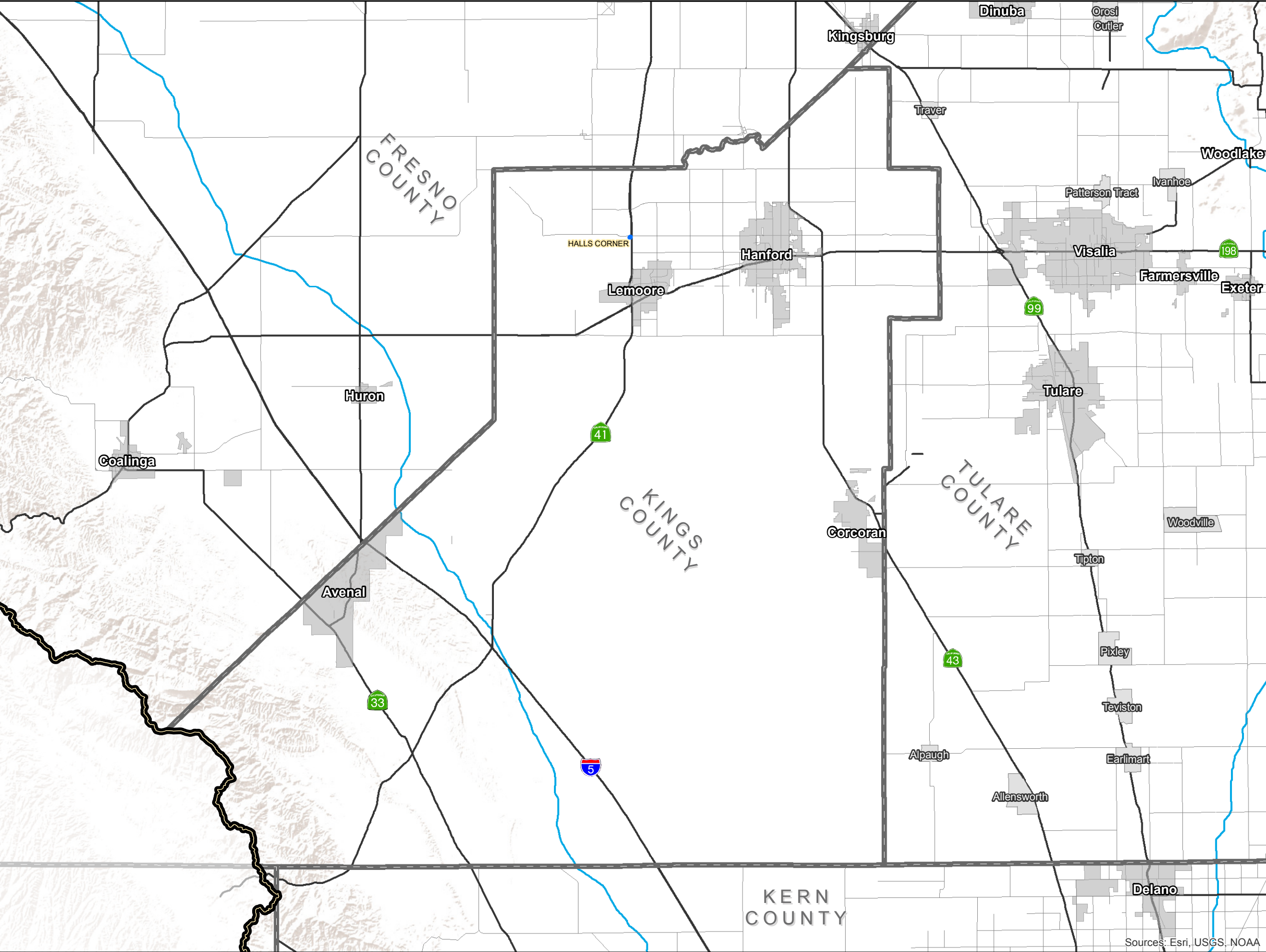
MAP VIEW EXTENT

0 2 4 6 Miles

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Sources: Esri, USGS, NOAA



Tulare Lake Basin Disadvantaged Community Water Study

KINGS COUNTY Communities

DAC and SDAC Communities
With Unknown Water Source

FIGURE 3-10

Legend

- Tulare Lake Basin
- Unknown Water Source
- County
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

A community with an unknown water source does not necessarily have a problem, this only indicates a lack of available data. A community with an unknown water source may: 1) be served by private wells, 2) be served by a State Small Water System, 3) be served by a neighboring system, 4) receive source water from a neighboring system, or 5) lack data for other reasons.

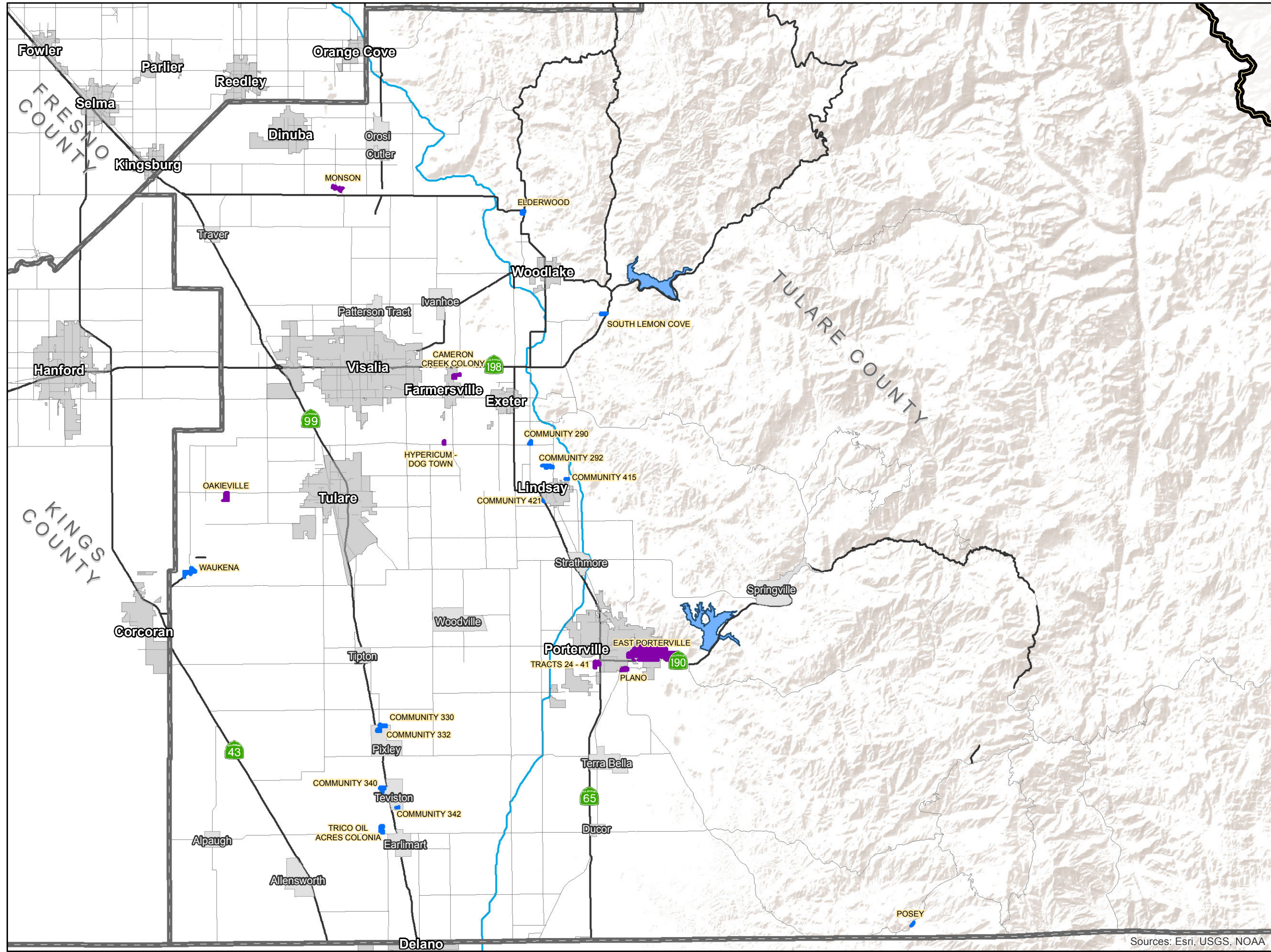
**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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Sources: Esri, USGS, NOAA



Tulare Lake Basin Disadvantaged Community Water Study

TULARE COUNTY Communities

DAC and SDAC Communities
With Unknown Water Source

FIGURE 3-11

Legend

- Tulare Lake Basin
- Unknown Water Source
- Private Wells
- County
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

A community with an unknown water source does not necessarily have a problem, this only indicates a lack of available data. A community with an unknown water source may: 1) be served by private wells, 2) be served by a State Small Water System, 3) be served by a neighboring system, 4) receive source water from a neighboring system, or 5) lack data for other reasons.

**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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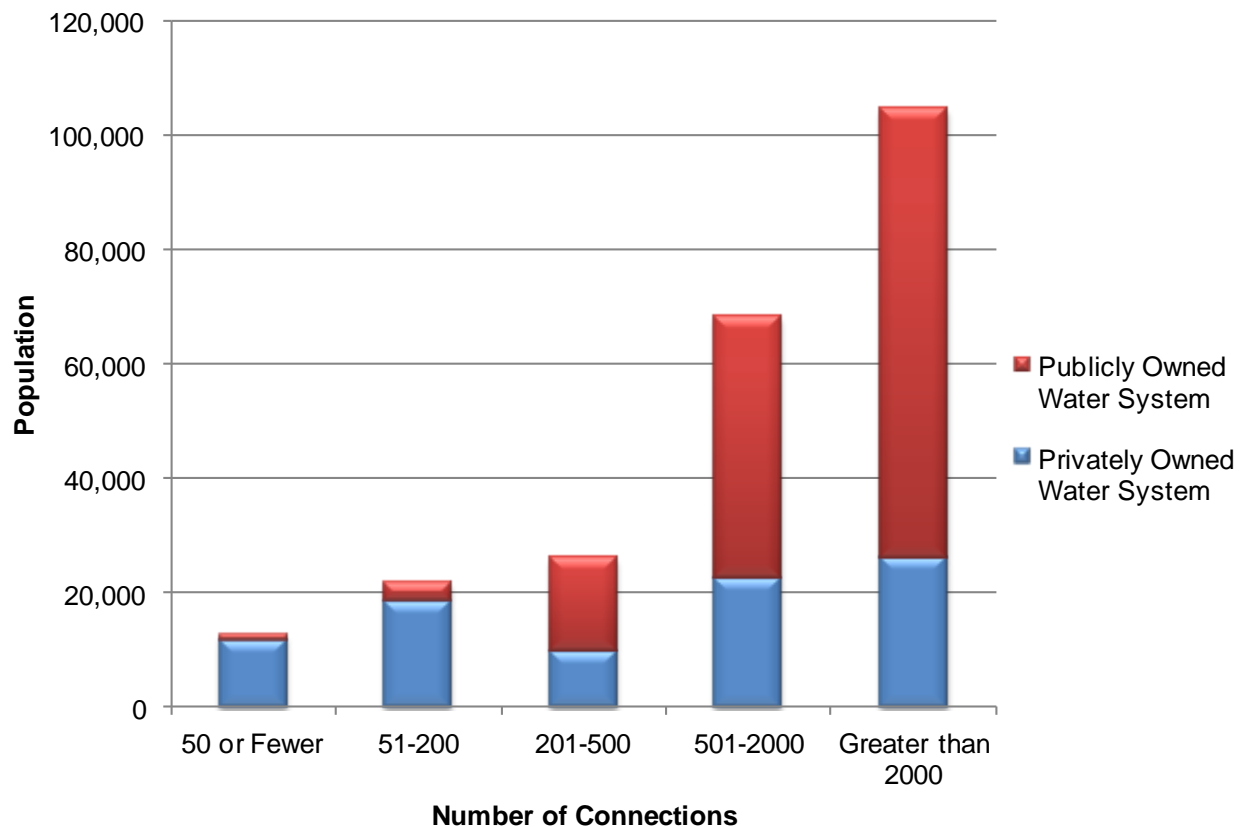
Sources: Esri, USGS, NOAA

3.1.4 Public versus Private Systems

The database documents systems that are publicly owned, versus privately owned systems and private well and septic owners. Communities are grouped by size to illustrate the number of communities at the various size ranges, as well as the number of private systems versus public systems at those size ranges. In general, the number of connections refers to the number of residential water system connections. **Table 3-9** summarizes the number of communities in each size range within the Tulare Lake Basin Study Area. This table includes the total number of communities in each category, as well as the number of communities with a water system owned by a public agency. Those communities not shown to have a publicly owned system may 1) have a privately owned water system; 2) be served by a separate larger water system and therefore do not have their own water system; or 3) be a community of private well owners. Smaller systems are most often privately owned, while the larger systems are increasingly publicly owned systems, as shown in **Figure 3-12**. This is important because some funding sources are available only to publicly owned systems.

Table 3-9. Community Size Ranges

Community Size Range (connections)	Number of Communities		Number of Connections/Dwellings		Population	
	Total	With Publicly Owned Systems	Total	Within Publicly Owned Systems	Total	Within Publicly Owned Systems
50 or Fewer	198	8	4,609	277	14,870	1,131
51 through 200	86	13	8,727	1,394	28,240	3,440
201 through 500	37	16	11,008	5,245	34,290	16,500
501 through 2,000	26	17	24,071	15,506	78,201	45,452
Greater than 2,000	6	5	32,075	24,255	104,671	78,671
Total	353	59	80,490	46,677	260,272	145,194

Figure 3-12. Disadvantaged Community Water Systems by Community Size

3.1.5 Other Database Issues

The database includes the best available data, but it is not a complete and comprehensive database of all water supply systems in the Study Area, and as such should be considered a work in progress for future updating. It is likely that there are communities and/or systems with water quality problems that have not been specifically identified because water quality data was limited or not available. Very small water systems (15 connections and less) are likely to have the most limited data available, and data for households with individual wells was not available. Their problem types, however, will likely fall within the family of problems identified to exist for other communities in the database. Very small water systems and individual household systems are discussed in the Individual Households pilot study.

There are also some emerging contaminants of concern that are discussed in the Technical Solutions pilot study. The emerging contaminants of most imminent concern are Hexavalent Chromium (Chrome-6) and 1,2,3-Trichloropropane (TCP). CDPH published a draft regulation for Chrome-6 in August 2013. The proposed maximum contaminant level is 10 parts per billion (ppb). CDPH has also developed a public health goal for TCP and is in the process of developing an MCL. It is anticipated that many of the DACs within the Tulare Lake Basin will be impacted by implementation of MCLs for Chrome-6 and TCP, and they could be expensive contaminants to mitigate.

3.1.6 Wastewater Issues









In addition to the source water issues faced by DACs in the Study Area, many communities also face issues with their wastewater. Wastewater challenges include reliance on septic systems that may be failing or potentially contaminating the groundwater, failing or insufficient sewer collection systems, or wastewater treatment systems that are not capable of meeting the limitations set forth in the facility's Waste Discharge Requirements (WDRs). Of the 353 DACs, 38 communities have their own wastewater treatment facility (WWTF). **Figure 3-13** through **Figure 3-16** show those communities that have WWTFs. Some of the communities not having their own wastewater treatment plant may have their wastewater treated at a nearby WWTF operated by another entity. Of the 38 communities with WWTFs, 25 are listed as having a violation of their waste discharge requirements. A majority of these plants are simple aerated lagoons that discharge to percolation ponds, evaporation ponds, or leach fields. These systems may not be capable of meeting existing or future discharge limitations, and improvements will likely be needed. In addition, those communities without a sewer system may need to install a collection system and implement community wide wastewater treatment in order to abandon existing individual septic systems.

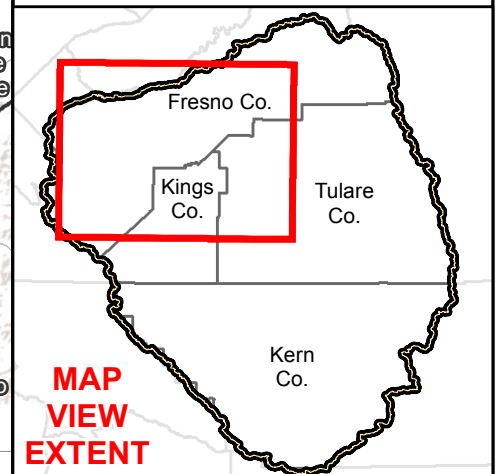
Tulare Lake Basin Disadvantaged Community Water Study

FRESNO COUNTY
Communities
DAC and SDAC Communities
With a WWTF

FIGURE 3-13

Legend

-  Tulare Lake Basin
-  County
-  DAC or SDAC Community - With WWTF
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal



**MAP
VIEW
EXTENT**

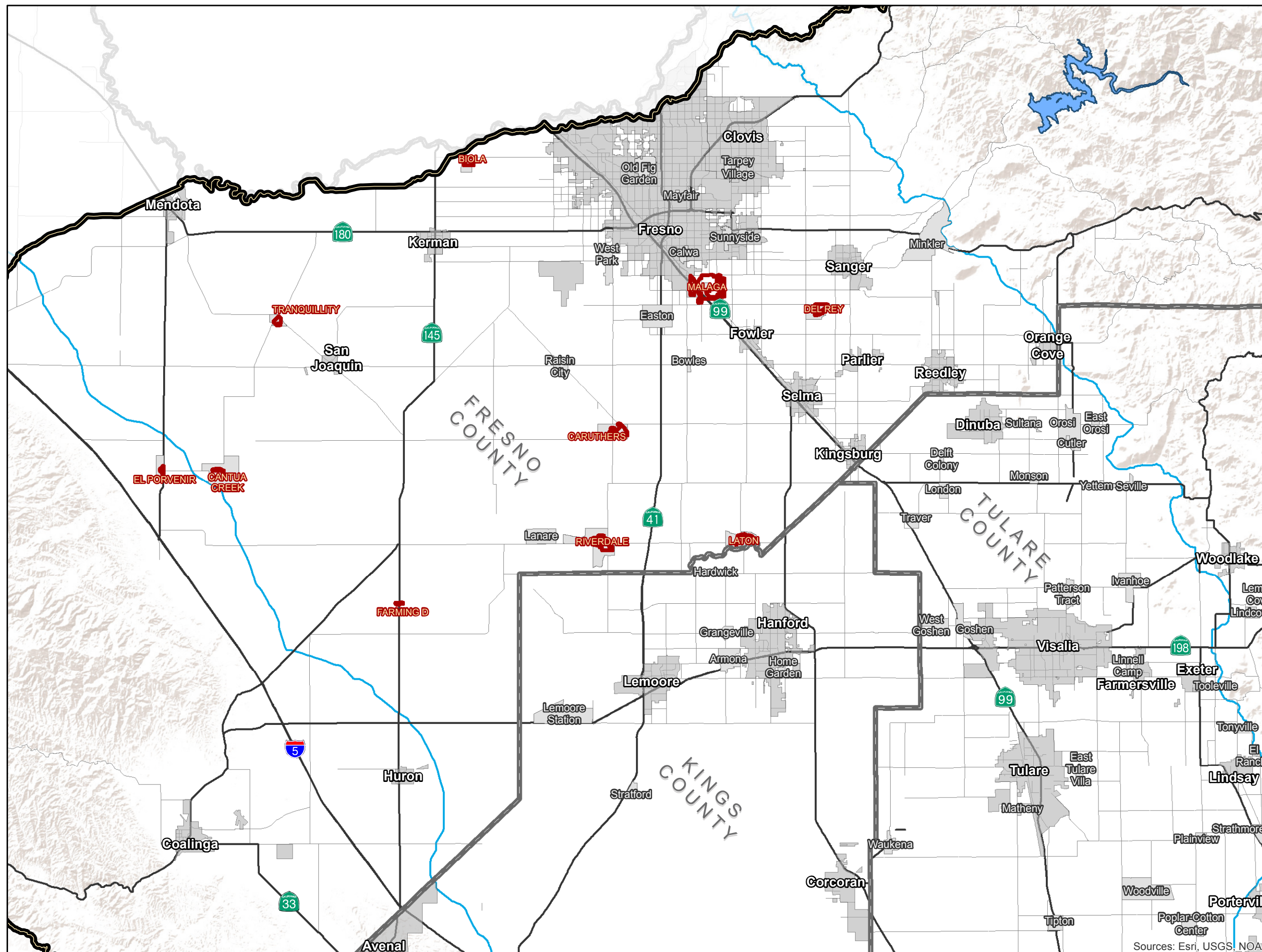
0 2 4 6 Miles

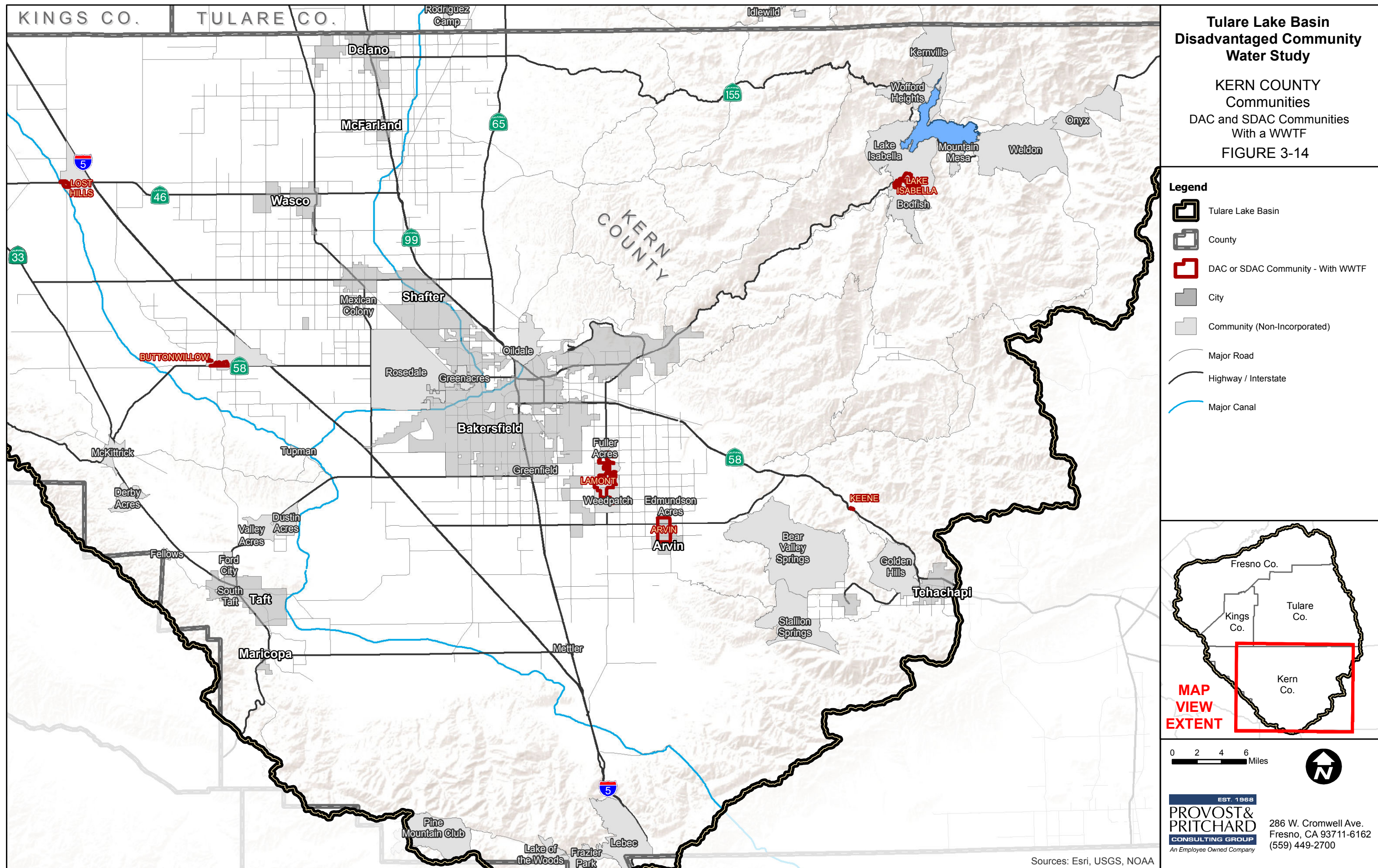


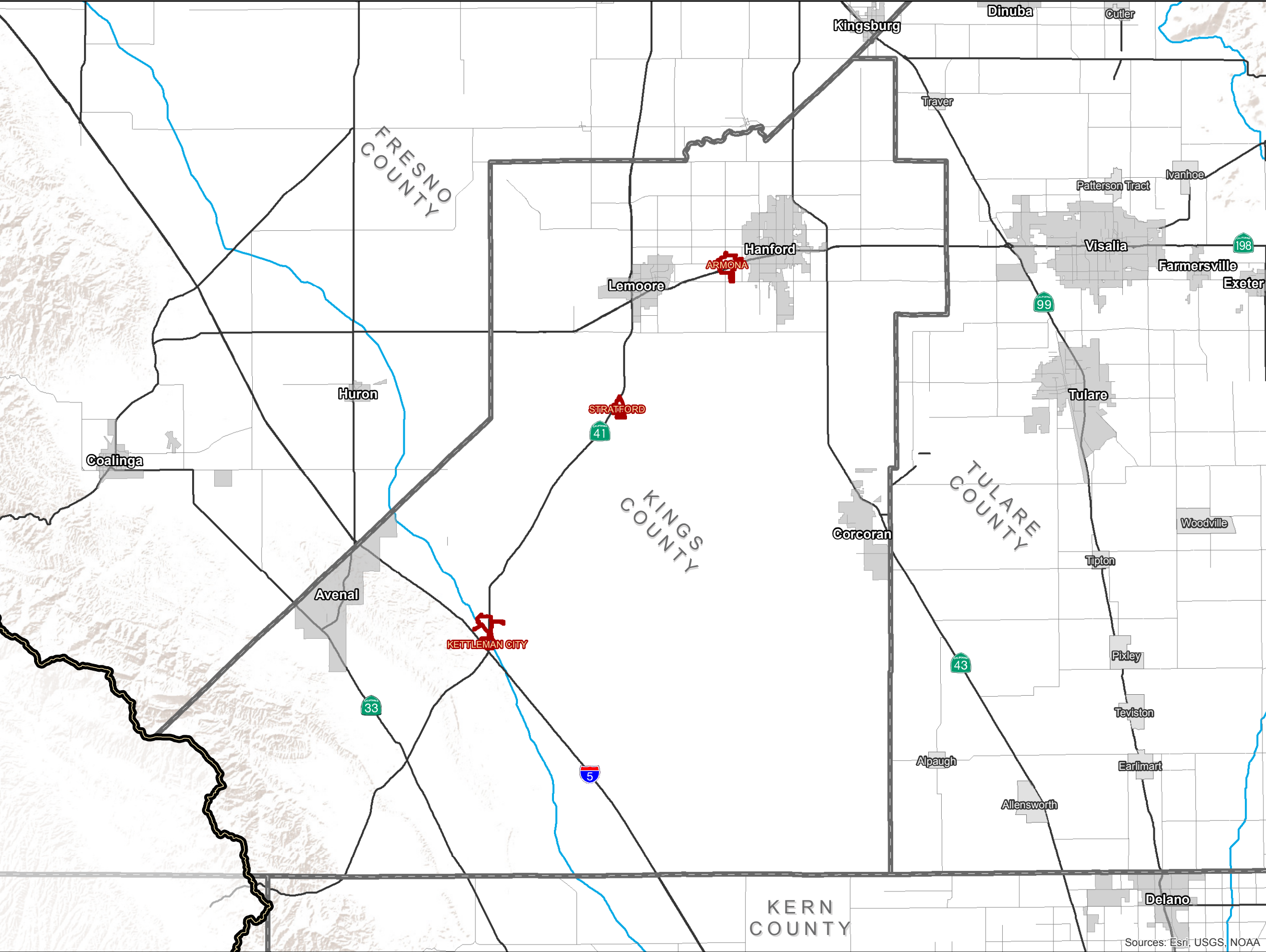
EST. 1968
PROVOST & PRITCHARD
CONSULTING GROUP
An Employee Owned Company

286 W. Cromwell Ave.
Fresno, CA 93711-6162
(559) 449-2700

Sources: Esri, USGS, NOAA







Tulare Lake Basin Disadvantaged Community Water Study

KINGS COUNTY
Communities
DAC and SDAC Communities
With a WWTF

FIGURE 3-15

Legend

- Tulare Lake Basin
- County
- DAC or SDAC Community - With WWTF
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

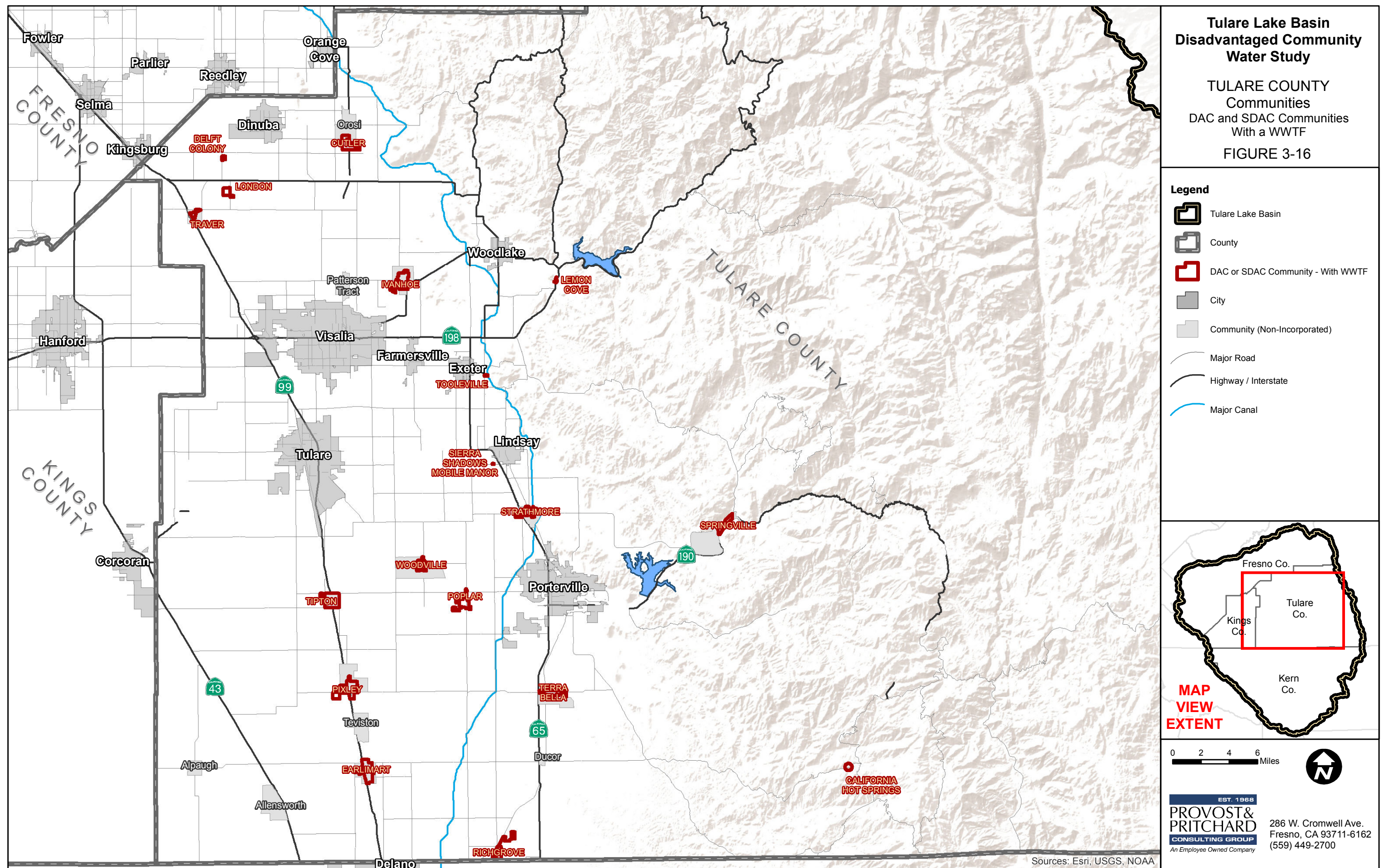
**MAP
VIEW
EXTENT**

0 2 4 6 Miles

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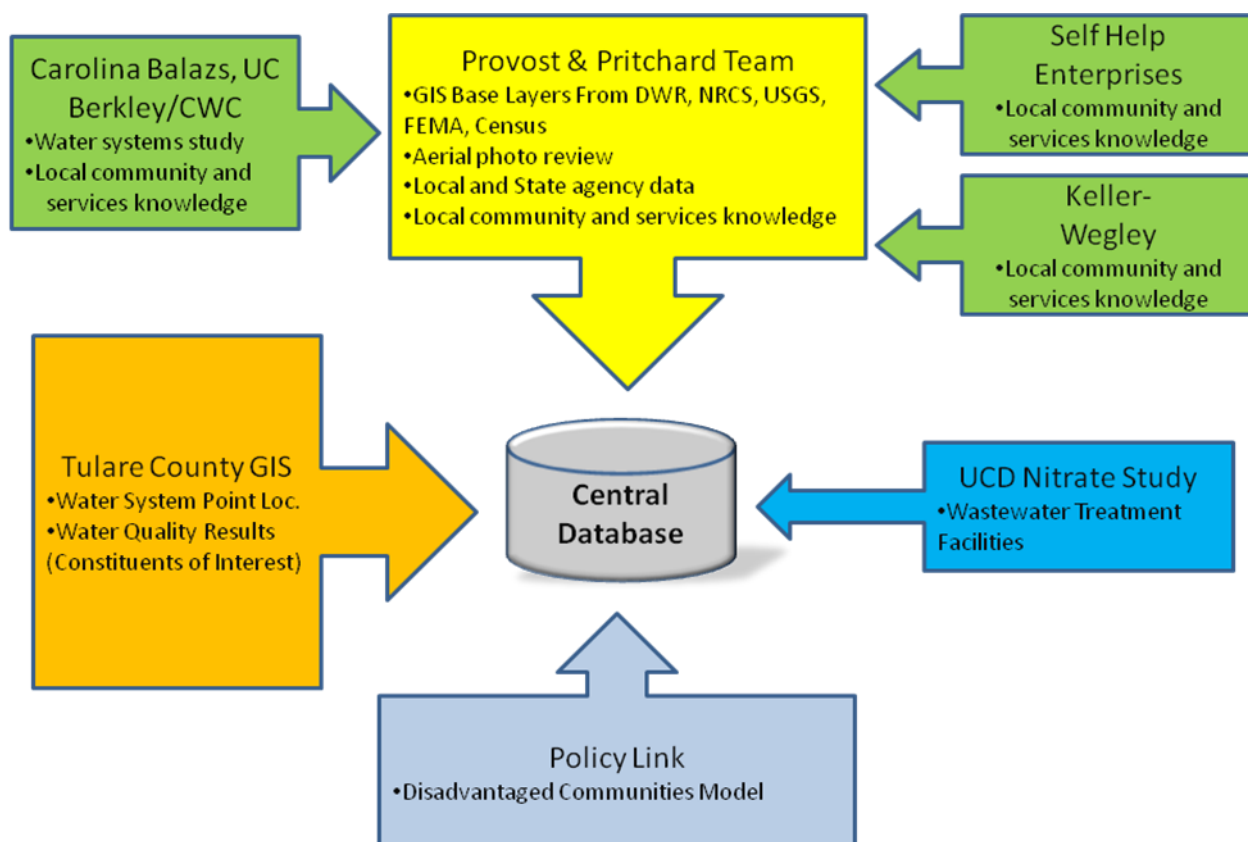
Sources: Esri, USGS, NOAA



3.2 Database Creation

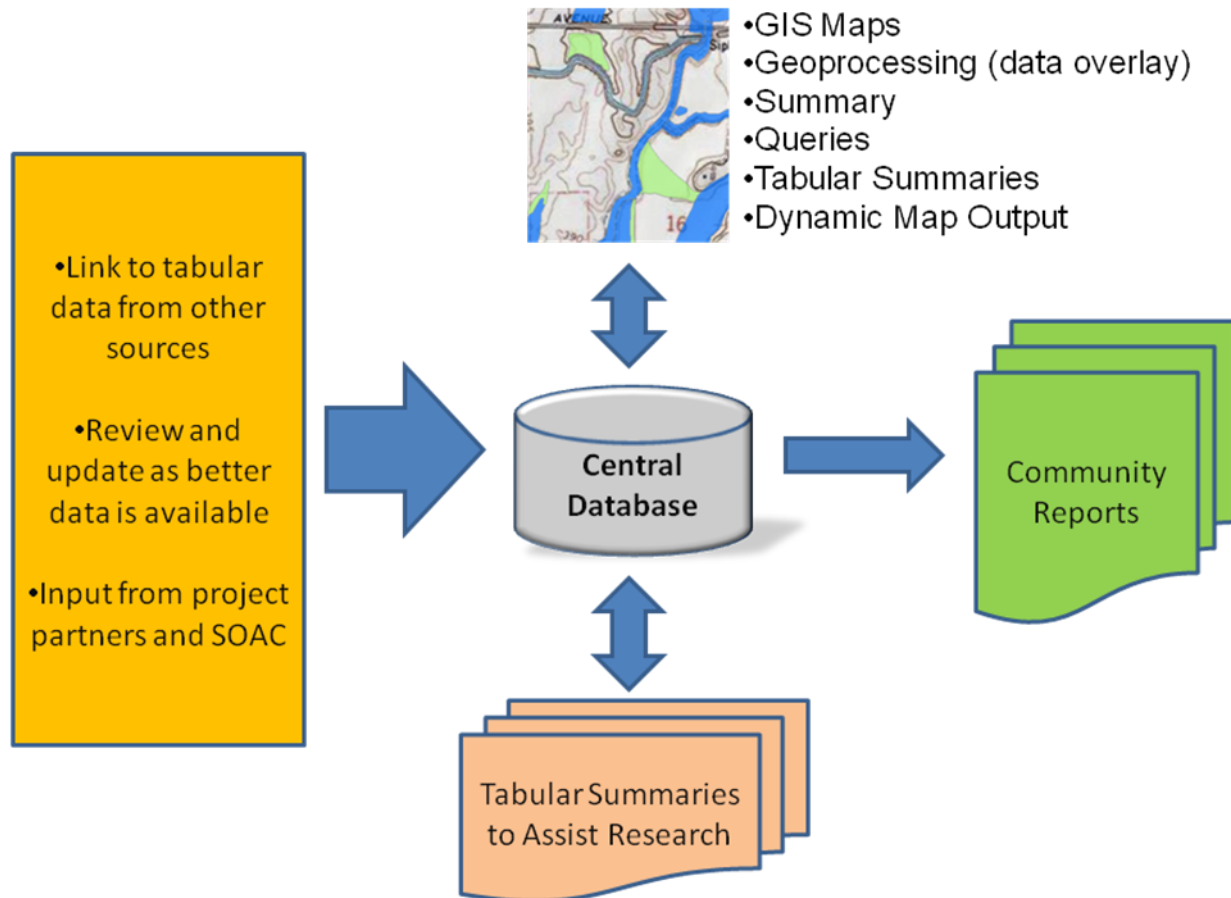
The County of Tulare and project team developed a database of disadvantaged communities in the Tulare Lake Basin Study Area. The project team coordinated with other local, state, and federal agencies as well as appropriate organizations to collect existing data and create the database. The project team utilized Geographic Information Systems (GIS) to map the location of disadvantaged communities in the Tulare Lake Basin and other available and relevant data in order to identify regional challenges and opportunities.

