

KERN WATER COLLABORATIVE FINAL MANAGEMENT ZONE PROPOSAL

PREPARED FOR



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AB	Assembly Bill
AB	Public Water Supply Well Status, Abandoned
APN	Assessor Parcel Number
AR	Public Water Supply Well Status, Active Raw
AU	Public Water Supply Well Status Active Untreated
Basin Plans	Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin
BPA	Basin Plan Amendment
C	Public Water System Type, Community
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CIWQS	California Integrated Water Quality System
CVDRMP	Central Valley Dairy Representative Monitoring Program
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVHM2	Central Valley Hydrologic Model 2.0
CVSC	Central Valley Salinity Coalition
CVWB	Central Valley Water Board
CSD	Community Services District
CWS	Community Water System
DAC	Disadvantaged Community
DDW	Division of Drinking Water
DS	Public Water Supply Well Status Destroyed
DUC	Disadvantaged Unincorporated Community
DWR	California Department of Water Resources
DWW	Drinking Water Watch
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
FAQs	Frequently Asked Questions
FMZP	Final Management Zone Proposal
GAMA	Groundwater Ambient Monitoring and Assessment
GAC	Granular Activated Carbon
GAR	Groundwater Quality Assessment Report
GIS	Geographic Information Systems
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrologic Conceptual Model
ILRP	Irrigated Lands Regulatory Program

Acronym	Meaning
INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status Inactive Raw
IU	Public Supply Well Status Inactive Untreated
IX	Ion Exchange
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System
MCL	Maximum Contaminant Level
MDB&M	Mount Diablo Base and Meridian
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
OAL	Office of Administrative Law
PMZP	Preliminary Management Zone Proposal
PN	Public Supply Well Status Pending
POU	Point of Use
PWS	Public Water System
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System

Acronym	Meaning
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children
WDR	Waste Discharge Requirements
WMP	Waste Management Plan

EXECUTIVE SUMMARY

ES.1. Preliminary Management Zone Overview

The Kern Water Collaborative (KWC) initiated the formation of the KWC Management Zone to comply with the Central Valley Regional Water Quality Control Board (Central Valley Water Board or CVWB) Nitrate Control Program requirements. To address the growing needs of this large region of California to solve the nitrate problem in groundwater, representatives from local growers, dairies, and other permitted dischargers in the Priority 2 areas within the Kern County Subbasin and a portion of the Tulare Lake Subbasin formed the KWC. The KWC elected to pursue Path B to comply with the Nitrate Control Program, which meant forming a Management Zone.

The proposed KWC Management Zone includes the Kern County Subbasin and a small portion of the Tulare Lake Subbasin (**Figure ES-1**). Due to differences in nitrate groundwater conditions within the subbasins of the Central Valley, the Central Valley Water Board assigned priorities based on the urgency of addressing nitrate problems in each groundwater subbasin. The Modesto, Turlock, Chowchilla, Kings, Tule, and Kaweah Subbasins were deemed the highest priority, Priority 1, which meant that their compliance with the Nitrate Control Program was on a fast-track compared to the Tulare Lake Subbasin and portions of the Kern County Subbasin (and five other subbasins), which were deemed a Priority 2 basin.

The overarching management goals of the Nitrate Control Program are (Central Valley Water Board, 2020):

1. Ensure safe drinking water supply;
2. Reduce salt and nitrate loading so that ongoing discharges neither threaten to degrade high-quality waters absent appropriate findings by the CVWB nor cause or contribute to exceedances of water quality objectives; and
3. Implement long-term, managed restoration of impaired water bodies where reasonable and feasible.

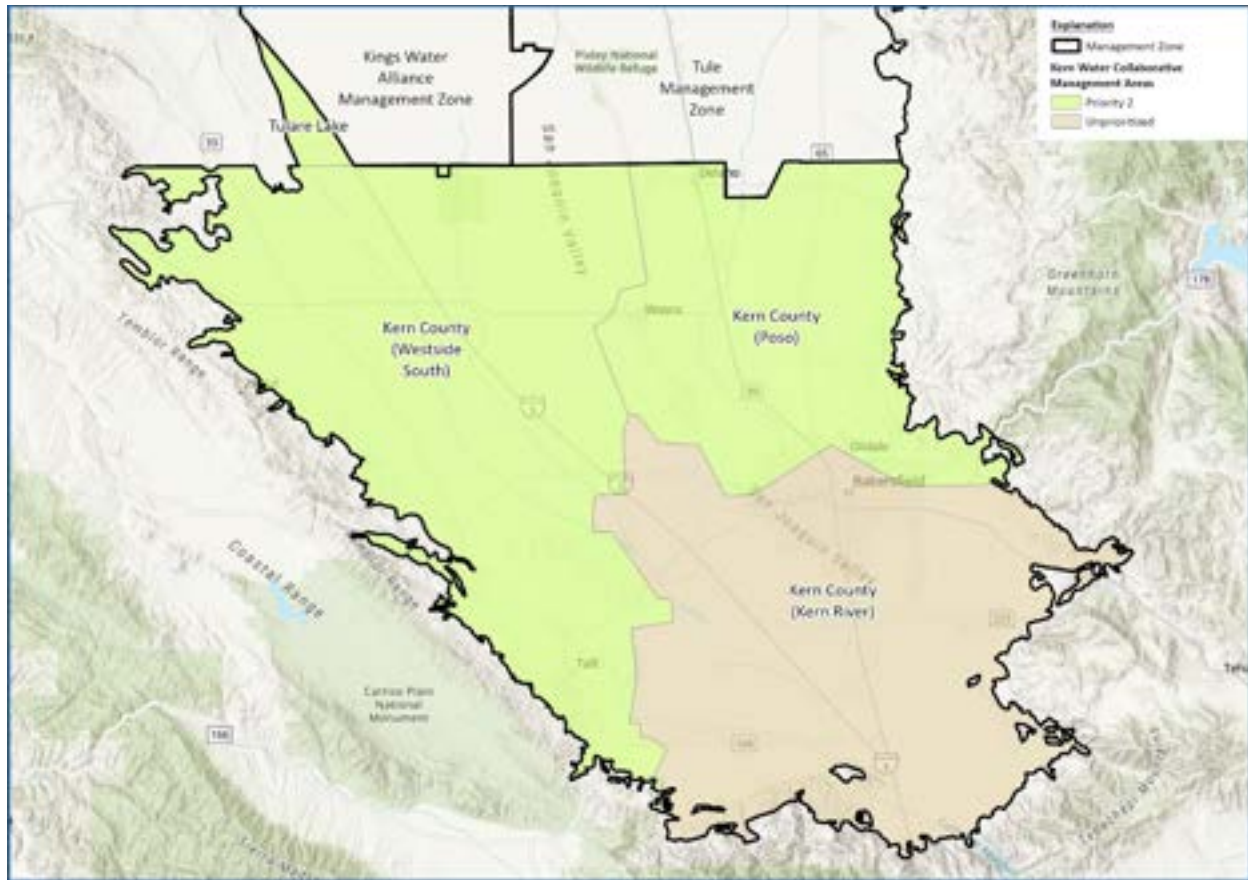


Figure ES-1. Kern Water Collaborative Management Zone

The Kern Water Collaborative worked collaboratively with permittees to form a Management Zone to achieve these goals. The proposed KWC Management Zone (Path B) to comply with the Nitrate Control Program allows an exception from the application of the nitrate standard compared to Path A. Path A is for Individual Permitting and imposes requirements to the discharger that may be difficult and expensive (potentially including: making significant upgrades to a discharger's facility, conducting extensive monitoring of discharge and local groundwater, providing replacement drinking water to local residents, etc.). The Path B option encourages partnership and teamwork among its discharging members to solve the nitrate problem within their Management Zone boundary.

Several documents are required to comply with Path B of the Nitrate Control Program. The first was the Preliminary Management Zone Proposal, including a key companion document, the Early Action Plan. For Priority 2 subbasin areas, these were submitted to the Central Valley Water Board on December 30, 2024. Implementation of the Early Action Plan began within 60 days of submittal, on February 26, 2025. The Final Management Zone Proposal (this document) is then due 180 days after public comment and the CVWB's review of the Preliminary Management Zone Proposal, which is February 16, 2026. The Management Zone Implementation Plan will be due six months after the CVWB's Executive Officer accepts the Final Management Zone Proposal.

This document, the Final Management Zone Proposal, along with one of its main attachments, the Early Action Plan, is the next step to complying with the Nitrate Control Program and continuing the process of solving the nitrate problems in the proposed Management Zone boundary. One of the most important components of the development of the Preliminary and Final Management Zone Proposals and Early Action Plan is public outreach and community engagement. California State law (AB 685) declares that “every person in the state has a right to clean, safe, and affordable drinking water.” This policy is commonly referred to as the Human Right to Water. To promote this effort, the KWC has been engaging the community through various outlets (including but not limited to, mailings, flyers, radio announcements, advertisements, emails, public webinars, and public surveys) to engage residents within the Management Zone to become involved in the decision-making process associated with solving their local nitrate problems.

This Final Management Zone Proposal document is purposely designed to address the three Priority 2 (P2) subbasin areas (a small portion of the Tulare Lake Subbasin, as well as the Kern County (Westside South) and Kern County (Poso) areas) in the Kern Water Collaborative domain. For purposes of this report, many of the descriptions of basic features and components that are similar across the P2 areas of the Management Zone are presented in the main FMZP document, and a series of Attachments provide specific local information for each of the three P2 areas.

The contents of this Final Management Zone Proposal include:

Section 1: Preliminary Management Zone Overview

This section provides an introduction and document roadmap, as well as background information about the Nitrate Control Program, more details on the Priority 2 timeline, the formation of the Kern Water Collaborative, a table cross referencing where in this document regulatory requirements are addressed, the preliminary governance, and the initial list of participants.

Section 2: Characterization of Proposed Management Zone

- This section describes the characterization of the P2 areas of the KWC Management Zone, including geography, jurisdictions, Groundwater Sustainability Agencies, water management entities, drinking water systems, Disadvantaged Communities and Severely Disadvantaged Communities, and land use.
- This section also includes the Initial Assessment of Groundwater Conditions, which is a crucial component in determining the extent of nitrate issues within the proposed Management Zone. This involves a summary of hydrogeology, groundwater elevations and flow, delineation of the Upper Zone of the groundwater system, and most importantly the nitrate water quality. This section contains several maps illustrating these elements within the proposed Management Zone and describes how the spatial interpretation of ambient nitrate conditions in groundwater is developed. The ambient nitrate map is used to identify areas within the Management Zone that have elevated nitrate conditions as determined by using scientific and analytical techniques with the most recent and complete dataset available at the time. A nitrate trend analysis is also presented.

Section 3: Management Zone Participants

- This section contains a description and list of Management Zone participants, including both permitted dischargers subject to the requirements of the Nitrate Control Program, as well as non-dischargers that have agreed to work collaboratively with the permitted dischargers to support the implementation of the Program.