The database is a collection of information from PolicyLink, CDPH, Self-Help Enterprises, County of Fresno, and County of Tulare, Carolina Balazs, Provost & Pritchard GIS data resources, as well as other sources. The database has been reviewed to evaluate the source water supply and quality issues as well as wastewater treatment and disposal issues within the Study Area. Modifications to the data have been made throughout the course of the Study. The database will continue to be maintained and updated by the County of Tulare after completion of this Study.



3.2.1 GIS Data

Geographic Information Systems data was collected and created for this project. Existing datasets were compiled and compared to create a boundary shape for each community. Sources for the shapes are listed in **Table 3-10**.



DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Table 3-10. GIS Boundary Shape Sources

Data	Source(s)	Description/Key Fields Included
<p>Communities (Tulare Lake Basin)</p> <p><u>Format:</u> GIS Shapefile</p> <p><u>Permissions:</u> Unrestricted</p> <p><u>Spatial Data:</u> Polygon shapes of estimated community boundaries. May differ from current municipal service areas.</p>	<p>This is a new file assembled and processed at Provost and Pritchard, using the following sources:</p> <ul style="list-style-type: none"> • PolicyLink (GIS shapefile of modeled DAC locations) • State of California, Department of Public Health, general water systems locations(processed by Tulare County September 2011) • Carolina Balazs PhD, UC Berkley/Community Water Center (water systems for Fresno and Tulare Counties shapefiles) • Self-Help Enterprises (regional community knowledge) • UC Davis Nitrate Study ('NO3G_WaterSystemBoundaries_TLB' geodatabase feature class) • US Department of Commerce, United States Census, TIGER Products, GIS data • Fresno County LAFCO (service area maps) • Tulare County LAFCO (service area maps) • Kern IRWMP (DAC maps) • Kings County LAFCO (service area maps) • Provost and Pritchard GIS data resources (aerial image and parcel review) 	<ul style="list-style-type: none"> • Community Name • Water System Name • Water System ID • Systems Classification • Estimated Connections • Estimated Population Served • 2010 Median Household Income (MHI, estimate from Self-Help review of US Census American Factfinder, or GIS Census 2010 MHI Layer,Block Groups) • Community Type (DAC, SDAC, xNot DAC, xConsolidated) • Community Type • Unique ID • IRWMP boundary which the community resides in • Elevation Region (valley floor, foothills, mountains) • Estimated Water Source (groundwater or surface water) • Wastewater Treatment Facility ID • Consolidation Notes • Active water sources • Demonstration project classification • Technical solutions classification

Attribute data for the fields were also compiled from several sources. Attribute data provides characteristics about the shape sources, such as community names, water system numbers, median household income, population, number of connections, etc. Field names are listed in **Table 3-10** and specific source references for them are listed in **Table 3-11**.

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

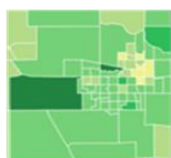
Table 3-11. Data Source References

Data Category	Data Sources
<ul style="list-style-type: none"> Community names and polygon shapes (sources 1,5,7,8,9,12,14,15,16,17) Water system (CDPH #) serving community (sources 1,5,7) Systems Category (combined information from sources 1,5,7,8) MHI 2010 (sources 7, 11, 12) Community Type (sources 5,6,11,16,18) Elevation region of community (source 18) Water Source (sources 1,5) WWTF Name and Statistics (sources 2,8) Population Estimates (sources 1,5,7,11,13,18) Connection Estimates (sources 1,5,7,11,13,18) Community Coding Analysis #1 (coding spreadsheet and maps) <ul style="list-style-type: none"> Active Sources Count - sources with 'Status' as SR, SU, AR, AU, DR, CU, CR, CM Active Treatment Plants – sources with 'Status' as ST, AT, DT, CT MCL thresholds exceeded for constituents Nitrate (as NO₃), Uranium, Arsenic, DBCP, Flouride, Perchlorate, PCB – Constituent coded as 'red' if a single source exceeded the MCL within the time period (either 2005-07 or 2008-10) on two or more occasions. Coded as yellow for Half Nitrate if a single source exceeded or was equal to 22.5 mg/L but less than 45.0 mg/L on two or more occasions (sources 2, 4) Violations for Total Coliform, THMs, Surface Water Rule from PICME data through 2008 (source 5) Community Coding Analysis #2 (summary spreadsheet and maps) <ul style="list-style-type: none"> Active sources considered 'delivered water' with 'Status' as AU, CU, AT, CT <ul style="list-style-type: none"> MCL thresholds exceeded for constituents Nitrate (as NO₃), Half Nitrate, Uranium, Arsenic– 	<ol style="list-style-type: none"> State of California, Department of Public Health <ol style="list-style-type: none"> Processed by Tulare County September 2011 Updated data from CDPH October 2012 State of California, State Water Resources Control Board <ol style="list-style-type: none"> GeoTracker GAMA http://geotracker.waterboards.ca.gov/gama/data_download.asp Personal Communications Provided spreadsheet State of California, Department of Water Resources Tulare County, Resource Management Agency Carolina Balazs, UC Berkley (need detailed citation) Community Water Center Self-Help Enterprises UC Davis Nitrate Study (need detailed citation) PolicyLink Fresno County, Public Works and Planning, Special Districts US Department of Commerce, United States Census, American Fact Finder, http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml US Department of Commerce, United States Census, TIGER Products, http://www.census.gov/geo/maps-data/data/tiger.html State of California, Department of Finance, http://www.dof.ca.gov/budgeting/documents/P-10-Population_2011.pdf Fresno County LAFCo Tulare County LAFCo Kern IRWMP Kings County LAFCo Provost and Pritchard GIS data resources

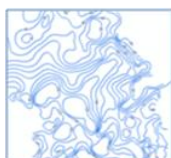
DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Data Category	Data Sources
<p>Constituent coded as 'red' if a single source exceeded the MCL during the time period (2008-10) on one or more occasions. Coded as yellow for Half Nitrate if a single source exceeded or was equal to 22.5 mg/L but less than 45.0 mg/L on one or more occasions (sources 2, 4)</p> <ul style="list-style-type: none"> ○ Active sources considered 'raw water' with 'Status' as AU, CU, AR, CR <ul style="list-style-type: none"> ▪ MCL thresholds exceeded for constituents Nitrate (as NO₃), Half Nitrate, Uranium, Arsenic— <p>Constituent coded as 'red' if a single source exceeded the MCL during the time period (2008-10) on one or more occasions. Coded as yellow for Half Nitrate if a single source exceeded or was equal to 22.5 mg/L but less than 45.0 mg/L on one or more occasions (sources 2, 4)</p> <ul style="list-style-type: none"> ● Review of Consolidated Water Systems (5,7,18) 	



US Census



DWR Groundwater



Water System Locations



Wastewater Treatment Facilities Locations



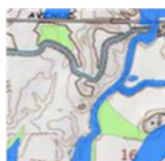
Political Boundaries
Water Agencies
IRWMPs
Municipal Boundaries



Topography



Imagery



Flood zones

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

3.2.2 Tabular Data

Tabular data was collected and created for this project. Water quality (WQ) data was compiled for sources serving communities. If a community could be linked to a water system ID number (as assigned by CDPH), then available data was associated with the community.

Water quality was summarized (coded) in several different ways in order to classify a community and evaluate what types of issues it may have. Descriptions for the fields created as part of the summary are listed in **Table 3-12**.

Table 3-12. Tabular Data Fields

Data	Source(s)	Description/Key Fields Included
<p>Water and Wastewater Review Coding Version 1</p> <p><u>Format</u>: Tabular Summary</p> <p><u>Permissions</u>: Unrestricted</p> <p><u>Spatial Data</u>: Link to GIS community shapes with Unique ID.</p>	<p>This is a new file assembled and processed at Provost and Pritchard, using the following sources:</p> <ul style="list-style-type: none"> State of California, Department of Public Health, Geotracker GAMA WQM data(processed by Tulare County September 2011) Carolina Balazs PhD, UC Berkley/Community Water Center (water systems governance, systems sources and supply, processed CDPH PICME and WQM data) UC Davis Nitrate Study ('WWTP_Data' table, 'AllFacilitiesTLBCounties' tab) State of California, Regional Water Quality Control Board (Waste Water Treatment Plant statistic table), additional fields and statistics by J.Dutton – Provost & Pritchard 	<ul style="list-style-type: none"> Number of Active Wells Source 'Status' as SR, SU, AR,AU,DR,CR,CU,CR,CM CODING: 0-1 well = RED; 2 wells = YELLOW; 3 wells = GREEN ALIAS: Physical Vulnerability Primary or Secondary MCL Exceeded MCL exceeded on 2 or more occasions at same source within a system, or Violation rule exceeded from WQM, 2008-2010 CODING: Nitrate (as NO3), Arsenic, Uranium, TCE, DBCP, PCB,Perchlorate, Flouride, Total Coliform, THMs = RED; Half Nitrate MCL (as NO3) = YELLOW; None = GREEN ALIAS: Poor Source Water Quality 1.5% of 2010 MHI MHI estimate from SelfHelp review of US Census American Factfinder, or GIS Census 2010 MHI Layer (Block Groups) WWTP Permitted Flow Percent CODING: >100% = RED, 80-100% = YELLOW, <80% = GREEN WWTP Excessive Inflow ((Dry Weather Permitted Flow(MGD) *1,000,000)/Population Served)*(Population Served/100) CODING: >120 = RED , < 120 = GREEN WWTP Violations Sum of All Violations From Three Years 2007-2009 CODING: >30 = RED, 1-30 = YELLOW, 0 = GREEN

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

		<ul style="list-style-type: none"> • <u>Difficulty of Treating</u> Review MCL and Rule Violations from Primary or Secondary MCL Exceeded process as listed above CODING: Nitrate (as NO₃), Uranium, Arsenic = RED, Flouride, Organics, Coliform = YELLOW • <u>Sum of RED and YELLOW Codes for above listed processes</u> Total sum of RED (value = 3) and Yellow (value = 2) CODING: Qualitative review of sums, no specific color codes
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An initial analysis of the database was conducted to help identify physical vulnerability and water quality issues throughout the Study Area. Issues were coded as 1) 'red' for those with an imminent problem, 2) 'yellow' for those who may be at a lesser risk of a problem, and 3) 'green' for those with no issue identified. The physical vulnerability was determined by the number of active wells. Those systems with only one active well do not have sufficient redundancy and reliability, and are at greatest risk. Those systems with three or more wells were considered not to have a physical vulnerability issue.

- Physical Vulnerability
 - Active Wells Count
 - Red = 1
 - Yellow = 2
 - Green = 3+

For the initial analysis, water quality issues were identified in the 'red' category if a single source exceeded the MCL within the time period on two or more occasions, for any primary MCL for which data was available. Additional analysis was done for the three contaminants that were most commonly found in the Study Area: arsenic, nitrate, and uranium. These constituents were then evaluated based on a source exceedance of an MCL in one or more samples collected between 2008-2010 for active untreated, combined untreated, active treated, or combined treated sources (considered as delivered water).

- Water Quality
 - MCL thresholds exceeded for constituents Nitrate (as NO₃), Uranium, Arsenic, DBCP, Flouride, Perchlorate, PCB – Constituent coded as 'red' if a single source exceeded the MCL within the time period (either 2005-07 or 2008-10) on two or more occasions. Coded as yellow for Half Nitrate if a single source exceeded or was equal to 22.5 mg/L but less than 45.0 mg/L on two or more occasions (sources 2, 4)
 - Total Coliform Violation – Red
 - THMs Violation (Code 82080 'Total Trihalomethanes') – Red

Wastewater analysis was based on information provided by the Regional Water Quality Control Board of wastewater treatment facilities that were in violation of their Waste Discharge Requirements.

Source references for tabular data reviewed are included in **Table 3-11**.

3.2.3 Confidential Data

Specific locations (coordinates) of drinking water wells are not included in any of the above listed datasets. A confidential dataset was provided by CDPH after the initial analysis and review was complete. The data has since only been reviewed to assist (as a reference) with questions regarding potential pilot projects for specific communities.

Other data in the database and GIS shapes is publically available through various sources.

3.2.4 Quality Assurance / Quality Control of Data

Quality assurance and quality control (QA/QC) was conducted on the various datasets as it was created/compiled using multiple resources, within the constraints of the timeline for the project. Data provided by project partners and stakeholders was maintained in original format in folders assigned to that specific contributor. Products reviewed included GIS shapefiles and associated attributes, raw tabular data, and data summaries.

Methods included, but were not limited to:

- Input/review of data from project stakeholders
- Professional knowledge of project partners (Self-Help Enterprises, Community Water Center, Provost & Pritchard, Keller Wegley, Tulare County)
- GIS data review, comparing multiple sources of similar data for differences
- Site visits to review current community conditions

Based on QA/QC efforts throughout the course of the Study, as well as several more recently consolidated systems, the database has been updated. The base data used at the conclusion of this Study was the original 2008 through 2010 water supply and quality information. Modifications have been primarily related to DAC classification, consolidations (where known), and general review of community information. **Table 3-13** summarizes the statistics developed through the database as first presented to the Stakeholder Oversight Advisory Committee in 2012, as well as the same set of statistics developed at the conclusion of the Study in 2014.

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

Table 3-13. Database Summary

	Database (2012)	Database (2014)
Number of Communities (DAC and Non-DAC)	533	530
Number of Disadvantaged Communities (DAC)	370	353
Number of DAC Water Systems	<i>Not previously identified</i>	218
Number of DAC Water Systems with One Active Source	94	96 (44%)
Number of DAC Water Systems with Water Quality Issue ^{1,2,3,4}	64	89 (45%)

1. Water quality issue for the 2012 statistics was based on at least 2 samples exceeding the MCL for nitrate, arsenic, uranium, DBCP, perchlorate, or fluoride.
2. Water quality issue for the 2014 statistics was defined as at least 2 samples exceeding a primary MCL between 2008-2010, for the data sets that were available. This includes coliform and THMs, in addition to the contaminants listed in 2012.
3. The number of water quality issues identified includes only those 196 systems with data available. The percentage is therefore based on the number of water quality issues out of the number of systems with data available, rather than the overall number of systems.
4. Water quality issues do not necessarily indicate violations.

3.3 Database Limitations

The current database is essentially a collection of tables from multiple sources that help create a single community summary report for each entity that has a shape in GIS (estimate of community boundary or service area).

Products generated from the water quality analysis, GIS shape attributes, and a community descriptions table from Self-Help Enterprises, are linked together on the unique ID assigned to each community.

The database used to evaluate DAC water quality issues contains limited numeric information about the water quality in the water systems listed. The information included in the database consists primarily of simplified numeric data. It does not provide explanation or comment on the possible unique circumstances associated with the data. There are many details that are not included in the database that would be beneficial in further analyzing the water quality issues and potential solutions. These additional details are described in the following sections.

Based on the database information collected, 218 of the 353 DACs have water systems. The database contains water quality data for 196 of the DACs with water systems in the Study Area. Thus, there are 22 DAC water systems identified that have no sample data

in the database. It is not possible to determine if there are water quality issues associated with the DACs that have no water quality data available.

The DACs with no water system identified or no water quality data may be served by private individual wells or private water systems (less than 15 connections). Water systems that are not permitted by CDPH or by the local county health department, such as individual wells for single family homes, are not included in the database. The lack of data for individual, unregulated systems precludes the precise determination of the population of TLB DACs affected by water quality issues.

The database contains no details of the general mineral or general physical characteristics of the water (e.g. pH, alkalinity, total dissolved solids, etc.); and contains no details of other contaminants other than for a select few contaminants. Violations of secondary standards are not documented. Certain natural water quality characteristics and contaminants cause interference with some treatment technologies. This may render some forms of treatment impractical. For example, silica, phosphate, and vanadium are known to interfere with the arsenic adsorption treatment process.

The database does not contain information regarding the volume of water produced and consumed at the listed water systems. Thus, it is difficult to determine whether a system has sufficient water supply capacity, or to reliably determine the size of a treatment system that may be needed to address a system's water quality issues. Population data for each water system is included, and thus typical per capita water use within the TLB can be used to estimate water production. This type of estimate, however, would not account for large commercial, institutional or industrial water users, such as schools, parks and industry that may be present in the community.

The database indicates the number of treatment plants in each water system and what contaminant is treated. For example, arsenic treatment or nitrate treatment. However, there is no information on the treatment process utilized.

Because of the limitations discussed above, the primary use of the database is to statistically evaluate drinking water contamination issues in the TLB. The results are valid only for the period of time reviewed and thus may not accurately reflect current conditions. Accordingly, the primary value of the database search is to indicate the general occurrence of the problems faced by DACs, to identify the magnitude of the problems and general location and to identify the major contaminants.

Solutions for each water system must be developed with complete water system and water quality information. Each community, water source, and water quality is unique. Each water system is unique. There is no "standard" solution that will apply for each water system with a given contaminant issue. This database therefore provides general background from which to start, but specific community outreach and feasibility studies will need to be conducted on a community by community basis in order to develop the appropriate solution for each community.

3.4 Ongoing Database Update and Maintenance

The County of Tulare plans to maintain and update the database that was developed through this Study beyond this project. The data will be assembled and formatted in a way that can be suitable for many uses, both those that are known and anticipated, and those that may be unknown. The primary goals and purpose of maintaining this database are many, and may include:

- Ongoing monitoring of water conditions: explore patterns of problems; are conditions improving or getting worse, etc.
- Identify problem areas and communities that have been unable to resolve their water quality or quantity, or wastewater challenges.
- Provide database framework so that others can provide data input. There will likely be specified data stewards, including a representative from each of Fresno, Kern, and Kings Counties who would have the ability to provide such data inputs.
- Work with LAFCos to review and confirm community boundaries.
- IRWM groups use database to identify needs of DACs within IRWM boundaries. IRWM groups may use this information to identify potential projects to submit for funding (goal for at least 10% of DWR's IRWM funding to fund disadvantaged community projects).

The datasets and information that will need to be updated on a regular basis in the database to make it useful for the purposes identified above include:

- Boundaries of water service areas
 - Tulare County Association of Governments (TCAG)
 - CDPH, Tulare County Resource Management Agency (RMA) - Permit Center
 - LAFCo boundary information from each county
 - Tulare County GIS shapes
- Water Quality Data
 - Primarily CDPH data (annual update)
 - Other data, as it is encountered
 - County Health and Human Services Agency (HHSA) - new wells
- Community water systems
 - LAFCo (MSRs)
 - CDPH Drinking Water Program – new, consolidated, or dissolved systems
 - Community Water Center – knowledge of projects that have been implemented

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Database

- Self-Help Enterprises – knowledge of projects that have been implemented

Tulare County GIS Department is committed to develop a website providing data and maps for Tulare County. The computer hardware and disk space required to add the data of the other three counties of the Tulare Lake Basin is minimal. Tulare County GIS can clean-up the assembled GIS data to map (with reasonable accuracy) the service areas of all known active public water systems in the Tulare Lake Basin.

Tulare County GIS/Tulare County Information Communication Technology (TCiCT) will download water quality data for the Tulare Lake Basin from various state databases on an annual basis (probably in April - to capture all data from previous year submitted to the state). Since this data collection and integration into the database can be fully automated, the time and energy for collecting four counties of data is the same as just collecting Tulare County. The challenge will be to keep community contacts and descriptions of problems at each community current. Various "data custodians" will have the ability to edit selected portions of the website data. Data custodians will include representatives from Fresno, Kern, and Kings Counties. Tulare County may also choose to solicit input from entities such as Self-Help Enterprises, which may be able to assist with keeping community contacts and problem descriptions updated. There will be a need to establish a monitor to edit this material. Data and information submitted by the "data custodians" will go through a selected person(s) at Tulare County, who will monitor the material being submitted. However, the data custodians selected will be expected to provide reliable material, as the County will not have the resources to verify every piece of information received.

The establishment of the initial website was funded (mostly) by funds in the Tulare Lake Basin Disadvantaged Community Water Study dedicated for that purpose. The maintenance of Tulare County data is a normal by-product of ongoing County efforts, so no additional funding should be needed.

Edits to the database by the responsible data custodians from each county would need to be funded by those counties (Fresno, Kern, and Kings). The selected representative from each county would provide revisions to the data as necessary, based on their direct knowledge of the systems within their respective county. The revisions provided by the other three counties within the Tulare Lake Basin would be incorporated into the database after review and approval by the primary custodian at Tulare County.

The four counties should work together to prepare a protocol for review by the multiple entities. Each county will also need to set up an appropriate budget for the associated tasks.

Water quality data would be collected from the State on a regular basis. This would likely be an annual update. Spatial data (water system boundaries, etc.) would be updated as needed (probably an annual check against LAFCos data and other datasets).

Issues of Confidentiality

Well location information can only be accessed by government agencies. It is not available for public use, and therefore cannot be presented on the website presenting the database information.

4 STAKEHOLDER PROCESS

An initial task for the TLB Study was to organize a Stakeholder Oversight Advisory Committee (SOAC or Committee). The County of Tulare established a basin-wide Committee comprised of community representatives, as well as regulatory and funding agency representatives and other organizations that work on and are familiar with disadvantaged community water and wastewater needs. The SOAC worked with the project team to identify priority issues, potential pilot projects, and review project recommendations. The details of the SOAC and its purpose, responsibilities, and actions performed are described in this Section.

In order to ensure that each pilot study was developed with input from stakeholders, a separate Pilot Project Stakeholder Advisory Group (PSAG) was convened for each of the four pilot studies. Each group was comprised of members of impacted communities, regulatory and funding agencies, local water or wastewater providers, and other agencies and organizations as appropriate, in order to provide input and recommendations to the project team.

The project team also conducted outreach to community representatives, including residents and local water board members that were the subject of individual pilot studies. These community representatives assisted the project team in confirming the viability of the proposed solutions.

4.1 Stakeholder Consultation and Community Outreach

The goal of the community outreach and stakeholder processes was to communicate with, inform, get input from, and gain support from agencies, local governments, water and wastewater purveyors, and community residents for the various tasks performed throughout this Study. The community outreach and stakeholder consultation process allowed the communities potentially impacted by the recommendations of this Study to be involved in the development of solution alternatives to address their water and wastewater issues. Their feedback was critical to the success of this project, since the community members have a unique understanding of the problems faced by their community.

Three sets of stakeholder groups were involved in this Study: 1) The Stakeholder Oversight Advisory Committee played a critical role in identifying priority issues within the Tulare Lake Basin Study Area, selecting representative pilot project studies to address the priority issues, and provide overall review and input on the Final Report development and recommendations presented; 2) the Pilot Project Stakeholder Advisory Groups for each of the four pilot studies provided input and recommendations to the project team throughout the identification and analysis of the pilot studies; and 3) the pilot project community review groups included residents of communities that were the subject of a pilot project. The community review groups provided further insight into the specifics of their water and/or wastewater systems, as well as input as to the applicability of the potential solutions for their unique situation.

4.1.1 Stakeholder Oversight Advisory Committee Formation

The Stakeholder Oversight Advisory Committee (SOAC or Committee) was created by the Tulare County Board of Supervisors on August 16, 2011. The SOAC bylaws, created with input from the project team, and adopted by the Tulare County Board of Supervisors, defined the role of the Committee and established the Committee's composition. A copy of the SOAC bylaws is attached in **Appendix G**.

In order to reach out to potential SOAC members a two-page Tulare Lake Basin Disadvantaged Community Water Study factsheet and frequently asked questions documents as well as an announcement soliciting applicants were developed. An application for the Committee was also developed. All of these documents were translated into English and Spanish and distributed by email and in person through the outreach activities described in this section. Documents were also posted and available on the County of Tulare (County) website. These outreach documents are presented in **Appendix G**.

Key areas in the four-county Tulare Lake Basin region were targeted in order to ensure that the SOAC was a dynamic group of stakeholders that accurately reflected the interests of the Study Area. Contact information was updated and consolidated into one database for the purpose of creating a comprehensive contact list. An email announcement and a formal invitation to participate in the SOAC were sent to 641 stakeholder contacts, including:

- 33 Community Services Districts
- 3 Irrigation Districts
- 1 Joint Power Authority
- 48 Mutual Water Companies
- 469 Private Water Companies
- 18 Public Utility Districts
- 2 Sewage Treatment Plants
- 20 Non Profit Organizations
- 28 Individual Community Leaders, Colleagues and Consultants
- 14 Government Contacts from 9 Different Agencies
- 44 Integrated Regional Water Management Planning Group Contacts
- 12 Academic Institution Contacts

A PowerPoint presentation on the Tulare Lake Basin Disadvantaged Community Water Study provided information to potential SOAC members. The PowerPoint presentation was presented to the following groups:

- Fresno County Water Commission

DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

Stakeholder Process

- Oroshi Public Utility District
- Cutler Public Utility District
- Sultana Community Services District
- Arvin Community Services District
- Lamont Public Utilities District (although official meeting was canceled due to lack of a quorum, fact sheets and information was provided and distributed to Board members and staff.)
- Kings County staff
- Upper Kings IRWMP group
- Kern IRWMP group
- South Kern Building Healthy Communities group (agencies, non-profits, community leaders, and funders).
- AGUA Coalition (18 local disadvantaged community representatives and 4 non-profits)

The project team also made targeted personal contacts through phone and email to potential stakeholders to encourage them to submit applications. Additionally, a letter was prepared and distributed to a list of key funding and regulatory agencies to request appointments and encourage participation. Applicants had approximately one month to complete and turn in an application to be considered for SOAC membership.

Applications for SOAC membership were received from 39 potential stakeholders. There were three (3) applications from Tulare County, eight (8) from Fresno County, five (5) from Kern County, and four (4) from Kings County for the disadvantaged community representative portion of the SOAC. The application information was compiled and evaluated by the project team. Applicants were evaluated against the criteria included in the bylaws and selected according to region and demographic representation. No more than one representative from each community was selected to be a member of the SOAC. Some applicants were disqualified due to late submittal.

The Tulare County Board of Supervisors made appointments to the Committee on October 11, 2011. Those who were selected were sent a formal letter of invitation to participate by the Tulare County Board of Supervisors.

Applicants who were not selected as an official member of the SOAC were sent a letter of invitation encouraging them to participate. The letter expressed the importance of broad based participation from across the region.

The project team solicited feedback from the SOAC members representing disadvantaged communities about their scheduling preferences. The SOAC meeting schedule was developed to ensure they would be able to participate. In addition, mileage reimbursement was provided to the disadvantaged community SOAC members so that transportation costs would not become a barrier to participation.

4.1.2 Composition of SOAC

The SOAC is comprised of 21 members. The membership selection was based on the following criteria:

Voting Members

- Four (4) county representatives, plus four (4) alternates (one each from each of the following counties: Tulare, Kings, Kern, and Fresno);
- Eight (8) representatives, plus four (4) alternates of disadvantaged community water or wastewater boards and/or committees; and/or
- Two (2) residents, plus one (1) alternate from each county (Tulare, Kings, Kern, and Fresno).

Ex-officio Members

- Four (4) representatives from different funding sources- i.e. Department of Public Health, State Water Resources Control Board, Department of Water Resources, United States Department of Agriculture, and/or Housing and Urban Development;
- One (1) member from a Tulare Lake Basin Integrated Regional Water Management Planning group; and
- Four (4) representatives from different non-profit, academic and/or community-based organizations.

The SOAC meetings were consistently well attended. On average approximately 16 of the 21 members attended the SOAC meetings, as well as more than 30 members of the public.

4.1.3 Description of Responsibilities and Activities

The SOAC met nine (9) times in accordance with the Study's Work Plan. The responsibilities of the SOAC included recommending to the Tulare County Board of Supervisors which pilot projects and/or studies would be completed for the Tulare Lake Basin Disadvantaged Community Water Study. The SOAC worked with the project team to identify plan priorities for the Tulare Lake Basin pilot projects, and review and provide input on draft and final recommendations. Additionally, the Tulare County Board of Supervisors acknowledged the dynamic composition of the SOAC and authorized and funded four additional meetings. These additional meetings provided the SOAC with updates on the Pilot Projects as well as information on other projects in the region.

The SOAC meetings had agendas that were emailed and mailed by County staff to members. The agendas were also posted on the Tulare Lake Basin Disadvantaged Community Water Study webpage on the Tulare County website. Detailed minutes for each meeting were captured and posted on the website as well. The project team also developed handouts and PowerPoint presentations, when appropriate, to facilitate the stakeholder process. All handouts were made available on the Study website

(<http://www.tularecounty.ca.gov/cao/index.cfm/tulare-lake-basin-disadvantaged-community-water-study/>).

A summary of the nine SOAC meetings is provided below:

October 24, 2011 - SOAC kick-off meeting. County staff provided information on the Brown Act, AB 1234 training, committee bylaws, mileage reimbursement, and the committee's roles and responsibilities. The consultant team provided information on the Study's background, purpose and goals, including the Scope of Work. The SOAC identified a regular meeting day and time.

December 5, 2011 - The project team provided the SOAC with a definition of DAC and what it meant for this Study. A summary presentation of the database was provided and the SOAC members and participants gave feedback on areas they could augment the database. All attendees participated in workgroups to discuss water and wastewater challenges and priorities. The groups recorded their opinions and reported back to the larger group. A broad overview of potential pilot projects was provided to jumpstart the group's thinking, and to help them imagine new models for shared solutions. The SOAC was provided draft scoring criteria that would be used to evaluate pilot projects at future meetings.

January 9, 2012 - The list of common problems was finalized. This list was derived from the workgroup sessions at the December 5th meeting. The SOAC members and interested parties broke into 4 workgroups to discuss the list of common problems and which of those challenges were perceived to be the greatest of most critical in the region. They were asked to answer a series of questions to help further refine the issues. Everyone in attendance cast 3 votes for the highest priority issues. The votes were tallied and the SOAC voting members approved the final prioritized list. The SOAC also considered the scoring criteria that would be used to evaluate pilot projects.

After the January 2012 meeting, an interim evaluation questionnaire was distributed to SOAC participants for the purpose of gauging the effectiveness of the facilitation methodology. It measured the inclusiveness of the SOAC process and how well the meetings achieve prescribed goals. Results of this and other evaluations are included in the Stakeholder Involvement Report included in **Appendix H**.

February 6, 2012 - The project team provided a recap of the priority issues that were selected at the January 9th meeting. The project team facilitated brainstorming sessions with the committee. The attendees were broken into four workgroups to discuss different sets of priority issues and brainstorm potential solutions for each of those issues. The input provided by each workgroup was recorded on flip charts that were captured by the project team and reported to the larger group. The attendees also evaluated the pilot project scoring criteria.

May 7, 2012 - The project team provided an overview of priority issues approved by the SOAC and supporting database water quality information collected for the region. The project team facilitated four group discussions on potential pilot

project topics. At each table (grouped by County), discussions centered around county-level maps and handouts on potential types of pilot topics. Each of the groups also started generating potential solutions for each of the pilot project topics and they all started to identify particular communities within their county where those types of pilot projects may apply. Feedback provided by the groups was recorded and captured by the project team to use in pilot project development.

June 4, 2012 - The consultant team explained that there were five “top priority” issues identified by the SOAC at the January 9th meeting. It was explained that these issues would become the focus of the pilot projects for the Study. All attendees were encouraged to participate in the pilot project stakeholder process. The SOAC voting members approved the following list of pilot projects: 1) Management/ Non-Infrastructure Solutions to Reduce Costs and Improve Efficiency, 2) Technical Solutions to Improve Efficiency/ Reduce Operation and Maintenance Costs, 3) New Source Development, and 4) Individual Household Solutions. The following elements were also approved by the SOAC to be developed through each of the aforementioned pilot projects: 1) Policy Recommendations, 2) Implementation Roadmap, and 3) Stakeholder Facilitation Tools.

July 30, 2012 - The project team provided an overview of the scope of the pilot project topics, the schedule for the development of the topics, as well as the budget for each pilot project. Additionally, the project team provided a summary of the pilot project stakeholder process. All attendees were briefed on the roles of the Pilot Project Stakeholder Advisory Groups. All attendees were asked to suggest people that could contribute to the various pilot project stakeholder processes. Preliminary lists of participants for each of the four Pilot Project Stakeholder Advisory Groups were generated. An interim evaluation questionnaire was given to SOAC participants at this meeting to gauge the effectiveness of the facilitation process. Results of this and other evaluations are included in the Stakeholder Involvement Report provided in **Appendix H**.

June 23, 2014 - The project team provided an overview of the draft final report and sought feedback. The project team also reviewed the updated draft recommendations and facilitated a group discussion to seek feedback on recommendations. General feedback received on the recommendations is provided in Section 4.1.7. The final SOAC process evaluation survey was also administered at this meeting. Results of this and other evaluations are included in the Stakeholder Involvement Report provided in **Appendix H**.

August 11, 2014 – This was the final SOAC meeting of the project. The project team provided a recap of the Tulare Lake Basin Disadvantaged Community Water Study, the various tasks and stakeholder processes involved, and a summary of the Final Report. In addition, an update on the status of the Tulare County website to host the database was presented by Tulare County.

4.1.4 Meeting Organization and Facilitation

Prior to the first meeting of the SOAC, the project team developed a set of ground rules for the meetings, which were approved by the SOAC at the first convening. A fact sheet was developed, which clarified the goals, meeting requirements, expectations, and attendance criteria. SOAC participants were provided with a binder and copies of all relevant documents. The County took the lead in drafting a master calendar for the project team, which outlined meeting dates and deadlines for drafting documents and completing translation.

The project team developed guidelines and handouts for a group training session for facilitators among the project team. Training for facilitators was held prior to the first SOAC meeting. Individuals responsible for conducting break-out sessions were given copies of the guidelines and instructed on how to effectively draw out participation from all members in the group.

Prior to each SOAC meeting, the project team coordinated to develop the format for meeting facilitation and break-out sessions, discuss agenda items, prepare an agenda and other meeting materials including handouts, charts, PowerPoint presentations, etc. All meeting materials were circulated within the project team for review and comment before being finalized. All final meeting documents were translated to English and Spanish, posted on the website, and printed for meeting attendees. After each meeting, the project team drafted the meeting minutes and translated the final minutes for distribution to the SOAC.

The consultant team developed a format to assist SOAC participants in identifying common problems and barriers to solutions, prioritizing problems, and identifying potential solutions and pilot projects. The project team invested significant time in developing meeting materials, as well as processes for break-out sessions, in order to yield information that reflects a regional perspective from multiple stakeholders.

The consultant team followed up with SOAC participants to answer questions about SOAC meeting participation, the project, and the process for development of pilot projects.

4.1.5 Outreach Efforts

The project team created, utilized, and managed a database of stakeholder contacts. The database included over 1,000 stakeholders. Due to varying degrees of technological access, email contacts were not obtained for nearly a third of the stakeholders. Email reminders with links to all materials (including the agenda) in English and Spanish were sent to all stakeholders prior to each of the SOAC meetings. In addition, individual reminder calls were made before each meeting to SOAC members and other community stakeholders who may not regularly utilize email.

The SOAC membership was managed by County staff. Agenda packets including agendas, minutes, and any relative material were sent via mail and email to SOAC members prior to each meeting. County staff maintained records for Tulare County

Board of Supervisor committee appointments, applicable ethics training, and committee administrative matters in accordance with County of Tulare's committee policies.

Throughout the life of the project, the project team continued to recruit stakeholders to participate in the SOAC process. The project team members provided updates on the Study and the SOAC's activities when they attend regular water meetings such as, AGUA (the Association of People United for Water) Coalition, IRMWPs meetings, Tulare County Water Commission, and others. Additionally, participation in the SOAC process was promoted during radio interviews and other opportunities.

Prior to the February 2012 meeting, a presentation was given by representatives from Rural Community Assistance Corporation (RCAC), an organization that has successfully modeled a process for regionalization of water systems in New Mexico. This collaborative effort was organized by Community Water Center for the benefit of SOAC participants. RCAC presented their experiences related to regionalization efforts in New Mexico, and discussed the challenges as well as successes they have had.

4.1.6 Translation

Community Water Center provided translations from English into Spanish of PowerPoint presentations and written materials including agendas, meeting minutes, and handouts for break-out sessions. Community Water Center also conducted simultaneous translation at all SOAC meetings, and break-out sessions were conducted in English and Spanish so that non-English speaking participants felt comfortable expressing their views. In addition, reminders for meetings and follow up phone calls were made by bilingual staff.

All documents developed and distributed to the public and posted on the SOAC website were translated and available in both English and Spanish.

4.1.7 SOAC Feedback on Recommendations

At the June 23, 2014 SAOC meeting, the draft Study recommendations were presented, and the SOAC was asked for feedback. Recognizing that the recommendations included in this Final Report are extensive, the SOAC suggested the following as priorities and next steps to accelerate improvements and address priority issues. This guidance by the SOAC is not necessarily a direct reflection of the findings of the Study, but it is important to understand where local focus may be initiated to help build momentum forward with the implementation of additional recommendations. The final recommendations provided in Section 13 are aimed at addressing the priority issues identified by the SOAC at the onset of this Study. The following priority recommendations identified by the SOAC are included within many of the detailed Final Report Recommendations.

- 1) Support development of local DAC coordinator(s) for the Tulare Lake Basin to support DAC outreach, data coordination and updates, funding assistance, and integration of DACs into planning and funding processes. State and federal

funding agencies should consider setting aside specific funding (perhaps from technical assistance and outreach budgets) to support local DAC coordinators that are housed in existing local entities (e.g. non-profit organizations, Counties, IRWMs). Counties, local IRWMs and local non-profit organizations should consider ways to support provision of these services directly. Given the hundreds of DACs in the TLB region, ideally coordinators could be funded for each County and/or for each watershed within the TLB.

- 2) Invest in DAC outreach and engagement. There was consensus that we have to expand the engagement of communities to develop solutions or significant, appropriate, and sustainable change will not happen. Effective outreach and engagement requires investment of time and resources and appropriate partners.
- 3) Actively fund, facilitate and incentivize collaborative solutions. Actively provide strong and proactive incentives to encourage collaboration between communities to reduce O&M costs and strengthen TMF capacity of DACs. This includes actively facilitating development of joint solutions, as well as addressing financial incentives and reducing barriers.
- 4) Counties should actively pursue policy of “non-proliferation” of DAC problems by providing strong incentives and controls through land use planning and permitting decisions.
- 5) Incentivize and reduce barriers to innovative approaches that reduce O&M costs by exploring energy and water efficiency opportunities, as well as dual systems, particularly when projects will be replacing or installing significant infrastructure and distribution systems. Consider ways that communities may be able to meet fire flow requirements through alternative systems, rather than potable source, and look for ways to make rules more flexible to ensure affordable safe water sources, while still protecting public safety from fires.
- 6) Continue to convene DAC focused stakeholder group to track progress. The SOAC is a good diverse group to start this that should meet quarterly to track progress on the recommendations of this Study. The group should expand and enhance DAC stakeholder engagement, particularly engaging other counties further.

To facilitate consideration and implementation of these priorities and next steps, and implementation of all the Final Report Recommendations, the tables provided in **Appendix N** organize the recommendations according to the potential implementing entity. Where more than one entity may be appropriate for implementation, the recommendation was included with each potential implementing entity. A discussion of all recommendations is also provided in Section 13 of this report.

4.2 Pilot Project Stakeholder Advisory Groups

At the June 4 and July 30, 2012 SOAC meetings, the project team began the recruitment for the Pilot Project Stakeholder Advisory Groups. The Project team continued to identify and recruit additional resources and key stakeholders for the

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PSAGs to further the development of solutions to the priority issues and problems faced by communities throughout the Tulare Lake Basin.

4.2.1 Pilot Project Stakeholder Advisory Group Formation

In order to ensure that each pilot study was developed with input from stakeholders, a separate Pilot Project Stakeholder Advisory Group was convened for each pilot study. Each group was comprised of members of impacted communities, regulatory and funding agencies, local water or wastewater providers, and other agencies and organizations as appropriate, in order to provide input and recommendations to the project team throughout the identification and analysis of various potential solutions to the issues identified through the SOAC. **Table 4-1** summarizes who participated in the PSAG process, for each pilot.

Table 4-1. PSAG Participation

Pilot Study	Meeting Date	Total Attendees	DACs	Community	Non-DAC	Organization/Agency
Management & Non-Infrastructure	April 16, 2013	9	1	Allensworth	8	DWR, LAFCo, RL Schafer and Associates/Rotary, Pure Water Group, County of Tulare BOS, CDPH, CRLAF and United Way
Management & Non-Infrastructure	October 30, 2013	13	1	Allensworth	12	Reg. Water Board, United Way, USDA, County of Kern, Kaweah IRWM, KBWA (Kings IRWM) and KRCD, LAFCo, CDPH (2), CWC board, CRLAF and ASM Perea.
Technical Solutions	September 11, 2013	15	3	Allensworth and Lemon Cove	12	Angiola WD, CV Reg. Water Board (4), DWR, CA water Inst.(2), Alta ID, Kings IRWM/KRCD, CDPH, Kaweah IRWM
Technical Solutions	May 7, 2014	5	1	Allensworth	4	LAFCo/Southern Sierra IRWM, Pure Water Group, and CDPH (2)

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Pilot Study	Meeting Date	Total Attendees	DACs	Community	Non-DAC	Organization/Agency
New Source Development	August 22, 2013	4	2	Allensworth	2	DWR and United Way
New Source Development	May 21, 2014	3	1	Allensworth	2	CDPH and Alta Irrigation District
Individual Households	December 5, 2013	7	1	Seville	6	DWR (2), RL Schafer/Rotary, RCAC, Kings IRWM/KRCD and Tulare County GIS
Individual Households	May 29, 2014	13	6	Seville, Cameron Creek, Easton, Monson and Allensworth	7	CDPH, RL Schafer/Rotary, LAFCo/Southern Sierra IRWM, Pure Water Group, PWQA, Tulare County GIS and CD 22 candidate

4.2.2 Meeting Organization and Facilitation

Two PSAG meetings were held for each of the four pilot studies. In general, the first PSAG meeting was held within two weeks of the release of the first draft of each pilot study. The general objectives of the first PSAG meeting were to: 1) discuss the purpose of the PSAG and specific role of the PSAG members; 2) provide an overview of the draft pilot study and; 3) facilitate a group discussion to seek feedback on the draft report and potential sites to conduct the community process review.

After the first meeting, the project team compiled input from PSAG members and project team members, conducted a community review process, and revised the draft pilot. The second PSAG meeting was held following the completion of both the community review process (see Section 4.3 below) and the draft pilot study for that particular pilot. At the second PSAG meeting, the project team provided: 1) an overview of the updated draft report, including (in most cases) a summary/overview of previous feedback received and community review process, new sections of the report (e.g. draft Decisions Trees and Draft Recommendations); and 2) a group discussion to seek feedback on the draft report and draft recommendations. A “roadmap” or set of decision trees was developed for each of the four pilot studies to guide communities and funding agencies through some critical steps to selecting an appropriate solution for their specific water issues and situation. The decision trees include a series of guidance questions and steps to document the process.

4.3 Community Review Process

The project team conducted outreach to the residents of communities that were the subject of a pilot project evaluation. A community review process was conducted for one to three communities or sets of communities for each of the four selected pilot studies.

4.3.1 Community Focus Area Review Group Formation

Communities were selected to be part of the community review process based on specific criteria developed for each pilot study. For the most part, the community had to be a DAC, have a water and/or wastewater challenge, and the potential to implement one or more of the identified solutions within the pilot study.

Upon selection of the communities or regional areas of focus, the project team then developed a targeted list of key stakeholders to outreach to within the community. Outreach to each of the identified stakeholders was conducted through a combination of email, phone calls, and posting or delivery of fliers. In general, participants of the community review process included community residents (users and private well owners), water providers (owners, board members, consultants, operators, general managers, and/or district engineers) and other interested parties working with DACs (e.g. Kings Basin Integrated Regional Water Management Authority (IRWMA) and Dolores Huerta Foundation).

The number of Community Review meetings varied by pilot. The Management and Non-Infrastructure pilot study focused its efforts in the greater Porterville area, which includes East Porterville, Poplar and Williams (Cotton Center) and many other small communities surrounding Porterville. A total of two community review process meetings were held within the area. Both the Technical Solutions pilot study and New Source Development pilot study held one community review process meeting in the selected communities, and two presentations to the board of directors of the water and/or wastewater providers. The Technical Solutions pilot study held its community review process in the communities of Poplar and Home Garden. The New Source Development pilot study held its community review process in the communities of Ivanhoe, Sultana and Stratford. Lastly, a single regional community review meeting was held with private well owners and/or individuals on septic systems for the Individual Households pilot study. Several communities were represented in the Individual Households pilot study community review process, including Easton, Cameron Creek, Seville, and Monson. **Table 4-2** below describes the type of outreach effort conducted for each pilot.

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Table 4-2. Community Review Process Participation

Pilot	Number of Participants	Comments on Outreach & Participation
Management & Non-Infrastructure	<u>Porterville Focus Area Meeting 1</u> 18 representatives from about 8 communities and the City of Porterville	Project team developed an outreach script and divided up outreach tasks based on relationships. CWC was lead in ensuring that all stakeholders received the meeting invitation. Follow up calls were made to ensure invitation was received and reminder calls were made the day before each meeting.
	<u>Porterville Focus Area Meeting 2</u> 7 representatives from 5 communities/water systems as well as a representative from the City of Porterville, Kings Basin Integrated Regional Water Management Authority (IRWMA) and the United Farmworkers Foundation.	Turnout was less than that obtained at first meeting. The project team believed this was due to fact that the agreed upon date for the second meeting had to be changed to ensure DACs could participate. There were also some other scheduling conflicts. Some participants had to attend other meetings.
Technical Solutions	<u>Home Garden:</u> 5 representatives, including: 3 community residents and 2 District staff/Consultants (Summers Engineering and Water Dynamics)	Turnout was low due to change over on the Home Garden Community Services District (3 board members resigned during the community review process). Further, securing a meeting location was difficult. Project team had tried once before to hold a meeting in the area unsuccessfully.
	<u>Poplar:</u> 8 representatives, including: 4 community residents, including 1 private well owner, 2 board members and 2 district staff/consultant(s) Keller Wegley Engineering and Poplar CSD Secretary.	Participation and discussion at meeting was good. This meeting provided an opportunity to have the board, community residents and private well owners jointly discuss water and wastewater needs and possible solutions.

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Pilot	Number of Participants	Comments on Outreach & Participation
New Source Development	<p><u>Ivanhoe:</u> 5 representatives, including: 2 community residents, 1 board member and 2 district staff (Water Operator and District Manager)</p> <p><u>Stratford:</u> 16 representatives, including: 10 community residents, (9) from Stratford and (1) Kettleman City, 5 from Stratford PUD (staff and board members and consulting Engineer) and representative from ASM Salas</p> <p><u>Sultana:</u> 21 representatives, including: 18 community residents and 2 Sultana CSD Board members*District water operator participated in one-on-one meetings with lead project engineer and District does not have a district general manager or engineer.*</p>	<p>Ivanhoe turnout was lower than anticipated. None of the project team members involved in the New Source Development pilot study had previously worked in this community.</p> <p>Great turn out because of outreach done by locally known community leaders.</p> <p>Great turn out because of outreach done by locally known community leaders. Additionally, the Sultana water challenges had been highlighted in the news the day prior to our meeting.</p>
Individual Households	<p><u>Community Meeting:</u> 14 participants, including: Sultana (1), Cameron Creek (3), Seville (4) Monson (5) and (1) Easton.</p>	<p>Good turnout from diverse stakeholders because of existing relationships and impacts of the drought. Individual wells are going dry and people wanted to make sure their needs were documented and were seeking resources. Much more wanted to participate but the commute posed a challenge.</p>

4.3.2 Meeting Organization and Facilitation

A community review process was conducted for each of the four selected pilot studies. The purpose of the community review meetings was to seek input from community leaders, key technical assistance providers and other key organizations working in communities on what type of specific projects would work well in communities that were likely to benefit from the particular type of pilot project. At each community review meeting, participants were asked to identify community water needs and possible solutions, and seek feedback on the proposed alternatives presented within the draft pilot study and recommendations for successful implementation. Participants labeled this process “trying on the dress”, where the “dress” were particular solutions for specific

types of water problems. For example, the community of Sultana, a community with water quality and water quantity challenges was asked to consider a number of New Source Development alternatives, including physical consolidation of a water system to a neighboring water system.

Each pilot study followed a slightly different community review process selection, but outreach and facilitation for each generally followed the outline below:

1. Establish selection criteria and develop initial list of eligible communities/sub regions of communities to consider;
2. Present preliminary list to PSAG and seek additional feedback;
3. Discuss feedback received with project team and lead Engineer and select community(ies) or region to focus on;
4. Develop a stakeholder lists and outreach plan;
5. Gauge interest by the community(ies) and or region;
6. Conduct an initial assessment of the community(ies) and or region needs;
7. Schedule meeting dates and conduct outreach through email, phone calls and posting or delivery of fliers;
8. Develop meeting materials and facilitate meetings and group discussions; and
9. Present findings of the community review process to area of focus and PSAG members.

For the Management Non-Infrastructure pilot study, the first community review meeting in the Porterville area was held to provide participants an overview of the goals and objectives of the TLB Study and community review process, seek information about the region's water and wastewater needs and challenges with technical, managerial and financial capacity, discuss potential management solutions presented within the pilot, and gauge their interest in informing the development of the pilot. Following a brief introductory to the overall goals and objectives of the study, meeting participants were asked series of questions about their water needs. The project team then provided information about the identified possible solutions and asked participants to share feedback on solutions (which solutions are of interest, have you implemented any of the proposed solution, what worked well and what did not, what is needed to implement solutions). Lastly, participants were asked to consider agreeing to be part of the informing of the development of the study and solutions for their area and other DACs facing similar issues. The goal of second meeting was to discuss specific solutions and related challenges associated with these solutions. Community members were asked to discuss ways to overcome barriers and resources needed to ensure successful implementation. The project team invited Ralph Gutierrez, the Woodville PUD operator to discuss Woodville's local case study example and developed a brief training on what the basics of operating a water and wastewater system. Following the brief training and presentation by the local water operator, the group then broke out into two tables to further discuss the potential alternatives presented and seek feedback on the

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applicability of the solution to their community and what would be needed for implementation, and to discuss sustainability of the solutions (leadership capacity and development needs).

For both the Technical Solutions and New Source Development pilot studies, Community Review Process Factsheets were developed and presented before a regular community board meeting for each of the selected communities. Once permission by the board was secured, one-on-one meetings were conducted with district staff to discuss districts needs and conduct a water and wastewater assessment. The process also included a single community meeting with multiple stakeholders to discuss and verify water needs, try on solutions, and seek feedback (solution preferred, least liked and why, implementation needs, and recommendations improve process for DACs), and a final community board presentation to discuss outcomes of the community review process, possible next steps, and draft recommendations.

A single regional meeting for the Individual Households pilot study was held to better understand the water and wastewater challenges impacting these individuals, learn about past efforts to solve their challenges (what worked well, what was hard, and what could have been improved/useful, as well as a sense of costs) and what is needed to better assist them in addressing their challenges).

A description of outreach efforts conducted for each of the community review process of each of the pilot studies is included in **Table 4-3**.

Table 4-3. Community Review Process Outreach Efforts

Pilot	Description of Outreach Effort
Management & Non-Infrastructure	Project team developed an outreach list with contact information for more than 20 water providers, community residents, and funding agencies from within the focus area.
Technical Solutions	<p>In Poplar: the project team outreached to 2 district board members, 2 district staff/consultant (Water Operator, District Engineer, General Manager, etc.), 2 private well owners form Poplar, and worked with local community leader/AGUA member to encourage community participation.</p> <p>In Home Garden: the project team outreached to 2 board members, 2 district staff (Water Operator, District Engineer, General Manager, etc.) and conducted on door-to-door outreach within the community. Additionally, fliers were also developed, translated and posted at the Home Garden Community Services District Office.</p>

Pilot	Description of Outreach Effort
New Source Development	<p>In Ivanhoe: the project team outreached to 2 district board members, 2 district staff/consultant (Water Operator, District Engineer) and worked with local community leader to encourage community participation. Fliers were also developed, translated and posted at the Water District, community stores and other common community places.</p> <p>In Sultana: the project team outreached to 2 district board members, the water operator, and worked with the district board member/community leader/member of AGUA to encourage community participation. Fliers were developed, translated and posted at the local community post office and distributed by the local community leader/board member/member of AGUA.</p> <p>In Stratford: the project team outreached to 2 district board members, 2 district staff/consultant(s) (Water Operator, District Engineer, General Manager, etc.) and worked with local community leaders to encourage community participation.</p>
Individual Households	A regional stakeholder list of private well owners and/or individuals on septic systems was jointly developed for the Individual Households pilot study. The list included close to 200 individuals.

4.4 Summary of Lessons Learned

In addition to assessing stakeholder perspectives on the stakeholder processes themselves, the project team undertook a process of self-evaluation, noting key lessons learned. As part of the facilitation process, the project team debriefed most meetings with “what went well”, “what was hard”, and “what would we change”. This section summarizes some of those lessons learned.

4.4.1 Successes

The project team identified some general areas that went well about the Study, including:

- Identifying the magnitude of the issues was good.
- Generation of interest and participation from diverse stakeholders within the Study Area.
- The project generated feedback and momentum on this topic. The drinking water program (CDPH) has become extremely active. Most recently, additional staff

members began participating in the process. The department also jointly provided written comments on the draft recommendations.

- Diverse stakeholders are now aware of and are addressing DAC needs. The County of Tulare is now coordinating monthly water meetings with CWC and SHE to track DAC water needs and identify solutions and resources to address them. The Water Commission, and local IRWM groups are also seeking and receiving updates on the progress of this study. Further, DACs are now aware of alternative solutions to consider. Specifically, the community of Seville is interested in sharing a water operator and/or billing services with the community of Sultana. Lastly, there is strong support for the continuance of the SOAC committee beyond the conclusion of the study.
- A broader network of individuals became invested in the topic. For example, additional funding from the County of Tulare to hold additional Supplemental SOAC meetings allowed the region to stay engaged and discuss mutual items of interest.
- Despite the big time commitment, the processes showed interested and committed stakeholders, e.g. stakeholders participated in multiple SOAC and pilot PSAG processes.
- The process served as an educational process for everyone, from community members to engineers.
- The project utilized existing relationships and networks: For example, the project utilized existing relationships and community resources to increase participation. The project team was diverse and was therefore able to facilitate the participation of diverse stakeholders. CWC and SHE work directly with DACs and had a number of community contacts. SHE also helped generate the funding contacts lists and encourage their participation. Provost and Pritchard was also able to share contact information for local DACs and water providers. Communities also helped share information. Sultana- board member helped get a lot of community residents at the community review process meeting. Stratford local community leaders also did the same. Home Garden was challenging because project team had not previously worked in this community. For the Management and Non-Infrastructure pilot outreach efforts were split based on existing relationships of the project team.

4.4.2 Challenges

Some common challenges were also identified, including:

- Evaluating the problem is not enough:
 - It is important to work on developing or advancing solutions because that is what community members really want.

- Continued participation was challenging:
 - Continued engagement by all SOAC members - we lost some members towards the end for various reasons (e.g. job changes, retirement, conflict of interest, etc.), DAC representation and engagement was sometimes low, etc.
 - Keeping track of active members and appointing new ones was also hard. Memberships were not fully tracked and members moving changing jobs or retiring did not necessarily notify the team. Sometimes recruitment of new members was also challenging.
 - Maintaining contact information. Outreach lists had to be regularly updated.
 - Impacts of the drought also impacted participation. Toward the final stages of the study, many participants were busy responding to impacts of the drought. DACs, consultants and funding agencies were working on applications and attending multiple meetings and workshops.
 - Low participation meant input varied: Some pilots received more feedback than others.
- The stakeholder processes required significant investment of time by participants:
 - Long reports require significant investment of time to read; not all participants read the reports.
 - Not always realistic to expect continuous participation in volunteer meetings or other efforts, especially something like this that required a large time commitment.
- Keeping project momentum is important for participation and input:
 - Development of the pilots and full study development process took a long time, and in many ways this slowed the momentum as the process stretched over many years. It made the stakeholder involvement process and the SOAC meetings more disjointed for the broader audience of participants.
 - Timing was a critical factor. Earlier in the process people were trying to understand the process and their role. Feedback became stronger once members were more familiar and invested in the process.
- Various stakeholder processes were good, but difficult to manage:
 - While it was good that the PSAG meetings were used to get feedback on the pilot studies, only SOAC members attending PSAG meetings got the full picture of the pilot projects. This may have led to less than ideal understandings of the pilot studies by the SOAC respondents.

- Lack of engagement by all SOAC members during the development of the pilots was hard to manage. Only some SOAC members read the reports and/or participated in the PSAG process. While the role of PSAG members was to fully engage with the pilot, the fact that SOAC members were not all participating in the pilot review process may have created some lack of communication/understanding across project components.
- Technical Components Are Hard for Lay Audience/Hard to Balance Voices in the Room:
 - Getting input from some stakeholders was hard. In the earlier phases DAC SOAC members were not as vocal and process was dominated by elected officials. This improved over time.
 - Some meetings were too technical in nature. Throughout the process DAC representatives noted to CWC colleagues that the process was hard to follow, or was too technical.
 - Most PSAG members were not able to read the reports because they were too long and/or had a lot going on because of the drought. Getting written comments was difficult - project team overcame this by offering 1-1 in person meeting and/or phone calls. During 1-1 meetings the project team members usually walked stakeholders through key sections of the report and received and recorded verbal feedback.
 - Decisions trees were too technical and or long and made seeking feedback challenging.
 - Turn-out low at some meetings, partly because of limited outreach, some possibly to do with changes of venue spaces.
 - Challenge of working across engineer types/different approaches, makes it hard to coordinate/draw lessons.
 - Even though the consulting team wanted community input, it was difficult to obtain input on available solutions because full analysis for a specific community was not performed. Pilots were designed to identify possible options and discuss some of the pros and cons associated with each, but the pilots identified the need to conduct a feasibility study to evaluate the options further as a next step for any community considering a project. However, most participants were often seeking more detailed information about the recommended solutions, costs for implementation, ongoing O&M costs and a way to rank one over the other. This was not feasible within the scope of this Study.
 - There was a variation in approaches for each pilot—this made it hard to present consistently across meetings, and for the process to look the same for each pilot.

- Some documents were presented at the meeting, with no time translate materials. When this happened, it created challenges during meetings because of the need for simultaneous translation and meeting facilitation.
- Translation during meeting (some reported echoing and mentioned it was disruptive to other participants) and breakout sessions (hard to maintain everyone updated, participants were speaking too fast not allowing time for translation).

4.4.3 Lessons for Future Stakeholder Outreach

Based on these overall successes and challenges, the project team identified some general lessons that were learned and what could be done better next time.

- Establish common vision for the project team:
 - Working with a diverse team (e.g. organizers, engineers etc) had benefits, but also made it hard to develop common visions for the project. The diverse background is an asset, but needs to be managed thoughtfully so that all voices and perspectives get heard. There needs to be openness to the idea that everyone will learn and grow in the process.
- Make final product useful:
 - Need to identify the purpose of the database and how it will be used.
 - This is also true for the development of recommendations and regional plan. During the development of draft recommendations, the project team identified the need to seek more feedback on the draft recommendations and was able to utilize one of the supplemental SOAC meetings to get more feedback. The team also held a number of one-on-one meetings with key stakeholders to seek additional feedback.
 - Stakeholders and project teams may have different interpretations/visions and uses for a regional plan. Therefore, visions, interest, needs and scope should be clarified with the project team, funding agency, and stakeholders prior to selection and development of final report format.
- Improve participation:
 - Ensure a process that promotes continued participation of stakeholders. Expecting a significant amount of work is a challenge—people were volunteering their time and effort.
 - Hold additional meetings in communities. One meeting was not enough. For example, the Management and Non-Infrastructure pilot received more feedback when two meetings were held. Further, draft decision trees were provided to community residents but there was no follow-up, e.g. New Source Development pilot study and others only had one meeting with each community.

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Stakeholder Process

- Hold meetings in the evenings 5:30 to 7:30 and within the community. Do not go over two hours or you will lose participants. This is true for all stakeholder process meetings.
- Consideration should be given to the meeting location - some participants may feel comfortable in one setting while others may feel intimidated. This could affect participation by some members.
- Breakout sessions, community-friendly facilitators, and translation services help to ensure that community residents feel comfortable speaking. Additionally, meeting leaders need to set the tone early at each meeting to encourage and recognize community participation.
 - Conduct breakout sessions for smaller group discussion
 - Encourage table seating to be mixed with a variety of participant types at each table
 - Provide name cards with no titles
 - Simultaneous translation
 - Skillful facilitation, eliciting feedback from various participant types
- Prepare for meetings:
 - It is important to clarify the roles of voting vs. non-voting members (when applicable).
 - Make sure to establish clear meeting objectives, develop appropriate meeting agendas, handouts, facilitation plans and hold planning project team calls early in the process and prior to meetings as needed.
 - Continue to provide full draft and final documents well before each meeting.
 - Make sure to summarize the main points of the reports and provide guidance on what type of input is needed in order to receive effective feedback. Seek feedback from stakeholders based on their expertise, experience and knowledge.
- Obtain stakeholder input:
 - This is a technical process, but is meant to include community stakeholders. Stakeholders with specific expertise, experience and commitments are more likely to feel comfortable engaging and providing feedback. Alternates should be identified and encouraged to participate to ensure continued engagement. At the same time, figuring out where community members can insert their voice and participation is critical.
 - One-on-one with community members is important because sometimes the other processes were too technical.

- Offer alternative ways for stakeholders to provide feedback. Utilize meetings and breakout groups to obtain feedback whenever possible.
- While SOAC members and participants had the opportunity to review pilot documents, anecdotal evidence suggests that in practice, few actually did this. Ideally, the SOAC would have had a better opportunity to review and/or understand the contents of the pilot documents. Or, ideally SOAC members would have been individually briefed on the pilot studies so they had full understanding (in some cases this was done by the project team). This might have helped increase satisfaction levels (as shown in survey results).
- Despite challenges of outreach, it was very important to go out to actual communities to vet the process. In this process, new relationships were developed and board members and community residents were educated and informed about water issues and potential solutions. These processes also served as an educational entry point on types of solutions.
- In the process of outreach, other forms of information sharing about available resources and programs occurred.
- Need to help participants have access to adequate information in order to effectively engage with a discussion of solutions. Example: the project team provided a brief presentation on what it takes to manage a water/wastewater system. This increased understanding of the proposed solutions and therefore triggered additional feedback.
- Using existing case studies to explain and promote solutions was very helpful. Having local presenters helped. Role playing and modeling how to provide feedback can also increase engagement.

4.5 Stakeholder Process Conclusions

The Tulare Lake Basin Study was one of the first efforts statewide to actively engage members of the public in the identification of water problems, and the development and discussion of solutions. From this perspective, it was both a trial and a model at what works and what can be improved for future efforts. In evaluating the processes, important lessons can be learned about how well this Study did in its various stakeholder processes, and what additional factors can be improved upon for future efforts. Overall, the evaluation indicates that the three stakeholder processes had varying levels of success for different components. Survey results indicated that participants at SOAC meetings were generally satisfied with the overall process. The area where the feedback was the most positive was in terms of the process bringing together a diverse array of stakeholders. This highlights the importance of how the Study was not only about “end products” but also about process; people valued the fact that people were being brought together. Similar findings are generally echoed in the PSAG survey results, where most participants were satisfied with the process and the

meetings, but there were lower levels of satisfaction around how useful the final documents would be.

From these responses, we can learn that the forum created by these stakeholder processes was important. Both the PSAG and the community review process highlighted some common key take-away messages, including how to make the reports and products more user-friendly. Many PSAG members noted that the pilots were quite technical. This might mean they are helpful for a more technical audience, but still need clarification and simplification for community members. In addition, from one-on-one interviews, stakeholders noted that while the pilots were helpful in highlighting possible solutions available and general paths to follow for solutions, there is still a need for technical assistance and funding to further evaluate options and implement solutions. This is not a flaw of the pilots themselves, but does indicate the value of producing on-the-ground solutions or pilots, so that stakeholders can observe some movement towards change.

This reveals a broader challenge regarding the technical nature of the stakeholder processes. While overall satisfaction levels were high, and people felt the SOAC and PSAG allowed for incorporation of their ideas and questions, the project was challenging in that it was combining multiple disciplines and backgrounds. Each pilot contained very technical components, which were often hard to digest by the general public. This was evidenced by numerous discussions about how the Decision Trees were difficult to follow and understand. This does not mean the trees themselves were not useful, it simply highlights how a stakeholder process that is meant to include community but also use technical information must conduct a delicate balance between these items, and be aware of how to present information to different audiences. If future work seeks to continue including community members in the development of solutions, “hard engineering solutions” must continue to be readily translated for a lay audience.

Some recurring challenges regarding the stakeholder processes included uneven participation and difficulties in sustaining participation over the life of the project. The project team suspects this was partly because of the magnitude (it was a four county-wide project) and its uniqueness of the study (feedback obtained throughout indicated that most participants had not previously participated in this type of process). Further, the study took a long time, and therefore sustaining people’s interest was challenging. In addition, towards the end of the project the effects of the California drought were being felt in the region, and were requiring attendance at numerous other meetings. This caused attendance at project meetings to dwindle.

In sum, in considering the overall Study and its success in the stakeholder processes, a nuanced perspective must be held. First, this was one of the first large-scale attempts at including DAC stakeholders, government agencies and technical experts in one conversation regarding water provision and related solutions. As such, it necessarily entailed various forms of translation—of language, of technical content, of community perspectives. As a first “model”, the team did the best it could to accommodate these various realities. With future funding and engagement, and a critical incorporation of lessons learned, additional work can build on this important foundation.

5 PROJECT FOCUS AND GOALS

The main goal of this study is to provide useful information and tools that can function as a roadmap or guidelines for various audiences. Discussion items and recommendations should be considered from the perspective of the customer, the perspective of the water or wastewater service provider, the perspective of various agencies, and the legislative perspective. This section discusses each of the perspectives considered in performing this Study.

The information presented in this study, including the four pilot study reports attached, includes descriptions of actual community efforts toward solving water supply challenges. The information may also include recommendations for other communities to consider regarding:

- a) Steps toward solving remaining existing water supply and wastewater collection or treatment challenges,
- b) Identifying obstacles interfering with solving remaining existing water supply and wastewater collection or treatment challenges, and
- c) Steps toward preventing or mitigating future water supply and wastewater collection or treatment challenges.

5.1 Local User/Consumer Perspective

When alternatives to address water supply and wastewater challenges are evaluated, the impacts to the consumer must be considered. Impacts that the consumer may be concerned about include:

- The cost of receiving the service. The costs may be in the form of initial capital costs and monthly service charges for water and wastewater.
- Level of funding and affordability
- The quality of water delivered
- The reliability of water delivered
- Restrictions regarding the use of water
- A change in water service provider that may result from a consolidation
- A change in how bills can be paid (e.g. is there still a local office that consumers can go to in order to pay their bills?)
- Health effects from consuming water not meeting state and federal requirements.
- Risks associated with communities served by one source of water if that source is not longer functional.
- Environmental impacts of the discharge of improperly treated wastewater.

- Standard procedures and policies regarding uncollected accounts may change.

The cost of receiving service may be in the form of initial capital costs for connection fees and/or monthly service charges. If an evaluated alternative involves connecting to a new system, a connection fee may be assessed. When implementation of an alternative will impact the service charges, the effect that will have on the consumer must be considered. Particularly in disadvantaged communities, the financial impact of a rate increase can be difficult to overcome.

The quality of water delivered is a primary concern. For a system that had existing water quality problems, it is important to consider whether the alternative will correct their drinking water quality problem. Consumers want to know that the water they are receiving is safe.

Similarly, the reliability of the water supply may be important to consumers. If water supply reliability has been an issue, they may want to know whether a proposed alternative will resolve that issue. No alternative should be recommended that would diminish the reliability of a system.

If an alternative could result in restrictions regarding water use, the impacts to the consumer should be considered. Generally, water use restrictions would likely be implemented for the benefit of the consumer, in that it may aid in the reliability and sustainability of a water supply. However, consumers may be concerned about such restrictions. Restrictions may include general conservation measures, limitations on outside water usage or usage during peak times of day, etcetera.

Consumers may also be concerned about a change in water service provider as a result of an ownership transfer. While this may be a concern to some, if the new service provider provides safe and reliable drinking water at affordable rates, most consumers will be happy.

Some alternatives may cause a change in how bills can be paid. For example, consumers may currently be able to make payments at a local water district office, but contracting for billing services with a nearby district or city may require consumers to mail payments or drive elsewhere to make payments. In remote areas this is of particular concern.

5.2 Service Provider Perspective

The service provider will be interested in evaluating the impacts of a potential solution from a different perspective. The service provider should consider various questions regarding the alternatives presented in this pilot study, including the following:

- What are the pros and cons of the proposed alternative(s)?
- Can the solution proceed while allowing each entity involved to maintain a level of quality that is acceptable to the customers?

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- Will all entities involved have the same rate structure, or will it differ by community (for consolidation or shared services)? How does this affect staffing/billing/rate setting?
- Will there be more staff needs / less staff needs?
- In what condition are the finances of the new partners? Will the surviving entity be responsible for the debt of a consolidating entity?
- How will delinquent accounts and difficult customers be handled?
- What information or resources are available to help evaluate/implement these types of alternatives?
- What will implementation look like, and how long will it take to fully implement selected alternative(s)?
- Is funding available to implement selected alternative(s)?
- Are annual revenues sufficient to offset expenses?
- What are the leadership and governance implications?
 - Is there a manager?
 - How are formal decisions made?
 - How are emergency decisions made?
 - Will proposed changes reduce/increase the number of board members, managers, employees, or other?
- How will community engagement/buy-in be developed?
- Ability to finance capital improvements.
- Ability to pass potential rate increases to pay capital and operating costs (Proposition 218) while still maintaining affordable rates to the rate payers.
- Evaluation of annual revenue versus expenses.
- Ability to provide operators certified to operate the improvements.

The service provider will be concerned about whether an alternative will provide safe reliable water, whether it can improve a component of their technical, managerial, and financial capacity, if it makes sense financially for the system, and whether the alternative can be implemented with the political, governance, and ownership issues for each participating entity in mind.

5.3 Agency Perspective

Considerations from the various agency perspectives focus on whether regulations are being met, including water quality standards, water demand objectives, and waste discharge requirements. At the agency level, various policy considerations could also benefit the ability to provide safe, reliable drinking water and wastewater services.

5.3.1 County Level

Items that counties should consider related to water supply and wastewater challenges include:

- Existing land development policies
- Consideration of impacts to land use control/zoning/building permit.
- Consideration of County Environmental Health Departments regarding individual wells and on-site sanitary sewer facilities.
- Local Agency Formation Commission for each county in regards to any changes in a DACs service area or potential joint agreements between communities.
- Conformance with the County General Plan

Counties may want to consider existing land use policies from two perspectives: 1) consistency with existing land use policies; and 2) potential adjustments to existing land use policies that could be made to minimize future water quality issues.

Counties also take into consideration minimum lot size requirements for on-site septic systems and location of individual wells to minimize contamination by on-site septic systems.

5.3.2 Regulatory Agencies

The perspectives of regulatory agencies to be considered include California Department of Public Health, California Department of Water Resources, Regional Water Quality Control Board, State Water Resources Control Board, Local Primacy Agencies, and United States Environmental Protection Agency. The involvement that these regulatory agencies may have include:

- Guidelines/directives to correct violations
- Sharing knowledge (e.g., training programs and other education opportunities and/or requirements)
- Permitting requirements for new or improved systems.
- Guidelines/directives to correct violations.
- Sustainability – require a means to sustain the facilities prior to allowing construction.

- Identification of impacts to DACs when new regulatory requirements are imposed.

Each of these regulatory agencies has rules, regulations, and other elements that they consider for new and existing facilities. Regulatory agencies will consider the permitting requirements for a new system, and whether the system is able to comply with those requirements. They can also provide guidelines or directives of how to correct those violations, as well as potential funding opportunities in some cases. These regulatory agencies can be a good resource for information about existing and proposed regulations, guidance related to correcting violations, funding opportunities, training opportunities, as well as education and training requirements.

5.3.3 Funding Agencies

Funding agencies may include any of the regulatory agencies listed above. Funding agencies may also include the Department of Housing and Urban Development (HUD) Community Development Block Grant program (CDBG), United States Economic Development Administration (EDA), United States Department of Agriculture (USDA) Rural Utilities, and State Bonds. Integrated Regional Water Management planning groups can apply for and administer funds for local entities and may be able to assist entities in understanding the funding agency perspective. Considerations from the perspective of the funding agencies may include the following:

- Does a proposed project and applying entity meet the requirements to receive funding?
- Does the proposed project fix a priority issue?
- Does the applying entity have the resources and funding to sustain the proposed facilities?
- Assistance with funding applications.

5.4 **Legislature Perspective**

This Study will help identify potential new policies or legislation to aid communities in providing safe and affordable drinking water and wastewater services, or suggestions to possibly improve existing policies. Some considerations from the legislative perspective may include the following:

- Identification of new legislation to facilitate funding assistance opportunities
- Routine identification of impacts to DACs when new legislation is proposed or implemented
- Identification of new legislation that may address DAC priority issues, as defined by the SOAC
- Identification of legislation that may result in adverse impacts to DACs

6 IDENTIFICATION OF ISSUES AND POTENTIAL SOLUTIONS

6.1 Identified Priority Issues

Through the SOAC process, several issues were identified, and a list of priority issues was developed. Potential solution sets (pilot studies) were generated to address the list of priority issues that was developed.

In consultation with the SOAC, the Project consultant team utilized the database to identify common problems associated with providing safe, reliable water and wastewater services to disadvantaged communities that can be effectively explored by further study, alternative solution development, and pilot projects. Using this list of common problems, the consultants worked with the SOAC to identify the priority issues facing DACs in the Tulare Lake Basin.

The SOAC, which was established in Task 2, identified common problems associated with disadvantaged communities related to safe, reliable water and wastewater services at their December 5, 2011 meeting. These common problems were as follows, in the priority order established by the SOAC at the January 9, 2012 SOAC meeting:

1. Lack of Funding to Offset Increasingly Expensive Operations and Maintenance Costs due in Large Part to Lack of Economies of Scale - Small systems serving primarily low-income households and remote locations cannot keep rates affordable and still generate enough revenue to run the system safely over the long term; Lack of funding resources to operate and maintain water or wastewater systems at affordable levels and lack of funding for planning and replacement of infrastructure as it ages
2. Poor Water Quality - Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants (i.e. taste, color, smell, etc.), health impacts
3. Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements - Lack of affordable or accessible funding for system improvements; Inadequate funding to make successful grant applications to get infrastructure improvements (i.e. lack of funding for grant writers, preliminary engineering, etc.); funding isn't always getting to the communities that need it most
4. Lack of Informed, Empowered, or Engaged Residents - Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts

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5. Lack of Technical, Managerial and Financial (TMF) Capacity by Water and Wastewater Providers - Lack of adequately trained technical, legal, financial, and managerial professionals, as well as inadequate training and ongoing education and assistance for existing water and wastewater providers; complete lack of institutional capacity for areas without a provider; lack of knowledge of available training, assistance, and educational support to support local employment in these sectors
6. Lack of Public Support or Political Will to Solve Water and Wastewater Challenges in DACs - Public officials, water policy decision makers, and voters are not prioritizing developing and funding solutions to existing water and wastewater challenges in disadvantaged communities and/or are not responsive or accountable to DAC residents
7. Lack of Vision and Integrated Planning to Develop Sustainable Solutions - Lack of shared visions of sustainable solutions for DAC water and wastewater needs within community planning documents, water planning documents, individual water and wastewater provider plans, county general plans, and Integrated Regional Water Management Plans (IRWMPs), lack of regional coordination and planning with larger entities in planning efforts
8. Inadequate Existing Infrastructure - Infrastructure that is aging, poorly constructed, or of insufficient capacity to meet current or future community needs
9. Lack of Information on DACs - Lack of information about water rates and usage, lack of information about water quality in areas that have no public water provider (i.e., private wells), barriers to accessing information on water quality (i.e., confidentiality requirements), lack of information about wastewater treatment in areas without wastewater system providers, etc. Lack of data on water and wastewater infrastructure compatible with GIS and online so it can be accessed by the general public
10. Lack of Affordable Interim Solutions - Residents either face high cost of having to purchase and haul bottled water or other alternative water supplies, and / or face the health impacts of exposure to contaminated water
11. A Changing Regulatory Environment - Changing water quality and water treatment standards, including more stringent requirements as well as new and emerging contaminants
12. Insufficient Quantity of Water - Insufficient supply or lack of reliable water supply, including surface and groundwater, including groundwater storage capacity, surface water storage and supply
13. Inadequate Accountability to DAC Residents by Water or Wastewater Providers - Water or wastewater providers that are not accountable to residents, such as being unresponsive or failing to communicate information properly

14. Segregated Community Development - Demographically segregated DACs have historically been and continue to be physically and politically separated from larger water and wastewater systems or cities
15. Inability to Address the Source of Pollution - Insufficient information on the source of water pollution and inability to address or protect water supply from existing and continuing sources of pollution
16. Resistance to Change by Existing Institutions - Resistance to changing an existing institutional structure, both by water and wastewater providers as well as by residents, professional contractors and technical advisors

At the January 9, 2012 SOAC meeting, the Project team presented the common problems identified above. The SOAC, with open discussion, refined the common problems list into a final list of priority issues. With consideration of this final list, the SOAC voted to identify the top five problems on the list as the priority issues facing disadvantaged communities in the Tulare Lake Basin.