Section 4: Current Nitrate Treatment and Control Efforts or Management Practices

- This section contains descriptions of current nitrate treatment and control efforts or management practices that exist within the Management Zone. These descriptions mainly originate from dischargers themselves, whether under a General Order (such as the Irrigated Lands Regulatory Program or Concentrated Animal Feeding Operations) or under individual permits.

Section 5: Early Action Plan Development and Implementation

- This section provides an overview of the Early Action Plan (which is an attachment to this Final Management Zone Proposal).

Section 6: Preparation of Management Zone Implementation Plan

- This section discusses how the Management Zone will next develop a Management Zone Implementation Plan in accordance with the requirements of the Nitrate Control Program.

The following table lists the Nitrate Control Program requirements for the Final Management Zone Proposal and where these requirements are addressed within this document (**Table ES-1**).

Table ES-1. Document Roadmap for FMZP Requirements (as described in Central Valley Water Board 2020)	
Requirement	FMZP Section
Proposed boundaries of the proposed P2 Management Zone areas	Section 1
Identification of initial and updated Participants/Dischargers	Section 1
Identification of other dischargers and stakeholders in the proposed P2 Management Zone areas that the initiating group is in contact with regarding participation in the Management Zone	Section 3
Assessment of groundwater quality conditions in the Upper Zone based on readily available existing data and information	Summary in Section 3; detailed information in Attachments B-2, C-2, D-2, E-2, and F-2

Table ES-1. Document Roadmap for FMZP Requirements (as described in Central Valley Water Board 2020)	
Requirement	FMZP Section
Identification/summary of current nitrate treatment and control efforts, or management practices of proposed P2 Management Zone participants	Section 5
Initial and updated identification of public water supplies or domestic wells within the Management Zone areas with nitrate concentrations exceeding the water quality objective	Summary in Section 2; detailed information in Attachments B, C, and D; Section 3 in proposed P2 Management Zone EAP (see Attachment F)
An EAP to address drinking water needs for those that rely on public water supply or domestic wells with nitrate levels exceeding the water quality objective	Summary in Section 5; complete proposed P2 Management Zone EAP in Attachment F
Documentation of process utilized to identify affected residents and the outreach utilized to ensure that they are given the opportunity to participate in development of an EAP	Summary in Section 5; Sections 3, 4 and 5 in the EAP (see Attachment F)
Identification of areas within or adjacent to the Management Zone that overlap with other management areas/activities	Section 2; Attachments B, C, and D
Any constituents of concern that the individual discharger/group of dischargers intend to address besides nitrate (not required but is an option available)	Section 5 discusses the use of Safe and Affordable Funding for Equity and Resilience (SAFER) funding to augment well sampling program.
Documentation of actions taken to implement the EAP	Section 5
Management Zone Implementation: <ul style="list-style-type: none"> • Timeline for development of the MZIP; • Governance and funding structure for administration of the Management Zone; Explanation of how the Management Zone intends to interact and/or coordinate with other programs such as Sustainable Groundwater Management Act (SGMA)	Section 6, 5.6, 5.7

ES.2. Characterization of the Proposed Management Zone

This section of the document describes the area encompassed by the KWC Management Zone, focusing on the Priority 2 areas: Tulare Lake portion, Kern County (Westside South), and Kern County (Poso). This section includes general descriptions of each area, as well as a description of drinking water systems, disadvantaged and severely disadvantaged communities, and land use. This section also includes the initial assessment of groundwater conditions, including hydrogeology, groundwater elevations and flow directions (with a discussion of areas of potential contribution), the delineation of the Upper Zone (which is the focus of the Nitrate Control Program), and nitrate water quality. The nitrate water quality section describes the data sources utilized for assessing nitrate conditions in groundwater, including a description of the data collection process, compilation and standardization of nitrate data, identification of outliers and imputation for non-detectable concentrations, well depth zone assignment, ambient and trends analyses, and an evaluation of inactive drinking water wells.

Section 2 is accompanied by a series of Attachments to this document that provide specific information and details for each P2 area of the proposed KWC Management Zone. **Attachments B-1** and **B-2** address these components for the proposed Tulare Lake area of the KWC Management Zone. **Attachments C-1** and **C-2** address these components for the proposed Kern County (Westside South) area of the KWC Management Zone. **Attachments D-1** and **D-2** address these components for the proposed Kern County (Poso) area of the KWC Management Zone.

ES.3. Management Zone Participants

Dischargers that received a Notice to Comply with the Nitrate Control Program include (a) coalitions that represent growers subject to the Irrigated Lands Regulatory Program (ILRP) General Order R5-2013-0120-09 (*Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are Members of a Third-Party Group*); (b) permittees subject to various General Orders, including those applicable to concentrated animal feeding operations including milk cow dairies, confined bovine feeding operations, poultry operations, and oil and gas operations; and (c) permittees that discharge under individual waste discharge requirements. The KWC conducted outreach to the representatives of permittees under General Orders and individual dischargers. The FMZP identifies the permitted dischargers that have elected to participate in the KWC.

ES.4. Current Nitrate Treatment and Control Efforts or Management Practices

The current nitrate treatment and control efforts or management practices being implemented by each of the participating permittees located in the proposed P2 groundwater subbasin areas of the KWC are summarized in this FMZP. The FMZP provides a general summary of the permit requirements applicable to ILRP General Order R5-2013-0120-09 (*Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are Members of a Third-Party Group*), or subject to a General Order for a concentrated animal feeding operation, or subject to a General Order for oil and gas operation. For permittees with an individual WDR that are participating in the KWC, the FMZP provides a brief summary of the nature of the permitted facility and their existing permit requirements related to the management of nitrate.

ES.5. Early Action Plan Development

Establishment of a Management Zone requires the preparation of an Early Action Plan (EAP) that identifies actions the KWC will carry out to address sources of drinking water with unsafe nitrate levels. The key element of the EAP, which was developed in collaboration with the community, is the Interim Replacement Water Program. This program provides immediate alternative sources of drinking water for those that depend on groundwater with unsafe levels of nitrate for their drinking and cooking needs, that is water with more than 10 mg/L- nitrogen (N).

The FMZP includes a summary of the key elements of the EAP including a summary of the wells potentially impacted by high nitrate levels, identification of areas within the Management Zone where the groundwater quality most likely exceeds 10 mg/L-N, a brief overview of key EAP elements such as community outreach, the interim replacement water options (e.g., bottled water delivery, point-of-use treatment systems and water fill stations), a well-testing program to support EAP implementation, and a general schedule for implementation. The actual EAP, which includes more comprehensive information is attached to this FMZP as Attachment F.

ES.6. Preparation of Management Zone Implementation Plan

The KWC Management Zone will work with the Central Valley Water Board during the review and acceptance of this FMZP. While that process is ongoing, the KWC Board will begin development of the Management Zone Implementation Plan (MZIP) for the Priority 2 areas within the Management Zone. The content of the MZIP will be consistent with the Nitrate Control Program regulations and outcome of ongoing discussions with Central Valley Water Board staff regarding interpretation of these regulations. The KWC Management Zone is committed to submitting its MZIP for its Priority 2 areas to the Central Valley Water Board within six months after this FMZP is accepted by the Executive Officer, as required by the Nitrate Control Program.

1. PRELIMINARY MANAGEMENT ZONE OVERVIEW

1.1. Introduction and Document Roadmap

The Kern Water Collaborative initiated the formation of the proposed Kern Water Collaborative Management Zone to comply with the Central Valley Regional Water Quality Control Board (Central Valley Water Board or CVWB) Nitrate Control Program requirements. The Kern Subbasin (Westside South), the Kern Subbasin (Poso), and the Tulare Lake Subbasin were determined by the Central Valley Water Board to be Priority 2 basins. To address the growing needs of this large region of the southern part of the Central Valley to solve the nitrate problem in groundwater, representatives from local growers and dairies and other permitted dischargers in the Kern County Subbasin and a small portion of the Tulare Lake Subbasin formed the Kern Water Collaborative (KWC). The KWC elected to pursue Path B to comply with the Nitrate Control Program, which meant forming a proposed Management Zone. The boundary of the proposed Management Zone is consistent with the Kern County Subbasin and includes a small area of the Tulare Lake Subbasin.

Due to the large geographical area covered by the proposed Management Zone, this document is divided into sections for each P2 area and includes Attachments that address each P2 area individually. Chapter 2 contains the characterization of the proposed Management Zone, including geography, jurisdictions, groundwater sustainability agencies, water management entities, drinking water systems, disadvantaged and severely disadvantaged communities, and land use. Chapter 2 also contains an initial assessment of groundwater conditions in the P2 areas, including the hydrogeology, groundwater elevations, and flow, the delineation of the Upper Zone of the groundwater system, a discussion of nitrate groundwater quality including nitrate ambient concentrations and trends analyses. Chapter 3 describes the Management Zone participants, including the permitted dischargers and non-discharger/stakeholder participation. Chapter 4 describes the current nitrate treatment and control efforts or management practices for each permitted discharger. Chapter 5 describes the Early Action Plan Development and Implementation.

The Final Management Zone Proposal (FMZP) was prepared in accordance with the requirements of the Nitrate Control Program (Central Valley Water Board, 2020). **Table 1-1** below summarizes these requirements and where they are addressed in this document. During the development of the Preliminary Management Zone Proposal (PMZP), a draft Early Action Plan (EAP) for the proposed P2 Management Zone areas was released to the public for review and comment on October 25, 2024; comments were received through November 1, 2024. Subsequently, a draft PMZP with an updated draft EAP was released to the public for review and comment on November 20, 2024; comments were received through December 4, 2024. Comments received on these public draft documents were considered in the preparation of the final PMZP and EAP. Attachment D-4 provides a response for each of the comments received. The Final Management Zone Proposal underwent similar public review: a public draft FMZP and EAP were released on January 12. Comments received on these public draft documents **will be** considered in the preparation of the final FMZP and EAP. Attachment D-4 **will provide** a response for each of the comments received.