1. Lack of Funding to Offset Increasingly Expensive Operations and Maintenance Costs in Large Part to Lack of Economies of Scale
2. Lack of Technical, Managerial and Financial (TMF) Capacity by Water and Wastewater Providers
3. Poor Water Quality
4. Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements
5. Lack of Informed, Empowered, or Engaged Residents

6.2 Selection of Representative Pilot Project Topics

The project team worked to develop a list of potential solutions to the priority issues identified by the SOAC. At the May 2012 SOAC meeting, the Project team facilitated discussions through break-out sessions on potential solutions to narrow down the topics that needed to be developed through pilot projects, and to get input on specific places and communities for potential demonstration projects.

The project team took the list of priority issues established by the SOAC and brainstormed various potential solutions for each priority issue. The SOAC, at their February 6th 2012 meeting, broke into four groups and also brainstormed various potential solutions for each of the priority issues facing the disadvantaged communities within the Tulare Lake Basin.

The Project team took each priority issue identified by the SOAC and used the information in the database as well as community setting information to establish draft individual community reports. Key indicators have also been identified for each issue. On April 2, 2012 the Project engineers began to evaluate each disadvantaged community using the draft individual community reports against the key indicators to identify outstanding data gaps and to identify patterns for potential solutions throughout

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the Tulare Lake Basin region. The final list of priority issues developed by the SOAC, and the four (4) potential solution sets (pilot studies) that aimed to address the priority issues, were summarize in a document entitled “Potential Pilot Projects/Studies”, dated June 4, 2012 (**Appendix G**). This list of potential pilot projects was approved by the SOAC at their June 2012 meeting.

A final list of potential solutions was generated as follows:

1. Management/Non-Infrastructure Solutions To Reduce Costs And Improve Efficiency
 - Personnel / Service / Purchasing Pools (i.e. lab, residual disposal, technical services, financial services, legal services, etc.)
2. Technical Solutions To Improve Efficiency/Reduce Operation & Maintenance
 - Separating potable water from other public water system uses (i.e. dual systems: in-home versus Irrigation or fire flow water)
 - Residual handling and management (on-site and off-site handling, all materials)
 - Water/energy efficiency technology
 - Less expensive water treatment technology & blending
 - Nitrate biological treatment
3. New Source Development
 - Physical Consolidation – Both water and waste water facilities
 - Exchanges/contracting for surface water or other source
 - Regional Drinking Water (or Wastewater) Treatment Plant
4. Individual Household Solutions
 - Well Improvements– resealing, deepening or replacing wells.
 - Point of Entry (POE) treatment (appropriate for a water systems or for individual wells)
 - Point of Use (POU) treatment (appropriate for individual wells, difficult for a system to be required to monitor items within the home)
 - Community Septic Systems (i.e. community leach field, cluster systems, package plants, etc.)
 - Advanced Septic System

Using the priority list of issues developed in Subtask 3.3, the SOAC selected a final roster of representative pilot projects and studies that are the focus of this Final Report.

Based on all of the prior work by the SOAC and the Project Team, at the June 4, 2012 meeting the SOAC was presented with a recommended list of four pilot projects, which they then approved. The approved pilot projects are as follows:

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Identification of Problems/Issues/Challenges

1. Management/Non-Infrastructure Solutions to Reduce Costs and Improve Efficiency
2. Technical Solutions to Improve Efficiency and Reduce Operation & Maintenance
3. New Source Development
4. Individual Household Solutions (Non-System Solutions)

Based on the priority issues and problems identified by the SOAC, the Project team developed a simple potential solutions matrix of priority issues and potential solutions, as identified in Subtask 3.2. Due to the way priority issues and potential solutions were defined, the Project team was able to select representative pilot projects based on a simple matrix. The results of this analysis are summarized under Subtask 3.3 above.

Following the approval of the pilot project topics at the June 4th SOAC meeting, the engineers developed a work plan for refining the problems and alternative solutions, developing the outreach effort with the PSAGs, and determining resources needed to form recommendations for each of the topics. Each pilot project topic was led by a Principal Engineer. The engineers had a goal of developing alternatives that could be sustainable by communities long-term. Development of alternatives and recommendations was done by using the database and the PSAGs as their sounding board for proposed solutions.

7 MANAGEMENT AND NON-INFRASTRUCTURE PILOT

The summary presented in this Chapter provides a brief description of the priority issues, potential solutions to address the priority issues, and findings of the Management and Non-Infrastructure pilot study. A more detailed description of these findings is included in **Book 2**.

7.1 Priority Issues

Several priority issues were developed during the Stakeholder Oversight Advisory Committee (SOAC) process. The specific priority issues that the Management and Non-Infrastructure pilot study aims to address include the following:

- Lack of funding to offset increasingly expensive operations and maintenance costs in large part due to lack of economies of scale.
 - Small systems serving primarily low-income households, especially in isolated locations cannot keep rates affordable and still generate enough revenue to run the system safely over the long term;
 - Lack of funding resources to operate and maintain water or wastewater systems at affordable levels and lack of funding for planning and replacement of infrastructure as it ages.
- Lack of technical, managerial and financial (TMF) capacity by water and wastewater providers.
 - Lack of adequately trained technical, legal, financial, and managerial professionals, as well as inadequate training and ongoing education and assistance for existing water and wastewater providers at the staff and board level;
 - Lack of awareness of available training, assistance, and educational opportunities to support local employment in these sectors.

7.2 Potential Alternatives

The Management and Non-Infrastructure pilot study focused on alternatives to reduce costs and improve efficiency. There are management and non-infrastructure approaches that can benefit both water and sewer systems, falling along a broad spectrum of formality. The alternatives that are presented in this pilot study include:

- Internal Changes
- Informal Cooperation
- Contractual Assistance
- Joint Powers Authority
- Ownership Transfer

- Formation of a Legal Entity
- County Operation of Multiple Zones of Benefit or County Service Areas
- Regional Association
- Combination of Alternatives

Internal Changes

Internal changes are modifications that can be made within an existing entity to reduce costs, improve service delivery, and/or improve efficiency. Some of the internal changes that may be considered include: assessing the existing rate structure to determine if adjustments to the user rates are appropriate; assessing the existing budget, financials, and reserves to determine if adjustments are necessary; and evaluating the existing management structure to see if changes to the structure may benefit the sustainability of the entity.

Informal Cooperation

Informal cooperation can involve two or more entities working together in a mutual aid arrangement, without contractual obligations. By sharing equipment, bulk supply purchases, backup operation and maintenance personnel, sampling and testing services, or similar items or services, the cooperating communities can reduce some of their individual expenses without the need for a formal agreement.

Contractual Assistance

Contractual assistance can be provided in various forms. An entity or group of entities can contract with a private third party entity to provide bookkeeping services, operation and maintenance services, management, engineering, or other services. This type of contract is under each individual system's control, and does not necessarily involve cooperation between two systems. Similarly, an entity can contract with a non-profit organization to provide any of a variety of services. This can involve an existing non-profit entity or one formed for the specific purpose of providing contract services to public or private water or sewer utilities.

Alternatively, contractual assistance can be between utility providers. In this case, an entity could enter into one or more contracts with other entities for the provision of services and/or the purchasing of goods and equipment.

Joint Powers Authority

Inter-agency contracts can involve the creation of a new entity by cooperation between several existing entities, which allows each of the member agencies to continue to exist as independent entities. Inter-agency contracts would most likely be in the form of a joint powers agreement that can form a Joint Powers Authority (JPA). This is a more formal contractual approach than that described in the Contractual Assistance section above.

The new entity formed through the joint powers agreement provides one or more services for all participating entities; however the remaining services of each entity

remain the responsibility of the individual agency. For example, the JPA may create a shared system management structure, while each participating entity continues to operate its own system.

Ownership Transfer

Ownership transfer involves consolidation of two or more systems into one existing or newly created system. This solution includes variants such as: acquisition and physical interconnection between the systems; or acquisition and satellite management (no physical interconnection). This pilot study discusses both forms of consolidation; however it focuses on the governance structure. Options for physical interconnection are developed further in the New Source Development pilot study.

Formation of a Legal Entity

Formation of a public legal entity may be an option for: (1) existing private entities that currently do not have access to funding or other opportunities as a private system, or (2) communities that do not have an existing water or sewer system and want to form a legal entity to provide water and/or wastewater service to the community. These would be communities that rely on private wells and/or septic systems. Individual households with private wells and septic systems are discussed further in the Individual Households pilot study.

Formation of a legal entity would help a system to become eligible for future funding opportunities for which they otherwise may not have been eligible.

County Operation of Multiple Zones of Benefit or County Service Areas

Another alternative may be to utilize County staff or contractors to provide management or operation services within multiple Zones of Benefit (ZOBs) or County Service Areas (CSAs). Many counties already manage ZOBs and/or CSAs within their jurisdictions. If a County has an efficient model in place to operate these service areas, or is willing to implement such a model, it could benefit many unincorporated communities by leveraging the county's considerable economy of scale and expertise in providing service to multiple communities.

Regional Association

A regional association focusing on sharing information can support and augment other solutions. There are various existing associations that can be utilized, or a new association could be formed to provide a specific service or serve a specific region. Regional associations are typically voluntary, independent associations whose main objective may be to act as a clearinghouse of information, materials, or resources to those entities that choose to become a member of the association. Existing entities continue to exist and function independently. Community members and entity leaders, staff and other interested parties can be potential members of the association. Included in this association, or as a separate program, could be training and education courses, including both leadership development and operator training programs. An association could also provide operation and maintenance services on a temporary or permanent basis.

Combination of Alternatives

Any one or a combination of two or more of the alternatives discussed in this pilot study can be implemented. Each community is unique, and therefore the most appropriate or most beneficial solution or solution set will differ from system to system. This study does not aim to recommend a single specific solution; rather it presents a range of potential solutions that could be implemented alone or in combination, depending on the specific circumstances of a particular community. The alternatives presented in this pilot study could also be implemented in combination with alternatives presented in the other pilot studies, and should be considered in the planning phase of any infrastructure project.

7.3 Implementation Process

The process of implementing a management or non-infrastructure solution is initiated when one or more entities decide to move forward in an effort to resolve their water or sewer system issues. From there, the system(s) can identify their needs and select the best options for their specific situation.

The alternatives identified in this pilot study range in formality and levels of sharing, and the implementation process varies significantly for the various options. The communities can choose which alternative(s) to implement depending on their needs and level of comfort with partnering with a nearby system.

The less formal alternatives, including informal cooperation and contractual assistance, can be implemented between the participating entities, with limited approval by regulatory agencies required. Alternatives involving ownership transfer or legal entity formation will require coordination with and approval from LAFCo, and appropriate regulatory agencies. Decision trees that were developed to help guide communities through the implementation process are presented in **Appendix J**.

7.4 Case Studies

Many disadvantaged communities with water supply or water quality issues have applied for and received funding for improvements to mitigate their water supply and/or water quality problems. Many disadvantaged communities with wastewater issues have also applied for and received funding for wastewater collection, treatment and disposal facility improvements. Various disadvantaged communities have implemented management and non-infrastructure type solutions through funded projects, and many others have also implemented these types of solutions on their own. Local communities are already demonstrating some of the solutions presented, including: Pixley Public Utility District, Tipton Community Services District, and Woodville Public Utility District which share resources on an informal basis; Porter Vista Public Utility District which contracts with the City of Porterville to provide sewer lift station maintenance as well as wastewater treatment; Cutler PUD and Orosi PUD which formed a JPA for wastewater treatment and disposal, and Fairways Tract Mutual Water Company which consolidated their water supply and distribution system with the City of Porterville through annexation

into the City. Several other local examples are presented in the Management and Non-Infrastructure pilot study as well (see **Book 2**).

7.5 Stakeholder Outreach Processes

For each pilot study, a Pilot Project Stakeholder Advisory Group was formed to provide review of the pilot study, and provide guidance on potential communities to conduct outreach efforts through a community review process. The community review process involved conducting community review meetings to ground-truth findings, to learn about what the residents in the community review focus area need and want, and to assess their perspective on the alternatives presented within the draft pilot study.

One community review focus area was selected from a list of multiple potential projects to evaluate the alternatives presented in this pilot study. The selected community focus area was the greater Porterville area, including East Porterville, Poplar and Williams (Cotton Center) and many other small communities surrounding Porterville. The community outreach effort for the Porterville focus area was aimed at evaluating various partnership approaches that may help improve technical, managerial, or financial viability by increasing the economy of scale.

More than 20 water systems were invited to participate in community review meetings for the Porterville focus area. Representatives from about 8 communities and the City of Porterville attended the first meeting, and representatives from 5 communities as well as a representative from the City of Porterville, Kings Basin Integrated Regional Water Management Authority (IRWMA) and the United Farmworkers Foundation attended the second meeting. Community participants included operators, board members, and residents.

Key takeaways from participants in the Porterville focus area were generally as follows:

- In general, participants were open to alternatives that would provide safe, reliable, and affordable drinking water, and quality service.
- There was concern that the management and non-infrastructure alternatives presented would not directly improve water quality.
- Education and training is a big need.

7.6 Funding Opportunities

State regulators and funders can begin encouraging non-infrastructure solutions by providing educational material as well as funding opportunities for such alternatives. Existing funding opportunities and proposed drinking water legislation are presented in this study. Traditional drinking water funding programs include the Safe Drinking Water State Revolving Fund, Proposition 84, Department of Water Resources Integrated Regional Water Management Program, Community Development Block Grant Program, and United States Department of Agriculture Rural Development. Some wastewater funding opportunities include the Clean Water State Revolving Fund, the Small

Community Wastewater Grant program, Community Development Block Grant Program, and United States Department of Agriculture Rural Development.

It is noted that most of the management and non-infrastructure alternatives presented in this pilot study would not be fundable under the traditional funding programs that have been available, unless these alternatives are part of a larger capital infrastructure project that meets the funding criteria.

7.7 Sustainability of Program

Long term planning is critical to the success and sustainability of any system. Communities need to ensure that the solution to be implemented is sustainable. Some key steps that may be taken to improve the sustainability of the implemented program include: 1) assess system management adequacy, 2) pursue leadership development opportunities, 3) promote community involvement and buy-in, and 4) consider long-term operations and maintenance impacts and affordability.

7.8 Obstacles and Barriers

Communities have identified and worked through obstacles to implementation of management and non-infrastructure alternatives. Based on the community review process in the Porterville focus area, the general consensus was that if a solution would provide the community with safe and affordable drinking water and good service, they would be willing to consider any of the alternatives presented. However, some of the potential obstacles that have been identified in the Porterville focus area or elsewhere include:

- Disadvantaged community water and/or wastewater systems lack the technical expertise to properly operate and maintain their systems, and they often lack the resources to engage with other entities.
- Consolidation may result in a loss of identity for a local community.
- A system that consolidates other systems into its service area may absorb those acquired systems' debts.
- The initial costs associated with holding meetings and discussing alternatives and potential partnerships, soliciting community involvement, and other associated tasks may be a barrier.
- Local political barriers can be significant.
- Management goals of multiple systems may conflict.

In trying to overcome these obstacles and barriers, it is important that the entities involved are encouraged to focus on the common need they are trying to resolve. The long term health and wellbeing of the residents within the region should be the primary goal, and should outweigh the other obstacles and barriers that may inhibit communities from working together.

7.9 Conclusions and Recommendations

7.9.1 Summary of Findings

Many of the alternatives presented in the Management and Non-Infrastructure pilot study, including internal changes, informal cooperation, contractual assistance, formation of a joint powers authority, ownership transfer, or formation of a legal entity (other than a JPA) can be implemented to improve the technical, managerial, and financial capacity of a water or wastewater system provider. These alternatives may provide increased resources, communication and collaboration, opportunity for training and education, and sharing of services that can improve various capabilities of the water or wastewater serving entity.

While these alternatives can provide many benefits, most of the management and non-infrastructure alternatives presented are not likely to provide a significant reduction in operations and maintenance costs. An exception is formation of a legal entity, which would allow a community system to apply for funding for system improvements, where it would not otherwise have been able to. Sharing resources on an informal or contractual basis will provide some financial benefit to the system, but will be negligible when considering the per connection cost savings. Ownership transfer will allow for improved economy of scale, as well as insurance requirements, permits, and staffing for only one system instead of two or more. This will provide a benefit. However, it is when physical interconnection is involved that greater savings can be achieved.

7.9.2 Recommendations

For communities that are interested in pursuing one of the management and non-infrastructure alternatives presented in this pilot study, additional action is recommended. To implement one of these alternatives, communities should work on the following:

- Define issues that potential alternatives will aim to resolve
- Seek funding to conduct a feasibility study to evaluate alternatives
- Review existing sanitary surveys, inspection reports, or other information providing background on the existing facilities
- Prepare a Self Assessment of all communities involved
- Prepare a Technical, Managerial, and Financial Assessment of all communities involved
- Retain legal counsel to evaluate the available forms of governance and how a different form of governance may change the responsibilities of an agency (if governance structure will be changed)
- Retain an accounting professional to evaluate the financial health of each entity and the feasibility of consolidating finances (if applicable)

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- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)
- Confirm that the solution will satisfy regulatory requirements
- Identify possible partnering communities or entities and initiate discussions
- Engage the community, provide information and seek input and community buy-in

Recommendations for various funding agencies as well as the Legislature were also developed as part of this pilot study, and for the overall Tulare Lake Basin DAC Study. Some recommendations or considerations include:

- County planning departments should consider the feasibility of connecting new development to existing public infrastructure, rather than permitting new small systems.
- Provide an education campaign throughout the Tulare Lake Basin region to educate board members, management staff, operators, and residents on the water issues that are faced by communities in the area.
- Promote Groundwater Management Planning – declining water levels leading to increased water quality contaminant levels and insufficient water supply.
- Continue the Pre-Planning and Legal Entity Formation Assistance Program.
- Continue the Consolidation Incentive Program.
- Consider other funding opportunities to assist with operation and maintenance expenses for communities with excessively high water rates.
- Provide technical and/or financial support for DACs to prepare funding applications.
- Conduct grant application workshops or training.

8 TECHNICAL SOLUTIONS PILOT

The summary presented in this Chapter provides a brief description of the priority issues, potential solutions to address the priority issues, and findings of the Technical Solutions pilot study. A more detailed description of these findings is included in **Book 3**.

8.1 Summary of Pilot Study

This pilot study has been prepared to identify the water and wastewater treatment challenges and provide potential technical solutions to be considered to address some of the ongoing water quality problems for DACs. Decision trees have been developed to help guide communities through some of the implementation processes involved with the technical solutions outlined in this report. The decision trees are flow charts that show data needed to evaluate the technical solutions and the decisions that may be made based on the available data. The decision trees are designed to aid DACs in determining potential technical solutions to address their water or wastewater issues.

8.2 Description of Problems

Several priority issues were developed during the Stakeholder Oversight Advisory Committee (SOAC) process, which was convened as an initial task of this Study. The details of the SOAC, including the purpose of the committee and actions performed, are described in the main body of the Final Report. The priority issues to be addressed are:

- Lack of funding to offset increasingly expensive operations and maintenance costs in large part due to lack of economies of scale;
- Lack of technical, managerial and financial capacity by water and wastewater providers;
- Poor water quality;
- Inadequate or unaffordable funding or funding constraints to make improvements; and
- Lack of informed, empowered, or engaged residents.

Water treatment facilities are typically costly to construct and maintain; therefore, it is generally preferred to resolve water contamination issues by means other than treatment. Often the preferred solution is to find a better quality source of water that does not require treatment. Many communities choose to drill a new well or connect to a neighboring water system to obtain safe drinking water. However, that is not always feasible, especially in areas that have widespread, known water quality contamination issues. If a high quality water source can be found, it can replace the contaminated supply or it can be blended with the contaminated source to provide water that meets water quality standards without treatment. This pilot study focuses on technical solutions for communities that have exhausted all other potential alternatives.

If a source with acceptable drinking water quality cannot be found, it may be necessary to provide a treatment system. Sometimes it may be advantageous to build a regional treatment system to treat the water to supply several neighboring communities. This pilot study examines these treatment alternatives and their potential use to remove the contaminants present in the Study Area. The findings and recommendations in this report are based only on a list of drinking water MCL exceedances and are therefore general and preliminary in nature. Determining the appropriate treatment approach for individual systems will require a more detailed evaluation of water quality and system-specific constraints that are beyond the scope of this pilot study.

All treatment systems generate liquid and/or solid waste streams that must be disposed. The disposal options will depend on the type of treatment system used; disposal options include non-mechanical and mechanical dewatering, discharge to a sewer collection system, deep well injection, evaporation, offsite disposal or zero liquid discharge. The treatment of residuals can be accomplished at the water treatment plant site or at a regional site that treats waste streams from multiple treatment plants. This pilot study also focuses on technical solutions for water treatment residual disposal that may remove obstacles for treatment or may reduce the overall cost of treatment.

In order to minimize the capital and operations and maintenance costs, a water treatment system should ideally treat water used primarily for potable and in-home use. If a large portion of a drinking water supply is used for non-potable purposes, a dual water distribution system can be considered as a technical solution that may reduce treatment costs. One distribution system would convey non-potable water for irrigation, landscaping, farming, etc., and a separate system would convey potable water.

Water conservation and energy conservation are technical solutions that can reduce the cost of producing potable water also minimizing potable water demand will minimize the cost of treatment facility construction and operation. Energy conservation will also minimize the energy cost associated with operating a water treatment plant. Energy conservation can be achieved through the use of energy efficient pumps, pumps with variable speed drives, and energy efficient motors. Renewable energy from biogas or solar is another option to reduce energy costs.

8.3 Potential Technical Solutions

This pilot study investigates and discusses how various technical solutions can be implemented. Technical solution alternatives to be discussed and possibly implemented in the TLB include:

- Blending
- Dual water distribution systems
- Biological nitrate reduction for water treatment
- Joint residual handling, management and disposal
- Lower cost water treatment technology

- Water and energy efficiency technology

Most of the existing DAC WWTFs in the Tulare Lake Basin discharge to land either through percolation, evaporation, or leach fields. There are some WWTFs that have the ability to discharge to a surface water. Residents in unsewered DACs discharge wastewater to individual leach fields or alternative on-site systems. Since both WWTFs and individual household systems discharge to land, improperly treated wastewater has the potential to pollute underlying groundwater. The polluted groundwater could lead to drinking water quality issues. Improvements to existing WWTFs could include:

- Additional lagoon volume
- Improved treatment process to existing wastewater treatment facilities (for example: Biolac)
- Nitrogen removal via solids recycling
- Additional pollutant removal by adding filters for tertiary treatment
- For the unsewered communities, a solution would involve installing a sewer collection system in addition to constructing a WWTF. Additionally, the existing household treatment systems would need to be properly abandoned.

Any improvements to existing WWTFs or a new WWTF would require adequately trained staff to operate and maintain the more complex treatment systems. The costs to construct and operate a new or upgraded WWTF can be expensive, especially to DACs.

It may be beneficial to have nearby communities to join an existing regional wastewater treatment facility. A regional wastewater facility may allow for some economies of scale cost savings for the construction of the facility and a larger customer base to pay for ongoing operations and maintenance costs.

8.4 Case Studies

In order to demonstrate the process of selecting and implementing technical solutions, several communities, at various stages of implementation, are highlighted. For water technical solutions, these communities are:

- Riverdale Public Utilities District – in process of locating a new well and treatment for arsenic removal
- Caruthers Community Services District – in process of constructing a new well and designing a treatment plant for arsenic removal
- Home Garden Community Services District – exploring modifications to existing arsenic removal treatment plant

For wastewater technical solutions, these communities are:

- City of Kerman – constructed WWTF improvements to expand capacity and improve treatment plant pollutant removal

- Caruthers Community Services District – constructed WWTF improvements to add nitrification/denitrification to activated sludge process

8.5 Community Review

Communities were selected to help further evaluate and ground truth the technical solutions presented in this pilot study. The community review process was also used to aid communities in developing a roadmap to address their particular issues. For the Technical Solutions pilot study the following DACs were part of the community review process:

- Home Garden Community Services District - technical solutions regarding the disposal of residuals from their arsenic treatment system.
- Poplar Community Services District – technical solutions for elevated nitrate concentrations in a groundwater well.

The community review process provided insight into the many water issues DACs face. Both communities reported water and/or wastewater challenges. A majority of the issues DACs face are related to costs and keeping rates affordable for its users. These costs are associated with the necessary engineering work needed to develop a solution, the construction of the chosen solution and the impact of the ongoing operations and maintenance costs. DACs, by definition, are disadvantaged and any increase in utility bills will have an impact on the residents. The potential cost impacts on the community will be very important in evaluating any water solution.

8.6 Funding Opportunities

State regulators and funders already provide educational material as well as funding opportunities to DACs. However, many DACs have issues with navigating the funding process and evaluating potential solutions for their community. Several existing funding opportunities and proposed drinking water legislation are presented in this pilot study. Some of the traditional drinking water funding programs include Safe Drinking Water Revolving Fund (SDWRF), Proposition 50, Proposition 84, Department of Water Resources Integrated Regional Water Management Act, Community Development Block Grant Program (CDBG), and United States Department of Agriculture (USDA) Rural Development. Each of these funding opportunities requires different applications with different informational requirements. These applications may be beyond the ability of a DAC to complete without assistance.

The State Water Resources Control Board administers the Clean Water State Revolving Fund (CWSRF) Program, which offers low-interest financing agreements for wastewater quality projects. Limited principal forgiveness/grants are available for disadvantaged communities. Eligible projects include, but are not limited to, construction and rehabilitation of publicly-owned wastewater treatment facilities, water reclamation facilities, and sewer systems. The types of improvements described in Section 7 of the Technical Solutions pilot study, including both improvements to existing treatment

systems and installing sewer infrastructure in unsewered communities, would likely be eligible for funding under the CWSRF Program.

All these funding sources have limited funding available each year, meaning DACs must compete for funding. The need for funding exceeds the amount of available funding, meaning certain communities may not receive funding for a number of years. In addition to the typical funding sources for water and wastewater projects, funding for “green” projects that involve alternative energy, water conservation or energy conservation may be beneficial to DACs depending on the water solution.

The funding opportunities offered by the various agencies cover only the capital costs associated with any improvements through construction. Once constructed, the DAC will need to pay for the ongoing operations and maintenance of the improvements, typically through utility bills. Currently, there are no funding sources available to help offset ongoing operations and maintenance costs despite the widespread need.

8.7 Sustainability of Technical Solutions

The equipment involved with any of the technical solutions will have an estimated life of at least 20 years if properly maintained. The biggest sustainability issue with any of the technical solutions will be the ability of the community to pay for and operate the solution. The operations and maintenance costs will increase the utility bills of the residents; the ability of residents to pass any required rate increases and pay those increases will be the biggest issue affecting sustainability. The other issue affecting sustainability is the ability of the community to find and retain qualified operators to operate the technical solutions.

Since increased operations and maintenance costs can be burdensome to communities, the evaluation of potential solutions should include careful analysis of ongoing maintenance costs. For example, spending more in capital costs for an automated system may result in lower recurring operations and maintenance costs. Operations and maintenance costs may also be lowered by evaluating some of the solutions presented in the Management and Non-Infrastructure pilot study, such as sharing common resources or forming joint governmental agencies to share costs.

8.8 Obstacles and Barriers

There are numerous obstacles that a community must overcome in order to implement a technical solution. Some of these obstacles include:

- Lack of approved technologies – For certain pollutants, like nitrates and fluoride, there are a small number of approved technologies. However, there are alternate treatment technologies constantly being developed. CDPH currently has an approval process for these emerging technologies. However, having an expedited process set up to pilot and potentially approve emerging technologies could be helpful to DACs if a more cost effective treatment is developed.

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- Proper selection of technology – This pilot study provides a guide of possible technical solutions. However, a more detailed evaluation of the technical alternatives would need to be completed to select a technology that will solve the particular problem(s) of a given community and is sustainable.
- Community acceptance – In order for the technical solution to be feasible it would need to be generally understood and accepted by the community. This acceptance would need to include the understanding of why a certain solution is being selected and how the community will benefit from the solution. Community acceptance would help with the passing of any rate increases and the payment of future utility bills. Levels of acceptance rise with increased community understanding of the necessity and benefits associated with any technical solution.
- Capital costs – There will be capital costs associated with any technical solution. If treatment is involved, the capital costs could be several million dollars. There is the opportunity to obtain funding through the traditional sources for water and wastewater projects or through funding for alternative energy or conservation projects. The ability to secure the necessary funding could be a major obstacle. Targeted and effective coordination of multiple funding coordinators and/or technical assistance providers can help address this obstacle.
- Operation and maintenance costs - The community may be able to obtain grants or low interest loans to pay for the associated capital costs for a technical solution; there are currently no funding mechanisms in place to assist with operation and maintenance costs. These costs will have to be borne by the rate payers in the community. Depending on the median household income in the community, the utility rate increase may adversely impact the rate payers. Potential solutions should be analyzed for ongoing maintenance costs so that these costs can be minimized and anticipated. Operations and maintenance costs may be lowered by evaluating some of the solutions presented in the Management and Non-Infrastructure pilot study such as sharing common resources or forming joint governmental agencies to share costs. A program that would provide transitional funding to help offset rate increases for a period of time would be beneficial.
- Licensed operators – The technical solutions may require a higher level certified operator than is currently employed or contracted by the community. A higher level operator would likely command a higher salary due to the scarcity of trained and certified operators at the higher level. It can be difficult for an operator at a DAC to maintain his certification since this requires ongoing educational requirements. Obtaining these educational requirements can be costly and requires time off work to attend, as well as travel from remote, rural locations. It is also difficult for an operator at a DAC to obtain a higher grade license since this would require spending a certain amount of time at a higher rated plant.
- Water meters – There are some DACs that have water meters installed; however sometimes the meters are not read and billing is done at a flat rate. The meters

are not read due to lack of staff available to perform this task. Reading meters and billing based on usage would lessen the water demand. This would result in lower operating costs for water pumping and treatment. Other DACs do not have water meters installed. These DACs would benefit from the installation of meters that can be read remotely to reduce the staff needed to perform the meter reading task. DACs would need to analyze and establish appropriate metered rates and billing systems. These tasks will require assistance. Many other DACs may have meters that are old or not working. DACs would benefit from funding to replace old and non-working water meters and to facilitate partnerships between other neighboring communities with or in need of water meters. Funding for meters has been limited and/or hard to obtain. For the most part funding has been limited to the funding made available through the IRWM program or Drinking Water Program as part of other larger projects.

- Waste disposal – If a water treatment solution is selected, there will be residuals that will need to be disposed. The waste to be disposed could be high in salinity or classified as hazardous waste. These will require additional costs to dispose of properly. During the evaluation of potential water solutions, the costs associated with waste disposal need to be evaluated. There are potential opportunities for DACs to reduce waste disposal costs by sharing resources with nearby communities that share a similar problem or instituting some of the solutions presented in the Management and Non-Infrastructure pilot study.

8.9 Conclusions and Recommendations

The following are items to be considered when evaluating any of the options in the Technical Solutions pilot study. These are items to be considered by various parties in order to facilitate the implementation of technical solutions to communities in the Study Area.

- Overall Considerations Regarding Technical Solutions for Disadvantaged Communities
 - Water treatment should be a “last resort”.
 - The technical solution will be specific to each community although communities can learn from each other in regards to implementing a solution.
 - For communities with failing septic systems, installation of a waste collection system and a wastewater treatment facility may be needed.
 - The technical solution must be financially sustainable by the community and ideally reduce or minimize ongoing operations and maintenance costs.
- Funding Agency Considerations
 - Ensure that funds are not used to support unsustainable systems. During the evaluation of funding, an evaluation should be done to show that utility

rates are and will remain affordable and that the potential solution should minimize operation and maintenance costs.

- Funding should be made available to public and investor-owned utilities for assisting in the restructuring of small water systems. If funding is provided to investor-owned utilities, they should be required to conform to the same technical, managerial and financial requirements as publicly-owned systems.
- Investigate the possibility of providing funding to offset the cost of increased operations and maintenance costs.
- Make funding available for projects that only involve the installation of water meters that can be read remotely. Currently, these projects are ranked lower than larger projects that involve treatment or new water sources and are rarely invited to apply for funding through traditional funding sources.
- Support the development and implementation of water conservation policies/measures by providing incentives and technical assistance to DACs and promoting the use of water and energy efficient equipment upgrades, such as energy-efficient or solar powered pumps.
- Promote effective coordination of multiple funding sources whenever possible. This can be accomplished by working the local funding coordinators and/or technical assistance providers.
- Community Involvement Considerations
 - The community should be involved throughout the process of improvements to their water and wastewater systems. The community should be invited to understand the alternatives evaluated, the reason for selection of a certain alternative, and the analysis of potential operations and maintenance costs. Care should be taken to develop effective community outreach methods, with attention to language, cultural, and social barriers.
 - Local political issues may discourage some needed changes to the water/wastewater system. Community outreach and engagement can help residents understand the benefits of a proposed solution, which may outweigh political barriers.
 - In most cases the final solution to a water/wastewater issue is not so much “planned” as it is negotiated. Such a negotiated solution has the potential to be regarded as a success in that it will be embraced by more stakeholders.
- Regulatory Considerations
 - EPA and CDPH could support fledgling water treatment technologies (i.e. titanium based nanofibers for arsenic removal, carbon nanotubes for

nitrate removal, membrane biofilm reactor (MBfR) for wastewater treatment, anaerobic migrating blanket reactors (AMBR) for wastewater treatment) through a verification program. The verification program is a study of a particular treatment process to establish its effectiveness at meeting its treatment claims.

- Small systems could benefit from more technical assistance from state water regulators. The state currently offers funding workshops and community groups like Self-Help Enterprises can offer technical assistance. However, due to the locations of these workshops they are not easy for DAC staff to attend. Regulatory agencies could offer more assistance tailored to specific small systems in order to guide them through the funding and alternatives analysis.

9 NEW SOURCE DEVELOPMENT PILOT

The summary presented in this Chapter provides a brief description of the priority issues, potential solutions to address the priority issues, and findings of the New Source Development pilot study. A more detailed description of these findings is included in **Book 4**.

9.1 Priority Issues

An initial task for the study was to organize a Stakeholder Oversight Advisory Committee (SOAC). The details of the SOAC, the purpose of the committee, and actions performed are described in the main body of the Final Report. The SOAC identified four pilot study topics for the Consultant Group as a culmination of meetings that took place from October, 2011 to July, 2012.

Several priority issues were developed during the Stakeholder Oversight Advisory Committee (SOAC) process. The specific priority issues that the New Sources Development pilot study aims to address include the following:

- Poor Water Quality - Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants (i.e. taste, color, smell, etc.), and health impacts.
- Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements - Lack of affordable or accessible funding for system improvements; Inadequate funding to make successful grant applications to get infrastructure improvements (i.e. lack of funding for grant writers, preliminary engineering, etc.); funding isn't always getting to the communities that need it most.
- Lack of Informed, Empowered, or Engaged Residents - Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts.

9.2 Potential Alternatives

Potential alternatives for water supply solutions may include:

- Physical consolidation – water or wastewater facilities
- Exchanges or contracting for surface water, or another source
- Regional Facility (Drinking Water or Wastewater)
- New well(s)

- Treatment of existing sources
- Recharge of a local area
- Water Conservation
- Restrict potable water deliveries from agricultural or large turf irrigation
- Mitigate a source of contamination such as on-site wastewater systems

Physical Consolidation

Physical consolidation of a water system to a neighboring water system may be a viable alternative to address water supply or water quality concerns. Physical consolidation involves connection of distribution pipelines or water service pipelines between the two systems. Typically, the system with water supply or water quality problems benefits from connection to the system that has sufficient capacity or water quality that satisfies regulatory requirements. Physical consolidation of a private system to a publicly owned community system (such as the consolidation of Lacey Courts Mobile Home Park with the City of Hanford) may be accomplished with the extension of a water service to the property. The private well would be required to be destroyed and the property would typically be required to annex to the publicly owned community or city system.

Physical consolidation of a small community water system to a larger community or city water system may require the complete reconstruction of the smaller system distribution system to satisfy current distribution system standards. Physical consolidation typically results in the dissolution of the ownership or management of the smaller system. The requirements associated with operation and maintenance of the water system are retained by the larger community system.

Exchanges or Contracting for Surface Water, or another Source

There may be opportunities for a community to contract for the delivery of a surface water supply from another entity. The surface supply will require water treatment and may have limitations regarding the reliability of the supply.

The contracting for supply from a larger water system may involve the construction of new sources and distribution system facilities to connect the small community water system to that of an adjacent system. While similar to the concept of consolidation, this type of alternative is a form of contracting for additional water supply.

Contracting for groundwater sources of supply from another entity is another example of this alternative.

Regional Facility

There may be opportunities for communities to combine resources and create a regional system for water supply. This alternative is similar to consolidation, however, it is likely that a new political entity would be created to own, operate, and maintain the regional facility.

An example of a regional system is the Selma Kingsburg Fowler County Sanitation District. This system is directed toward sanitary sewer collection, treatment, and disposal.

New Well

There may be opportunities for communities to construct a new water supply well that could provide the quantity and quality required. A new water supply well could however require treatment. It is noted that **Figure 2-1** through **Figure 2-4** identify raw water quality from water supply wells where water quality objectives for constituents such as arsenic, nitrate, and uranium are exceeded.

Treatment of Existing Sources

There may be opportunities for communities to construct a new water treatment facility to treat the water from an existing well. Treatment may also be performed by blending water from two different sources prior to distribution so that the final water meets regulatory requirements. It is noted that **Figure 2-1** through **Figure 2-4** identify raw water quality from water supply wells where water quality objectives for constituents such as arsenic, nitrate, and uranium are exceeded. Some of the systems identified to have raw water quality issues may already have treatment systems to address these issues. The Technical Solutions pilot study further discusses treatment options.

Recharge of a Local Area

There may be opportunities for a community to contract for the delivery of a surface water supply from another entity for the purposes of recharging the groundwater of an area in need of supplemental water to mitigate declining groundwater levels. It is noted that recharge activities may also have beneficial impacts on local water quality.

The entire Tulare Lake Basin Study Area is subject to declining groundwater levels. It is noted that there may be recharge sites that are not shown in the exhibits as there is not a comprehensive list of every site in the basin. However, the fact is that there exist recharge sites throughout the Study Area. Further, the rivers, canals, and streams that exist in the Tulare Lake Basin serve as recharge facilities when they convey water.