Table 1-1. Document Roadmap for FMZP Requirements (as described in Central Valley Water Board 2020)	
Requirement	FMZP Section
Proposed preliminary and final boundaries of the proposed P2 Management Zone areas	Section 1
Identification of initial and updated participants/dischargers	Section 1
Identification of other dischargers and stakeholders in the proposed P2 Management Zone areas that the initiating group is in contact with regarding participation in the Management Zone	Section 3
Assessment of groundwater quality conditions in the Upper Zone based on readily available existing data and information	Summary in Section 3; detailed information in Attachments B-2, C-2, D-2, E-2, and F-2
Identification/summary of current nitrate treatment and control efforts, or management practices of proposed P2 Management Zone participants	Section 5
Initial and updated identification of public water supplies or domestic wells within the Management Zone areas with nitrate concentrations exceeding the water quality objective	Summary in Section 2; detailed information in Attachments B, C, and D; Section 3 in proposed P2 Management Zone EAP (see Attachment F)
An EAP to address drinking water needs for those that rely on public water supply or domestic wells with nitrate levels exceeding the water quality objective	Summary in Section 5; complete P2 Management Zone EAP in Attachment F
Documentation of process utilized to identify affected residents and the outreach utilized to ensure that they are given the opportunity to participate in development of an EAP	Summary in Section 5; Sections 3, 4 and 5 in the EAP (see Attachment F)
Identification of areas within or adjacent to the Management Zone that overlap with other management areas/activities	Section 2; Attachments B, C, and D
Any constituents of concern that the individual discharger/group of dischargers intend to address besides nitrate (not required but is an option available)	Section 5 discusses use of Safe and Affordable Funding for Equity and Resilience (SAFER) funding to augment well sampling program.
Documentation of actions taken to implement the EAP	Section 5
Proposed timeline for the development of the Management Zone Implementation Plan (MZIP)	Section 6
Governance and funding structure for administration of the Management Zone	Section 6

Table 1-1. Document Roadmap for FMZP Requirements (as described in Central Valley Water Board 2020)	
Requirement	FMZP Section
Explanation for how the Management Zone intends to interact and/or coordinate with other programs such as the Sustainable Groundwater Management Act (SGMA)	Section 6

1.2. Nitrate Control Program

The Central Valley Water Board adopted amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin (Basin Plans) to incorporate a Salt and Nitrate Control Program (Resolution R5-2018-0034) on May 31, 2018. Following State Water Resources Control Board (State Water Board) action on October 16, 2019 (Resolution 2019-0057), the Nitrate Control Program became effective on January 17, 2020, upon approval by the Office of Administrative Law. The State Water Board's 2019 Resolution approving the Basin Plan amendments required targeted revisions to the Nitrate Control Program. The Central Valley Water Board adopted these revisions on December 10, 2020 (Resolution R5-2020-0057) with the State Water Board approving these revisions on June 1, 2021 (Resolution 2021-0019). The revisions were approved by the Office of Administrative Law on November 10, 2021.

The Nitrate Control Program is designed to achieve the following three management goals in the Central Valley Region:

- **Goal 1** – Ensure a safe drinking water supply;
- **Goal 2** – Reduce salt and nitrate loading so that ongoing discharges neither threaten to degrade high-quality waters absent appropriate findings by the Central Valley Water Board nor cause or contribute to exceedances of water quality objectives; and,
- **Goal 3** – Implement long-term, managed restoration of impaired water bodies.

1.3. Notice to Comply

Permitted dischargers subject to the requirements of the Nitrate Control Program may choose between two compliance pathways:

- *Path A: Individual Approach* – The permittee or a third-party group subject to a General Order must comply with all Nitrate Control Program requirements on its own.
- *Path B: Management Zone Approach* – Permitted dischargers work collectively with other dischargers (individual or third-party group subject to a General Order) to form a Management Zone to comply with all requirements of the Nitrate Control Program.

The Nitrate Control Program defines a Management Zone as follows (Central Valley Water Board, 2020):

A discrete and generally hydrologically contiguous area for which permitted discharger(s) participating in the Management Zone collectively work to meet the goals of the SNMP [Salt and Nitrate Management Plan] and for which regulatory compliance is evaluated based on the permittees collective impact, including any alternative compliance programs, on a defined portion of the aquifer. Where Management Zones cross groundwater basin or sub-basin boundaries, regulatory compliance is assessed separately for each basin or sub-basin. Management Zones must be approved by the Central Valley Water Board.

The timing of implementation of the Nitrate Control Program varies by groundwater subbasin, based on the priority designation, i.e., Priority 1 (P1), Priority 2 (P2) or “Not Prioritized” (Central Valley Water Board 2020). Within a priority designated area, implementation of the Nitrate Control Program is triggered when the Central Valley Water Board sends permitted dischargers a Notice to Comply (NTC) with the Program.

The Nitrate Control Program identifies eight P2 groundwater subbasins in the Central Valley Region. From north to south, the P2 subbasins include Yolo, Eastern San Joaquin, Delta-Mendota, Merced, Madera, Tulare Lake, Kern County (Westside South), and Kern County (Poso). The Central Valley Water Board sent an NTC to permitted dischargers in P2 groundwater subbasins on December 29, 2023.

The Nitrate Control Program describes the requirements for the development of a Management Zone by a collective group of permittees. **Table 1-2** summarizes these requirements including regulatory deliverables due dates. Central Valley Water Board (2020) describes the specific requirements applicable to each deliverable.

Table 1-2. Path B Management Zone Deliverable Schedule		
Deliverable	Schedule	Due Date
Submit Preliminary Management Zone Proposal (PMZP), including Early Action Plan (EAP) to Central Valley Water Board	365 days after receiving Notice to Comply	December 30, 2024 (per NTC letter dated December 29, 2023)
Implement EAP	Within 60 days of PMZP submittal (unless Central Valley Water Board deems the EAP incomplete)	February 26, 2025 (per NTC letter dated December 29, 2023)
Priority 2 Permittees to Submit Notice of Intent (NOI) to Central Valley Water Board indicating pathway choice	February 26, 2025 (per NTC letter dated December 29, 2023)	
Final Management Zone Proposal (FMZP)	180 days after receiving comments from the Central Valley Water Board on the PMZP	February 16, 2026 (per PMZP letter dated August 20, 2025)
Management Zone Implementation Plan (MZIP)	Six months after the FMZP is accepted by the Central Valley Water Board's Executive Officer	

1.4. Management Zone Formation

Through establishment of a Management Zone, permittees have an opportunity to work collectively to meet the Nitrate Control Program goals. This approach allows the permittees to leverage their resources and to comply with nitrate management requirements in a more integrated and thus cost-effective manner.

1.4.1. Kern Water Collaborative

The Kern Water Collaborative (KWC), established in June, 2022, is a non-profit¹, public benefit California corporation based in Bakersfield, California. KWC was created to organize and operate the Management Zone areas in the Kern County Subbasin (Westside South, Poso, and Kern River), as well as a small portion of Kings County's Tulare Lake Subbasin.

Attachment A-1 provides the governance and KWC bylaws, which were approved on June 3, 2022. **Figure 1-1** illustrates the KWC's organization and governance structure. The KWC is under the direction of a Board of Directors (**Table 1-3**). The Board is supported by an Executive Director and other staff, consultants, and

¹ The Kern Water Collaborative filed the California non-profit forms on June 29, 2022, followed by the federal forms in August of 2022 after the CA tax exempt status was granted.

local organizations as needed to accomplish its responsibilities. Affiliated organizations include: Irrigated Lands Regulatory Program (ILRP) Coalitions, Central Valley Dairy Representative Monitoring Program (CVDRMP), and Central Valley Salinity Coalition.

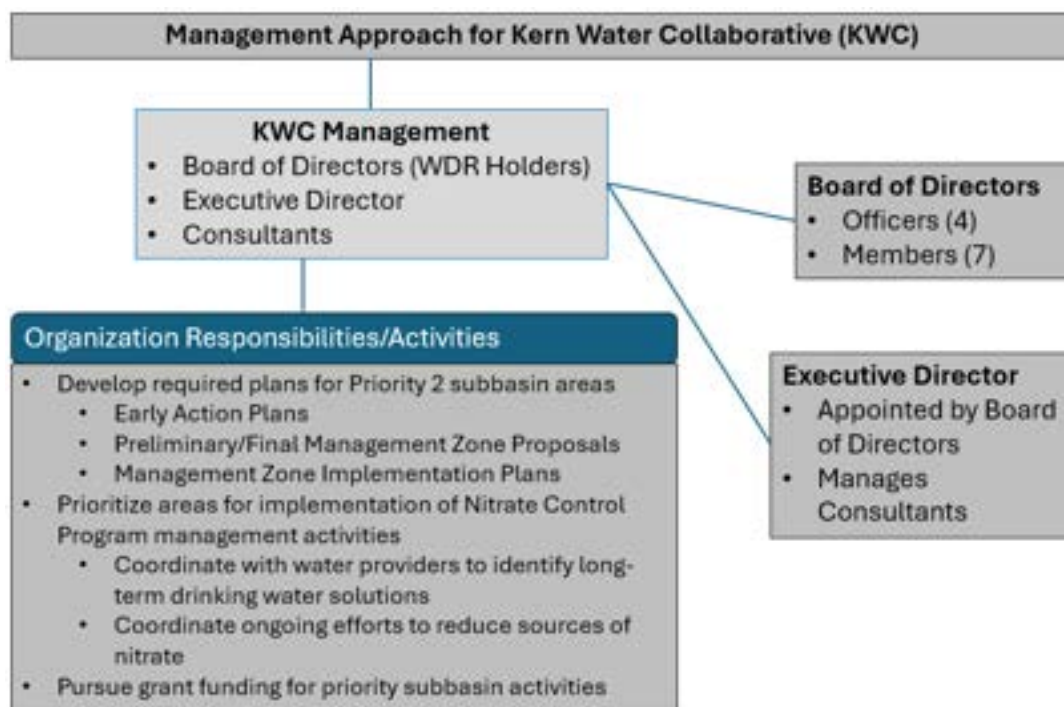


Figure 1-1. KWC Governance Structure and Organizational Responsibilities

Table 1-3. Kern Water Collaborative Board (December 2024)		
Board Member	Position Held	Affiliation
David Halopoff	Board of Directors, Chair	Cawelo Water District Coalition
Jason Meadors	Board of Directors, Vice Chair	Valley Water Management Company
Perry Tjaarda	Board of Directors, Treasurer	PT Dairy
Laura Brown	Board of Directors, Secretary	JG Boswell Company/Kern River Watershed Coalition Authority
Tim Ashlock	Board Member	Buena Vista Coalition
Morgan Campbell	Board Member	Westside Water Quality Coalition
Tim Holtermann	Board Member	Holtermann Farms/Kern River Watershed Coalition Authority
Melissa McCormack	Board Member	Wonderful Company
Sheridan Nicholas	Board Member	Wheeler Ridge-Maricopa WSD/Kern River Watershed Coalition Authority

Table 1-3. Kern Water Collaborative Board (December 2024)		
Board Member	Position Held	Affiliation
Pat Ostly	Board Member	North of the River Sanitary District
Christine Zimmerman	Board Member	Western States Petroleum Association

KWC combines the resources and expertise of its members and affiliated organizations to meet the goals of the Nitrate Control Program within the three P2 proposed groundwater subbasin areas it oversees: the Kern County (Westside South) Area, the Kern County (Poso) Area, and the small portion of the Tulare Lake Subbasin Area. The KWC is also poised to serve the non-prioritized area of the Kern County Subbasin (Kern River) at the time dischargers in that area receive a NTC. The benefits of this collaborative approach include:

- Coordinate nitrate management strategies to meet program goals;
- Reduce duplication of efforts in administrative management;
- Coordinate approaches and messaging to the local community with regard to ensuring their drinking water sources meet nitrate drinking water standards;
- Use consistent planning approaches in areas with similar hydrology and water needs;
- Leverage economies of scale for implementing an Interim Replacement Water Program through the EAP, including optimizing services required to operate and maintain the program;
- Represent a larger population and area when pursuing public grant funds to address drinking water concerns;
- Increase the potential for joint projects among permittees to address nitrate impacts, especially where Management Zones are contiguous; and
- Increase efficiency for those representing Waste Discharge Requirement (WDR) holders and impacted communities.

1.4.2. Proposed Management Zone Boundary

Figure 1-2 illustrates the boundaries for the proposed Kern Water Collaborative Management Zone, including the three P2 subbasin areas and one non-prioritized area: Kern County (Westside South), Kern County (Poso), Tulare Lake, and Kern County (Kern River). These boundaries are consistent with the 2003 California Department of Water Resources (DWR) Bulletin 118 delineation of the entire Kern County Subbasin (Groundwater Subbasin No. 5-22.14), and a portion of the Tulare Lake Subbasin (Groundwater Subbasin No. 5-22.12). The Kern County Subbasin was divided into three areas for the purposes of the Nitrate Control Program, based on DWR water-supply planning areas. The three P2 subbasin areas have a single EAP (included as **Attachment F** to this FMZP). The Kern County (Kern River) area is not prioritized by the Nitrate Control Program; therefore, it does not have an EAP at this time.

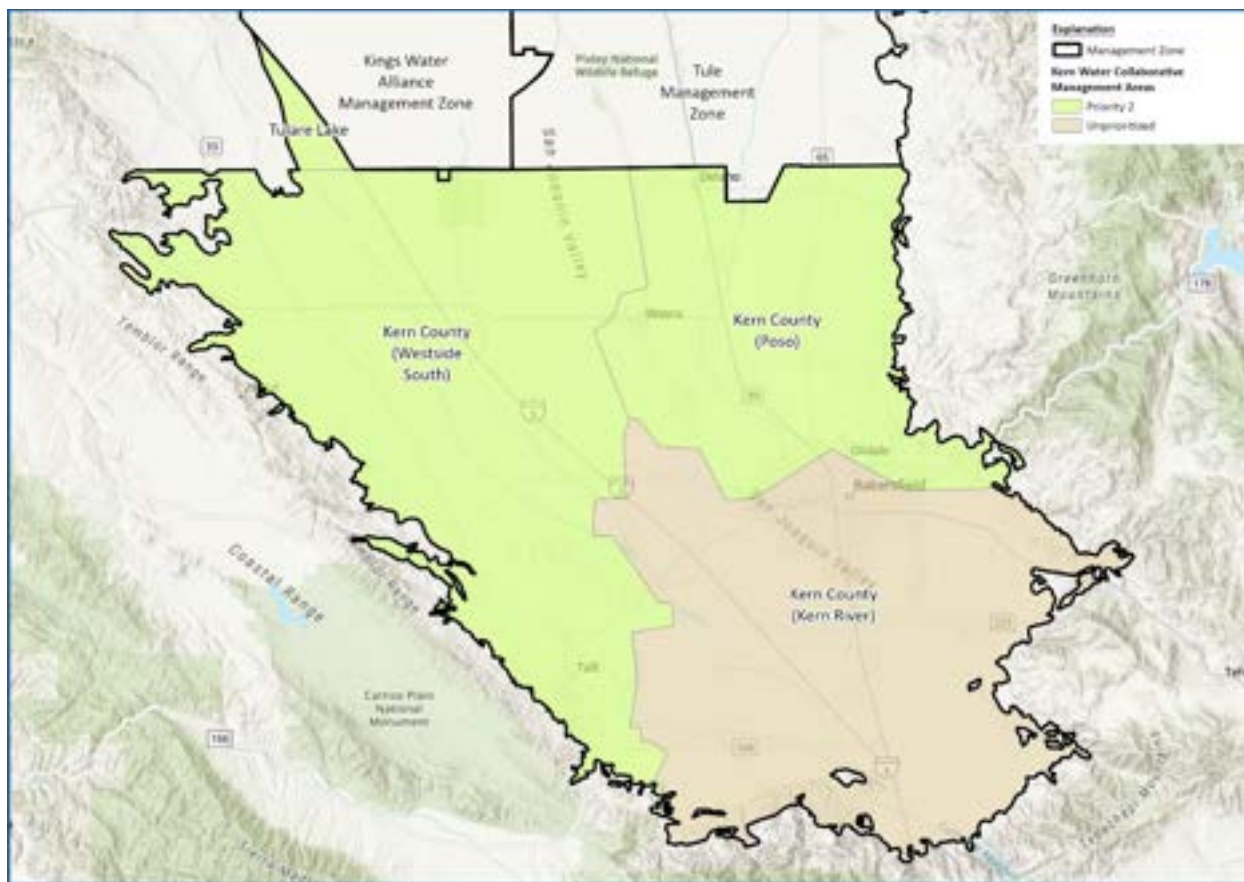


Figure 1-2. Proposed Kern Water Collaborative Management Zone Boundary

Kern County (Poso) Area

The Kern County (Poso) Area is designated as a P2 area of the greater Kern County Subbasin. This area represents the northeastern portion of the Kern County Subbasin, as delineated by the Basin Plan amendment and the Nitrate Control Program.

Kern County (Westside South) Area

The Kern County (Westside South) Area is designated as a P2 area of the greater Kern County Subbasin. This area represents the western portion of the Kern County Subbasin, as delineated by the Basin Plan amendment and the Nitrate Control Program.

Tulare Lake Area

The Tulare Lake Area is designated as a P2 area of the greater Tulare Lake Subbasin. This is a small triangular area that is located within the Dudley Ridge Water District Boundaries and is also within the boundaries of the Westside Water Quality Coalition. The KWC Tulare Lake Area represents a small

southwestern portion of the Tulare Lake Subbasin. The remaining area of the P2 Tulare Lake Subbasin not covered by KWC is under the existing purview of the Kings Water Alliance².

Kern County (Kern River) Area (Not Prioritized)

The southeastern portion of the Kern County Subbasin is not prioritized by the Nitrate Control Program, but this area is included within the proposed KWC Management Zone. This area represents a DWR water-supply planning area that was not considered a P1 or P2 during prioritization of the Central Valley Floor for Nitrate Control Program purposes. Since this area is not prioritized, it is not the focus of the FMZP or EAP. In the event that dischargers within this area receive a NTC, the KWC will be ready to develop a plan to comply with the Nitrate Control Program.

1.4.3. Consistency with Required Management Zone Characteristics

The Nitrate Control Program summarizes the characteristics of a Management Zone (Table N-4; Central Valley Water Board, 2020):

- A defined area which incorporates a portion of a large groundwater basin(s)/subbasin(s);
- Encompasses all groundwater for those permittees that discharge nitrate to groundwater that have selected to comply with the Nitrate Control Program through participation in the defined Management Zone; and
- Voluntarily proposed by those regulated permittees located within the proposed Management Zone boundary that have decided to work collectively and collaboratively to comply with the Nitrate Control Program.

As described below, the proposed P2 areas of the KWC Management Zone are consistent with these three general characteristics.

Defined Portion of a Large Groundwater Basin/Subbasin

The proposed P2 Management Zone area boundaries coincide with the Kern County (Westside South), Kern County (Poso), and part of the Tulare Lake Subbasin, as delineated by DWR (DWR, 2003). Accordingly, with the exception of the Tulare Lake Subbasin portion, the proposed boundaries establish already recognized water management areas. The inclusion of the Tulare Lake Subbasin portion is in coordination with the existing Kings Water Alliance (KWA) Management Zone boundaries established in March 2021 when KWA submitted its Preliminary Management Zone Proposal for the portions of multiple groundwater subbasins including the majority of the P2 Tulare Lake Subbasin.

² Kings Water Alliance Final Management Zone Proposal, which includes the remaining area of the P2 Tulare Lake Subbasin can be found here: https://cvsalinity-my.sharepoint.com/:b:/g/personal/cv-salts_cvsalinity_org/EVWYP5ysep1Mrk0Q7SbN6RgBEX04eq508MNW7Cmk5WAgbA?download=1, accessed October, 2024.

Encompasses Groundwater Potentially Impacted by Management Zone Participants

All dischargers participating in the proposed P2 Management Zone areas are located within the proposed boundaries (see Sections 1.5, 4 and 5) and do not discharge outside of the areas encompassed by each of the proposed P2 Management Zone areas.

Voluntarily Proposed by Permitted Dischargers

This FMZP was voluntarily prepared by the permitted dischargers identified in Section 1.5 below. Development of this FMZP and the P2 Management Zone EAP occurred through an open, public stakeholder process.

1.4.4. Management Zone Governance

As described in the Management Zone formation section above, the Management Zone is governed by the Kern Water Collaborative, a non-profit public benefit corporation that filed for non-profit status on June 29, 2022. **Attachment A-1** provides the governance and bylaws of the Kern Water Collaborative. The Board of Directors currently has four officers and seven members that represent Irrigated Lands Regulatory Program coalitions, dairies, produce companies, oil and gas, and water utility companies.

1.4.5. Process to Establish Proposed Management Zone

This section provides an overview of the process to develop this Management Zone proposal, including efforts to engage the public in the process.

Final Management Zone Proposal Development

Development of this FMZP included significant outreach to interested parties throughout the proposed P2 Management Zone areas. **Figure 1-3** provides an overview of the different types of entities with interests in the development of the FMZP and EAP. These entities have a vested interest in the communities they live and work in, and they also may have very different interests or expectations in how the Nitrate Control Program requirements are implemented within the KWC Management Zone. Together, all these groups or individuals are considered to be Management Zone “interested parties”.

Interested parties can be referenced in two ways: a) permitted dischargers, or b) non-dischargers. The former received the NTC and must comply with the requirements of the Nitrate Control Program applicable to their discharge permits as issued by the Central Valley Water Board. Non-dischargers include community participants (local residents and community advocates) and other interested stakeholders. Community participants include the residents of Kern and Kings Counties who rely on domestic wells or small water systems as their source of drinking water. Other stakeholders are those entities with roles or responsibilities in the proposed Management Zone associated with local governance, environmental management, land use planning, and management of drinking water and wastewater.

During development of the FMZP and EAP, participation was encouraged by all interested parties shown in **Figure 1-3**. However, while nitrate management can benefit all interested parties, it is the local community participants that are the primary focus of outreach efforts to ensure residents have access to

drinking water that meets the nitrate drinking water standard. The following sections describe the community engagement activities implemented to obtain input during FMZP and EAP development.