Water Conservation

There may be opportunities for communities to implement water conservation measures including the installation of water meters and implementation of an associated metered water rate schedule for all connections. Other water conservation measures could include performing leak detection studies and implementing the necessary corrective actions, requiring low flow appliances within residences, or providing rebates for the installation of low flow appliances. Water conservation, as encouraged through water meters, rate schedule, and other water conservation measures may result in water savings for a community. Each community is unique, however, a water savings of up to 20 percent is not unreasonable.

Restrict Potable Water Deliveries to Agricultural or Large Turf Irrigation

There may be opportunities for communities to encourage or require the restriction of potable water supply and delivery to non-potable uses. Examples may be turf irrigation of schools or parks, or agricultural irrigation. If potable water use is to be separated from non-potable water use on a property, there must be a means to measure the relative use of each water source on that property.

Communities such as Armona CSD, Pixley PUD, and Ivanhoe PUD have schools within their boundaries that have installed shallow groundwater wells for the purpose of landscape irrigation. The heavy summer demands of large landscape areas may be significant for communities within the Study Area, and installation of a separate non-potable service may significantly reduce the peak summer demands on the potable supply.

Mitigate a Source of Contamination

There may be opportunities for communities to encourage or require the mitigation of sanitary sewer treatment and disposal systems that may have an adverse impact on source water quality. The on-site systems may be contributing to the elevated nitrate concentrations.

9.3 Implementation Process

As is common to most rural water systems, distressed rural economies preclude straight-forward capital-intensive solutions without outside sources of funding. Creative solutions for sharing common functions (billings, operations, etc.) could help free up resources for capital investment.

One of the key tasks associated with evaluating water supply and quality issues is to develop a knowledge base of the existing condition. When a community has knowledge regarding its water and wastewater infrastructure and the local conditions that may impact the operation of the facilities, the community has the opportunity to proactively address challenges. Local leadership associated with water and wastewater issues is critical to sustainable solutions that may be available. Many disadvantaged communities will require technical assistance to present solutions and funding assistance for capital improvements, however, long term operation and maintenance of the facilities remains the responsibility of the local community.

The implementation of long term solutions may also incorporate recommendations contained in the Management and Non-Infrastructure pilot study and the Technical Solutions pilot study.

Decision Trees are intended to be a tool for community leaders to use to assist them to develop appropriate solutions to water and wastewater challenges.

9.4 Case Studies

Many disadvantaged communities with water supply or water quality issues have applied for and received funding for improvements to mitigate their water supply and/or water quality problems. Many disadvantaged communities with wastewater issues have also applied for and received funding for sewer or wastewater treatment facility improvements. Several case studies are presented in the New Source Development pilot study (See **Book 4**).

9.5 Stakeholder Outreach Process

For each pilot study, a Pilot Project Stakeholder Advisory Group was formed to provide review of the pilot study, and provide guidance on potential communities to conduct outreach efforts through a community review process. The community review process involved conducting community review meetings to ground truth findings, to learn about what the residents in the community review focus area need and want, and to assess their perspective on the alternatives presented within the draft pilot study.

Community reviews were conducted for three selected communities: Sultana CSD, Ivanhoe PUD, and Stratford PUD.

Sultana

Currently, Sultana Community Services District's water system serves one-hundred and sixty (160) water connections providing water to two-hundred forty-two (242) residences; one (1) post office; nine (9) commercial establishments; two (2) gas station/grocery stores; one (1) church; one (1) packing house; and the Monson-Sultana School.

The water system is currently supplied by one primary active well (Well No. 3) which was drilled in 1996 to a depth of 430 feet; has an annular seal to a depth of 250 feet with a 14-inch casing installed to a depth of 430 feet perforated between 260 and 420 feet. The well is equipped with a 60 hp oil lubricated turbine pump and 5,500 gallon hydropneumatic tank. A natural gas generator is located at the well site to provide power when electrical service is interrupted. The District's backup well (Well No. 2) was drilled to a depth of 358 feet; has an annular seal to a depth of 60 feet with a 14-inch casing installed to a depth of 332 feet. This well is equipped with a 75 hp oil lubricated turbine pump and also a 5,500 gallon hydropneumatic tank.

Water pumped from the District's primary well (Well No. 3) meets all Title 22 standards. However, the system's backup well (Well No. 2) has produced water exceeding the DBCP Maximum Contaminant Level set by EPA and CDPH.

The challenges faced by the Sultana Community Services District include:

- Disadvantaged Community
- A single water supply well that meets potable water quality regulations but is not sufficient for peak or fire demands

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- A second water supply well that exceeds water quality regulations for nitrate and DBCP
- Unknown water demands
- Unknown water losses
- Undersized water distribution mains
- No water storage
- Local groundwater that has high nitrate and DBCP
- Minimal cash reserves
- 2014 drought

Goals of the Sultana Community Pilot Project

The goals of the Sultana Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC Study and the New Source pilot study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Source pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Sultana CSD to consider.

Pilot Project Activities Summary

1. Obtain and review records
2. Field review – well, community system, community characteristics
3. Meet with District and operations staff
4. Discussions with CDPH – regulatory and funding
5. Discussions with City of Dinuba
6. Review of Monson water quality and funding applications
7. Review of Northern Tulare County Regional Safe Drinking Water Project surface water plant alternative
8. Review sewer discharge agreement
9. Review past studies
10. Review past funding applications

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11. Prepare draft Decision Trees
12. Conduct a Community Review Meeting
13. Summarize activities
14. Provide recommendations for District consideration

Recommended Future Actions and Schedule

1. Monitor and record the water use of Well No. 3 and Well No. 2 daily.
2. Determine the standing water level in Well No. 3 and Well No. 2.
3. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
4. Identify potential water supply well and water storage sites.
5. Perform a hydrogeological study of the area to determine if potable water supply is available. Construct a test well to confirm the availability of sustainable potable water.
6. Proceed with funding and construction of a water supply well.
7. Consider adjustment of water rates. The District is in dire need of additional reserves and operating funds.
8. Consider applying for funding for installation of water meters.
9. The District should consider including the installation of new water meters that can be read remotely in any larger project. A new billing rate structure would need to be determined that would include a base rate to cover basic O&M costs that would be billed regardless of how much water is used and then a per gallon rate for water used. This would encourage water conservation within the District.
10. Consider prohibiting any new connections.
11. Consider establishing connection fees once a sustainable water supply is obtained.
12. Consider contracting for water service from the City of Dinuba.

The District should consider including consolidation with the City of Dinuba when pursuing grant funding. Projects that include consolidation are strongly preferred by CDPH and tying consolidation into any water system improvements may result in a higher ranking for the project.

13. Coordinate with Monson and Tulare County with any local hydrogeological investigations.
14. Maintain interest in the Northern Tulare County Regional Safe Drinking Water Project for future water supply alternatives.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs,

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estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

Ivanhoe

The Ivanhoe PUD is responsible for providing domestic water service within the District's Boundary. Ivanhoe's water supply is derived from five deep underground wells that pump at a consistent water level between 250 and 350 feet. According to District staff, the five wells provide water supply requiring no chlorination or treatment. District staff indicated that the production capacity of the wells ranges between 360 and 950 gallons per minute (gpm) and that the five wells have a total maximum production capacity of approximately 3,090 gpm.

The challenges faced by the Ivanhoe Public Utility District include:

- Disadvantaged Community
- Increasing nitrate concentrations in wells; presence of DBCP, TCP
- Undersized water distribution mains in a portion of the District
- Some water distribution valves do not close completely
- No water storage
- Although information available from the Department of Water Resources indicates that the standing water elevation of agricultural wells in the vicinity of Ivanhoe have declined by approximately 50 feet since the mid 1980's, the District indicated that standing water levels of the municipal wells have not been significantly impacted. It is recommended that in light of the current drought, the District monitor the water levels of the water supply wells on a regular basis.

Goals of the Ivanhoe Community Pilot Project

The goals of the Ivanhoe Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC Study and the New Sources pilot study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.

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- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Ivanhoe PUD to consider.

Pilot Project Activities Summary

1. Obtain and review records
2. Meet with District and operations staff
3. Discussions with CDPH – regulatory and funding
4. Review potential of physical consolidation with Cal Water (City of Visalia)
5. Review past funding application
6. Prepare draft Decision Trees
7. Conduct a Community Review Meeting
8. Summarize activities
9. Provide recommendations for District consideration

Recommended Future Actions and Schedule

1. Place Wells No. 2 and No. 7 as standby in the Water Supply Permit.
2. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
3. When funding becomes available, perform a hydrogeological study of the area to determine if potable water supply is available. Construct a test well to confirm the availability of sustainable potable water. Utilize the hydrogeological study to immediately explore the location for future well sites.
4. Proceed with funding and construction of a water supply well.
5. Consider the review of blending new water supply wells with either of the standby water supply wells for the purposes of achieving acceptable nitrate levels. This review would include the review of potential water storage tank sites.
6. It is recommended that the District maintain interest in the Kaweah River Basin IRWMP as it may be available as a vehicle to utilize to apply for funding assistance for future water supply improvements.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

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During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

Stratford

The town of Stratford is located in Kings County, approximately 4.5 miles south of Lemoore California. As a rural area with a population of 1,277 (Census 2010), the community is surrounded by open space and agriculture land. The Stratford Public Utility District (SPUD) provides community services (water, sewer, refuse collection, and streetlights) to the residents of Stratford. The Stratford Public Utility District operates a water distribution system. The existing infrastructure of the water distribution system consists of approximately 300 metered service connections, 4 inch and 6 inch diameter asbestos cement piping, and approximately 65 existing fire hydrants. There are currently three (3) existing wells in Stratford (Well No.s 5, 6, and 7). Currently, the SPUD maintains a water storage tank that has a storage capacity of approximately 30,000 gallons.

Challenges Faced by Stratford Public Utility District

The challenges faced by the Stratford Public Utility District include:

- Disadvantaged Community
- Insufficient water supply to meet maximum day demands with the largest well out of service
- Aged and undersized water distribution mains
- Perched water and corrosive soils
- Minimal water storage
- No cash reserves
- Not included within the geographic boundary of any IRWM group, and therefore unable to join

Goals of the Stratford Community Pilot Project

The goals of the Stratford Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC Study and the New Sources pilot study.

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New Source Development Pilot Study

- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Stratford PUD to consider.

Pilot Project Activities Summary

1. Obtain and review records
2. Meet with District and operations staff
3. Discussions with CDPH – regulatory and funding
4. Review past funding applications
5. Prepare draft Decision Trees
6. Conduct a Community Review Meeting
7. Summarize activities
8. Provide recommendations for District consideration

Recommended Future Actions and Schedule

1. Place Well No. 6 as standby in the Water Supply Permit.
2. Update the Funding Application for a new water supply well with the reinforced consideration that the District does not have a sufficient water supply.
3. Upon receipt of funding assistance, proceed with construction of a water supply well and water storage tank.
4. It is recommended that the District maintain interest in the Kings Basin IRWMP as it may be available as a vehicle to utilize to apply for funding assistance for future water supply improvements. IRWMP's may be a viable mechanism to utilize to receive funding assistance.
5. Investigate the potential of working with the school to construct a new water supply well for the purpose of irrigation of school landscaping.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and

wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

9.6 Funding Opportunities

State regulators and funders can begin encouraging solutions by providing educational material as well as funding opportunities. Existing funding opportunities and new drinking water legislation are presented in this study. Traditional drinking water funding programs include the Safe Drinking Water State Revolving Fund, Proposition 84, Department of Water Resources Integrated Regional Water Management Program, Community Development Block Grant Program, and United States Department of Agriculture Rural Development. Some wastewater funding opportunities include the Clean Water State Revolving Fund, the Small Community Wastewater Grant program, Community Development Block Grant Program, and United States Department of Agriculture Rural Development.

9.7 Sustainability of Program

A sustainable water system is one that can meet fiscal and customer performance goals over the long-term. Sustainable systems have the following characteristics:

- A commitment to meet service expectations.
- Access to water supplies of sufficient quality and quantity to satisfy future demand.
- A distribution and treatment system that meets customer expectations and regulatory requirements.
- The technical, institutional, and financial capacity to satisfy public health and safety requirements on a long-term basis.

Small systems today face severe challenges, including rapidly increasing regulations, declining water quality and quantity, legal liability for failing to meet requirements of the Safe Drinking Water Act, financial distress, and customer resistance. A system's ability to deal with these challenges depends, to a great degree, on its managerial, technical, and financial capabilities.

Small water systems must find ways to make the capital improvements or operational changes necessary to ensure long-term sustainability. Maintaining this long-term focus in the face of pressing immediate needs is one of the greatest challenges small water systems face.

As is often the case, financial capacity lies at the heart of this challenge. Small systems in particular are hampered by limited access to capital funds, often due to an insufficient

rate and/or tax base, either because the number of customers is small or because the population served has a low MHI.

9.8 Obstacles and Barriers

There are numerous obstacles that a community must overcome in order to implement a new source solution. Some of these obstacles include:

Proper selection of new source – This pilot study provides a guide of possible new source solutions. However, a more detailed evaluation of the new source alternatives would need to be done to select an alternative that will sustainably solve the problem(s) unique to each community.

Solution – Select an engineering firm with experience in dealing with water supply or quality issues similar to the community's issues. Each community has unique issues. An evaluation of the alternatives that includes technical, fiscal (capital and operational), and managerial requirements is critical. Technical recommendations would take into account the various aspects of the alternatives and the capabilities of the community system to own and operate the facilities.

Community acceptance – In order for the new source solution to be successful it would need to be accepted by the community. Community acceptance would help with the adoption of any rate increases and the payment of future maintenance costs. The community understanding the reason for and benefits associated with any new source solution would be beneficial.

Solution – It is critical to get the community involved early on in the process of any new source alternative. Community involvement throughout the process is encouraged. Communication with the community residents regarding the alternatives available to address the community challenges is critical to determine the most appropriate and acceptable solution for the specific community. The community should be given the opportunity to be informed of new source solutions being considered and how the changes may affect their water/wastewater and the additional costs. These circumstances provide opportunities to receive community feedback. Levels of community acceptance may rise with increased community understanding of the necessity and benefits associated with any solution.

Capital costs – There will be capital costs associated with any new source solution. The ability to secure the necessary funding could be a major obstacle.

Solution – Consulting firms or some community groups (like Self Help Enterprises) are experienced in helping small communities obtain funding. These firms or groups are familiar with available funding and the process needed to secure the funding. The consultant should also be familiar with helping the community obtain funding for any possible improvements. Experience with the pooling of funding sources is also beneficial.

Operation and maintenance costs - The community may be able to obtain grants or low interest loans to pay for the associated capital costs for a new source solution. Operation and maintenance costs will have to be borne by the residents in the community (customers of the system).

Solution – Selection of the most appropriate new source solution includes a strong consideration of the annual costs to sustain the facilities. These costs would include O&M, providing funds for reserves, and debt service for any loans for the capital costs. Community acceptance of the new source solution may help ease the acceptance of necessary rate increases.

Water meters – Using water meters and billing based on usage are ways to encourage water conservation.

Solutions – Water conservation through the installation of water meters is only appropriate if the water rate structure is based on water use. The community system must adopt a water rate schedule that is based on water use for the benefits of water meters to be realized.

Licensed operators – The new source solutions may require a higher level certified operator than is currently employed or contracted to the community. The operator at the higher level would likely command a higher salary due to greater technical capabilities and responsibilities.

Solutions – Explore the possibility of an existing operator for the community system to obtain the required certification. If an operator cannot be found from existing staff, the community may need to explore the possibility of hiring a contract operator. As discussed in the Management and Non Infrastructure pilot study, the option of neighboring communities sharing resources, such as certified operators is a possible alternative to consider.

9.9 Conclusions and Recommendations

For communities that are interested in pursuing one of the New Source Development alternatives presented in this pilot study, additional action is recommended. To implement one of these alternatives, it is recommended that communities consider the following tasks:

- Prepare a Self Assessment of the existing infrastructure, capacity, demands, and items that may impact any of the items.
- Seek funding to conduct a feasibility study to evaluate alternatives
- Prepare a Technical, Managerial, and Financial Assessment
- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)

- Confirm that the solution will satisfy regulatory requirements
- Confirm the solution is fiscally sustainable

Recommendations for various funding agencies as well as the Legislature were also developed as part of this pilot study, and for the overall Tulare Lake Basin DAC Study. Some recommendations or considerations include:

- County planning departments may consider specific limitations when proposals for new small systems are received.
- Regulatory changes (water and wastewater) should be evaluated with the perspective of and impact to the service providers and consumers in mind.
- Providing technical and/or financial support for DACs to prepare funding applications.

10 INDIVIDUAL HOUSEHOLDS PILOT

The summary presented in this Chapter provides a brief description of the priority issues, potential solutions to address the priority issues, and findings of the Individual Households pilot study. A more detailed description of these findings is included in **Book 5**.

The individual household, for the purposes of the Individual Household pilot study, is a single household that utilizes a privately owned, individual groundwater well to satisfy its water supply demands. An individual household may also use an on-site wastewater treatment system, such as a septic tank and leach line system. An individual household may be represented by the homeowner or renter. In general, individual households are not subject to drinking water quality regulations. Until May 2013, individual households were not subject to wastewater treatment and disposal regulations. Wastewater treatment and disposal regulations now apply to new on-site wastewater treatment and disposal systems. Numerous water quality and wastewater problems have been encountered in rural areas populated by individual households.

10.1 Priority Issues

Several priority issues were developed during the Stakeholder Oversight Advisory Committee (SOAC) process. The specific priority issues that the Individual Households pilot study aims to address include the following:

- Poor Water Quality - Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants (i.e. taste, color, smell, etc.), and health impacts.
- Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements - Lack of affordable or accessible funding for system improvements; Inadequate funding to make successful grant applications to get infrastructure improvements (i.e. lack of funding for grant writers, preliminary engineering, etc.); funding isn't always getting to the communities that need it most.
- Lack of Informed, Empowered, or Engaged Residents - Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts.

Specific problems associated with the individual household or respective renter are difficult to establish due to very limited regulatory oversight. Problems that affect rural communities and water systems can be assumed to affect the individual household. Additional problem identification can result from voluntary reporting from individual households, academic studies and professional experience. Problems affecting

individual households can be categorized into three (3) categories: 1) water quality, 2) water quantity and its delivery, and 3) wastewater treatment and disposal.

10.2 Potential Alternatives

The Individual Households pilot study was prepared to assist in directing the individual person(s), such as the homeowner or renter associated with a household, to potential solutions to identified water quality and/or wastewater problems. The Individual Households pilot study provides guidance to the individual household in the process of selecting potential solutions to water quality and/or wastewater treatment and disposal problems. The pilot study utilizes questions and responses to direct the individual household to specific solutions. Categorical solutions to water quality and/or wastewater problems that are discussed include:

- Well Improvements
 - Well disinfection
 - Well repairs
 - Well modifications
 - New well
- Water Quality Solutions
 - Existing source options
 - Treatment options
 - New source options
- Water Delivery Improvement Solutions
 - Well improvements
 - Water distribution (delivery) improvements
 - Water demand considerations
- Community Based Water Source Solutions
 - Well improvements
 - Well discharge treatment
 - New community water source
 - Alternative water source
- Individual Wastewater System Solutions
 - Repairs to existing components
 - Enhancements/modifications to existing systems
 - New treatment and/or disposal systems

- Community based treatment and disposal systems
- Individual Wastewater System Maintenance Activities
 - Implement/follow proper individual system use limitations
 - Implement/follow proper maintenance practices
 - Increase maintenance practice frequency
 - Community based maintenance activities
- Community Based Wastewater Treatment and Disposal Solutions
 - Wastewater system improvements
 - New community based wastewater systems
 - Alternatives to community based approaches

Solution charts are included in the pilot study, which are intended to be a tool for individual households to use to assist them to develop appropriate solutions to water and wastewater challenges.

10.3 Funding Opportunities

Funding opportunities are limited in the area of assistance to individual households. In general, funding programs are designed to serve community-based systems, in which a governance structure exists for disbursement and repayment of funds. Funding opportunities for improvements related to individual households may be available through special funding programs offered at the county level or through community-based organizations, as well as philanthropic groups. Equipment manufacturers may also offer price incentives or discounts that would reduce solution costs.

10.4 Stakeholder Outreach

For each pilot study, a Pilot Project Stakeholder Advisory Group was formed to provide review of the pilot study, and provide guidance on potential communities to conduct outreach efforts through a community review process. The community review process involved conducting community review meetings to ground-truth findings, to learn about what the residents need and want, and to assess their perspective on the alternatives presented within the draft pilot study.

A single regional community review meeting was held with private well owners and/or individuals on septic systems for the Individual Households Solutions pilot study. Several communities were represented in the community review process, including Easton, Monson, Cameron Creek, and Seville. The single regional meeting was held to better understand the water and wastewater challenges impacting these individuals and to learn about past efforts to solve their challenges (what worked well, what was hard, what could have been improved, and what is needed to better assist them in addressing their challenges).

10.5 Obstacles and Barriers

Numerous obstacles exist for individual households that often prevent the use of a potential solution. Obstacles include financial, ownership, regulatory, and governance considerations. Financial obstacles represent the primary obstacle since many individual households or renters may not have the financial capability to pursue a solution to the problem at the residence. Limited financial aid funding exists. Another significant obstacle results from the ownership status of the individual household. Renters may be at a disadvantage to pursue a solution.

10.6 Conclusions and Recommendations

Recommendations for various regulatory and legislative entities as well as private well owners were developed as part of this pilot study. Some recommendations that were developed specific to the Individual Households pilot study include:

- Ensure that specifics regarding existing private well and septic system infrastructure are known.
- Create a single point of contact for private well and septic system owners to obtain information and access resources relative to well operations, well drilling, septic tank effluent disposal and efforts related to community system development.
- Continue to convene a local stakeholder group designed to assess the need for and to work toward the creation of assistance and advocacy programs, being able to assess the overall need for and the specific issues to be addressed by a localized assistance and/or training program.
- Expand groundwater management plans to address declines and increases in groundwater levels and water quality impacts related to changes in groundwater conditions on individual household wells.
- Consider developing an interim governance structure to allow for examination of community based solutions as they relate to individual water supply and/or wastewater treatment and disposal problems.
- Permits for construction of rural single-family residences and farmworker related housing facilities must be restricted to issuance only when the water supply has been demonstrated to be of adequate quantity, the quality meets applicable State and/or Federal standards, and treated wastewater effluent can be properly disposed of.
- Well drilling permits should only be issued in areas with known water quality problems if the proposed construction and well completion procedures are fully protective of other groundwater sources.
- Disclosure of water quality data related to the source of consumptive supply for a property should be required upon sale of property to a potential buyer.

11 FUNDING OPPORTUNITIES

The Department of Water Resources, California Department of Public Health, State Water Resource Control Board, and United States Department of Agriculture have historically provided the bulk of public funds available for drinking water infrastructure improvements. Funding alternatives that may be available to DACs would generally include grants, loans, and rate adjustments to increase revenues. Specific sources of funding assistance may include:

- California Department of Public Health, Safe Drinking Water State Revolving Fund (SDWSRF)
- State of California Bond Measures such as Proposition 50 and Proposition 84
- Department of Water Resources (DWR), Integrated Regional Water Management Planning Program
- State Water Resources Control Board (SWRCB), Clean Water State Revolving Fund (CWSRF) and Cleanup and Abatement Account (CAA)
- The Department of Housing and Urban Development (HUD) – Community Development Block Grant (CDBG) program
- United States Department of Agriculture (USDA) Rural Utilities

Each of the funding alternatives has qualifying requirements and specific application requirements. The community may qualify for the funding opportunity, or the community may need to coordinate the application through another entity such as a County or Integrated Regional Water Management Authority.

Additional information on the funding sources listed above may be found through the California Financing Coordinating Committee (CFCC) at www.cfcc.ca.gov. The CFCC has available a Common Funding Inquiry Form that may be completed and submitted for review by all CFCC member agencies. The community would then receive feedback regarding potential funding assistance opportunities for the community and the specific needs identified. The CFCC conducts Funding Fairs each year to provide education regarding the various funding assistance programs, and to provide interested parties an opportunity to meet with representatives of specific funding agencies. The 2014 Funding Fairs Flyer and 2014 Funding Fairs Handbook are included in **Appendix M**.

This section provides a description of several funding sources that are available for water and wastewater system improvements. The funding opportunities described herein are not the only funding options available. There are other existing and new funding sources that may be utilized, and therefore the CFCC resources should be utilized to get additional information.

11.1 Traditional State Drinking Water Funding Programs

CDPH currently administers and oversees several sources of funds to address drinking water quality issues. The sources of these funds are summarized below.

11.1.1 Safe Drinking Water State Revolving Fund (SDWSRF)

The 1996 amendments to the federal Safe Drinking Water Act (SDWA) responded to the national drinking water infrastructure needs by establishing the Safe Drinking Water State Revolving Fund program. The SDWSRF provides financial assistance in the form of federal capitalization grants to states that in turn provide low interest loans and other assistance to public water systems.

CDPH uses the resource of the SDWSRF for low interest loans or grants to enable water systems to fund necessary infrastructure improvements. CDPH manages SDWSRF resources to fund projects to ensure that public water systems are able to provide an adequate, reliable supply of safe drinking water that conforms to federal and state drinking water standards. The funds are provided from the federal government, with a 20 percent match from the State required. Interest and loan repayments are re-incorporated into the fund. The SRF currently provides ongoing allocations of approximately \$80 to \$130 million per year in California.

11.1.1.A. Safe Drinking Water State Revolving Fund – Intended Use Plan

The 2014-2015 Intended Use Plan (IUP) is part of CDPH's application for the federal fiscal year (FFY) 2014 capitalization grant from the USEPA. For FFY 2014, California is eligible for an \$83 million grant from the \$907 million appropriated by Congress for the nation's SDWSRF programs. The federal funding, in coordination with CDPH's existing loan and interest repayments, as well as associated state match funds, will help ensure funding for drinking water projects that address the State's highest public health priorities.

Federal and State laws allow a portion of federal funds to be used for specified set-aside activities in addition to providing financial assistance to PWS for infrastructure improvements. CDPH intends to use 22 percent of the FFY 2014 SDWSRF allotment award for these set-aside activities. The remaining 78 percent of federal funds, plus all state matching funds and all interest and repayments, will be used for project funding.

In State Fiscal Year (SFY) 2014-2015, CDPH will continue to focus on implementing the public health aspects of SDWA and will ensure that funds are expeditiously and timely disbursed from all available sources. These efforts are instrumental in achieving the requirements of the SDWA.

11.1.2 Proposition 50 Funding

California voters passed Proposition 50 – Water Security, Clean Drinking Water, Coastal and Beach Protection Act, in 2002. CDPH is responsible for portions of this act that deal with water security, safe drinking water, and treatment technology. Proposition 50 allocated approximately 500 million dollars to CDPH for use as direct grants and loans to community water systems for infrastructure development, construction, and maintenance. Proposition 50 also allocated funds to the State Water Resources Control Board and to the Department of Water Resources. CDPH's portion of the Proposition 50

funds has been fully allocated, and **CDPH is no longer accepting applications for this funding source.**

Although the CDPH is no longer accepting applications, this is an example of a funding mechanism that many DACs have been able to utilize to address water quality challenges. Future bond measures may offer similar opportunities.

11.1.3 Proposition 84 Funding

California voters passed Proposition 84 – Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act, in 2006. Proposition 84 allocated approximately \$250 million to CDPH for grants and loans to communities for drinking water planning and infrastructure. This \$250 million allotment included \$60 million specifically earmarked for use as grants to reduce or prevent contamination of groundwater that serves as a source of drinking water. Proposition 84 also allocated funds to DWR for use in Integrated Regional Watershed Management planning and development. The CDPH component of Proposition 84 is fully allocated and **CDPH is no longer accepting applications for this funding source from projects that are not already in the Proposition 84 funding stream.**

11.1.4 DWR IRWM Program

In 2002, Senate Bill 1672 created the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplied to improve the quality, quantity, and reliability.

DWR has a number of IRWM grant program funding opportunities. Current IRWM grant programs include: planning, implementation, and stormwater flood management. DWR's IRWM Grant Programs are managed within DWR's Division of IRWM by the Financial Assistance Branch with assistance from the Regional Planning Branch and regional offices. As of 2014, \$472 million of the \$1 billion dollars allocated to DWR for IRWM planning and implementation remain. Further, on March 1, 2014, Governor Brown signed AB103 to assist drought-affected communities and directed DWR to expedite the solicitation and award of \$200 million (of the \$472 million) in IRWM funding. The expedited funds are to support projects and programs that provide immediate regional drought preparedness, increase local water supply reliability and the delivery of safe drinking water.

The locations of the Integrated Regional Water Management Planning Groups within the Tulare Lake Basin are shown in **Figure 1-6**.

11.1.5 Clean Water State Revolving Fund (CWSRF)

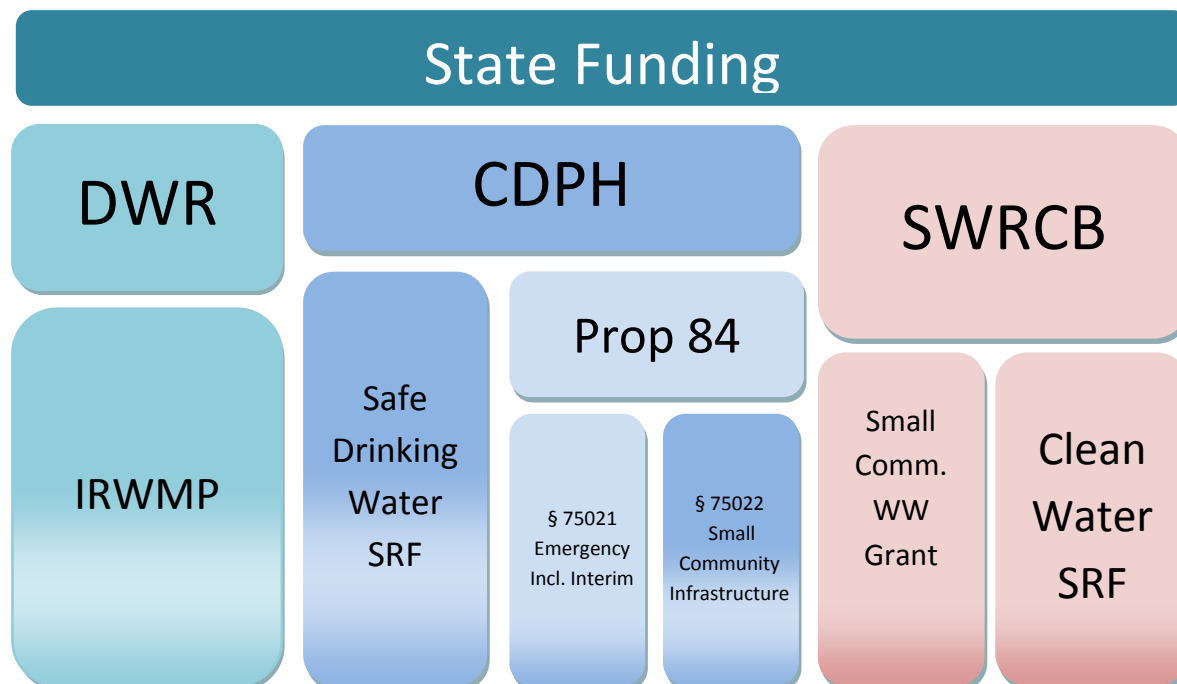
The State Water Resources Control Board Division of Financial Assistance funds wastewater projects that serve disadvantaged communities. The Clean Water State Revolving Fund (CWSRF) can provide loan and principal forgiveness (grant) funding for planning, design and construction of wastewater infrastructure to serve disadvantaged communities. The CWSRF Program operates pursuant to an agreement between the

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State Water Resource Control Board and the United States Environmental Protection Agency and has an annual grant of \$75 to \$100 million for projects. The CWSRF Program has funded a broad range of projects. About 76 percent of funds were used for wastewater treatment and water recycling facilities.

The CWSRF Small Community Grant Fund (when available) provides grants to small, disadvantaged communities for their wastewater projects through a fee, assessed in lieu of interest, on CWSRF financing agreements. This program can provide grants of up to \$2,000,000 to cover planning, design and construction of wastewater infrastructure to serve disadvantaged communities. Demand for this funding is high and now always available. In general, a DAC must bring its sewer rates to at least 1.5% of the MHI for the community before grants can be issued.

[\[http://www.swrcb.ca.gov/water_issues/programs/grants_loans/\]](http://www.swrcb.ca.gov/water_issues/programs/grants_loans/)



11.2 Other State Funding

11.2.1 State Water Resources Control Board and Regional Board Clean Up and Abatement Account Program

The Cleanup and Abatement Account (CAA) was created to provide public agencies with grants for the cleanup or abatement of pollution. The CAA is supported by court judgments and administrative civil liabilities assessed by the SDWSRF and the Regional Water Quality Control Boards. Eligible entities that could apply for this funding include public agencies, as well as non-profit organizations and tribal governments that serve a disadvantaged community. CAA is not a permanent and consistent source of funding, and it fluctuates annually in terms of the number of projects that are funded. For

example, the program funded \$12.5 million in projects in 2009, but only \$1.8 million in 2013.

11.2.2 Central Valley Regional Water Quality Control Board Supplemental Environmental Projects (SEPs) Program

The State Water Resources Control Board and Regional Water Quality Control Boards may allow a discharger to satisfy part of the monetary assessment imposed in an administrative civil liability order for polluting, by completing or funding one or more Supplemental Environmental Projects (SEPs). These projects implement water quality monitoring programs; well rehabilitation or replacement; watershed assessment programs; wetland, water body, or riparian habitat conservation or protection programs; pollution prevention projects; and public awareness projects.

In March 2014 the Central Valley RWQCB adopted a program specifically geared towards funding SEPs that benefit disadvantaged communities in the Central Valley. Funding amounts available for this program will fluctuate year to year since they are based on assessed and collected fines. The Rose Foundation for Communities and the Environment was selected to act as a third-party oversight group to administer the SEP funds and select the projects with final authorization from the Central Valley RWQCB staff. Projects are selected through a competitive application process.

11.2.3 The Strategic Growth Council, Sustainable Communities Planning Grant

The Sustainable Communities Planning Grant and Incentives Program funded by Proposition 84, authorized \$90 million for planning grants to, among other things, protect the environment and promote healthy, safe communities. This program also includes an Environmental Justice Set-Aside fund totaling twenty-five percent (25%) of the funding per funding cycle. This funding is for Environmental Justice communities, which are defined as those communities that receive the top ten percent (10%) of statewide scores using the latest published version of the California Environmental Protection Agency's (Cal/EPA) CalEnviroScreen tool. Eligible projects could include projects that protect drinking water from contamination or improve water infrastructure systems. The minimum grant award is \$50,000. The maximum grant award is \$500,000, unless the application is a joint proposal, in which case the maximum award is \$1 million.

11.2.4 Proposition 84, Safe Drinking Water Emergency Funding (\$10 Million)

In December 2012, CDPH revised the criteria for Proposition 84, Emergency Grants to expand the allowable uses of the funding to address an urgent need to provide interim water supplies to public water systems that serve severely disadvantaged communities and lack the technical and financial capability to deliver water that meets primary safe drinking water standards and are facing a health emergency. \$10 million was made available to CDPH to provide alternate water supplies to existing water systems, necessary to prevent contamination, or provide other sources of safe drinking water

including bottled water. In this effort, shorter term emergency project funding such as bottle water supplies, were capped at \$50,000 per project. A total of \$2 million dollars was made available for emergency interim projects. This left \$6 million for larger, longer term emergency responses such as establishing connections to an adjacent water system, design, purchase, installation and initial operation costs for water treatment equipment, and other water system construction projects. These projects are capped at \$250,000 per project.

11.3 Federal Funding Programs

11.3.1 Community Development Block Grant Program

The Community Development Block Grant program is a flexible program that provides communities with resources to address a wide range of unique community development needs. The CDBG program is a federally funded program run by the Department of Housing and Urban Development (HUD). The CDBG program was created by the Housing and Community Development Act of 1974 and continues to provide funding. Grants through this program are only given to cities and counties. Community water systems can receive funding through their local county.

DACs can compete for CDBG funds to resolve water, wastewater and storm drain/flooding issues. The HUD CDBG program is broken into two primary components. Cities and counties with larger population centers such as Fresno and Kern Counties receive an annual formula-driven allotment of CDBG funds which is considered an entitlement. Smaller cities and counties including Kings and the non-Metropolitan Statistical Area portions of Tulare county compete on an annual basis for CDBG discretionary “small cities program” funds administered by the State Department of Housing and Community Development. [<http://hcd.ca.gov/fa/cdbg/index.html>]

Under the entitlement program in Fresno and Kern Counties, communities compete for funding at the County level. An advisory committee makes recommendations to the Fresno County Board of Supervisors which makes the decisions on CDBG funding provided the proposed project meets HUD criteria. In the unincorporated portions of Kings and Tulare Counties, the local Board of Supervisors selects projects to compete for funding at the state level.

CDBG funding is one of the few sources available to cover project-related work on private property. Such work may include sewer and water connections and abandonment of old water wells and septic tanks.

Some entitlement counties and small cities have opted out of Fresno County’s entitlement program because there is the potential that a larger amount of funding could be secured through the competitive process through the Small Cities Program. On the flip side, the jurisdiction may receive no CDBG funding in an annual funding cycle if their application does not compete well. This is a highly competitive program and in order to compete, the City would need to emphasize health and/or safety issues related to water, wastewater or storm water needs that would be resolved by the proposed

project. To be competitive, the community would also need to have a very high percentage of low income households.

Under the discretionary small cities program, pre-design Feasibility Study costs can be applied for through CDBG's Planning and Technical Assistance grants for a maximum of \$50,000.

11.3.2 USDA Rural Development, Rural Utility Service

United States Department of Agriculture (USDA) Rural Development provides program assistance funding through direct loans, guaranteed loans, and grants. USDA Rural Development provides direct loans and grants to develop water and waste disposal systems in rural areas and towns with a population not in excess of 10,000. These funds are available to public bodies, non-profit corporations, and Indian tribes. Additionally, USDA Rural Development provides loan guarantees for the construction or improvement of water and waste disposal projects serving the financially needy communities in rural areas. The water and waste disposal guarantee loans are to serve a population not in excess of 10,000 in rural areas.

- USDA Rural Utilities Service (RUS) has been the largest funding source for rural water and wastewater system improvements over the years. RUS funding is often quicker to secure than State funding but there is usually less grant available and the community normally takes on a higher percentage of loan. In recent years, RUS's loan interest rate has been lowered to rates competitive with State-operated SRF programs.

[http://www.rurdev.usda.gov/UWEP_HomePage.html]

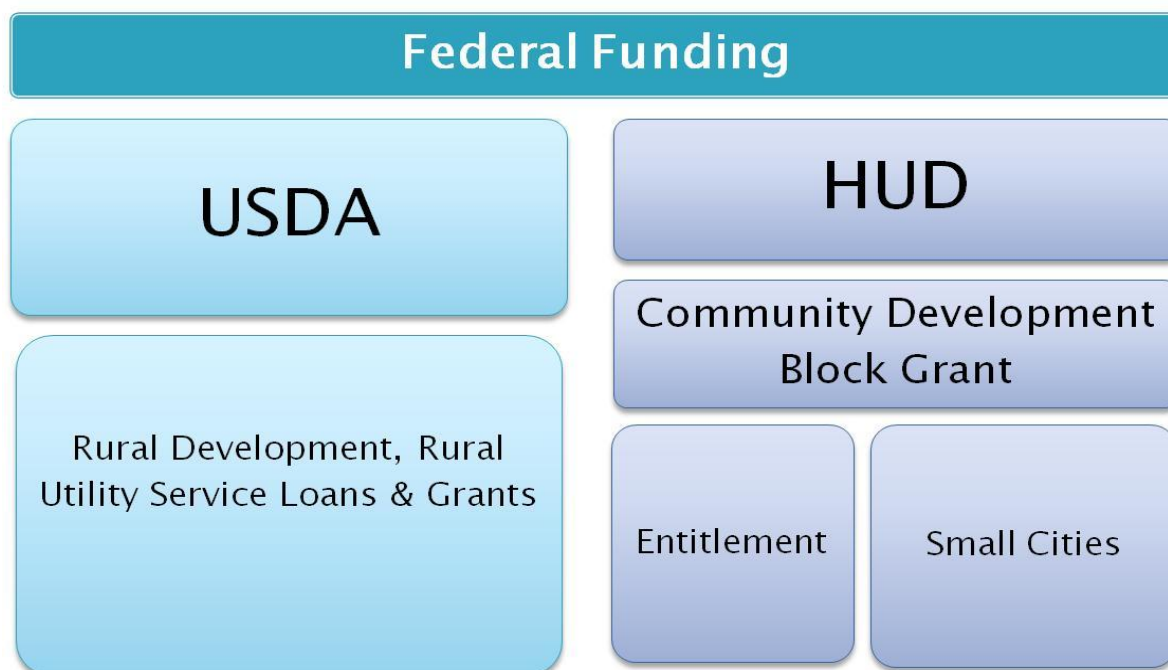
- RUS funding usually covers a broader definition of eligible project costs than many State operated programs. This simplifies the process when USDA is the sole source of project funding. When USDA funding complements other funding sources, USDA can often finance costs ineligible in other programs such as land purchase and contingencies (not eligible in SWRCB programs for example) or replacement of a water distribution system (often times ineligible in CDPH programs). In "unusual cases" (RUS Instruction 1780) USDA water and wastewater program funds can be used to fund water and sewer service connections on private property and the abandonment of old private wells and on-site septic systems.
- At the time of the preparation of this report, the State of California was suffering from one of the worst droughts in recorded time. In response to the drought, USDA has allowed eligible rural communities affected by the drought to apply for Emergency Community Water Assistance Grants for up to \$500,000. Eligible rural communities are those with a population of less than 10,000 that are experiencing a significant decline in the quantity of water (or such a decline is imminent) that is attributable to the drought conditions and the proposed project is necessary to alleviate this problem. This funding source is a very streamlined process. Funds were obligated within 2 months

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of submission of applications to 11 parched Tulare County (primarily disadvantaged) communities in July 2014. For the duration of the drought, it is likely more Emergency Community Water Assistance Grants funds will be made available.

- Individual loan applications may be submitted by income eligible property owners that reside on their property to USDA's 504 housing rehabilitation program. This program can cover the costs of water and sewer service connections and/or the abandonment of old water wells or on-site septic systems, though funding is often limited.

[\[http://www.usda-rural-development-direct-mortgage.com/504_repair_loan_and_grant.htm\]](http://www.usda-rural-development-direct-mortgage.com/504_repair_loan_and_grant.htm)



11.4 Newer and Emerging CDPH Funding Programs

11.4.1 Pre-Planning and Legal Entity Formation Assistance Program

The Pre-Planning and Legal Entity Formation Assistance Program (Pre-Planning) is designed to assist communities that do not have access to safe drinking water, and public water systems not eligible for SDWSRF funding due to the lack of an eligible entity. CDPH had grant funds available under a new local assistance set-aside for a pilot program to assist with the formation of a legal entity with the necessary authority to enable access to the SDWSRF project funding process for subsequent planning and construction funding. Funds through this program are to be used to explore formation of an eligible legal entity and to complete such formation where it is feasible and desired by the affected community. Possible project outcomes include the identification and/or

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creation of a regional authority, identification of an existing authority which could extend service, or the creation of a new governing authority.

Pre-Planning applications were accepted through November 2013. This was a pilot program whose results will be reviewed to determine future funding availability.

Program Eligibility and Application Information:

Currently, communities of private well owners and state smalls⁵ (systems between 5-14 connections) do not qualify for funding under the Safe Drinking Water State Revolving Loan Fund (SDWSRF), which grants millions of dollars a year to PWSs for water related projects. Under a new set-aside, communities of private wells or state smalls that want to create a new water system or be consolidated into existing PWSs are eligible to receive SDWSRF funding. Entities that are eligible to submit an application on behalf of one or more affected communities include: public entities such as cities, counties, special districts, LAFCo; existing PWSs; public colleges; public universities; non-profit organizations; and joint powers authorities. Applicants are required to demonstrate their ability to carry out the activities identified in the work plan.

<http://www.cdph.ca.gov/services/funding/Pages/Pre-Planning.aspx>

11.4.2 Consolidation Incentive Program

The Consolidation Incentive Program is designed to promote consolidation as a cost-effective solution to water systems that do not meet safe drinking water standards. CDPH is providing an incentive to encourage larger systems to consolidate nearby noncompliant systems. Through the consolidation incentive process, lower ranked projects that do not usually receive SRF invitations can become eligible for funding. By agreeing to consolidate a neighboring noncompliant system, CDPH will re-rank a low-ranked project into a fundable category.

Consolidation Incentive Planning applications were accepted through March 2014. Consolidation Incentive Construction applications were accepted through June 2014.

Program Eligibility and Application Information:

In order to apply for a consolidation incentive project, systems must first submit a re-ranking request form for a project that was previously submitted but not funded. Once approved, CDPH will notify the system and invite the newly-ranked projects to submit full applications during the next round of invitations.

<http://www.cdph.ca.gov/services/funding/Pages/ConsolidationIncentive.aspx>

⁵ State small system serves at least five, but not more than 14 service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year.

11.4.3 The Small Water Systems Program Plan (SWSP)

In 2012, CDPH announced plans to concentrate funding and other resources on 177 specific small public water systems (PWSs)¹ in need of meeting drinking water standards. Most of the water systems are in disadvantaged communities. This program outlines specific actions that CDPH intends to take that will incrementally reduce the number of small systems not meeting the State's water quality standards. CDPH staff have set a goal of bringing 63 of the 177 identified small systems into compliance by the end of 2014 and most of the remaining others within three years.

Specific Actions Taken by CDPH Staff:

CDPH and third-party providers will prioritize these small systems over other systems for receiving available technical and financial resources and work with stakeholders to identify opportunities for consolidation.

CDPH will track progress towards resolving problems and provide stakeholders an annual report on the status of all water systems still listed.

CDPH staff, working with counties, will prepare a one-page summary for each system on the list that identifies issues and barriers that keep water systems from executing permanent drinking water solutions.

CDPH will create a small system specific webpage, with technical information and updates.

Program Eligibility and Application Information:

Eligible communities are those with small systems with fewer than 1,000 service connections and a population up to 3,300. Communities that meet these criteria and are currently out of compliance, with one or more drinking water quality violations, will be contacted by CDPH with further details on how to participate in this program. CDPH intends to work closely with third party provider to fully implement this program. Communities in the Central Valley, that believe they qualify for this program, but aren't listed as one of the 177 identified communities should contact CDPH Drinking Water Program staff, the Community Water Center, or a respective regional third party provider (Rural Community Assistance Corporation (RCAC), California Rural Water Association (CRWA) and Self-Help Enterprises). ***San Joaquin Valley Contact List:*** CDPH Drinking Water Program (916) 552-9127, Marques.Pitts@cdph.ca.gov; Community Water Center (559) 733-0219 or (916) 706-3346; Self-Help Enterprises (559) 651-1000.

11.5 New Drinking Water Legislation

11.5.1 Assembly Bill 21 (Alejo): Small Community Safe Drinking Water Grant Fund

This bill would provide funds for disadvantaged communities without safe drinking water by authorizing the assessment of a charge in lieu of interest payments on loans and depositing the monies into a newly created grant fund. The new grant program would

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allow disadvantaged communities who are unable to repay interest-bearing loans to apply for grants to remedy their unsafe drinking water.

This bill was signed by Governor Brown on October 8, 2013.

11.5.2 Assembly Bill 30 (Perea): Small Community Grant Funds

The State Water Pollution Control Revolving Fund Small Community Grant Fund (SCG Fund) finances wastewater treatment projects in small disadvantaged communities. The SCG Fund is scheduled to sunset in 2014. This bill would extend the sunset date to 2019.

This bill was signed by Governor Brown on October 8, 2013.

11.5.3 Assembly Bill 115 (Perea): Small Community Consolidation

This bill would clarify applicant eligibility for state drinking water funding and encourage existing PWSs, and private well owners, primarily in disadvantaged communities with unsafe drinking water, to consolidate and form a new or revised PWS.

This bill was signed by Governor Brown on October 8, 2013.

11.5.4 Senate Bill 103: Public Water System Drought Emergency Response Program

Senate Bill 103 was amended in Assembly February 25, 2014 to revise items of appropriation and make other changes for the purpose of addressing drought conditions in the state. SB 103, as amended, directed that, of the amount appropriated in Schedule (7), \$15,000,000 shall be available for encumbrance until June 30, 2016, for purposes consistent with subdivisions (a) and (c) of Section 75021 of the Public Resources Code for grants of up to \$500,000 per project for public water systems to address drought-related drinking water emergencies or threatened emergencies. The State Department of Public Health shall develop new guidelines for the allocation and administration of these moneys, including guidelines that dictate the circumstances under which the per-project limit of \$500,000 may be exceeded. The department shall make every effort to use other funds available to address drinking water emergencies, including federal funds made available for the drought, prior to using the funds specified in this provision.

11.5.5 Interim Replacement Drinking Water for Economically Disadvantaged Communities with Contaminated Water Supplies

On March 1, 2014, Governor Brown approved a \$687.4-million emergency drought relief package to take effect immediately. As a result of the Governor's action, the State Water Resources Control Board approved \$4 million in funding from the Cleanup and Abatement Account to provide interim replacement drinking water for economically disadvantaged communities with contaminated water supplies. Eligible entities that can apply for this funding include public agencies, as well as certain non-profit organizations and tribal governments that serve a disadvantaged community and that have the authority to clean up or abate the effects of a waste. Emergency water projects include

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bottled water, vending machine, point of use devices (water filters), hauled water, wellhead treatment, and planning activities.

In an effort to distribute funds as quickly and efficiently as possible, the State Water Board will coordinate with the Regional Water Quality Control Boards, the California Department of Public Health district offices, the Office of Emergency Services, and other stakeholders (e.g. environmental justice groups, community assistance groups, etc.) to identify those disadvantaged communities that are most at-risk and would benefit from financial assistance.

12 CONCLUSIONS AND RECOMMENDATIONS

The objectives of the Tulare Lake Basin Study are defined within the grant agreement as follows:

- Develop a plan that provides rural, disadvantaged communities with a safe, clean and affordable potable water supply and effective and affordable wastewater treatment and disposal.

Conclusion: The Study identified the disadvantaged communities in the Tulare Lake Basin area and the common themes of water and wastewater challenges that the disadvantaged communities face. Tools such as Decision Trees have been prepared to assist the communities develop a plan to address the challenges. Examples of communities who have either completed or initiated the process of developing solutions to the water and wastewater challenges have been included in the study.

- The plan will include recommendations for planning, infrastructure, and other water management actions, as well as specific recommendations for regional drinking water facilities, regional wastewater treatment facilities, conjunctive use sites and groundwater recharge, groundwater for surface water exchanges, related infrastructure, project sustainability, and cost sharing mechanisms.

Conclusion: Recommendations associated with the various new source alternatives have been included in the Decision Trees. Each community in the Study Area is unique, therefore, specific recommendations for capital improvements are not viable within the context of this study. Specific viable regional water or wastewater facilities are not shown to be a common occurrence in the Tulare Lake Basin. Conjunctive use and groundwater recharge opportunities may exist within the Study Area, however specific description of facilities for specific communities requires additional evaluations. Project sustainability is a critical component of any system and ultimately requires sufficient water or sewer rates, qualified personnel, and local leadership.

- Identify projects and programs that will create long-term reliability, while optimizing the ongoing operation and maintenance and management costs for small water and wastewater systems.

Conclusion: Any recommended facilities or adjustment of operations and management require the consideration of sustainability and long-term reliability. Alternatives identified in the Management and Non Infrastructure were specific to optimization of resources.

At the January 9, 2012 SOAC meeting, the SOAC, voted to identify the top five priority issues facing disadvantaged communities in the Tulare Lake Basin, as follows:

1. Lack of Funding to Offset Increasingly Expensive Operations and Maintenance Costs in Large Part to Lack of Economies of Scale

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2. Lack of Technical, Managerial and Financial (TMF) Capacity by Water and Wastewater Providers
3. Poor Water Quality
4. Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements
5. Lack of Informed, Empowered, or Engaged Residents

Throughout the preparation of this Study, including associated pilot studies, the potential alternatives for disadvantaged communities to consider and resulting recommendations from this Study maintained an emphasis on these top five priority issues.

In order to meet the objectives of this Study, the following five tasks were performed:

1. Baseline Data Gathering, Mapping, and Database Creation of Disadvantaged Communities in the Tulare Lake Basin
2. Stakeholder Consultation and Community Outreach
3. Selection of Pilot Projects and Studies to Develop Representative Solutions to Priority Issues
4. Implementation of Pilot Project Stakeholder Process to Develop Studies and Representative Solutions to Priority Issues
5. Preparation of Final Report

Each of the pilot studies evaluated various solution types and alternatives to help address the different water and wastewater issues identified for the Study Area. However, there were barriers identified through various stakeholder efforts that make implementation of such alternatives challenging. The purpose of the recommendations presented in Section 13 is to provide a plan to address the priority issues and barriers identified through the stakeholder processes and pilot studies.

Through the Study, various findings were developed. It was found that drinking water and wastewater infrastructure needs, including water quality monitoring, treatment and contaminant removal, new wells, equipment, and operational needs, exceed the amount of funds that are available. Funding that is available is limited or not accessible for certain types of infrastructure projects, non-infrastructure projects aimed at improving TMF capacity, projects for private entities, or individual households.

In the past decade large investments have been made toward California's drinking water infrastructure through the various funding sources described in Section 11. These investments have significantly improved the ability of communities to deliver safe drinking water that meets all public health standards. However, there is still extensive need remaining, and Proposition 50 and 84 funding have been exhausted. The SRF will address some of the remaining needs, but these funds are insufficient to address all of the known and expected drinking water issues remaining.

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Additionally, it was found that there is a large need for improved technical, managerial, and financial capabilities for DACs. Many lack the proper training or education to properly operate or manage a system. Training programs are currently available, but it is difficult for staff to attend, especially since in many cases water and wastewater system staff have other jobs and cannot afford the time or travel to attend training programs.

Upon completion of the Study, several major successes of the project were noted:

- A comprehensive inventory of DACs has been prepared;
- A “roadmap” or set of decision trees was developed to guide communities and funding agencies through some critical steps to selecting an appropriate alternative for their specific issues and situation;
- Through various stakeholder outreach efforts, the interest and awareness of communities related to water and wastewater issues within the Tulare Lake Basin was expanded;
- Priority issues common to communities throughout the Study Area, and various obstacles and barriers to address those issues, have been identified and acknowledged;
- Recommendations for local service providers, various regulatory and funding agencies, as well as the Legislature were developed to help overcome those obstacles and barriers so that the priority issues afflicting DACs within the Study Area can be adequately addressed;
- A database of DACs within the Tulare Lake Basin, and their water and wastewater challenges was compiled; and
- The Tulare Lake Basin Disadvantaged Water Study Final Report was compiled and made available on the Tulare County website.

The recommendations provided in the following section are intended for various local, state, and federal agencies, the Legislature, as well as local service providers (entities providing water and/or wastewater service for DACs). For communities that are interested in pursuing any of the alternatives presented in this Study, additional action is recommended. To implement an alternative, communities should work on the following:

- Prepare a Self Assessment of the existing infrastructure, capacity, demands, and items that may impact any of the items (information may be available in recent sanitary surveys and inspection reports) (see **Appendix K**)
- Seek funding to conduct a feasibility study to evaluate alternatives
- Prepare a Technical, Managerial, and Financial Assessment (see **Appendix L**)
- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)
- Confirm that the solution will satisfy regulatory requirements

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Conclusions and Recommendations

The plan recommendations provided in Section 13 is summarized in **Table 12-1**.

Table 12-1. Summary of Plan Recommendations

Recommendation	Lead Agency/Entity	Pg #
13.1 Improve Local TMF Capacity		
Priority Issue: Lack of Technical Managerial and Financial Capacity by Water and Wastewater Providers		
13.1.1 Enhance Internal Awareness		
A. Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and depth of private well or septic system facilities should be known by the property owner and maintained in a database by the county [See Recommendation 13.7.1.C].	Private well or septic owner	202
B. Ensure that specifics regarding existing water or wastewater system infrastructure are known. The location, size, condition, and capacity of facilities should be known and records maintained by the community services management personnel.	Water or wastewater system owner	203
C. Conduct a review of fiscal resources annually and determine the necessary levels of reserves for replacement and maintenance of all infrastructure. Determine an appropriate time frame and funding plan to achieve the necessary levels of reserves.	Water or wastewater system owner	204
D. Consider adding a requirement for more frequent or comprehensive and standardized assessment of TMF capacity for local water and wastewater providers, as well as updating regulatory and permit requirements for water and wastewater systems to clarify that providers must meet TMF requirements to maintain permit to operate.	State Agencies and LPAs	205
13.1.2. Provide Assistance and Training		
A. Attend training programs and encourage or require staff and board members to attend training programs.	Water or wastewater system owner	206
B. Create a single local point of contact for local service providers and private well owners to obtain information and access resources to provide guidance related to water and wastewater challenges.	Counties and State Agencies	207
C. Consider providing regular Special District Board training opportunities, including leadership and ethics training.	Counties	208
D. Continue to convene a DAC focused stakeholder group for the Tulare Lake Basin, and expand outreach to further enhance DAC, County, IRWM, and other local stakeholder engagement and participation.	Non-profit organizations, Counties, IRWMs, State Agencies	208

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Recommendation	Lead Agency/Entity	Pg #
E. Target existing technical assistance training programs to specific communities who have shown a need and interest, to focus on their needs and provide locally available and specialized training programs.	State Agencies and Technical Assistance Providers	210
F. Improve the operator certification process by providing more frequent testing, and offering certification tests in more locations.	State Agencies	210
G. Consider developing operator training programs at local community colleges to address the lack of licensed water and wastewater operators.	Local Community Colleges	211
13.1.3. Encourage Sharing of Resources to Build TMF Capacity		
A. Even outside of larger infrastructure project development processes, alternatives such as sharing common resources, forming joint governmental agencies, or other forms of consolidation should be evaluated to determine if O&M costs could be reduced or TMF capacity improved. [Same as Recommendation 13.2.1.B]	Water or wastewater system owners, state and federal funding agencies, LAFCo	212
B. Establish local DAC coordinator(s) for the Tulare Lake Basin to support DAC outreach, help link communities to funding sources and training opportunities, and help integrate DACs into planning processes, including IRWMPs.	Existing Local Non-Profit Organizations, with support from State Agencies, Counties, IRWMPs	213
C. Support the evaluation and development of a regional entity or entities to provide regional operations, management, or other services in regions that are interested in exploring such services.	Local Non-Profit Organizations, Counties, LAFCo, Legislature	214
13.2 Improve O&M Funding		
Priority Issue: Lack of Funding to Offset Increasingly Expensive Operations and Maintenance Costs in Large Part due to Lack of Economies of Scale		
13.2.1 Reduce Costs		
A. Project alternatives should be analyzed to minimize ongoing costs. If O&M costs cannot be supported, other alternatives should be pursued.	Water or wastewater system owner	217
B. Even outside of larger infrastructure project development processes, alternatives such as sharing common resources, forming joint governmental agencies, or other forms of consolidation should be evaluated to determine if O&M costs could be reduced or TMF capacity improved. [Same as Recommendation 13.1.3.A]	Water or wastewater system owner, state and federal funding agencies, LAFCo	218
C. Consider providing increased funding for capital improvements for water (or wastewater) related projects when it would allow for reduced O&M costs over the long term.	State and Federal funding agencies	218
D. Support the development and implementation of water conservation policies/measures by providing incentives and technical assistance to DACs and promoting the use	State Agencies	219

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of water and energy efficient equipment upgrades, such as energy-efficient or solar powered pumps.		
13.2.2 Increase Revenues		
A. Evaluate water and sewer rates at least every three to five years and when any major improvements are constructed, and modify as appropriate to achieve the necessary financial resources for annual operations and reserves.	Water or wastewater system owner	219
B. Each local service provider (water or wastewater) should develop a single rate structure (which may include different categories, such as residential, commercial, and industrial), and no exceptions should be made to that structure. A tiered rate structure should be developed with appropriate base rates and water usage rates to encourage conservation while ensuring sufficient revenue.	Water or wastewater system owner	220
C. Seek funding to install or replace water meters. The replacement meters should be capable of being read remotely (if the system size or agreements with neighboring systems support it) to reduce labor costs.	Water or wastewater system owner, technical assistance providers	221
D. Establish appropriate connection fees for any new connections to support the capital improvements required to provide service to those new connections.	Water or wastewater system owner	221
E. Consider establishing a transitional funding program to assist with O&M costs on a temporary basis.	State agencies and the legislature	222
13.2.3 Provide Assistance, Training, and Information		
A. Develop an O&M plan that includes the types of ongoing O&M costs needed, O&M servicing and parts replacement schedule, and amount needed for O&M fund reserve to help the community plan ahead to address covering O&M adequately.	Water or wastewater system owner	223
B. Continue to provide, expand, and better publicize technical assistance training on developing rate studies and establishing rate policies, which should also include guidance on conducting a Prop 218 hearing.	State Agencies, Technical assistance providers	224
13.3 Improve Water Supply Quality and Reliability		
Priority Issues: Poor Water Quality, Inadequate Supply Reliability, Inadequate Existing Infrastructure, and Insufficient Quantity of Water		
13.3.1 Prevent Worsening of Problems		
A. Do not allow new connections if the service capacity is not confirmed. This may require imposition of a moratorium. Developing appropriate connection fees, as recommended above, is necessary to provide a means to ensure that capacity can be made available for planned new connections.	Water or wastewater system owner	225

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B. [See Recommendations under "Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues"]	County	226
C. Improve Groundwater Management Planning to address declining water levels and increased water quality contaminant levels, and evaluate ways the two trends may be exacerbating each other.	State Agencies	226
D. Clarify the interpretation of a well site control zone with a 50-foot radius, as referred to in Title 22, Chapter 16, Article, Section 64560 of the California Regulations Related to Drinking Water.	State Agencies	227
E. Consider ways to encourage and provide funding to sewer communities that rely on individual septic systems that are failing or are on inadequately sized lots.	SWRCB, RWQCB and other Funding Agencies	228
F. Allow drinking water funding agencies to fund infrastructure for fire flow requirements. Where affordability or feasibility of the project is jeopardized by meeting full fire flow requirements, also allow drinking water projects to be funded for domestic purposes provided a limited level of fire flow is available. Where a viable option, the feasibility of installing a dual water distribution system to meet domestic supply and fire flow requirements, should be considered (especially where irrigation demands can be accommodated through the non-potable system used for fire flow).	County Fire, County Board of Supervisors, Funding Agencies	228
13.3.2 Encourage Shared Solutions to Reduce Vulnerability		
A. Provide funding opportunities to encourage the development of regional cooperation, partnerships, and consolidation of services, where appropriate.	State Agencies	229
13.4 Improve Funding for DACs		
Priority Issue: Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements		
13.4.1 Improve Scoring Criteria and Guidelines		
A. Consider changes on Category E (insufficient source water capacity or delivery capability) project rankings, to make it easier to get funding for that category of projects.	State Agencies	230
B. Continue the Pre-Planning and Legal Entity Formation Assistance Program. Consider creation of similar programs for wastewater for areas currently on septic.	State Agencies	231
C. Continue the Consolidation Incentive Program, however, modify the system so that large systems do not obtain benefits that are significantly out of proportion to the benefits provided by consolidation. Also consider expanding the consolidation incentive program and make it available to larger systems seeking to assist communities of private well owners impacted by the	State Agencies	231

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drought and/or facing water quality challenges.		
D. Consider ways to expedite the funding process, so that communities applying for funding do not spend several years drinking water that does not meet primary drinking water standards, and/or relying on insufficient water supply.	State and Federal Funding Agencies	232
E. Streamline the process for payment of claims for state-funded projects, so that local water providers can receive more timely reimbursement.	State Funding Agencies	232
F. Require privately owned for-profit systems to conform to all requirements (including audits and other fiscal requirements) of publicly owned systems in order to receive public funding assistance.	State Agencies	233
13.4.2 Target Outreach and Technical Assistance		
A. Local service providers should attend existing grant application workshops, including CFCC Funding Fairs, and participate in other training opportunities provided through SWRCB, CWEA, CRWA, RCAC, and other resources.	Water or wastewater system owner	234
B. Participate in Integrated Regional Water Management Planning group meetings and consider becoming an “Interested Party” or “Member” of an IRWMP group.	Water or wastewater system owner	234
C. IRWM groups should consider organizing pre-application and grant application workshops or training opportunities for DACs that are “Interested Parties” or “Members” of the IRWM group, as well as prepare and distribute outreach and educational materials to those DACs as funding from DWR is made available.	IRWM groups	235
D. Consider ways to allow communities in IRWM “white areas” (areas not currently within and IRWM group boundary) to participate in the IRWM process.	DWR, IRWM groups	236
13.5 Improve DAC Awareness and Participation		
Priority Issue: Lack of Informed, Empowered, or Engaged Residents		
13.5.1 Provide Community Outreach and Engagement		
A. Provide the community as much information as possible on potential projects, and opportunity to provide input early on in the process.	Local water or wastewater providers	237
B. Attempt to use in-person, phone or mail outreach to DAC residents as much as possible; email and website should be utilized, but are not sufficient on their own.	Local water or wastewater providers	239
C. Expand community engagement in the development of projects. Funding to facilitate community engagement should be included in project budgets and standard approved scopes of work for project development at both the planning and construction phase.	Local water or wastewater providers and State Agencies	239

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13.6 Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues		
Priority Issue: Lack of Vision and Integrated Planning to Develop Solutions		
13.6.1 Restricting Permits for Development		
A. County planning departments should require any new development near an existing system (within 1-2 miles) to evaluate the feasibility of connecting to the existing system, rather than permit the creation of a new system, whenever possible.	County Planning Departments, LAFCos, State Agencies	241
B. Require and actively support investment in bringing existing systems into compliance and developing long-term sustainable and affordable solutions before allowing growth, and as part of permitting growth in communities where the existing water system cannot accommodate growth due to inadequate drinking or wastewater infrastructure.	County, LAFCo	241
C. In cases where there is a moratorium on connecting to a public water system, the county should not issue a permit to drill a private well on a property within the district boundary. Additionally, public water systems should consider implementing an ordinance prohibiting new well drilling within the PWS boundary and notify the county of this ordinance.	County, local service provider	242
D. In areas where there is no existing water system infrastructure available, building permits should only be issued if adequate supply and quality from a private well is confirmed to be available. This may include installation of a viable treatment system (POU or POE) with acceptable maintenance service.	County	243
E. Provide enforcement action when people do not obtain a permit for drilling of a new well or installation of an on-site wastewater system.	County	243
13.6.2 Planning and Zoning		
A. All counties shall identify areas where new growth should be directed based on the existence of public water and sewer governance and infrastructure. Counties shall only zone for residential development where there is safe and reliable water, except in situations where there are viable plans to provide safe and reliable drinking water, and additional growth will create more economy of scale and bring a greater rate payer base that will allow for a system to be sustained.	County Planning Department, LAFCo	243
B. The water quality from private wells shall be analyzed and any contaminants exceeding primary drinking water quality standards should be disclosed to the buyer upon sale of a property.	State Agencies, Department of Real Estate, Legislature	244

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C. Clarify conflicting policies related to farm worker housing. The policy that counties shall permit and encourage the development of sufficient farm labor housing (California Health and Safety Code Section 17021.6) can be inconsistent with the requirement to provide safe drinking water (in areas where water quality does not meet drinking water standards).	State Agencies	245
13.7 Develop & Maintain Information on DAC Water/Wastewater Needs		
Priority Issue: Lack of Information on DACs		
13.7.1 Improve Data Collection		
A. Tulare County should continue to update and maintain the database that was developed through this Study.	Tulare County (Lead), Fresno, Kern, and Kings Counties	246
B. Tulare County should track progress with respect to the priority issues identified in this Study. The current condition should be clearly identified. Monitor and measure the success of improving the circumstances through implementation of recommendations of this Study, relative condition of drinking water supplies, and condition of wastewater service.	Tulare County (Lead), Fresno, Kern, and Kings Counties	247
C. Improve County Environmental Health Department responsibilities, fee authorities, and requirements to permit and monitor on-site systems.	County Environmental Health Departments	247
13.7.2 Improve Data Management and Accessibility		
A. [See Recommendation 13.7.1.C]	County Environmental Health Departments	248
B. Develop a centralized reporting and data management system so that water supply related data can be shared and coordinated among agencies. For example, well logs retained by DWR can be correlated with water quality information retained by SWRCB. This will likely require confidentiality agreements between agencies.	State Agencies	248
C. Disclosure of water quality data – Require disclosure to the buyer of water quality on sale of property. In areas where there is a Public Water System, this may be in the form of recent Consumer Confidence Reports. For properties with private wells, this would be laboratory reports for samples collected from the private well.	State Agencies, Department of Real Estate	249

13 PLAN RECOMMENDATIONS

Tulare County and the project team were tasked with preparing a plan to address the drinking water and wastewater needs of disadvantaged communities in the Tulare Lake Basin. Through the SOAC process and in consultation with the database developed through this Study, several common problems were identified as the major challenges faced by disadvantaged communities in the Study Area. Of the common problems identified, five (5) priority issues were selected through the SOAC. The five priority issues included:

- Lack of funding to offset increasingly expensive operations and maintenance costs in large part due to lack of economies of scale;
- Lack of technical, managerial, and financial (TMF) capacity by water and wastewater providers;
- Poor water quality;
- Inadequate or unaffordable funding or funding constraints to make improvements; and
- Lack of informed, empowered, or engaged residents.

Four pilot projects were selected which sought to identify: potential solution alternatives to address those priority issues; funding opportunities that are available to implement the recommended solutions; steps to insure long-term sustainability of an implemented solution; identification of obstacles and barriers to implementation of a recommended solution; and a proposal for how to eliminate those obstacles or barriers. Those recommendations related to funding opportunities, long-term sustainability, and overcoming obstacles and barriers to implementing solutions to the priority issues that have been identified, are the basis for the plan to address the drinking water and wastewater needs of DACs in the Study Area. Implementation of the recommendations presented herein will set the stage to start making progress toward resolution of the priority issues that are faced by DACs in the Tulare Lake Basin. These recommendations therefore serve as steps toward improving the drinking water and wastewater challenges of disadvantaged communities in the Tulare Lake Basin, and toward reducing the instances of perpetuating the circumstances that contribute to the creation of additional challenges.

Various state, federal, and local agencies are involved directly in the provision of drinking water and wastewater services, or provide regulatory oversight of drinking water and wastewater systems. This plan describes various recommendations on how the appropriate agencies at various levels can help the communities in the region address their water and wastewater challenges.

Several recommendations for future action were developed from observations witnessed during the Tulare Lake Basin Disadvantaged Community Water Study efforts, specific comments from participants, and questions discussed during the development

of the pilot studies. These recommendations have been developed to carry the objectives of this project forward beyond this Study.

Recommendations are made to various types of entities, including the service provider, local county agencies, IRWMP groups, State agencies, federal agencies, and the legislature. These recommendations are made to address a specific priority issue or set of priority issues that were identified by the SOAC prior to developing the pilot studies. These recommendations are intended to serve as a plan to address the drinking water and wastewater needs of rural, disadvantaged communities in the Tulare Lake Basin. A handout document of the recommendations provided in this section is included in **Appendix N**.

Recommendations were developed to facilitate and encourage potential solutions aimed at addressing the five (5) priority issues that were selected through the SOAC. Additionally, through the course of the Study, several other common problems that were previously identified also emerged as important issues to be addressed. Those additional common problems included the following:

- Lack of vision and integrated planning to develop solutions (ranked 6th by the SOAC on the list of common problems, see **Appendix G**);
- Inadequate existing infrastructure (ranked 7th by the SOAC);
- Lack of information on DACs (ranked 8th by the SOAC);
- A changing regulatory environment (ranked 9th by the SOAC); and
- Insufficient quantity of water (ranked 10th by the SOAC).

Seven (7) main categories of recommendations were identified to address the five (5) priority issues as well as the additional common problems determined to be of high importance. The seven main categories of recommendations are as follows:

1. Improve Local Technical, Managerial and Financial Capacity
2. Improve Operation and Maintenance Funding
3. Improve Water Supply Quality and Reliability
4. Improve Funding for Disadvantaged Communities
5. Improve Disadvantaged Community Awareness and Participation
6. Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues
7. Develop and Maintain Information on DAC Water/Wastewater Needs

Note: The recommendations contained herein are provided for general consideration by the various entities identified. The information contained herein is not intended to be and should not be construed as legal advice. Readers should seek the advice of an attorney when confronted with legal issues, and an attorney should perform an independent evaluation of the issues addressed in these materials.

13.1 Improve Local TMF Capacity

Priority Issues

Lack of Technical, Managerial, and Financial (TMF) Capacity by Water and Wastewater Providers – Lack of adequately trained technical, legal, financial, and managerial professionals, as well as inadequate training and ongoing education and assistance for existing water and wastewater providers; lack of institutional capacity; lack of knowledge of available training, assistance, and educational support to support local employment in these sectors.

Note: Federal and state statute enables SWRCB, Division of Drinking Water to require a demonstration of TMF capacity only (1) on formation of a new public water system; (2) on change of ownership of a public water system; or (3) when state funding is provided to a public water system through one of its three funding sources. SWRCB can recommend TMF assessments at other times and has been able to require specific TMF demonstrations through some enforcement actions. Also, note that wastewater system permittees are not required to provide a demonstration of TMF capacity under the SWRCB permits.

Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Enhance internal awareness of the requirement of TMF capacity to have a sustainable system (communities)
2. Provide more assistance and training
3. Encourage sharing of resources to build TMF capacity

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

13.1.1 Enhance Internal Awareness

Private Well or Septic Owner:

13.1.1.A. Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and depth of facilities (private well or septic system) should be known by the property owner and maintained in a database by the county. [See Recommendation 13.7.1.C]

- *Who: The owner of a private well or septic system*
- *Why: If a property owner has knowledge of the infrastructure that exists on his property, it will help to more effectively and efficiently address problems (e.g. well goes dry or septic system fails) when they arise, and may help to understand when a problem may be coming so it can be addressed before a failure occurs.*

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- *How: Obtain information from the well driller, pump contractor, or contractor who is installing the septic system. Confirm that the well driller or contractor has obtained appropriate permits from the county and that details of the construction are submitted to the county to maintain in their database. For existing facilities, information should be available at the county.*
- *When: Anytime that a new well is drilled, septic system installed, or when any modifications to an existing well or septic system are made (for example, deepening a well). This information should also be requested when purchasing a property, either from the seller or the county. If the information is not available, it would be advisable to have a contractor inspect these facilities and produce the necessary information so that the buyer knows what he is purchasing.*
- *Funding: No funding source is necessary. This is a matter of maintaining records of what is on a landowner's property.*

Local Service Provider:

13.1.1.B. Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and capacity of facilities should be known and records maintained by the community services management personnel.

- *Who: Water or wastewater system owner*
- *Why: When the owner of infrastructure has information regarding the location, size, depth, materials, age, capacity, and condition of the facilities, the owner will be able to a) effectively respond to problems with the facilities, and b) know the capability of the existing infrastructure to meet existing and proposed demands. Knowledge of the existing infrastructure is critical when planning expansions or upgrades to said infrastructure. This information is also useful for LAFCos conducting Municipal Services Reviews for publicly-owned systems and mutual water companies, and should be integrated into those reports to the extent appropriate.*
- *How: Records of existing infrastructure should be available at the office of the local service provider. If records of existing infrastructure are not readily available, the county may have information regarding infrastructure within existing rights of way. Another source of information may be the engineer of record for the respective improvements. The RWQCB and SWRCB Division of Drinking Water may also have information associated with wastewater treatment and water supply infrastructure, respectively. If no records are available, a survey of ground surface infrastructure (manhole lids, cleanouts, valves, hydrants, meters, wells) may provide limited information regarding the location of infrastructure.*

- *When: Improvement plans are required to be approved by the local service provider prior to construction. Copies of the “as built” plans are to be maintained by the local service provider upon completion of construction. Records of repairs or modifications to the existing infrastructure are to be maintained by the local service provider.*
 - *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the water or sewer charge for service.*
- 13.1.1.C. Conduct a review of fiscal resources annually and determine the necessary levels of reserves for replacement and maintenance of all infrastructure. Determine an appropriate time frame and funding plan to achieve the necessary levels of reserves.
- *Who: Water or wastewater system owner*
 - *Why: The owner of the water or wastewater system has the responsibility to operate and maintain the facilities. Operation and maintenance responsibilities include payment for power, chemicals, labor, insurance, communications, maintenance equipment, regular maintenance of the facilities, response to failures or damage of the facilities, and replacement of facilities that have reached the end of their respective useful life. Reserves are necessary to be able to respond to catastrophic failures or emergencies (i.e. failure of a well pump). If the fiscal resources are not sufficient to satisfy the basic demands of sustaining the facilities, adjustments to the monthly rates are necessary.*
 - *How: Public water and sewer systems are subject to annual audits of fiscal resources and procedures. In addition, the owners of water and sewer systems should define an operations budget for all required expenditures and necessary savings for replacement/repair of infrastructure. Private water and sewer systems should also define an operations budget for all required expenditures.*
 - *When: Review and adjustments to fiscal resources should be an ongoing activity. However, the owner of the facilities should define a budget annually. Typical fiscal year cycles for public systems begin on July 1 of each year. The activity of preparing the budget for the next fiscal year would typically include a review of the fiscal performance of the previous year so that appropriate adjustments may be included in the upcoming budget.*
 - *Funding: Review of fiscal resources and performance of the water or sewer system is funded through the operations funds of the owner of the facilities.*

State Agencies:

13.1.1.D. Consider adding a requirement for more frequent or comprehensive and standardized assessment of TMF capacity for local water and wastewater providers, as well as updating regulatory and permit requirements for water and wastewater systems to clarify that it must meet TMF requirements to maintain a permit to operate.