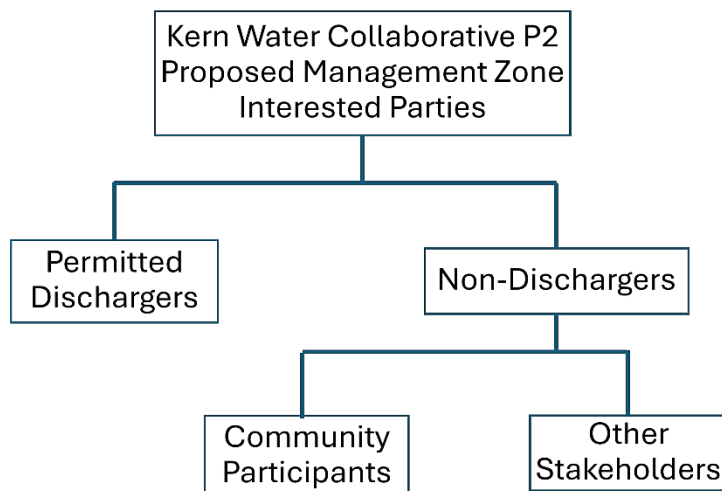


Figure 1-3. Coordination with Interested Parties in the Proposed P2 Kern Water Collaborative Management Zone

Regular meetings were held with interested parties in the Management Zone. Public participation activities included (see **Attachment E** and **F** for more detailed information regarding public participation activities):

- Meetings directed at non-dischargers in the proposed P2 Management Zone with interests in the management of water in the areas and ensuring residents have safe drinking water.
- Meetings with community participants to keep them informed not only about the Nitrate Control Program, but the development of the Interim Replacement Water Program that will address nitrate contamination concerns in drinking water in the proposed P2 Management Zone.
- Direct outreach to permitted dischargers that received a NTC with the Nitrate Control Program to encourage them to participate in the proposed P2 Management Zone.
- Provided opportunities for all interested parties to review and comment on draft versions of the FMZP and EAP.

Throughout the process to prepare the FMZP and EAP, the KWC regularly posted information on its website: <https://kwcmz.org/> (See **Attachment E-1** for meeting notices; **Attachment E-2** for presentations). Notices of meetings, recordings of meetings (in English and Spanish), and opportunities to comment on public draft documents were shared with the interested party contact list maintained by KWC.

1.5. List of Participants in the Proposed Management Zone

This section identifies the permitted dischargers that have indicated their intent to participate in the proposed P2 groundwater subbasin areas at the time of this FMZP submittal. Although submittal of this FMZP on behalf of each of these permitted dischargers indicates their intent to participate in the Management Zone under the Nitrate Control Program, the Central Valley Water Board still required Priority 2 permittees to submit an individual Notice of Intent (NOI). Priority 2 permittees had until February 26, 2025 to submit their NOI to the Central Valley Water Board.

- Growers enrolled under ILRP General Order R5-2013-0120-09 (*Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are Members of a Third-Party Group*).
- Milk Cow Dairies regulated under General Order R5-2013-0122 (*Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies*) and enrolled as a member in the CVDRMP (See **Attachments B-4:** Tulare Lake area, **C-4:** Kern County (Westside South) area, and **D-4:** Kern County (Poso) area).
- Confined Bovine Feeding Operations regulated under General Order R5-2017-0058 (*Waste Discharge Requirements General Order for Confined Bovine Feeding Operations*) and enrolled as a member in the CVDRMP (see Attachments B-4, C-4, and D-4).
- Poultry Operations regulated under General Order R5-2016-0087-01 (*Waste Discharge Requirements General Order for Poultry Operations*) (see Attachments B-4, C-4, and D-4).
- Oil and Gas Operations regulated under General Order R5-2017-0035 (*Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Two (GO2)*) and General Order R5-2017-0036 (*Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three (GO3)*) (see Attachments B-4, C-4, and D-4).
- Permittees authorized to discharge under an Individual WDR (**Table 1-4:** Kern County (Westside South) area, **Table 1-5:** Kern County (Poso) area), and **Table 1-6:** Kern County (Tulare Lake) area).

**Table 1-4. Initial List of Individual Permitted Dischargers Participating in the
Proposed Kern County (Westside South) Area**

Facility Name	CV-SALTS ID	Order No.	Address	Contact Name
Belgian Anticline, McKittrick 1-1 Facility	3114	69-199	SE of Lokern Road & Lost Hills Road, McKittrick, CA 93251	Jason Meadors, jmeadors@valleywatermanagement.org
Buttonwillow Tomato Processing Plant	1841	R5-2008-0067	36889 Highway 58, Buttonwillow, CA 93206	Laura Brown, lbrown@jgboswell.com
Buttonwillow Wastewater Treatment Facility	2709	R5-2009-0123	Sullivan Road - 1 1/2 Miles East off Buttonwillow Drive, Buttonwillow, CA 93206	Marianna Buoni, buoni.marianna@cleanharbors.com
Elk Hills Oil Field, 10G Class II-1 Waste Management Complex	3095	73-042	Section 10, Township 31S, Range 24E, MDB&M, CA	Richard Garcia
Liberty Compost	3136	R5-2009-0018	12421 Holloway Road, Lost Hills, CA 93249	Patrick McCarthy
Lost Hills Processing Plant	2232	99-075	13646 Highway 33, Lost Hills, CA 93249	Shahla Ali, shahla.ali@wonderful.com
Maricopa Wastewater Disposal Facility	2673	00-153	NW 1/4, of Section 7, Township 11N, Range 23W, SBB&M (San Bernardino Base & Meridian) Maricopa, CA	Eric G. Ziegler, lrobinson_com@bak.rr.com
Midway-Sunset and Buena Vista Oil Fields, Broad Creek 2 Facility	3081	R5-2002-0223	Section 2, Township 32S, Range 23E, MDB&M (Mount Diablo Base and Meridian), CA	Jason Meadors, jmeadors@valleywatermanagement.org
Midway-Sunset Oil Field, Buena Vista 1 Facility	3080	5-01-026	Section 19, Township 31S, Range 23E, MDB&M, CA	Jason Meadors, jmeadors@valleywatermanagement.org
Midway-Sunset Oil Field, Buena Vista 2 Facility	3079	5-01-027	Sections 13 & 18, Township 31S, Ranges 22&23E, MDB&M, CA	Jason Meadors, jmeadors@valleywatermanagement.org

**Table 1-4. Initial List of Individual Permitted Dischargers Participating in the
Proposed Kern County (Westside South) Area**

Facility Name	CV-SALTS ID	Order No.	Address	Contact Name
Midway-Sunset Oil Field, Maricopa East Facility	3069	59-07301	Midway-Sunset Oil Field, Maricopa, CA	Jason Meadors, jmeadors@valleywatermanagement.org
Midway-Sunset Oil Field, Maricopa West Facility	3078	59-073	Midway-Sunset Oil Field, Maricopa, CA	Jason Meadors, jmeadors@valleywatermanagement.org
Midway-Sunset Oil Field, Southeast Taft Facility (SE Taft)	3077	01-029	Midway-Sunset Oil Field, Taft, CA	Jason Meadors, jmeadors@valleywatermanagement.org
POM - Buttonwillow	2844	R5-2012-0099	23145 West Lerdo Highway, Buttonwillow, CA 93206	Melissa McCormick, melissa.mccormick@wonderful.com
Wasco Pistachio Processing Plant	2396	R5-2018-0005	16070 Wildwood Road, Wasco, CA 93280	Emmanuel Ramos, emmanuel@primexfarms.com
Wasco State Prison Wastewater Treatment Facility	2610	90-217	701 Scofield Avenue, Wasco, CA 93280	Scott Degough, scott.degough@cdcr.ca.gov
Wonderful Pistachios & Almonds King Facility	2172	R5-2015-0082	10429 King Road, Lost Hills, CA 93249	Shahla Ali, shahla.ali@wonderful.com

**Table 1-5. Initial List of Individual Permitted Dischargers Participating in the
Proposed Kern County (Poso) Area**

Facility Name	CV-SALTS ID	Order No.	Address	Contact Name
ASV Wines McFarland Winery	2846	Pending	31502 Peterson Road, McFarland, CA 93250	Parker Rous, prou@sunviewvineyards.com, rhansen@asvwines.com, jlooker@sunviewvineyards.com
Bidart Bros Bakersfield Potato Shed	2394	R5-2018-0043	34702 7th Standard Road, Bakersfield, CA 93314	Leonard A. Bidart, lbidart@bidartbros.net
Califia Farms LLC	2884	R5-2022-0053	33502 Lerdo Highway, Bakersfield, CA 93308	Meme Luangrath, memel@califiafarms.com
Delano Growers Grape Products	1954	R5-2014-0064	32351 Bassett Avenue, Delano, CA 93215	Rick Lord, rick@delanogrowers.com
Delano Wastewater Treatment Facility	2659	R5-2017-0052	1107 Lytle Road, Delano, CA 93216	Juan C. Cerda, jcerda@cityofdelano.org
Garlic Processing Plant Shafter	2200	R5-2020-0025	18602 Zerker Road, Bakersfield, CA 93314	John Layous, jlayous@thegarliccompany.com
Kern Front Oil Field, Rosedale Spreading Basin (Discharge 003)	3048	R5-2015-0127	Kern Front Oil Field, Saco, CA	Juan Campos, juancampos@crc.com
North of the River Sanitary District Biosolids Land Application Area	2916	2004-0012-DWQ	28970 7th Standard Road, Shafter, CA, 93263	Patrick Ostly, postly@norsd.com
North of River Sanitary District Sills Reclamation Project	2414	R5-2009-0088	28970 7th Standard Road, Shafter, CA 93263	Patrick Ostly, postly@norsd.com
North of the River Sanitary District Sills Reclamation Project No. 2	2497	2016-0068-DDW	1508 18th Street, #320, Bakersfield, CA, 93301	Patrick Ostly, postly@norsd.com
Shafter Carrot Packing Plant	2395	R5-2021-0029	6301 South Zerker Road, Shafter, CA 93623	Cristal Andrade, Candrade@grimmway.com

**Table 1-5. Initial List of Individual Permitted Dischargers Participating in the
Proposed Kern County (Poso) Area**

Facility Name	CV-SALTS ID	Order No.	Address	Contact Name
Sun Pacific Bakersfield Packinghouse	2355	R5-2017-0126	33374 Lerdo Highway, Bakersfield, CA 93308	Jim Black, JBlack@sunpacific.com
Sunview Cold Storage Facility	2762	Pending	31548 Peterson Road, McFarland, CA 93250	Parker Rous & Jesse Munguia, prous@sunviewvineyards.com, jmunguia@sunviewcoldstorage.com, jlooker@sunviewvineyards.com
Wasco Wastewater Treatment Facility	2735	R5-2002-0198	5410 7th Street, Wasco, CA 93280	lajennings@ci.wasco.ca.us

1.6. Contacting the Kern Water Collaborative

KWC may be contacted for any questions or concerns regarding this FMZP and its attached EAP during normal business hours by the following methods:

By phone at (661) 888-4108

By email at nicole@kwcmz.org

Through KWC website at <https://kwcmz.org/>

Direct Mail: P.O. Box 1428, Bakersfield, CA 93302

KWC staff will respond to any questions or concerns during normal business hours in a timely manner. For any resident needing translation services, access to bilingual staff will be available and additional language resources will be provided as needed.