- *Who: State Agencies and Local Primacy Agencies*
- *Why: There is a lack of comprehensive information and standardized indicators of water and wastewater providers to assess TMF capacity. Additionally, Federal and state statute enables the SWRCB Division of Drinking Water to require a demonstration of TMF capacity only (1) on formation of a new public water system; (2) on change of ownership of a public water system; or (3) when state funding is provided to a public water system through one of its three funding sources. SWRCB can recommend TMF assessments at other times and has been able to require specific TMF demonstrations through some enforcement actions, however a clearer requirement that systems must meet TMF requirements and a standardized assessment would drastically improve the ability to enforce these requirements and ensure more universal compliance. Also, note that wastewater system permittees are not required to provide a demonstration of TMF capacity under the SWRCB permits so this should be added to permits. This information would also be useful for LAFCos conducting municipal services reviews and should be integrated into that process, as available and appropriate.*
- *How: The State Water Board should update its permitting guidelines and initiate rule making processes as appropriate to clarify these requirements and provide standardized assessments and indicators. These indicators could then be applied through the annual inspection process and reported to the regulating entity annually through the sanitary assessments. Permit requirements for individual permits could be added as they are renewed, if a general rulemaking is not feasible. Resources and enforcement could be used in tandem to bring systems into compliance. It is important that enforcement not be used to penalize a system that is in-capable of correcting the problem without providing assistance to build TMF capacity. Assistance could be in the form of training, technical assistance, and funding assistance to assess joint solutions or supporting forms of consolidation to build TMF capacity.*
- *When: The sooner this is conducted, the easier it will be to ensure all systems meet TMF requirements and target resources and enforcement to those systems that are unable or unwilling to comply.*

- *Funding: Funding at the State level would be needed to enact new guidance and undertake rulemaking and added time for annual assessments.*

13.1.2 Provide Assistance and Training

Local Service Provider:

13.1.2.A. Attend training programs and encourage or require staff and board members to attend training programs.

- *Who: Water or wastewater system owner*
- *Why: Training is appropriate for everyone involved in the management of a water or wastewater system, regardless of size. Especially in small or isolated communities, boards and staff may get stuck in ruts or patterns of management that persist over many years. Minimal outside intervention and a limited pool of board/staff candidates combine to create an insular environment that may be resistant to change. Training brings in new perspectives and new approaches and can revitalize institutions that lack forward motion.*
- *How: The water or wastewater system owner or manager should convey the importance of attending trainings and what it can mean for the community.*
 - *Attend trainings provided by Rural Community Assistance Corporation (RCAC) in coordination with SWRCB. RCAC provides free statewide training throughout the year at locations around California under a contract with SWRCB. Local SWRCB Division of Drinking Water District Offices can request specific training topics be offered in their area, if information is available indicating an interest in that topic. The Division of Drinking Water encourages local water providers and assistance organizations to review the RCAC training topics and provide input to the local District Office on desired local training. The RCAC training program can be viewed at <http://www.rcac.org/event/1114>.*
 - *Operator training – Participate in existing local entities such as California Water Environment Association (CWEA) and California Rural Water Association (CRWA).*
 - *Board and leadership training – Participate in board training opportunities such as leadership training and ethics training. SWRCB (Division of Drinking Water) in coordination with Rural Community Assistance Corporation (RCAC) and Self-Help Enterprises (SHE) will be providing targeted board training for several communities in the Study Area; there is potential for this program to be expanded and continued to other communities.*

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- *Network with other communities, share resources and information, and provide informal training to one another.*
- *Utilize web portals from state agencies and counties, as well as funding fairs, to access information on training programs, funding opportunities, and other available resources.*
- *When: Managers, board members, and operators should attend appropriate training programs annually, at minimum.*
- *Funding: The source of funding is the water or sewer fund of the local service provider. Technical assistance funding from State agencies may be available to supplement these costs in some cases (i.e. operator certification reimbursement programs) or bring specific trainings to local areas.*

County:

13.1.2.B. Create a single local point of contact for local service providers and private well owners to obtain information and access resources to provide guidance related to water and wastewater challenges.

- *Who: Counties and/or district offices of SWRCB could develop a single point of contact. Local service providers and private well and septic system owners can utilize existing resources at the county and State levels.*
- *Why: Currently, it is difficult for individuals and small DACs to navigate existing requirements, resources, and opportunities. A single point of contact would allow communities or private well owners to obtain information and access resources to provide guidance related to water and wastewater challenges more efficiently. Additionally, a single point of contact could help coordinate more effective access for other public, private and non-profit agencies (such as LAFCo, private water companies or contractors, and assistance providers) trying to provide support to address these issues. Some counties, and the SWRCB, RWQCB, and other agency websites provide forms of an information clearinghouse that are good resources for information on many water and wastewater related programs, requirements, and resources. A point of contact at the local level would help water and wastewater service providers or private well owners navigate and identify existing resources to get information related to their system issues.*
- *How: Designating a staff person as the primary single point of contact in each local county or each district office of SWRCB would enable local water and wastewater providers or private well owners to identify appropriate websites, resources, and other information from the County Environmental Health, SWRCB, RWQCB, or other websites to access information, answer questions, obtain necessary forms, learn about*

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training and funding opportunities, and stay aware of new regulations. The point of contact could also have recommendations on more specific contact persons on any particular topic or program that could help provide more detailed information and assistance.

- *When: Ongoing.*
- *Funding: Creation of a single point of contact would likely need to be included in county or state agency staff/operating budgets. Some funding may be able to be targeted to support this through capacity building or technical assistance set asides of the SRFs. Funding for this resource could also be developed through permit fees for local water systems, domestic well owners, septic owners, and wastewater systems as part of the support services for administration of the drinking water and/or wastewater regulatory permitting programs.*

13.1.2.C. Consider providing regular Special District Board training opportunities, including leadership and ethics training. General legal topics may be covered, but the local service provider should seek specific legal advice from its own legal counsel.

- *Who: Counties*
- *Why: Boards, in particular, may develop habits over time that may or may not be compatible with special district law. Periodic training on ethics and legal issues, as well as a place to go to ask basic questions, can help boards avoid inadvertent missteps. However, special district law can be complex and difficult for communities to comprehend, and therefore specific legal advice should be provided by an attorney hired by the water or wastewater system provider.*
- *How: Holding periodic trainings in the physical context of government buildings can remind participants of the larger system in which they function as local government representatives. Tulare County has sponsored a series of ongoing “Government 101” trainings that have been successful. They are held on a weekday evening at the County administrative building, and dinner is provided.*
- *When: Trainings should be held one to two times per year. Weekday evenings may work best.*
- *Funding: Local water or wastewater service providers, and counties.*

Counties and State Agencies:

13.1.2.D. Continue to convene a DAC focused stakeholder group for the Tulare Lake Basin, and expand outreach and engagement to further enhance DAC, County, IRWM, and other local stakeholder engagement and participation. Expanded outreach and engagement efforts should educate local board members, operators, and residents on local water and wastewater challenges

and priority issues, as well as resources that are available, including findings and recommendations developed through this Study and existing resources from technical assistance providers. Continuation of stakeholder meetings should occur at least quarterly to track progress on the recommendations of this Study and provide updates on new program, challenges, resources or opportunities.

- *Who: The stakeholders that have participated in the Tulare Lake Basin Disadvantaged Community Water Study (particularly those in the SOAC), including state agencies, counties, IRWMs, DAC representatives, and non-profit organizations.*
- *Why: Local DAC stakeholders have found it to be valuable to come together on a regular basis to discuss local DAC issues, opportunities and programs, and reflect on recommendations through this multi-year Study process. The SOAC recommended that the group continue to meet quarterly to track progress on the recommendations of this Study, as well as engage more extensive DAC stakeholders through a local follow-up outreach and engagement campaign. Expanded outreach and engagement would help enable local systems to utilize tools and lessons learned through this Study, as well as other existing resources, and develop appropriate solutions. This would help ensure that this Study is more than just a report, but will actually be accessed by communities and help to develop long-term sustainable solutions to local water and wastewater challenges.*
- *How: This would be best accomplished through continuation of the SOAC process through a coordinated effort with all the stakeholders, counties, organizations and agencies that have participated in the Tulare Lake Basin Disadvantaged Community Water Study. Some funding would be needed to 1) have a coordinating entity continue to facilitate these groups and invite representatives to participate in local stakeholder meetings, and 2) support planning and implementation of expanded outreach and engagement throughout the Basin. Participation from local disadvantaged communities, counties, non-profits and funding agencies directly in the outreach and engagement would help make these efforts more effective by lending credibility, resources, and reliability through personal connections from communities in similar situations.*
- *When: Following completion of this Study, meet quarterly and identify a plan and funding to expand outreach and engagement to additional stakeholders in the Basin.*
- *Funding: Counties could fund continuation of quarterly meetings of the SOAC. Additionally, the group could approach state or federal funding agencies about funding for a coordinating entity (a non-profit or local agency) to coordinate an expanded outreach, education, and engagement*

campaign to follow up after this Study has ended. Local non-profits could approach private and public funding sources to support these efforts.

13.1.2.E. Target existing technical assistance training programs to specific communities who have shown a need and interest, to focus on their needs and provide locally available and specialized training programs.

- *Who: State Agencies and technical assistance providers (RCAC, SHE, etc.)*
- *Why: Local, targeted trainings are more effective because they are more accessible to rural communities, and can be tailored to meet the unique needs identified by water and wastewater system representatives. There is an additional benefit to bringing local water and wastewater system representatives together so they can network and learn from each other.*
- *How: SWRCB (Division of Drinking Water) in coordination with Rural Community Assistance Corporation (RCAC) and Self-Help Enterprises (SHE) will be providing targeted board training for several communities in the Study Area. This initial effort can inform how a program can be expanded, improved and continued to other targeted groups of communities. SWRCB staff and technical assistance providers should work together to identify target communities. A local venue would be identified and invitations extended to water system representatives, including board, staff and operators.*
- *When: Quarterly or biannually, in different locations. Follow-up trainings could be scheduled as needed, depending on response.*
- *Funding: State Water Resources Control Board technical assistance funding through the SRF set aside, or current or future bond funding.*

13.1.2.F. Improve the operator certification process by providing more frequent testing, and offering certification tests in more locations.

- *Who: SWRCB Operator Certification Programs*
- *Why: Operator certification is challenging for people in remote areas and for those without English language skills. Training opportunities are limited, testing sites are distant, and the exams are offered only in English. Sometimes valued staff members are lost because they cannot achieve a basic distribution operator certification, despite adequate skills and long experience. Particularly for lower-level certifications, such as water distribution or treatment certification level D-1 or T-1, or wastewater operator Grade I, the need for accessibility and affordability of certification programs may outweigh other precautions. Currently, drinking water treatment and distribution system operator exams are only offered in eight locations throughout the State, including one location (Fresno) within the Tulare Lake Basin Study Area. Each distribution and treatment certification test is offered two times per year. Similarly, wastewater*

treatment plant operator certification exams are currently held two times per year, with only one exam location in the Tulare Lake Basin (Fresno).

- *How: Provide opportunities for examinations in more locations, on a more frequent basis. Consider providing exams in at least three locations throughout the Tulare Lake Basin (for example, Fresno, Visalia, and Bakersfield). Also consider remote testing that could be done online, possibly from local libraries.*

Consider making examinations available in Spanish or other dominant languages, at least for lower-level certifications that do not require English literacy to perform relevant duties. Note that regulatory documents are in English only, and therefore this may not be a feasible consideration.

- *When: Exams should be offered quarterly.*
- *Funding: SWRCB Operator Certification Programs*

Local Community Colleges:

13.1.2.G. Consider developing operator training programs at local community colleges to address the lack of licensed water and wastewater operators.

- *Who: Local Community Colleges (State Center Community College District, Sequoias Community College District, Kern Community College District, West Hills College, or others)*
- *Why: There is a lack of properly certified operators available to operate water and wastewater systems throughout the Study Area. With increasing regulations necessitating the need for more and higher grade treatment facilities, this will only become more of an issue if operator training programs do not become a higher priority.*

Training programs have been attempted at local community colleges, however, they have had trouble filling seats, and so these programs have not been sustainable. It may require some outreach efforts to encourage students to pursue this career path, but local job opportunities and compensation would need to support that.

- *How: Community college districts should discuss and evaluate the need for providing operator training programs. If such programs are developed, the community college district should outreach to youth to inform them of the benefits of these training programs and the need for water and wastewater system operators. It is recommended that an evaluation be conducted of the magnitude of operator needs and relative compensation levels for those who complete such training programs, so that the outreach efforts can be properly informed. These discussions should involve CWEA and their experience related to operator training needs.*
- *When: Now. Ongoing.*

- *Funding: Community college districts.*

13.1.3 Encourage Sharing of Resources to Build TMF Capacity

Local Service Provider:

13.1.3.A. Even outside of larger infrastructure project development processes, alternatives such as sharing common resources, forming joint governmental agencies, or other forms of consolidation should be evaluated to determine if O&M costs could be reduced or TMF capacity improved. [Same as Recommendation 13.2.1.B]

- *Who: Local water and wastewater providers and entities developing applications for improvements to disadvantaged community water and wastewater systems should examine these alternatives. Also, state and federal funding agencies should support examination of these alternatives within the scope of work of public funding agreements.*
- *Why: For some areas, a sustainable and affordable solution could be made possible through some form of regional or shared solution that would allow communities to share ownership and operation of water infrastructure as well as create a sizable enough funding base of rate payers to have a sufficient economy of scale for operations and maintenance. Local agencies should examine the full range of alternatives and evaluate how costs may be able to be reduced through shared solutions in order to address immediate and long-term operations and maintenance funding and TMF capacity challenges.*
- *How: Water and wastewater providers should ask local district engineers to examine these alternatives, and should seek out contractors and engineers that have experience with this kind of analysis and have proven experience in successfully developing these kinds of solutions.*

A third party entity, such as a county, non-profit or other group could also develop an analysis of alternatives with a number of communities jointly. However, in all cases analysis should be transparent and community-driven, allowing the community to understand and provide input into the pros and cons and real O&M costs of alternatives.

- *When: It is easiest to do this as part of funding applications for feasibility studies when solutions are being developed because there are funding sources available to cover the costs of providing these types of analysis. However, similar analysis should be discussed with local district engineers outside of larger capital project development as well.*
- *Funding: The primary source of funding is the water or sewer fund of the local service provider. The source of revenues is the water or sewer charge for service. Sources of external funding for this may include the new pre-planning entity formation set aside as part of the SDWSRF.*

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However, all feasibility study planning funding from the state or federal funding sources should include this kind of analysis. In addition, IRWM funding could support this, as well as sustainable community planning funding grants.

Local Non-Profit Organizations or other local entities:

13.1.3.B. Establish local DAC coordinator(s) for the Tulare Lake Basin to support DAC outreach, collect updated information on DAC water and wastewater needs, help link communities to funding sources, training opportunities, and technical assistance resources, and help integrate DACs into planning processes, including IRWMPs.⁶ Specific responsibilities could include some or all of the following:

- Provide outreach, communication, and capacity development with local disadvantaged communities in unincorporated areas.
 - Collect updated information on DAC water and wastewater needs and collect new information to close data gaps (i.e., TMF capacity needs, source of water where unknown in database, water supply needs, etc.).
 - Provide technical assistance to DAC water and wastewater entities who are trying to integrate their needs within IRWM and other local and regional planning efforts.
 - Work with individual DACs to determine appropriate funding programs.
 - Provide information to DACs on available training and technical assistance providers and resources, including fundraising, grant writing, fiscal management, and project management assistance.
 - Link local DACs to experts (including NGOs and private contractors) that can effectively facilitate and support locally-developed, voluntary consolidation or other forms of shared solutions and regional planning efforts by providing expertise for studies or analysis, stakeholder facilitation, as well as legal and LAFCo process assistance, with the goal of advancing the most sustainable and affordable solutions.
- *Who: Existing local non-profits organizations or technical assistance providers could provide DAC coordination and outreach activities. State agencies, local counties, and IRWMs could also provide support for this position.*

⁶ This recommendation is intended to be consistent with recommendations related to the need for DAC coordinators and DAC representation provided in both the Kings Basin DAC Study and the Governor's Drinking Water Stakeholder Group's Report on New and Expanded Funding Sources.

Kings Basin DAC Study: http://www.krcd.org/pdf_ukbirwma/Kings%20Basin%20DAC%20Final%20Report.pdf

Governor's Drinking Water Stakeholder Group Report:

http://www.swrcb.ca.gov/water_issues/programs/groundwater/docs/stakeholders/8132013_2_final_rep_new_expanded_funding.pdf

- *Why: In order to effectively and efficiently plan and implement water and wastewater solutions in the Tulare Lake Basin, where there are a large number of disadvantaged communities in unincorporated areas without safe drinking water and wastewater services, targeted assistance is needed to support coordination of DACs. Without this kind of coordination, disadvantaged communities in unincorporated areas will likely remain isolated, disjointed, and often unorganized without structural capacity and an ability to implement cost effective drinking water and wastewater solutions and effectively participate in planning or regional project development processes.*
- *How: Given the hundreds of DACs in the TLB, ideally coordinators could be funded for each county and/or for each watershed within the TLB. Efforts to coordinate DACs locally could be organized through local DAC associations or task forces, although a DAC coordinator would likely be (at least initially) housed within an existing local non-profit organization. State and federal funding agencies could consider setting aside specific funding for local DAC coordinators as part of state funding program outreach and technical assistance budgets. It is noted that this would be a voluntary program for those communities interested in utilizing the services of a DAC coordinator for the potential services described above.*

Counties, local IRWMs and local non-profit organizations should also consider ways to provide these services or support these efforts. Local counties and IRWM groups could support this through official recognition of DAC coordinators within planning and project development processes, providing DAC update items within relevant meeting agendas, and deliberate coordination with staff and decision-making bodies with explicit intent to integrate DAC issues and support effective DAC outreach and engagement.

- *When: Ongoing.*
- *Funding: State funding could be targeted through existing technical assistance set-asides, such as the SRF, through existing funding program outreach and assistance budgets, or through new bonds or funding sources. For DACs directly represented by a coordinator, the local water or wastewater provider could provide funding to support this position. Additionally, non-profit organizations could seek private sources of funding to support these activities, at least to get processes started.*

13.1.3.C. Support the evaluation and development of a regional entity or entities to provide regional operations, management, or other services in regions that are interested in exploring such services. Efforts should begin with a small region or group of interested communities to show interest and success before considering scaling-up to any type of larger regional entity. Regional DAC operations or management services may include some or all of the following: 1) provide the organization, structure, and capacity needed to

support development and funding of sustainable and affordable shared solutions, particularly for communities not currently served by centralized water and wastewater providers, 2) provide direct management and operations of existing DAC water systems when needed or requested, and 3) directly represent participating DACs in IRWM groups or other forums, when appropriate.

- *Who: Counties, non-profit organizations, or other regional entity (including one or more special districts). If a special district structure is used, LAFCos would need to support consolidation or creation of the new regional special district serving areas that may or may not be physically connected. This may also necessitate legislative action.*
- *Why: Many disadvantage communities lack sufficient organization, capacity, and representation structure required to develop, implement and maintain drinking water and wastewater systems. This is particularly true of DACs without an existing centralized public water system or wastewater system, as well as systems that go into receivership, or are just not sustainable due to inadequate technical, managerial, and financial capabilities. Some DACs within smaller regions of a county have started to consider options to create different forms of unified regional entities to provide water and/or wastewater services (e.g. Northern Tulare County, Alpaugh-Allensworth area, and communities in western Fresno County). While counties and other existing water and wastewater agencies are able to support some of these functions on a case by case basis, counties and existing providers are often reluctant to take on additional responsibilities for troubled DAC systems. There is a need and interest in some areas for an entity or entities that can have the focused capacity to regionally or jointly operate systems when needed (e.g., receivership) and/or requested. Additionally, where regional entities are established, they can directly represent those DACs within local IRWMs and facilitate enabling more in-depth integration of DAC needs and projects within planning efforts and regional project development.*
- *How: It is most feasible to begin with a smaller group of DACs voluntarily working together to establish a regional operating entity that can perform some of these functions to test such a model, show success, and build the framework and trust in such an entity. Additionally, rather than taking on all planning, project development, operation and representation functions at once, an entity could start by taking on one or two of these functions, such as operating existing entities as a receiver or taking on operations of zones of benefits from a county that no longer wants to directly provide that role. Areas to begin initial efforts, where DACs have already expressed interest in exploring a regional operation model, include the South Tulare County forum or the Northern Tulare County regional water system study efforts.*

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Such an entity or organization could be housed in an existing agency or local government or non-profit organization, or be a new independent entity. LAFCos must be involved in development of these concepts and should support consideration for allowing regional entities that may or may not be geographically contiguous or physically connected.

- *When: Some regions are already pursuing these models and further development should be supported following the completion of this Study.*
- *Funding: The funding to start up a new entity to provide regional operations services may take some support by state funding sources. However, the funding to maintain this type of entity and fund the operations and maintenance of the entity beyond a start-up phase would need to rely entirely on funding from local rate payers and other revenues generated by the local provider. Therefore, it is important that any start up phase include developing the ability to collect fees and a sufficient economy of scale to fully sustain these services.*

State funding sources to support piloting small regional entities could include the Clean Up and Abatement Account, SRF Pre-Planning and Legal Entity, and IRWM funding. Future bonds or budget allocations may be able to provide funding for these activities. Additionally, pilot project funding could be pursued from private foundation sources, USEPA, or USDA for purposes tailored to meet the criteria of those funding sources. In other parts of the country, local governments, states and the federal government have funded part or all of start-up and implementation of regional water entities.

13.2 Improve O&M Funding

Priority Issues

Lack of Funding to Offset Increasingly Expensive Operations and Maintenance Costs in Large Part due to Lack of Economies of Scale – Small systems serving primarily low-income households and remote locations cannot keep rates affordable and still generate enough revenue to run the system safely over the long term; Lack of funding resources to operate and maintain water or wastewater systems at affordable levels and lack of funding for planning and replacement of infrastructure as it ages.

A Changing Regulatory Environment – Changing water quality and water treatment standards, including more stringent requirements as well as new and emerging contaminants.

Potential Solutions

Potential solutions to resolve the priority issues described above include:

1. Reduce Costs

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- a. Look for effective and less expensive physical and technological alternatives
 - b. Look for different ways to structure services to spread costs (governance structures)
 - c. Reduce water usage
 - d. Reduce regulatory burden
 - e. Discontinue the local system.
2. Increase Revenue
 - a. Direct subsidy during transition time period
 - b. Rate restructuring
 - c. Increasing customer base through consolidations
 3. Provide assistance, training, and information to help achieve these other strategies

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

13.2.1 Reduce Costs

Local Service Provider:

13.2.1.A. Project alternatives should be analyzed to minimize ongoing costs and secure TMF capacity. If O&M costs cannot be supported or TMF capacity challenges are not adequately addressed, other alternatives should be pursued.

- *Who: Any DAC considering making any improvements to their water or wastewater system.*
- *Why: O&M costs have to be borne by the users in the community. Depending on the median household income in the community, the utility rate increase may adversely impact the users. State agencies have implemented requirements within their funding programs for full evaluation of the operation and maintenance lifecycle costs for a selected project, along with a water rate study to identify what impact the project has on the cost of water for that community. If the projected water rate is deemed to be unaffordable, they will not (and should not) fund the selected project.*
- *How: Solutions should be analyzed to minimize ongoing costs. If O&M costs of a project cannot be supported, other alternatives should be pursued. Developing an O&M plan that includes the types of ongoing O&M costs needed, O&M servicing and parts replacement schedule, and amount needed for O&M fund reserve can help the community plan ahead to address covering O&M adequately. If O&M costs cannot be supported by the community, it may be that the system is not viable (too small, too*

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remote, insufficient water supply or water quality, etc.) and should be discontinued.

- *When: Whenever a DAC is evaluating potential improvements to their water or wastewater system.*
- *Funding: Local Funding from the water or sewer fund of the local service provider should support O&M costs. The source of revenues is the water or sewer charge for service. Funding agencies fund an analysis of alternatives conducted in a feasibility study, and/or during the project planning phase.*

13.2.1.B. Even outside of larger infrastructure project development processes, alternatives such as sharing common resources, forming joint governmental agencies, or other forms of consolidation should be evaluated to determine if O&M costs could be reduced or TMF capacity improved. [See Recommendation 13.1.3.A for full description]

State Agencies:

13.2.1.C. Consider providing increased funding for capital improvements for water (or wastewater) related projects when it would allow for reduced O&M costs over the long term. For example, construction of dual water systems for DACs with poor distribution systems or high non-potable water demand.

- *Who: State and Federal funding agencies*
- *Why: Grant funding for DACs is currently capped at \$5 million for capital costs (for Prop 84 funding). O&M costs must be paid by the system customers. There may be instances when a capital cost greater than \$5 million may provide a DAC with less O&M costs compared to an improvement with a capital cost less than \$5 million. For example, a dual water system would allow the DAC to treat a smaller volume of potable water resulting in lower on going O&M costs. Other funding sources such as SRF and USDA are available, which typically have loan components.*
- *How: Consider allowing DACs to obtain grant funding for capital costs greater than \$5 million if the higher capital costs solution will lower ongoing O&M costs. An evaluation to determine appropriate levels of funding and qualifications would need to be done prior to increasing current funding limits.*
- *When: When considering new funding programs or funding program updates.*
- *Funding: Local funds, State legislature, SWRCB*

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13.2.1.D. Support the development and implementation of water conservation policies/measures by providing incentives and technical assistance to DACs and promoting the use of water and energy efficient equipment upgrades, such as energy-efficient or solar powered pumps.

- *Who: State Agencies*
- *Why: Water systems that implement water conservation techniques and bill their customers based on water used will use less water. Less water used will mean less water needing treatment that will result in lower O&M costs. Energy efficient upgrades to pumps and other large electrical consumption equipment will lower electrical costs to the water system.*
- *How: Provide incentives for water systems to install water meters and implement water conservation policies, and measure their effectiveness. Energy companies can provide incentives in the manner of rebates or funding for water systems to install more energy efficient equipment.*
- *When: Now for water conservation measures. When existing pumps or electrical equipment is due for replacement for energy efficient upgrades.*
- *Funding: Local funding, State legislature, SWRCB/RWQCB, energy companies.*

13.2.2 Increase Revenues

Local Service Provider:

13.2.2.A. Evaluate water and sewer rates at least every three to five years and when any major improvements are constructed, and modify as appropriate to achieve the necessary financial resources for annual operations and reserves for the next five year period. This should include development of a rate study to determine appropriate reserves and rate increases, and follow Prop 218 requirements. Typically the Prop 218 hearing will address increases for several years and, if necessary, will include increases for subsequent years at a set frequency.

- *Who: Local water and/or wastewater providers*
- *Why: Many community water or wastewater systems do not bring in enough revenue to offset the system expenses. This is often due to rates that were set many years ago and rarely if ever increased. Increases in regulatory requirements, system age, changes in the economy (inflation), as well as other factors necessitate an increase in rates at least every five years, if not more frequently. Additionally, any changes to the system that impact the operation and maintenance costs, should be reflected in the rates. Delaying adequate cost increases means O&M costs are not addressed, needed repairs are not made, and systems are not planning to address water capacity and/or water quality issues.*

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- *How: Develop a rate study determine appropriate reserves and rate increases, and follow Proposition 218 requirements. This will likely require the services of an engineer or other technical service provider. Assistance with developing a rate study is available and is recommended to be expanded under recommendation 13.2.3.B.*

The California League of Cities put out a Proposition 218 Implementation guide in 2007. It may be available from the League at 1400 K St., 4th Floor, Sacramento, CA 95814.

- *When: At minimum, every five years, and when any major improvements are constructed or other changes to the system that impact O&M costs.*
- *Funding: Local service provider*

13.2.2.B. Each local service provider (water or wastewater) should develop a single rate structure (which may include different categories, such as residential, commercial, and industrial), and no exceptions should be made to that structure. A tiered rate structure should be developed with appropriate base rates and water usage rates to encourage conservation while ensuring sufficient revenue. Certain discounts (such as senior citizen discounts) may be employed, as long as they are consistently used and part of the written rate structure.

- *Who: The water or wastewater system owner.*
- *Why: The rate structures for many communities have not been updated or reviewed for many years. In addition, there are many occasions that have been discovered where special undocumented rates had been established for specific properties many years ago. There have been other instances of properties receiving service with no requirement to pay for said services.*
- *How: A review of the fiscal requirements to operate the water or wastewater system should be conducted annually by the owner. An equitable distribution of charges necessary to sustain the water or wastewater system is necessary so that all customers are treated in a consistent manner. The owner of the system may need to contract for the services of legal counsel and a rate structure consultant to determine an appropriate rate structure.*
- *When: The basis for charging for water or wastewater service should be consistent and sufficient to meet system demands at all times.*
- *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the water or sewer charge for service.*

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13.2.2.C. Seek funding to install or replace water meters. The replacement meters should be capable of being read remotely (if the system size or agreements with neighboring systems support it) to reduce labor costs.

- Consider installing same meters as neighboring community(ies) so that meter reading and billing systems can be shared.
- Develop a tiered rate structure with appropriate base rates and water usage rates to encourage conservation while ensuring sufficient revenue.
 - *Who: Local government boards, technical assistance providers/consultants*
 - *Why: Installation of water meters is a basic and very effective method of water conservation. Metering leads to natural behavioral changes by water consumers because meters tie water use directly to household finances. Reduction in water use results in lower operating and maintenance expenses to the utility. Use of water meters also provokes the development and use of tiered rate structures, which are an excellent tool for improving overall utility finances and distributing costs over customers with different use patterns. Additionally, installing compatible meters in several locations in a given region can provide a very good opportunity for communities to enter into contractual agreements to share equipment, software, billing functions and staffing positions.*
 - *How: Consult with a technical service provider and/or engineering consultant to determine the available funding opportunities. Water meter installation could be considered as part of a larger infrastructure project, or as a separate project.*
 - *When: Immediate and ongoing.*
 - *Funding: A source of funding is the water or sewer fund of the local service provider. State agencies could redefine Category H projects (as defined by the State Revolving Fund Project Ranking Criteria) to include replacement metering projects, including meter reading equipment and necessary software. DWR could fund an ongoing Water Use Efficiency program (currently the program is funded only periodically) in which metering and re-metering projects are eligible.*

13.2.2.D. Establish appropriate connection fees for any new connections to support the capital improvements required to provide service to those new connections.

- *Who: The water or wastewater system owner.*
- *Why: The water or wastewater systems are faced with capital expenditures necessary to satisfy infrastructure demands resulting from growth of the population served and from needs of the existing population (changes to regulatory requirements and the need to replace existing facilities). Connection fees are imposed as a means to collect funds from*

new developments to be served by the water or wastewater system. The existing water or wastewater system should not be required to assume additional capital improvement burdens imposed by new development demands upon the systems.

- *How: The water or wastewater system owner may conduct a review of the existing infrastructure and its relative ability to serve the existing and future demands. Capital improvements necessary to meet the demands of existing and future populations of the service area may be described and the relative capital cost of the improvements may be estimated. The relative benefit of the capital improvements for the existing and future population may be estimated. Based on the information described above, the relative connection fee per new connection may be estimated. The owner of the water or wastewater system would review the information and determine the appropriate connection fee.*

Proposition 218 is not applicable when establishing new connection fees. However, the fees must reasonably relate to the costs incurred by the service provider.

- *When: If there is not a connection fee established for the system, the owner should prepare the supporting documents and establish connection fees as soon as possible. If connection fees are established, the basis for the fees, and the fees themselves, should be reviewed at a frequency of at least every few years.*
- *Funding: The source of funding is the water or sewer capital improvement fund of the local service provider. The source of revenues is from developers of new residential, commercial, and industrial service connections.*

State Agencies:

13.2.2.E. Consider establishing a transitional funding program to assist with O&M costs on a temporary basis.

- *Who: State agencies and the legislature*
- *Why: At the state level there is a need for a targeted and coordinated funding program with the clear goal of transitioning small disadvantaged communities in unincorporated areas without safe drinking water (including those communities with and without existing public water systems) to achieve, self-sustaining, affordable drinking water systems.*
- *How: This newly targeted program should specifically include funding for the following:*
 - *Technical Assistance for both 1) project application and project operation and management (currently eligible under SWRCB Division*

of Drinking Water funding but not DWR IRWM funding), and 2) leadership and capacity training;

- A pooled capital reserve fund, which can cover both short-term financing costs and help lower O&M costs; and*
- Some O&M subsidies for an initial period of time until long-term solutions are implemented and self-sustaining.*

As a “transitional” program, the associated funding should be limited to supporting the transition of existing disadvantaged communities into self-sustaining systems that can achieve compliance with the applicable regulatory requirements and ensure affordable rates. The program should not be a long-term, ongoing financial support mechanism. As such, a disadvantaged community’s participation in a transitional funding program should have conditions and incentives to ensure it is meeting certain objectives and milestones in a timely manner. In particular, at minimum state agencies should require and provide TMF training and improvements as a condition of receiving this O&M funding.

- When: This should be considered as part of the IUP process, state budget and legislative process, and within the creation or appropriation of new funding sources, including the new water bond.*
- Funding: Such an effort would need to include targeting significant amounts of existing funding sources, and will need new and additional funding sources to adequately address the needs and gaps identified above. The modified Water Bond should include significant funding for this effort. It may be possible to create a set aside in the SRF Intended Use Plan (IUP) for some or all of this purpose, as well as utilizing the Clean Up and Abatement Account and IRWMPs for at least some of these purposes. If a statewide or other scale of water user fee were established, part of it could be used for this purpose. Funding for ongoing O&M costs should be from the water or sewer fund supported by local users through water or sewer rates.*

13.2.3 Provide Assistance, Training, and Information

Local Service Provider:

13.2.3.A. Develop an O&M plan that includes the types of ongoing O&M costs needed, O&M servicing and parts replacement schedule, and amount needed for O&M fund reserve to help the community plan ahead to address covering O&M adequately. This will also help identify any potential for cost savings through reduced O&M costs and explain any need for regular rate increases.

- Who: The water or wastewater system owner.*
- Why: The water or wastewater system is subject to regulatory requirements from the SWRCB, County Environmental Health Department, or RWQCB. In addition, the physical facilities require*

maintenance and confirmation that the facilities operate as required. An operations and maintenance plan provides the basis for the activities and procedures necessary to satisfy the regulatory and operational demands of the systems.

- *How: The owner of the water or wastewater system is required to have certified operators for the systems. Either the owner, operator, or a consultant may prepare the appropriate operation and maintenance plan for the system(s).*
- *When: An operations and maintenance plan should be in place at all times.*
- *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the water or sewer charge for service.*

County and State Agencies:

13.2.3.B. Continue to provide, expand, and better publicize technical assistance training on developing rate studies and establishing rate policies, which should also include guidance on conducting a Prop 218 hearing. This type of assistance is currently available for disadvantaged communities from SWRCB technical assistance providers.

- *Who: State Agencies, Technical Assistance providers*
- *Why: The Prop 218 process in California is complicated and nuanced. Many legal questions remain unanswered, even after almost twenty years. Many questions arise during a Prop 218 process, and can therefore become very expensive due to extensive legal consultation. The more training that Boards and staff receive before embarking on a Prop 218 rate change, the more adept they will be at navigating the process and avoiding pitfalls. The availability of State agencies or other technical service providers for assistance during the process would be very useful to many small districts that do not retain regular counsel, however this does not dismiss the need for legal counsel. The local entity should hire an attorney for specific guidance through this process.*
- *How: Holding periodic trainings in the physical context of government buildings can remind participants of the larger system in which they function as local government representatives. On the other hand, it might be most impactful to hold a training related to developing a rate study and conducting a Prop 218 hearing in particular communities, scheduled to precede a planned rate change.*
- *When: Trainings should be held one to two times per year. Weekday evenings may work best.*

- *Funding: Local funding, state agencies, or technical assistance funds already available could be used for this purpose.*

13.3 Improve Water Supply Quality and Reliability

Priority Issues

Poor Water Quality – Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants, and health impacts.

Inadequate Existing Infrastructure – Infrastructure that is aging, poorly constructed, or of insufficient capacity to meet current or future community needs.

Insufficient Quantity of Water – Insufficient supply or lack of reliable water supply, including surface and groundwater, including groundwater storage capacity, surface water storage and supply.

Potential Solutions

Potential solutions to resolve the priority issues described above include:

1. Prevent Worsening of Problems
 - a. Avoid permitting new development or water or wastewater users without first securing adequate water supply, water quality, infrastructure, and TMF capacity.
 - b. Improve groundwater management to protect and improve groundwater quality and quantity.
2. Promote adoption of shared solutions that reduce community vulnerability.

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

13.3.1 Prevent Worsening of Problems

Several recommendations to help prevent or minimize worsening of the problems that currently exist are described herein. Additional recommendations are provided under Recommendation 13.6 - Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues.

Local Service Provider:

13.3.1.A. Do not allow new connections if the service capacity is not confirmed. This may require imposition of a moratorium. Developing appropriate connection fees, as recommended above, is necessary to provide a means to ensure that capacity can be made available for planned new connections.

- *Who: The water or wastewater system owner.*

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Plan Recommendations

- *Why: An existing system is responsible to provide the water and wastewater services to the properties connected to the system. The existing system would not be able to fulfill the service obligation to new connections if the capacity was not available.*
- *How: The owner of the water or wastewater system must know what the relative capacity and demands of the system are at all times so a determination of whether sufficient capacity is available to meet the proposed demands can be made. Establishing appropriate connection fees can help ensure capacity can be developed when necessary. If sufficient capacity is not available, and funds are not available to develop additional capacity, a moratorium on new connections should be pursued.*
- *When: Ongoing.*
- *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the water or sewer charge for service.*

County:

13.3.1.B. [See recommendations below under Recommendation 13.6 – Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues]

State Agencies:

13.3.1.C. Improve Groundwater Management Planning to address both declining water levels and increased water quality contaminant levels, and evaluate ways the two trends may be exacerbating each other.

- *Who: Department of Water Resources and local water agencies.*
- *Why: Groundwater levels within many areas of the Tulare Lake Basin Study Area have declined over time and there does not appear to be any reason to expect groundwater levels to stabilize. There are currently three basic methods available for managing groundwater resources in California: 1) management by local agencies under authority granted in the California Water Code or other applicable State statutes, 2) local government groundwater ordinances or joint powers agreements, and 3) court adjudications. However, no law requires that any of these forms of management be applied in a basin. Instead, groundwater management is often instituted after local agencies or landowners recognize a specific groundwater problem. The level of groundwater management in any basin or sub-basin is often dependent on water availability and demand.*

With the declining groundwater levels, it is becoming increasingly critical to manage and protect this resource, which is relied on for domestic uses by approximately 90% of communities in the Study Area.