2. CHARACTERIZATION OF PROPOSED MANAGEMENT ZONE

2.1. General Description of Proposed Management Zone Areas

Table 2-1 describes the key data sources used to develop the following general information about the three P2 proposed Management Zone areas within the Kern Water Collaborative Management Zone: geography, jurisdictions, groundwater sustainability agencies (GSAs), and water management entities. This information is provided for each proposed Management Zone area in the following attachments to this FMZP:

Geography: **Attachment B-1.1:** Tulare Lake Area; **Attachment C-1.1:** Kern County (Westside South); **Attachment D-1.1:** Kern County (Poso)

Jurisdictions: **Attachment B-1.2:** Tulare Lake Area; **Attachment C-1.2:** Kern County (Westside South); **Attachment D-1.2:** Kern County (Poso)

Groundwater Sustainability Agencies: **Attachment B-1.3:** Tulare Lake Area; **Attachment C-1.3:** Kern County (Westside South); **Attachment D-1.3:** Kern County (Poso)

Water Management Entities: **Attachment B-1.4:** Tulare Lake Area; **Attachment C-1.4:** Kern County (Westside South); **Attachment D-1.4:** Kern County (Poso)

Table 2-1. Key Data Sources to Characterize the Proposed Management Zones ³ (last accessed December 2025)		
Boundary Type	Source for Boundary Data	Comments
Groundwater Sustainability Agency	DWR Map Viewer: https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true Individual GSA links for finding “Interested Parties:” https://sgma.water.ca.gov/portal/gsa/all	GSA boundaries, and also a list of GSA “Interested Parties”
Groundwater Basin/Subbasin	DWR Bulletin 118: https://water.ca.gov/Programs/GroundwaterManagement/Bulletin-118 Basin Boundary Geographic Information System (GIS) file: https://data.cnra.ca.gov/dataset/i08-b118-ca-groundwaterbasins-2016	DWR Bulletin 118 basin and subbasin boundaries
Water Districts	DWR by request from the Geology and Groundwater Investigations Section, or here: https://data.ca.gov/dataset/i03-waterdistricts	Irrigation Districts, water districts, community service areas, and community service districts
Public Water Supply Systems	California Drinking Water System Area Boundaries: https://gis.data.ca.gov/datasets/waterboards::california-drinking-water-system-area-boundaries/about	Division of Drinking Water (DDW)
State Small Water Supply Systems (SSWS)	By request from Kern County Environmental Health Department State Water Board’s 2023 Aquifer Risk Map dataset for “State Small Water Systems (2022) DDW” (https://gis.data.ca.gov/datasets/2d34d39f75b8491d88adda57adb837ec_0/explore)	Boundary data is typically not available for SSWS (usually just an address)
Disadvantaged Communities (DAC)/Severely Disadvantaged Communities (SDAC)	DACs and SDACs boundaries available from DWR: https://gis.water.ca.gov/app/dacs/	Department of Water Resources (DWR)

2.1.1. Drinking Water Systems

Table 2-2 summarizes how residential water systems are classified in California. Systems are categorized by use, connections, and duration of service over a period of a year. Residential water systems are distinguished by the total number of service connections:

³ Note: Data obtained through the ILRP – Drinking Water Well Monitoring Program for domestic wells on enrolled parcels will be reviewed more thoroughly during MZIP development.

- Local Small Water Systems (LSWS) serve two to four household connections;
- State Small Water Systems (SSWS) serve five to 14 household connections; and
- Residential Public Water Systems (PWS) serve 15 or more service connections or regularly serve at least 25 individuals daily at least 60 days per year.

Residential PWS are termed Community Systems. The PWS designation also includes non-residential water systems, such as Transient Non-Community Systems (rest stops, retailers, gas stations, markets, parks, etc.), and Non-Transient Non-Community Systems (churches, schools, non-retail companies, etc.).

Table 2-2. Classification of Drinking Water Systems by Constituency, Connections, and Duration of Service per Year								
Duration of Service	Connections		< 5	5 +	< 15	15 +	< 200	200 +
	Persons Served:		< 25			25 +		
N/A	Small Water System (SWS) ¹	Classification Defined By	Connections					
< 60 days/year	Local Small Water System		Connections & (persons, duration)					
< 60 days/year	State Small Water System			Connections & (persons, duration)				
≥ 60 days/year	Community Public Water System ²					Connections or (persons, duration)		

Source: Adapted from Boyle et al. 2012

NOTES:

Classification as a SWS does not preclude classification as any of the other types. SWS may be regulated by Division of Drinking Water or by Local Primary Agency.

A PWS is a system for the provision of water for human consumption that has 15 or more service connections OR regularly serves at least 25 individuals at least 60 days per year.

Public Water Systems

PWS are defined as systems that provide drinking water to (1) at least 15 service connections, or (2) regularly serve at least 25 individuals daily for at least 60 days per year (see **Table 2-2**). PWS, which are regulated by the State Water Board's DDW, are required to submit water samples of their raw and delivered water for a broad suite of regulated constituents on various schedules that depend on the constituent and the source water context.

All PWS data on water quality, source locations, service areas, and historical data are publicly available on the State Water Board website.³ The California Environmental Health Tracking Program (CEHTP) maintains

a dataset of PWS boundaries in California. These data are provided to CEHTP by the water systems. Some quality control measures are observed by CEHTP, but the data do contain errors, including boundary errors (e.g., overlapping misplaced boundaries, or duplicated boundaries).

The CEHTP data are hosted as a shapefile with attributes for the PWS identification (ID), system name, the number of connections and number of persons served, and the water system type. The PWS ID and system name are reliable except in the few cases where system boundaries are entirely mis-located. When the connections and population served numbers are compared with those same datapoints in the Safe Drinking Water Information System (SDWIS) database maintained by the State Water Board's DDW, these values appear to either be lacking quality control procedures or are not updated. It is unclear if these numbers are reported by the systems or added by CEHTP based on other data. However, many PWS are wholesalers, thus some populations may inadvertently be counted twice.

Attachment B-1.5: Tulare Lake Area, **Attachment C-1.5:** Westside South, and **Attachment D-1.5:** Poso provide the locations of PWS boundaries within each proposed P2 Management Zone area. Additional information regarding the status of drinking water systems is provided in the proposed P2 KWC Management Zone EAP (**Attachment H**). Not all of these systems may be currently active, according to the State Water Board's Drinking Water Watch (DWW) (<https://sdwis.waterboards.ca.gov/PDWW/>, accessed in November and December 2025).⁴

State Small Water Systems

SSWS are defined as systems serving at least five but not more than 14 residential households. Typically, SSWSs are regulated by County Environmental Health Departments; regulatory oversight of these systems varies by county. Typically, counties require the submission of water quality samples annually (at most) for a smaller set of constituents than monitored by a PWS. SSWS data are public; however, most counties in the state do not have these data compiled in an easily accessible format (many counties require a fee for data retrieval for these systems). Typically, a county will have hard-copy files of the original permit filed for the SSWS, and an annual record of water quality data collected for compliance with county regulations (although such data collection may be sporadic and only for a few constituents).

The SSWS permit typically includes information on the construction of the water source (well) and the street where service is provided. Most counties do not have maps of SSWS service areas. In most cases, the only way to locate the service area of an SSWS is to use the address recorded on the permit. Some SSWSs are included in the PWS boundary data maintained by CEHTP, described above, but this is irregular. Kern and Kings County Environmental Health Departments were contacted to obtain available SSWS address data for the proposed P2 Management Zone areas, as well as the groundwater sustainability agencies in the area who may have compiled this information for their Groundwater Sustainability Plans (GSPs). In order to determine if the SSWS is within each proposed P2 Management Zone boundary, the addresses need to be geocoded or plotted on a map.

Local Small Water Systems

Local Small Water Systems (LSWSs) include residential systems serving two to four households. LSWSs are typically permitted by County Environmental Health Departments. Most counties regulate LSWSs as if they were simply private wells – that is, they are unregulated except for the requirements associated with

the drilling permit. Typically, no information is available to identify the difference between a single-household well and one used for an LSWS.

No water quality data are typically collected on an ongoing basis from LSWS and domestic wells, though some counties collect a water quality sample at the time the well is drilled. Some counties do not maintain their LSWS and domestic well data at their Environmental Health Office; however, other county offices may have these data, such as Community Development Offices, Public Works Offices, or Building Departments.

2.1.2. Disadvantaged Communities and Severely Disadvantaged Communities

Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs) include many areas of the state that have poor access to regulated drinking water supplies. The neighborhoods in these areas tend to include many households without adequate financial resources to treat their residential domestic supply well water, or even to test for contaminants.

Pursuant to Senate Bill 535, DACs were designated on May 2022 by the CalEPA.⁵ CalEPA-based DAC designations on “geographic, socioeconomic, public health, and environmental hazard criteria” and has developed specific criteria and methods for applying those criteria. CalEPA relies on the California Communities Environmental Health Screening Tool (CalEnviroScreen) developed by the Office of Environmental Health Hazard Assessment (OEHHA), which has released a new final version of the CalEnviroScreen Version 4.0 tool. DACs are now defined into four types of geographic areas: (1) census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; and (4) areas under the jurisdiction of federally recognized Tribes.

DWR provides a Disadvantaged Communities Mapping Tool (<https://gis.water.ca.gov/app/dacs/>, accessed December 2025) that is an interactive map application to help locate disadvantaged communities. DACs and SDACs are qualified using Median Household Income values (MHI) from census surveys. DACs represent a MHI between \$57,800 - \$77,067, and SDACs represent areas with MHI less than \$57,800 based on 2023 American Community Survey data.

Attachment B-1.6: Tulare Lake Area, **Attachment C-1.6:** Westside South, **Attachment D-1.6:** Poso provide a summary table showing the population characteristics of DACs and SDACs and a figure illustrating the locations of DACs and SDACs for each respective proposed P2 Management Zone area. The summaries in the above-referenced attachments provide a GIS analysis of population based on the area each DAC and SDAC cover within the respective proposed P2 Management Zone. The population provided in the table represents the estimated population of the DAC/SDAC that lies within the P2 proposed Management Zone area based on the proportion the community overlaps with the Proposed Management Zone. Population data for the DACs and SDACs are from the DWR Disadvantaged Community (DAC) Mapping Tool (<https://gis.water.ca.gov/app/dacs/>, accessed December 2025) GIS coverage of DAC and SDAC census places within the proposed P2 Management Zone, using 2020 American Community Survey (ACS) population estimates and incorporating yearly county-provided population growth factors to estimate census block populations in 2024.

2.1.3. Land Use

Attachment B-1.7: Tulare Lake Area, **Attachment C-1.7:** Westside South, and **Attachment D-1.7:** Poso provide the land use characteristics of each proposed P2 Management Zone area associated with agricultural activity. Tables in these Attachments summarize the acreage for each agricultural crop type from the 2023 provisional statewide crop mapping from DWR

(<https://data.cnra.ca.gov/dataset/statewide-crop-mapping>, accessed December 2025).

Besides the nonpoint sources of nitrate loading that can occur due to agricultural land uses, septic systems are also a smaller but potential source of localized nitrate loading. The amount of nitrate loading from septic systems is variable, dependent on the rate of denitrification. Denitrification occurs in the soil column below the septic leachfield, with more denitrification occurring where more carbon is available and where clayey or heavy soils slow the downward flow of water (creating larger anaerobic zones that increase denitrification). Conversely, in soils below the septic leachfield where there is less carbon available and there exists sandy, faster soils, the water travels downward more quickly (creating a thin anaerobic zone), which results in lower denitrification rates, and therefore more nitrate potentially reaching the water table.

De-designated Areas

According to the CV-SALTS Prioritization & Optimization Study: Final Baseline Characterization Report, there are three small areas within the KWC Management Zone where exceptions to the applicability of the MUN (municipal and domestic water supply) beneficial use have been adopted and approved by the State Water Board (P&O Study Consultant Team, 2024). The de-designated area near South Lost Hills covers approximately 6 square miles and is located in the Kern County (Westside South) area of the KWC Management Zone (Priority 2). The de-designated area near McKittrick covers approximately 1 square mile and is also located in the Kern County (Westside South) area of the KWC Management Zone (Priority 2). The third de-designated area located near South Fuller Acres covers approximately 1 square mile and is located in the Kern County (Kern River) area of the KWC Management Zone (not prioritized). These are relatively small areas within the KWC Management Zone where municipal and domestic water supply (MUN) beneficial uses of groundwater have been de-designated, indicating that groundwater is not suitable for drinking.

2.2. Initial Assessment of Groundwater Conditions

This section along with the associated attachments for each proposed P2 Management Zone (**Attachment B-2:** Tulare Lake Area, **Attachment C-2:** Kern County (Westside South), and **Attachment D-2:** Kern County (Poso)) provides an initial assessment of nitrate groundwater conditions for the FMZP based on readily available existing data and information collected in October 2025. Where possible, information from the Central Valley SNMP (CV-SALTS, 2016) was used and updated with more recent groundwater quality data from publicly available sources. Domestic well test results from EAP implementation were also incorporated into the FMZP nitrate analysis. Key data sources for this assessment included:

Supplemental information on groundwater within each respective proposed P2 Management Zone was obtained via DWR's Bulletin 118 (DWR, 2004). This document provides an overview of groundwater conditions (both groundwater levels and groundwater quality) in specific subbasins

including the Tulare Lake and Kern County Subbasins. Bulletin 118 also contains descriptions of groundwater basins and subbasins in California, with many descriptions updated from their 2003 descriptions in 2016 (DWR, 2016). DWR also released their statewide Groundwater Basin Prioritization in 2014 and 2015, and more recently in 2019⁴ which contains basic information on each groundwater basin, including population, population growth, total number of public supply wells, groundwater volume, percent of total water supply supplied by groundwater, irrigated acreage, and other comments on groundwater levels or quality specific to aquifers within the basin.

GSAs have developed Hydrogeological Conceptual Models (HCM), which include details on the physical characterization of the basins and groundwater conditions. Groundwater Sustainability Plan (GSP) documents developed within the Tulare Lake and Kern County Subbasins were used for the purpose of creating consistency between the FMZP and the GSP documents.

Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) completed a high-resolution mapping analysis of nitrate and total dissolved solids (TDS) groundwater quality in the Central Valley Region including within the proposed P2 Management Zones (CV-SALTS, 2016). The high-resolution mapping of salt and nitrate was completed for the Upper, Lower, and Production Zones of the groundwater system, which are defined in the documentation. Ambient TDS and nitrate conditions are provided, as well as assimilative capacity, groundwater quality trends, and predicted conditions (after 10, 20, and 50 years). The CV-SALTS high resolution dataset utilizes groundwater quality data from 2000-2016.

Table 2-3 summarizes sources of data accessed to update the CV-SALTS nitrate groundwater dataset for completing the initial assessment of groundwater conditions for this FMZP.

Table 2-3. Data Sources Accessed to Develop Assessment of Groundwater Conditions in Proposed Management Zones	
Data Source	Link
General Groundwater Conditions	
DWR Bulletin 118 overview of basin/subbasin conditions (groundwater levels and groundwater quality)	https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118
DWR's Groundwater Sustainability Basin Prioritization	https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization
Individual GSA's Hydrogeological Conceptual Model	https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies https://sgma.water.ca.gov/portal/gsp/all

⁴ DWR's Basin Prioritization can be found here: <https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization> (accessed December 2025).

Table 2-3. Data Sources Accessed to Develop Assessment of Groundwater Conditions in Proposed Management Zones	
Data Source	Link
Publicly Available Groundwater Quality Data Sources	
GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA)	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/Default.asp
DWR Water Data Library	https://wdl.water.ca.gov/
United States (USGS) Geological Survey National Water Information System	https://waterdata.usgs.gov/nwis/qw
GeoTracker Regulated Facilities	http://geotracker.waterboards.ca.gov/ and http://geotracker.waterboards.ca.gov/datadownload
Division of Drinking Water	https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/EDTlibrary.html
County-Specific Data Available by Request	
Kings County state small water systems and domestic/local small water systems (water quality data)	https://www.kcdph.com/
Kern County state small water systems and domestic/local small water systems (water quality data)	https://www.kernpublichealth.com/permitting-compliance/water

2.2.1. Hydrogeology

The proposed P2 Management Zone areas have unique hydrogeologic settings, as described by DWR (DWR, 2003 and subsequent updates) as well as through GSPs completed for the Kings County Subbasin and the Tulare Lake Subbasin. The hydrogeology of each proposed P2 Management Zone area is provided in the following Attachments: **B-2.1: Tulare Lake Area**; **C-2.1: Westside South**; and **D-2.1: Poso**. The hydrogeology sections provide descriptions of aquifer and aquitard materials, as well as a representative cross section figure illustrating the subsurface materials. This section also provides information and a map illustrating the ILRP High Vulnerability Areas (HVAs) that were developed by agricultural coalitions that cover the various proposed P2 Management Zone areas.

2.2.2. Groundwater Elevations and Flow

In most areas of the Central Valley, groundwater generally flows from the foothills toward the axis of the Central Valley. Maps showing contours of equal groundwater elevation are publicly available from DWR for the most recent Spring 2023 season (<https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels>, accessed December 2025). The Spring 2025 contours of equal groundwater elevation provide insight into the direction of groundwater movement and allow identification of groundwater pumping depressions. Maps provided in Attachments B-2.2: Tulare Lake Area; C-2.2: Westside South; and D-2.2: Poso show the groundwater level contours and groundwater flow directions to help inform areas of potential contribution for each proposed P2 Management Zone area.

Areas of Potential Contribution

The evaluation of potential impacts to groundwater associated with downgradient migration of nitrate is included in the following Attachments: **B-2.2: Tulare Lake Area**, **C-2.2: Westside South**, and **D-2.2: Poso**. Using the Spring 2025 groundwater elevation contours from DWR, hydraulic gradients and groundwater flow directions are quantified along the boundaries of each proposed P2 Management Zone area. The proposed Management Zone boundaries are divided into major segments of distinct groundwater flow direction characteristics, based on this Spring 2025 snapshot in time as provided by DWR's spatial coverage of contours of equal groundwater elevation. Hydraulic gradients and groundwater flow directions are provided in **Attachments B-2.2, C-2.2, and D-2.2** to quantify potential areas of contribution⁵ associated with possible downgradient migration of nitrate from within the proposed P2 Management Zone areas. No gradients are calculated along the edge of alluvial materials and the terminus of the Upper Zone of the groundwater system. No gradients are calculated along proposed Management Zone boundaries that border P1 or P2 areas because those areas are already under the purview of a Management Zone that is addressing the Nitrate Control Program requirements. Most of the proposed P2 Management Zone areas border other proposed P2 Management Zones or P1 Management Zones, with the exception of the southeastern boundary of the proposed Kern County (Westside South) area and the southern boundary of the proposed Kern County (Poso) area, as those areas border the non-prioritized Kern County (Kern River) area of the KWC Management Zone.

The KWC recognizes that uncertainty exists with the quantification of the areas of potential contribution described above, due to both hydraulic gradients calculated from specific seasons and years, as well as the ambient nitrate map. The KWC also recognizes that this analysis represents a snapshot in time, as represented by DWR's Spring 2025 groundwater elevation contour. The generalized groundwater flow direction assessment performed for SGMA and GSP purposes is provided in **Attachments C-2.2 and D-2.2** in the Kern County Subbasin. The GSP generalized groundwater flow directions agree with the DWR Spring 2025 contours in most areas. The GSP flow directions help inform the understanding of groundwater movement patterns near the western edge of the Westside South area where DWR did not have ample control points to extend their contours of equal groundwater elevation in Spring 2025. The areas of potential nitrate contribution will be revisited; future work during the development of Management Zone Implementation Plans for the proposed Management Zone will rely heavily on results from the GSPs in each area. Coordination efforts between the KWC and the GSAs in their respective areas are already underway.

2.2.3. Upper Zone Delineation

The Upper Zone refers to the upper portion of the groundwater aquifer system used for determining ambient nitrate conditions in each respective proposed P2 Management Zone area. The Upper Zone of the groundwater system includes the depth from the bottom of the vadose zone to the top of the Lower Zone, as developed during previous CV-SALTS efforts (CV-SALTS, 2016). The depth of the Upper Zone is

⁵ Area of Contribution: This is the portion(s) of Subbasin (and in this case the Management Zone) where a discharge or discharges will co-mingle with the receiving water (e.g., groundwater) and where the presence of such discharge(s) could be detected.

based on well construction information (where available), and other comparable information that provides the best available indication of well depth. The determination of the Upper Zone depth gives the highest weight to domestic well depths (**Table 2-4**). Consistent with the understanding of the local hydrogeology, where the Corcoran Clay is present, the Upper Zone does not extend below the top of the Corcoran Clay.

Table 2-4. Basis for Determining Depth of the Upper Zone	
Data Layer	Weights for Establishing Bottom of Upper Zone
Domestic Wells Bottom Perforations	40%
Farm Virtual Wells Top Perforations	10%
Urban PWS Top Perforations	20%
Rural PWS Top Perforations	20%
DDW Systems Top	10%
Total	100%

CV-SALTS determined the boundaries of the Upper and Lower Zones throughout the Central Valley Floor through high-resolution nitrate and TDS mapping using GIS spatial analyses of several layers of data (CV-SALTS, 2016). Well construction data were used in combination with depth-to-water contours and characteristics of the Corcoran Clay, including the extent, depth, and thickness of this significant clay member. Data for the development of the Upper and Lower Zones originated from:

- DWR depth to groundwater contours;
- Depth to groundwater from reports including Groundwater Quality Assessment Reports⁶;
- State Water Board's DDW database of location and construction information for PWSs;
- USGS California Central Valley Hydrologic Model 2.0 (CVHM2; in progress at the time):
 - Modeled virtual farm well construction for agricultural pumping
 - Actual rural public well water system well construction information
 - Actual urban public well water system well construction information
 - Texture database of driller's logs, including domestic well construction information

⁶ The Sacramento Valley Water Quality Coalition Groundwater Quality Assessment Report (<https://norcalwater.org/efficient-water-management/efficient-water-management-regional-sustainability/groundwater-quality-report/>) and the East San Joaquin Water Quality Coalition Groundwater Quality Assessment Report (https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality/coalitions_submittals/east_sanjoaquin/ground_water/2014_0113_esj_gwqar.pdf) were accessed for depth-to-groundwater data.