- *How: To be determined by the State of California. Local control of groundwater management activities may be maintained, however it is*

recommended that the Department of Water Resources consider ways to ensure that sufficient groundwater management planning is being conducted within the Basin to address declining groundwater levels and increasing water contaminant levels.

- *When: Ongoing.*
- *Funding: Unknown.*

13.3.1.D. Clarify the interpretation of a well site control zone with a 50-foot radius, as referred to in Title 22, Chapter 16, Article, Section 64560 of the California Regulations Related to Drinking Water. The current interpretation in Tulare County is that there must be a 50-foot radius onsite around a well. This interpretation would require communities to purchase properties that are significantly larger than necessary. This interpretation would also eliminate existing lots within the community from consideration for use as well sites. Guidance should clarify how well sites may be able to meet the requirement to have a 50-foot control zone for source water protection, even if the well site itself is smaller.

- *Who: State Agencies*
- *Why: It is noted that there is an acknowledgement of the need for some control of facilities or activities within the immediate proximity of public water supply wells. However, there have been interpretations of the subject code section that would require owners of new wells to physically acquire property that would exceed many properties available within a community. It is not believed that the intent of the code section is consistent with some of the interpretations. Some interpretations would impose a significant financial hardship to both acquire a large parcel and construct the water distribution facilities to connect the parcel to the existing community system. In addition, the definition of a control zone is in need of clarification for all parties involved (owner of the water system, county regulatory staff, SWRCB regulatory staff). Considerations of existing property uses and existing public rights of way adjacent to proposed water supply wells require clarification.*
- *How: It is suggested that examples are provided by the SWRCB (Division of Drinking Water) that would clarify the definition of a control zone, as it may extend beyond the limits of the actual well site property.*
- *When: Now.*
- *Funding: Unknown.*

13.3.1.E. Consider ways to encourage and provide funding to sewer communities that rely on individual septic systems that are failing or are on inadequately sized lots.

- *Who: Funding agencies including the State Water Resources Control Board, USDA and possibly county agencies utilizing Community Development Block Grant funds*
- *Why: Failing septic tanks endanger public health in a number of ways, not least by exposing humans to raw sewage, and by contaminating groundwater supplies with bacteria and nitrates.*
- *How: Conduct studies in communities that gauge the degree to which septic tanks are failing, what it costs homeowners to pump, repair and/or replace them. Conduct preliminary engineering studies that recommend a solution and develop estimated project costs and monthly sewer rates, so homeowners can make informed decisions.*
- *When: Immediate and ongoing.*
- *Funding: State Water Board, USDA, CDBG*

13.3.1.F. Allow drinking water funding agencies to fund infrastructure for fire flow requirements. Where affordability or feasibility of the project is jeopardized by meeting full fire flow requirements, also allow drinking water projects to be funded for domestic purposes provided a limited level of fire flow is available. Where a viable option, the feasibility of installing a dual water distribution system to meet domestic supply and fire flow requirements, should be considered (especially where irrigation demands can be accommodated through the non-potable system used for fire flow).

- *Who: County Fire, County Boards of Supervisors, and funding agencies such as USDA*
- *Why: Especially in communities where water must be treated to remove contaminants, it should be an option for utilities to choose to treat only the water that is actually consumed by people. Fire flow and outside irrigation demands can represent a significant portion of the total water demand in a given community, and requiring that fire flow is always available means that more water is being pumped and treated than is being consumed. Dual systems present one way for communities to protect public safety without building oversized treatment and potable water distribution systems. The dual system can also allow for use of untreated water for irrigation purposes, additionally reducing the system treatment requirements. In cases where a dual system is cost prohibitive, and attaining fire flow requirements through the main potable system is much too expensive to operate, allowing a reduced fire flow capacity should be considered.*

Plan Recommendations

- *How: Adjust fire codes to allow for greater flexibility in the manner in which communities meet fire flow requirements, or perhaps reducing those requirements. Provide funding (e.g., Community Facility loans and grants through USDA) to install parallel piping that is dedicated for fire flow and landscape irrigation use. Utilize existing wells that do not meet Title 22 requirements to supply the second system, when available.*
- *When: As soon as practicable.*
- *Funding: USDA Community Facilities or Water & Wastewater loans/grants.*

13.3.2 Encourage Shared Solutions to Reduce Vulnerability

State Agencies:

13.3.2.A. Provide funding opportunities to encourage the development of regional cooperation, partnerships, and consolidation of services, where appropriate.

- *Who: State Agencies*
- *Why: To encourage swifter implementation of appropriate shared or regional solutions, both “carrot” and “stick” approaches should be used in collaboration as appropriate towards that goal. Many local entities are otherwise uninterested and unwilling to even consider sharing services with neighboring systems and need further motivation.*
- *How: State agencies should not issue permits to new water or wastewater systems within a municipality or within ½ mile radius of an existing entity providing water or sewer service without showing of a good faith attempt to obtain service from an existing provider and help bring them into compliance, if needed. For existing public water systems that are struggling to meet compliance or have a history of non-compliance, regulatory agencies should promote or enforce action towards consolidation or shared solutions, as appropriate.*
- *When: These requirements should be used as part of the permit application approval process, funding application review process, and MCL enforcement and annual system inspection process.*
- *Funding: State agencies would not need extra funding to utilize this oversight power. However, state funding sources should be made available to support development and implementation of these solutions in conjunction with any enforcement or regulatory action, as appropriate.*

13.4 Improve Funding for DACs

Priority Issues

Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements – Lack of affordable or accessible funding for system improvements; inadequate funding to make successful grant applications to get infrastructure improvements (i.e. lack of funding for grant writers, preliminary engineering, etc.); funding is not always getting to the communities that need it most.

Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Improve scoring criteria and guidelines to better address DAC needs, get to the communities that need it most, and create long-term affordable and sustainable solutions for DACs.
2. Target outreach and technical assistance to enable communities to access funding sources and implement solutions quickly.

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

13.4.1 Improve Scoring Criteria and Guidelines

State Agencies:

13.4.1.A. Consider changes on Category E (insufficient source water capacity or delivery capability) project rankings, to make it easier to get funding for that category of projects.

- *Who: State Agencies*
- *Why: There are many communities with insufficient water supply, however, the criteria for funding eligibility is heavily weighted on water quality challenges. The lack of sufficient water quantity is often a significant problem.*
- *How: Review and revise the guidelines for ranking of funding eligibility criteria to enable funding assistance for water supply sources, especially for those communities with a single source of supply.*
- *When: Now.*
- *Funding: Unknown.*

13.4.1.B. Continue the Pre-Planning and Legal Entity Formation Assistance Program. Consider creation of similar programs for wastewater for areas currently on septic. [See Recommendation 13.3.1.E]

- *Who: State Drinking Water SRF and the State Water Board.*
- *Why: There is a need for more flexible pre-planning funding to enable evaluation of appropriate governance alternatives to develop shared and regional solutions and to support solutions for areas not currently served by a public water system. The first round of applications for this indicated there was a large demand and unmet need, and additional rounds should be extended. This will both enable California to use its SRF effectively, and help communities most in need of developing solutions be able to do the analysis it needs to develop the best solution, and address eligibility barriers by developing appropriate entities for construction and full project implementation. Historically the evaluation and development of regional solutions has not been able to score high or pass through eligibility barriers and this funding pot was created specifically to help address those challenges and allow these sorts of projects to be developed when they address disadvantaged community safe drinking water needs.*

Similarly, creation of a similar program should be evaluated for areas on septic or with unaffordable wastewater services to evaluate development of shared or regional wastewater solutions.

- *How: Implement this through the Intended Use Plans of the SRF programs.*
- *When: The IUPs are developed annually. Additionally, applications should be accepted throughout the year.*
- *Funding: This is primarily aimed at utilizing funding through the SRF programs.*

13.4.1.C. Continue the Consolidation Incentive Program, however, modify the system so that large systems do not obtain benefits that are significantly out of proportion to the benefits provided by consolidation. Also consider expanding the consolidation incentive program and make it available to larger systems seeking to assist communities of private well owners impacted by the drought and/or facing water quality challenges.

- *Who: State Agencies*
- *Why: There does not appear to be any limitation on the benefits received by the entity willing to allow the consolidation of a smaller system. If the larger entity (Incentive System) can receive funding assistance drastically beyond the scale of the cost of improvements to receive a consolidation then the use of public funds consistent with the Priority Categories may be in question.*

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Plan Recommendations

- *How: Consider placing a limit on the allowed value of Incentive System projects that may be re-ranked to a higher Priority Category by virtue of a consolidation project. Also, consider allowing extension of services to those on State Small Systems and private wells that are contaminated or going dry, to be considered eligible for appropriate consolidation incentives.*
- *When: Now.*
- *Funding: Unknown.*

13.4.1.D. Consider ways to expedite the funding process, so that communities applying for funding do not spend several years drinking water that does not meet primary drinking water standards, and/or relying on insufficient water supply.

- *Who: All funding agencies (US EPA, SWRCB, USDA, DWR)*
- *Why: Currently, communities cannot apply for funding until an actual water quality violation is documented. Often, though, it is apparent that a problem is emerging as contaminant levels slowly climb. Allowing systems to apply for funding based on documented contamination levels that are projected to exceed an MCL in the coming two to five years, for example, would give communities a big head start on fixing problems. This could significantly reduce the time that people spend drinking unsafe water.*

Another consideration would be to streamline the funding process so that it does not take five plus years from the time of initial application to implementation of a project.

- *How: Consider amending funding regulations and intended use plans to allow application by water systems that can demonstrate a documented increase in a regulated contaminant that is projected to exceed the MCL in two to five years.*

Also, consider methods to speed up the funding process, including amending planning contracts by adding design and construction phases.

- *When: This is a change to regulations that could be made immediately. It is anticipated that the recent Drinking Water Program transition from CDPH to SWRCB may help the Drinking Water Program funding process.*
- *Funding: The Safe Drinking Water State Revolving Fund would be the most obvious, and possibly this change could be implemented through a change to the Intended Use Plan. DWR IRWMP funding could also be a good source for funding to avert future problems. In both cases, planning funding could be expanded to allow for studies that monitor, assess and project contamination that could exceed a health standard.*

13.4.1.E. Streamline the process for payment of claims for state-funded projects, so that local water providers can receive more timely reimbursement. Simplify

DWR IRWM claims reimbursement forms to be in line with SWRCB (Division of Drinking Water) claims process.

- *Who: All state funding agencies. USDA already makes payment electronically and in a matter of days.*
- *Why: Waiting six weeks or more for state reimbursement puts water and wastewater systems in a difficult position. Often they owe hundreds of thousands of dollars to a contractor for a month's work, and simply have no way to pay until they receive their state check. Payment made quickly and electronically would save weeks of delay, interest paid, and intense hardship by small systems.*
- *How: Streamline reimbursement processes by being less stringent on documentation. Set up electronic fund reimbursement and other processes to expedite payments. Consider making advances in cases of hardship.*
- *When: As soon as possible.*
- *Funding: None.*

13.4.1.F. Require privately owned for-profit systems to conform to all requirements (including audits and other fiscal requirements) of publicly owned systems in order to receive public funding assistance.

- *Who: State Agencies.*
- *Why: Private for-profit systems are owned by an individual or private corporation. The general purpose of a private system is associated with the fiscal incentive for the owner of the system. Providing public funding assistance to upgrade privately owned water or wastewater systems may be construed as a gift of public funds. Private systems may not have been constructed or operated to the same standards as public systems. It may periodically be perceived that the users (tenants) of the private system are the primary consideration for determining if public funding assistance is appropriate. Care should be exercised to not remove the private owner responsibility for the water or wastewater infrastructure.*
- *How: Ensure that the requirements associated with audits, fiscal reserves, rate structures, operational budgets, operational and managerial requirements, and technical requirements are mandated equally to all potential recipients of public funding assistance.*
- *When: Ongoing.*
- *Funding: No additional funding is necessary.*

13.4.2 Target Outreach and Technical Assistance

Local Service Provider:

13.4.2.A. Local service providers should attend existing grant application workshops, including CFCC Funding Fairs, and participate in other training opportunities provided through SWRCB, CWEA, CRWA, RCAC, and other resources.

- *Who: The water or wastewater system owner.*
- *Why: Preparing funding applications is complex and challenging, and can often be expensive due to printing costs, the need for studies, and the time invested. Developing a better understanding of the application process, and learning about resources available to help, will help communities through this process.*
- *How: Visit the CFCC Funding Fairs website for more information on funding fairs. http://www.cfcc.ca.gov/funding_fairs.htm*
- *When: Annually.*
- *Funding: The CFCC funding fairs are no cost. Other training opportunities should be paid for through the water or wastewater system user fees.*

13.4.2.B. Participate in Integrated Regional Water Management Planning group meetings and consider becoming an “Interested Party” or “Member” of an IRWMP group.

- *Who: Water or wastewater system owner or manager*
- *Why: Participation in local IRWM groups allow systems to understand the regional water management efforts being developed, inform those efforts with the needs of their local community, and develop joint projects to improve water quality, water supply, storm water management and flood control in each sub-basin. Disadvantaged community impacts and needs may not be adequately addressed in local management plans or understood by water management and other local agencies if local disadvantaged communities do not participate. Additionally, disadvantaged communities need to participate in order to ensure specific projects are developed and funded that address their critical needs.*
- *How: Each IRWM group has its own unique governance structure and meeting process. Community representatives should contact the group in their region to get on the email list and ask how to become members or interested parties of the group. In general, becoming a member allows you to vote on decisions made by the group. Membership may be limited to public agencies in some cases. In some cases, fees are required, although DWR states that IRWM groups cannot require payment for local stakeholders to participate. Becoming an interested party may be a good way of getting started. That formal status means that an entity has*

*adopted and is supportive of the regional plan and its goals and objectives, and means it is a formal part of the planning group and generally invited to be part of any Advisory Board or stakeholder group meetings. Some IRWM groups only allow for formal submittal of projects by members, so interested parties can only propose projects that are formally sponsored by members. A map of IRWM groups within the Study Area is included as **Figure 1-6**.*

- **When:** Entities can join IRWM groups at any time. Contact the appropriate IRWM group to find out when the next meeting is and what the process is for becoming part of the group. It is best to join soon so that communities are able to be part of the process by the time the next funding and planning update takes place.*
- **Funding:** Each IRWM has different membership fee requirements, although all have an option for some form of formal participation that is free for disadvantaged communities. Communities should ask for technical assistance to support their ability to effectively participate in planning and project development from local IRWM groups, the Department of Water Resources, and local technical assistance providers. IRWM groups can include projects in regional applications that fund planning and project development and construction for disadvantaged communities. Under DWR's current funding guidelines for funding available to IRWMs, projects that advance critical needs in disadvantaged communities qualify for extra points and are not required to meet the same funding match and project readiness requirements as other projects. Additionally, DWR has set a goal for at least 10% of DWR's IRWM funding to fund disadvantaged community projects so local IRWMs may include DAC projects in regional applications to increase the competitiveness of funding applications.*

IRWMP Level:

13.4.2.C. IRWM groups should consider organizing pre-application and grant application workshops or training opportunities for DACs that are "Interested Parties" or "Members" of the IRWM group, as well as prepare and distribute outreach and educational materials to those DACs as funding from DWR is made available.

- **Who:** IRWM groups*
- **Why:** Local IRWM groups benefit from engagement of DACs within IRWMs and development of DAC projects as part of integrated regional water management planning and project development applications. 10% of IRWM funding is aimed to be used for DAC projects. Additionally, IRWM applications receive additional points in scoring and cost waivers if projects to address critical water needs in DACs are included.*

Additionally, IRWM plans were created to address priority water needs in the region, which include disadvantaged community needs, particularly in

the Tulare Lake Basin. If these plans and the projects to implement the plans are not addressing disadvantaged community needs, they are not accomplishing their goals and not adequately accomplishing the mission of IRWMs and the funding source. Because of that, each region should proactively encourage and facilitate effective inclusion of DAC needs and projects within IRWM planning and project application processes.

Local IRWMs in the region have already taken many steps to do this, and this recommendation is to continue as well as expand these efforts to do more formal, extensive and timely outreach, training, workshops and technical assistance with each funding round.

- How: IRWM groups can organize formal and timely workshops and trainings specifically aimed at providing information and answering questions and supporting integration of DAC needs and projects for each round of DWR funding and plan updates. It would be most useful to invite the local DWR IRWM representative to also be present for these meetings in order to be able to answer any questions that may arise. Outreach and facilitation of these meetings would be done more effectively in partnership with local community-based nonprofits and technical assistance providers. The database of DACs and outreach contact lists developed for this TLB DAC Study should be integrated into each IRWM group's database and used for planning, communication and outreach efforts.*
- When: This should be conducted enough in advance to allow for preparation and submission of projects within the IRWM application timeline, as well as any regular plan updates.*
- Funding: The costs of hosting meetings and outreach could be funded as part of administrative staff costs of IRWM groups, and could also be included in any applications for planning and technical assistance grants through State agencies.*

13.4.2.D. Consider ways to allow communities in IRWM “white areas” (areas not currently within an IRWM group boundary) to participate in the IRWM process.

- Who: DWR*
- Why: There are communities that are not within the boundaries of an IRWM group, but would like to participate in the IRWM process. The communities are currently unable to participate.*
- How: Needs to be considered by DWR.*
- When: Now.*
- Funding: DWR and IRWM groups.*

13.5 Improve DAC Awareness and Participation

Priority Issues

Lack of Informed, Empowered, or Engaged Residents – Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts.

Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Provide community outreach and engagement as part of project development
 - a. Include community outreach and engagement in project budgets and annual budget of water systems
 - b. Implement appropriate and effective practices when conducting outreach and engagement (e.g., provide translation and use in-person, phone, and mail for outreach, not just email)
 - c. Conduct analysis that facilitates community engagement in project development.

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

13.5.1 Provide Community Outreach and Engagement

Local Service Provider:

13.5.1.A. Provide the community as much information as possible and opportunity to provide input early on in the process. Local water and wastewater providers should include funding and/or staff time as part of annual and project budgets to conduct community outreach, education, consultation with community residents/users (through community meetings) in order to address barriers and lack of information and to evaluate and implement recommendations identified by the users.

- *Who: Local water or wastewater providers or entities acting as project applicants on behalf of DACs.*
- *Why: Communication is critical for community acceptance. Community acceptance will help implementation of the solutions and overcoming barriers. It will also help support acceptance of reasonable rate increases needed to ensure adequate service or improvements.*

- *How: Local providers should consider holding regular community meetings and sending out letters to consumers with updates on services and inviting them to participate in consideration of alternatives and throughout the development of major projects. The more transparent information that is available and opportunities for discussion, the more that community leaders can support informed choices and gain broad support.*

There are two primary activities to accomplish this:

- *An effective communications plan. Local services providers should proactively update the community on its services and notify customers of opportunities for input on new project development. Notices should be delivered to each household and translation should be provided as needed. In most DACs, a significant percentage of the population is primarily Spanish-speaking and therefore Spanish translation should be provided for notices and at public meetings. Local service providers should consider having bilingual staff or securing a contract with a translator to regularly translate important public documents and provide interpretation at public meetings when needed. Translation should be included in job descriptions or contracts included as part of the system's annual budget.*
- *A responsive scope of work for project development. Local service providers should ensure that any scope of work with an engineering firm includes transparent evaluation of alternatives to minimize O&M costs, and includes the need to explain project alternatives to the community and effectively incorporate and respond to feedback. For large, complex project planning processes involving more than one community, the contracts should include subcontracts with a community facilitation team that relates well to community members, as well as engineers, and that should be included in any funding scope of work. The more board members and community members and other interested parties can be provided analysis of the pros and cons and realistic estimated costs for consumers of various alternatives, the better decision-making that can take place.*
- *When: This is particularly important for systems when developing new projects, and is important to include within any project application scope of work. But there is also an ongoing need to communicate with consumers effectively about the services being provided.*
- *Funding: Funding for ongoing regular communication should be included in the system's annual budget as part of the cost of services. However, when more intensive analysis, facilitation and communication services are needed around major project development, this can be funded by including it in the scope of work for project applications, particularly within planning and pre-planning funding sources.*

Plan Recommendations

13.5.1.B. Attempt to use in-person, phone or mail outreach to DAC residents as much as possible; email and website should be utilized, but are not sufficient on their own.

- *Who: Local service providers and other entities providing outreach and communication with DACs.*
- *Why: Many DAC members and representatives do not have access to internet or email. Residents of DACs can be better reached by mail, phone or through in-person outreach. Email outreach is not sufficient on its own to reach DAC stakeholders.*
- *How: Flyers sent out with bills, door-to-door outreach, and direct mail are the most effective. Mailing lists may be obtained with the local water provider and county registrar. Consider asking local community leaders within the community to help do door to door outreach to distribute flyers or contract with other service providers that specialize in culturally appropriate outreach and community engagement. Local non-profit organizations can be used to aid in outreach efforts and updating contact information.*
- *When: Any major outreach efforts, including notices of meetings for major project development or updates from the water or wastewater system should strive to use effective forms of communications.*
- *Funding: These costs should be included as part of administrative budgets or outreach budgets within project development scopes of work.*

13.5.1.C. Expand community engagement in the development of projects. Funding to facilitate community engagement should be included in project budgets and standard approved scopes of work for project development at both the planning and construction phase. Feasibility studies funded by public funds must evaluate alternatives (including costs to end users and an evaluation of pros and cons). This information should be provided to the community at a public meeting for feedback as part of the planning process to select final alternatives for implementation. While this is typically already required to be presented during open session Board meetings, increased community engagement is recommended.

- *Who: Local service providers and State agencies.*
- *Why: In order to ensure that the best project alternative is developed and that there will be strong community-support to facilitate swift implementation and support any rate increases, there needs to be effective community engagement and sufficient analysis to provide for informed and transparent decision-making. Opportunities for community engagement are typically required through open session Board meetings, for which agendas must be posted for the public.*

Plan Recommendations

- *How: Standard scopes of work for planning and construction phases should include community engagement, and feasibility studies should evaluate alternatives to show pros and cons and estimated resulting costs to end users.*
- *When: During development of any proposed project.*
- *Funding: Outreach efforts could be funded through the project funding program and/or through the water or sewer fund of the local service provider.*

13.6 Improve Land Use Planning to Minimize Creation of New Issues

Priority Issues

Lack of Vision and Integrated Planning to Develop Solutions – Lack of shared visions of sustainable solutions for DAC water and wastewater needs within community planning documents, water planning documents, individual water and wastewater provider plans, county general plans, and Integrated Regional Water Management Plans, lack of regional coordination and planning with larger entities in planning efforts.

Many of the priority issues identified by the SOAC and discussed above are perpetuated by allowing new development in areas where there is not a sustainable system with adequate water supply reliability and quality. While water and wastewater related issues are being resolved in some communities, similar issues are being created in new areas.

Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Development permits (including any new domestic wells or septic systems) should require that:
 - a. Adequate supply, quality, and TMF capacity will be available for long-term water and wastewater service before a building permit is issued.
 - b. Any new development near an existing system should connect to and help bring the existing system into compliance, rather than create new systems.
2. Planning and zoning should be appropriately targeted and updated to ensure water and wastewater systems have the capacity needed to serve projected development.

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

There is a need to try to get the local government entities, counties, cities, special districts, LAFCo, etc. to meet and consider how to reduce barriers and/or increase

requirements to try to control potential further development where water quality and/or quantity are inadequate to promote health and safety. It is suggested that the lack of an adequate water supply, public or private, should be a basis to deny development on health and safety grounds. The recommendations in this section follow this general suggestion.

13.6.1 Restricting Permits for Development

County:

13.6.1.A. County planning departments should require any new development near an existing system (within 1-2 miles) to evaluate the feasibility of connecting to the existing system, rather than permit the creation of a new system.

- *Who: County Planning Departments, LAFCos, and State Agencies*
- *Why: Permitting development of a new water system where there is the potential to connect to an existing neighboring system perpetuates the priority issues that this Study and the recommendations herein aim to resolve. It is creating a new small system that will likely struggle to maintain sufficient TMF capacity, primarily due to lack of economy of scale, and where there are water quality issues known, this creates another system for which water quality issues will need to be resolved. On the other hand, if the new development connects with an existing system, it can help to bring that system into compliance rather than constructing a new system, it can provide improved economy of scale and additional rate payer base, it may allow access to additional resources, and it will allow for increase reliability for the system.*
- *How: Address policy issues and permitting requirements for new systems to more actively require new development to connect with existing water and wastewater systems where feasible. County Planning Departments may not necessarily have the legal authority to require the existing system to make the connection. However, they can and should recommend that the property to be developed be annexed. LAFCos should also consider this within the LAFCo approval processes.*
- *When: Any time new development is proposed.*
- *Funding: County, SWRCB*

13.6.1.B. Require and actively support investment in bringing existing systems into compliance and developing long-term sustainable and affordable solutions before allowing growth and as part of permitting growth in communities where the existing water system cannot accommodate growth due to inadequate drinking or wastewater infrastructure.

- *Who: Local entity, County, LAFCo, State funding agencies, and Legislature.*

- *Why: Unless a local entity water or wastewater system is in compliance with regulatory requirements and is fiscally sustainable, it is unable to provide reliable and sustainable water and wastewater services to any new connections.*
- *How: The local entity must prove the ability to provide Technical, Managerial, and Financial capabilities for a sustainable system prior to consideration of growth. County planning should require such proof prior to proceeding with consideration of new development that would rely upon the local system(s). LAFCos should also consider this within the LAFCo approval processes.*
- *When: Ongoing.*
- *Funding: Local entity rate structure.*

13.6.1.C. In cases where there is a moratorium on connecting to a public water system, the county should not issue a permit to drill a private well on a property within the district boundary. Additionally, public water systems should consider implementing an ordinance prohibiting new well drilling within the PWS boundary and notify the county of this ordinance.

Permitting of a private domestic well outside of the district boundary should be allowed only if the new well meets primary drinking water quality standards and will not significantly impact existing PWS. Counties should not permit a new well that does not meet standards, unless it is demonstrated that a treatment system will be installed.

- *Who: County, local service provider.*
- *Why: Typically a water system will issue a moratorium if they have insufficient supply to serve new customers. If a landowner is then allowed to drill a new well within the district boundary it can impact the district's supply source, and may allow a path for contamination of the district's supply. In areas where water quality is an issue, issuance of a permit for a new well also allows for the homeowner to develop a new source of supply which is likely to have water quality problems.*
- *How: Consider amending county well permitting ordinances to clarify that permits will not be issued for new private wells to be drilled within the boundaries of an existing public water system. It is important that systems implement a moratorium and notify the county of the existence of a moratorium. Existing water systems should also consider establishing an ordinance prohibiting drilling new private wells within the system boundaries (not just a moratorium on connections). Additionally, consider amending county well permitting ordinances to clarify that permitting of new domestic wells outside of water system boundaries are required to show that the new well can meet drinking water standards for commonly*

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known contaminants in the area (or implement adequate treatment devices) and will not impact water supplies of existing users.

- *When: Anytime*
- *Funding: No funding source necessary.*

13.6.1.D. In areas where there is no existing water system infrastructure available, building permits should only be issued if adequate supply and quality from a private well is confirmed to be available. This may include installation of a viable treatment system (POU or POE) with acceptable maintenance service.

- *Who: Counties, Legislature*
- *Why: Issuance of a permit to build a home on a property where there is not existing water system infrastructure available, and where the supply and quality available from a private well are not confirmed to be sufficient, puts the homeowner or tenant at risk of having a water supply that does not meet water quality standards and/or water supply that may be insufficient.*
- *How: Require an analysis of water supply prior to issuing a building permit. In areas of known groundwater contamination (high levels of primary constituents), counties should not zone for residential building.*
- *When: Now, ongoing.*
- *Funding: No funding necessary.*

13.6.1.E. Provide enforcement action when people do not obtain a permit for drilling of a new well or installation of an onsite wastewater system.

- *Who: County*
- *Why: It has been noted that some property owners have drilled a private well and/or installed a septic system without a permit from the county. This poses a health risk for the well user in addition to neighboring well owners whose well could be contaminated by an improperly constructed well or septic system.*
- *How: To be determined at county level. Enforcement action may include fines and/or shutting down the well.*
- *When: Soon, ongoing.*
- *Funding: Counties.*

13.6.2 Planning and Zoning

County:

13.6.2.A. All counties shall identify areas where new growth should be directed based on the existence of public water and sewer governance and infrastructure.

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Counties shall only zone for residential development where there is safe and reliable water, except in situations where there are viable plans to provide safe and reliable drinking water, and additional growth will create more economy of scale and bring a greater rate payer base that will allow for a solution to be sustained.

*Note: this recommendation is **not** intended to limit the ability to create infrastructure in existing communities that currently rely on private wells or septic systems; rather, this recommendation is intended to limit growth in areas that do not have sufficient governance and infrastructure to accommodate such growth.*

- *Who: County Planning Department and LAFCos*
- *Why: The proliferation of small water systems that lack economy of scale and proper technical, managerial, and financial capacity is a large part of the problem faced by communities in the Study Area. By encouraging growth around existing public water and sewer systems and discouraging growth in other areas, this problem can be minimized in the future. However, it is important to confirm the capacity of the existing systems prior to zoning for residential development that would rely on those systems. Implying the potential for growth in areas that do not have proven safe and reliable water supply sources is not exercising due diligence in land use planning.*
- *How: Planning documents should account for existing infrastructure and governance structures that are available when zoning for residential land use. When growth is encouraged near (within 3-5 miles) existing public systems through planning documents, those systems potentially impacted should be notified. Counties should require proof of the existence or reasonable capability to provide safe and reliable water supply to an area prior to defining land uses or zoning for potential land uses in areas within the county. LAFCos should also consider this within LAFCo approval processes. Where this would require re-zoning of areas, legal counsel should be consulted to make sure property rights of owners are not infringed upon.*
- *When: Now and any time planning documents are reviewed and updated.*
- *Funding: County Planning Department.*

State Agencies:

- 13.6.2.B. The water quality from private wells shall be analyzed and any contaminants exceeding primary drinking water quality standards should be disclosed upon sale of a property. The contaminants to be analyzed may vary by county or region within California; however for the Tulare Lake Basin it is recommended that, at minimum, water quality from private wells should be analyzed for coliform bacteria, nitrates and arsenic. If other contaminants, such as

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uranium, TCP, Chrome-6, perchlorate, or DBCP are known to be prevalent in the area near the subject property, a buyer may request analysis of the known contaminants in the area. This would put some onus on the Department or Real Estate to inform realtors of the water quality issues in their area of service.

- *Who: State Agencies, Department of Real Estate, Legislature, property owners*
- *Why: There are currently no requirements for ongoing monitoring of private well water quality. As such, a homeowner may have no reasonable way to know the quality of water that is being consumed, and may not even consider that it could have contaminant levels in exceedance of a water quality standard. A buyer has the right to know what is in the water and whether it may have potential health impacts, just as he has the right to know if there are termite issues or roof damage.*
- *How: Through State Agencies, Legislature, and/or Department of Real Estate require that water quality be disclosed upon sale of a home. The water quality disclosure will be between the seller and the buyer. This is not recommended to be public information, due to the confidentiality and privacy considerations of property owners.*
- *When: Now, ongoing.*
- *Funding: Funding for water quality sampling will be through real estate transactions.*

13.6.2.C. Clarify conflicting policies related to farm worker housing. The policy that counties shall permit and encourage the development of sufficient farm labor housing (California Health and Safety Code Section 17021.6) can be inconsistent with the requirement to provide safe drinking water (in areas where water quality does not meet drinking water standards). There should be no requirement to issue a permit if doing so causes a violation of water quality standards for the tenants to be served. These conflicting policies put counties in a difficult position.

- *Who: State agencies*
- *Why: The California Department of Housing and Community Development analyzes special housing needs for farm workers. There can be a legal conflict if it is demonstrated that there is a need for farm labor housing under the Housing Element, but water meeting drinking water standards is not available to that farm labor housing development. In this case, the county has a dilemma as to whether or not to permit the farm labor housing knowing that their water supply will not meet State and Federal drinking water standards. In either case, they would be required to violate a State policy.*
- *How: To be determined by State agencies.*

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- *When: Now.*
- *Funding: Unknown.*

13.7 Develop & Maintain Information on DAC Water/Wastewater Needs

Priority Issues

Lack of Information on DACs – Lack of information about water rates and usage, lack of information about water quality in areas that have no public water provider (i.e., private wells), barriers to accessing information on water quality (i.e., confidentiality requirements), lack of information about wastewater treatment in areas without wastewater system providers, etc. Lack of data on water and wastewater infrastructure compatible with GIS and online so it can be accessed by the general public.

Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Improve Data Collection (including collection of new data and ongoing updates of key data)
2. Improve Data Management and Accessibility

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

13.7.1 Improve Data Collection

County:

13.7.1.A. Tulare County should continue to update and maintain the database that was developed through this Study. Local data stewards from each of the other three counties (Fresno, Kern, and Kings) should be established to assist in the quality control of the data collected for each respective county. The uses of this database could be many, but the primary purpose would be to track improvements to the water supply quality and reliability in the Study Area.

- *Who: Tulare County (Lead), Fresno, Kern, and Kings Counties (local data stewards)*
- *Why: The uses of this database could be many, but the primary purpose would be to track water quality and supply issues in the Study Area, as well as changes overtime (improvements in the conditions, or otherwise). It is noted that at present there are many communities with an unknown source of water.*
- *How: Data will be maintained by Tulare County and updated on approximately an annual basis.*

- *When: Current and ongoing.*
- *Funding: Tulare County.*

13.7.1.B. Tulare County should track progress with respect to the priority issues identified in this Study. Monitor and measure the success of improving the circumstances of DAC water and wastewater systems through implementation of recommendations, relative condition of drinking water supplies, and condition of wastewater service. This could be done in coordination with the SOAC, if the SOAC is continued as recommended.

- *Who: Tulare County (Lead), Fresno, Kern, and Kings Counties (local data stewards)*
- *Why: To monitor and measure the success of this Study through implementation of recommendations, based on relative condition of drinking water supplies and wastewater service.*
- *How: The website that will host the data is currently being developed. Data will be maintained by Tulare County and updated on approximately an annual basis. Statistics related to the number of water quality issues, water supply issues, wastewater treatment and disposal issues, and other factors can be compared and charted to monitor progress.*
- *When: Ongoing.*
- *Funding: Tulare County, and other local and State agencies.*

County:

13.7.1.C. Improve the County Environmental Health Department responsibilities, fee authorities, and requirements to permit and monitor on-site systems. (There was a frequent observation that records for on-site systems were non-existent – i.e. Plainview, Rodriquez Labor Camp). Improve data collection, reporting, and management for private domestic wells, State Small Systems and septic systems so that the water supply and on-site wastewater conditions can be better documented and understood. Local counties or state agencies should maintain a database of information related to private wells and septic systems, including the location, size, condition, and depth of facilities. This database should be created to include all new individual wells and septic systems, as well as any modifications to existing facilities that are requested. Eventually the goal should be to include data on existing facilities, however it is understood that the effort to collect and report data on existing facilities would take years to complete.

- *Who: County Environmental Health Departments*
- *Why: It is apparent that there are many private, on-site water and wastewater systems with non-existent or insufficient records of the facilities. The lack of records includes topics such as design capacity, on-site sustainability, inspections, and records of “as-constructed” facilities.*

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The lack of records impacts the ability to evaluate adequacy of existing systems and impacts the ability to develop new community systems in areas that are served by on-site systems.

In order to ensure private well and septic systems are adequate to provide safe drinking water and protect local water quality and public health, counties maintain local ordinances and implement permitting programs. A database could provide more efficient and accurate means of ensuring that local facilities are protective of public health and meeting all requirements, and could be used to inform ongoing planning, permitting and code enforcement activities. Specifically, it is important to understand the physical location, depth and design of facilities so that 1) the county can confirm sufficient separation between facilities is available, 2) the property owner is knowledgeable when facilities need to be maintained, fixed, or replaced [see Recommendation 13.1.1.A], and 3) in the case that a new water or sewer system is being considered, the county and/or engineers can understand the location of facilities during the feasibility analysis.

- *How: The building permit process must include complete records regarding proposed and “as-constructed” on-site water and wastewater systems.*
- *When: Now, ongoing.*
- *Funding: Well drilling and onsite wastewater permit fees. Current county permit fees for these activities should be re-evaluated to ensure they are adequate to meet administrative costs for an effective permitting program.*

13.7.2 Improve Data Management and Accessibility

County:

- 13.7.2.A. Improve the County Environmental Health Department responsibilities, fee authorities, and requirements to permit and monitor on-site systems. (There was a frequent observation that records for on-site systems were non-existent – i.e. Plainview, Rodriquez Labor Camp). [See Recommendation 13.7.1.C]

State Agencies:

- 13.7.2.B. Develop a centralized reporting and data management system so that water supply related data can be shared and coordinated among agencies. For example, well logs retained by DWR can be correlated with water quality information retained by SWRCB. This will likely require confidentiality agreements between agencies.
- *Who: State Water Agencies (DWR, State Water Board)*
 - *Why: Water data is currently housed in many different agencies and not accessible or easily integrated to inform planning, regulatory activities, or*

water management. The state should provide consistent and ideally centralized or easily integrated data management systems to allow for water data to be more effectively utilized and support good decision-making.

- How: All state agencies should have consistent protocols and requirements for electronic reporting in water monitoring or data reporting requirements within regulatory or other related programs. Currently, Geotracker GAMA seems to include most water quality data, while DWR holds records on water supply and well completion reports. Integration of the Drinking Water Program into the State Water Board will likely speed up integration of drinking water reporting systems with other State Water Board databases. However, it is unclear how DWR data and State Water Board data will be better integrated. Confidentiality issues will need to be coordinated between state agencies that may obtain access to confidential data.*
- When: This should be evaluated as part of the Governor's efforts to improve groundwater management.*
- Funding: This could be funded through general funds, program fees, and bond where appropriate within the State budget and appropriation process.*

Legislature:

13.7.2.C. Disclosure of water quality data – Require disclosure to the buyer of water quality on sale of property. In areas where there is a Public Water System, this may be in the form of recent Consumer Confidence Reports. For properties with private wells, this would be laboratory reports for samples collected from the private well. Recommend sampling for known and suspected contaminants in the area [See Recommendation 13.6.2.B].

- Who: State Agencies, Legislature, Department of Real Estate, local water service providers, property owners*
- Why: A buyer has the right to know what is in the water and whether it may have potential health impacts, just as he has the right to know if there are termite issues or roof damage.*
- How: Through State Agencies, Legislature, and/or Department of Real Estate, require that water quality be disclosed upon sale of a home. For properties served by a regulated Public Water System, this may be in the form of recent Consumer Confidence Reports. For properties with private wells, this would require sampling and disclosure of laboratory reports indicating constituent levels and whether or not they are in exceedance of any primary water quality standards.*
- When: Now, ongoing.*

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- *Funding: Funding for water quality sampling and disclosure will be through real estate transactions.*

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