- Corcoran Clay depth, thickness, and extent

The above data were used to create interpolated layers over the Central Valley Floor of different well types and their perforation depths. The well construction layers were then combined in a weighting process to estimate where pumping occurs for the predominant well types. The weights provided in **Table 2-4** were then used for calculating the depth to the bottom of the Upper Zone.

2.2.4. Nitrate Water Quality

To characterize nitrate concentrations in groundwater beneath and adjacent to the proposed P2 Management Zone areas, available groundwater data were compiled, organized, and used to determine ambient conditions and trends that indicate where nitrate conditions are improving or degrading. This section describes:

- Groundwater nitrate data sources;
- Data quality control procedures;
- Organization of the nitrate data by groundwater depth horizon; and
- Data analysis methodologies for characterizing ambient conditions and trends.

Nitrate water quality analyses for each P2 area of the KWC Management Zone are provided in the following **Attachment B-2** for the Tulare Lake area; **Attachment C-2** for the Kern County (Westside South) area; and **Attachment D-2** for the Kern County (Poso) area.

Data Collection

Groundwater nitrate data have been collected and compiled from publicly available sources through the State Water Board's GAMA groundwater information system for the proposed P2 Management Zone areas, including a 3-mile buffer around the border of the proposed Management Zone. The sources of nitrate data in the bulk download from GAMA included:

- DDW (Division of Drinking Water);
- DWR (Department of Water Resources);
- GAMA_DOM, GAMA_SP_STUDY, and GAMA_USGS (GAMA program specific groundwater monitoring sites for domestic wells, special studies, and joint efforts with the USGS);
- LOCALGW (GAMA data from local water agencies and well owners);
- USGS_NWIS (USGS's National Water Information System, NWIS);
- WB_CLEANUP (State Water Board data from regulated facilities database, also known as GeoTracker); and
- WB_ILRP (State Water Board data from ILRP drinking water wells on grower parcels and groundwater quality trend monitoring (GQTM) wells)

Other data were requested and acquired from local entities, including county departments and groundwater sustainability agencies. These data were requested to use for analysis of groundwater

conditions in the proposed Management Zone areas. Implementation of the EAP yielded domestic well nitrate samples that were also included in this data collection.

Table 2-5 summarizes the readily available groundwater quality data used to develop the nitrate water quality analysis for the proposed P2 Management Zone areas. These datasets include data previously developed for CV-SALTS and additional data obtained in October 2025. Using the sources listed in this table, nitrate measurements and well data were compiled for each proposed P2 Management Zone area.

Table 2-5. Groundwater Quality Data Sources for Proposed KWC Priority 2 Management Zone Areas	
Data Category	Data Sources
The Phase II CV-SALTS Conceptual Model nitrate groundwater database developed for the High-Resolution Mapping project (CVSALTS, 2016)	<ul style="list-style-type: none"> • Formerly California Department of Public Health , now DDW • DWR • Central Valley Water Board WDR data per the Dairy General Order • Central Valley Water Board Regulated Sites • State Water Board/USGS GAMA Program • USGS
Geotracker GAMA ⁷ (Note: Not all entities had nitrate data from within the proposed Management Zones)	<ul style="list-style-type: none"> • Department of Pesticide Regulation • DWR • GAMA – Domestic Wells; Special Studies, and Priority Basin Projects • Local Groundwater Projects • Monitoring Wells (Central Valley Water Board Regulated Sites) • ILRP • DDW PWS Wells (Actual Locations) • USGS NWIS •
Kings County, Kern County, and Kern County Subbasin GSAs	Nitrate tests associated with well permits and/or state small water systems
Kern Water Collaborative	Nitrate tests associated with implementation of the EAP for domestic well testing

Compilation and Standardization

All public data (and locally derived requested data, as available and permitted to be shared with the public) are compiled to standardize naming, formatting, and measurement units. The nitrate data undergo a cursory quality assurance/quality control (QA/QC) process prior to being utilized to characterize

⁷ <https://geotracker.waterboards.ca.gov/gama/gamamap/public/>, accessed in October 2025

groundwater conditions. This process includes removing duplicate entries and marking questionable sample results that appeared to be misreported (typically from incorrect measurement units reported or anomalous/incorrect entries).

Identification of Outliers and Imputation for Left-Censored Data

Groundwater nitrate data are assessed for statistical outliers prior to performing ambient concentration and temporal analyses. Outliers are data points in which the measured value does not represent the actual value due to instrument or other errors. Outliers are detected with the right-tailed Grubbs' outlier test, which detects single outliers in normally distributed datasets (Grubbs, 1969; Stefansky, 1972). The outlier assessment is only performed for wells with four or more data points and less than 25 percent of their measurements were non-detectable, as smaller sample sizes often misidentify nonoutliers as outliers (Thompson and Lowthian, 2011). For wells with four or more data points and less than 25% of their measurements were non-detectable, the following methodology is used to identify outliers:

The maximum value is considered an outlier if the null hypothesis of no outliers in the dataset is rejected. The null hypothesis is rejected if the Grubbs test statistic G^8 exceeds the upper critical value at a high significance level ($\alpha = 0.001$).

Identified outliers are removed from the dataset, and the removed data are replaced by imputation⁹. The natural cubic spline method¹⁰ is used for the imputation of removed outliers. This method generates a smooth line connecting points on either side of the missing data using a third-degree polynomial determined by the data in the vicinity. If the imputed result is inaccurate (i.e., zero or negative), the nearest neighbor method is used instead. The Grubbs' test is again performed on the datasets with imputed values to confirm no statistically significant outliers remain in the dataset after imputation.

Additional imputations are performed where applicable on left-censored data. Left-censored data are data with an unknown value but known to be below a certain value. In groundwater nitrate datasets, these are non-detect values in which a measurement cannot be made below a certain threshold. The detection threshold depends on the measuring device or analytical methodology and varies in the dataset. Left-censored data (non-detects) were imputed using regression on order statistics (ROS), which replaces non-detects using a probability plot of the detected values (Helsel and Cohn, 1988; Shumway et al., 2002). ROS is used on wells with four or more data points and no more than 25 percent non-detects. Imputed values depend on the distribution of detected values and may exceed detection limits. These values are used only in the calculation of means and ambient conditions.

⁸ The Grubbs' test statistic, G , is the largest absolute deviation from the sample mean in units of the sample standard deviation.

⁹ Imputation is the assignment of a value based on an inference from other values.

¹⁰ The natural cubic spline method is an interpolation tool to estimate values based on knowledge of the dataset.

Well Depth Zone Assignment

The ambient nitrate concentration and trends analyses consider wells categorized into the “Upper Zone,” “Lower Zone,” and “Below Lower Zone” depth categories. This depth designation is based on the following criteria:

- Well depth and bottom of screened interval depth¹¹
- Well type
- Estimated well depth based on DWR’s Well Completion Report (WCR) spatial representation of statistics
- Comparison of the well’s actual or estimated depth with the CV-SALTS delineation of the bottom of the Upper Zone

Wells from the publicly available nitrate dataset do not always have available depth information. The well type may serve as a proxy for wells from this dataset that do not have well depths or screened interval data reported. In this case, all domestic wells are categorized into the Upper Zone (as the depths of domestic wells are what the CV-SALTS’ studies relied on most heavily for developing the depth of the Upper Zone). Other well types were assigned an estimated depth based on DWR’s WCR spatial representation of well depth statistics, as available. DWR provides a one-mile grid mapping (based on Public Land Survey System (PLSS) sections) of the general statistics of well depths based on well types (well types include domestic, industrial, irrigation, municipal, and monitoring). However, this coverage has limitations (e.g., data and application are subject to change, attribute tables may include missing and duplicate records, incorrect values, and limited spatial resolution). The estimated depth is assigned based on the well type and DWR WCR statistics of mean well depth for the PLSS section that the well falls within. Assigned well depths are compared to the GIS coverage of the depth to the bottom of the Upper and Lower Zones, as defined by CV-SALTS and placed in their appropriate well depth category¹².

Also, there are a small amount of wells that have screened interval information whose data indicate that the well is completed in multiple depth zone categories. Once all the nitrate data are categorized by depth, the groundwater concentration sample data are further scrutinized and standardized. As described above, the publicly sourced data go through a QA/QC process. This process improves the quality of the dataset (removing erroneous data from the dataset that could potentially skew the spatial interpolation incorrectly). Beyond this QA/QC process, however, the methodology of reporting non-detects varies between the various public entities reporting data to the GAMA database. Multiple methods have been used to represent non-detect nitrate sample results. Sometimes this has involved the use of the reporting

¹¹ Due to lack of a consistent reporting of screened interval information for each well, composite wells were categorized into the lowest depth zone in which completed. For example, wells that may have a well screen that spans the Upper and Lower Zones were placed in the Lower Zone, utilizing the depth of the well and/or the depth of the bottom of the screened interval and comparing it to the bottom of the Upper Zone and bottom of the Lower Zone.

¹² A future refinement of this methodology could involve utilizing screened interval information (when available) to better assess the understanding of Upper Zone water quality contributions and Lower Zone water quality contributions to wells that have screened intervals that span both depth zones.

limit value within the “value” field with a qualifier to denote “less than” entered as “<”; other times, there are non-detects in the public record listed with a value of “0” with or without a reporting limit (RL) in the “RL” field. Non-detect nitrate sample entries were standardized and quantified for purposes of data utility. Imputed values were developed using the ROS approach described above to replace left-censored (non-detect) concentrations where possible.

Public Posting of Nitrate Groundwater Data

The nitrate groundwater quality datasets for each proposed Management Zone area will be posted on the CV-SALTS website (www.cvsalinity.org) to be publicly available for download. The dataset contains a README tab which describes the fields and contents within the dataset; another tab provides well information (WellInfo) including location, source, and depth categories; the last tab provides the actual nitrate data (NitrData) used for the FMZP analyses described below. The nitrate data include wells sampled for Nitrate or Nitrate+Nitrite within three miles of each proposed P2 Management Zone area.

Nitrate Groundwater Quality Analysis Methodology

The spatial interpolation process known as kriging was used for the analysis of ambient nitrate concentrations within the proposed Management Zone. Spatial interpolation is a way to construct estimated values based on the range of a dataset (actual data); in this case, the method was used for the analysis of ambient nitrate concentrations in the Upper Zone. The specific method of interpolation used is known as kriging. This method relies on numerical nitrate values for the calculations; excluding non-detect nitrate levels could result in artificially higher interpolated ambient nitrate concentrations. A sample that returned a non-detect nitrate level should not be discarded simply because its actual low concentration is not quantified. Because non-detect samples are also informative, the method of utilizing imputed values was adopted. Laboratory and U.S. Environmental Protection Agency analytical methods for measuring nitrate concentrations in water samples have not changed significantly in the last 20 years, which supports quantifying non-detect samples with a low value for recent nitrate data (post-2010 data as used in the Management Zone analyses).

Groundwater quality data for each well were temporally summarized to produce one average annual value to represent post-2010 concentrations. Annual averages for each well for each year and an average of post-2010 years with data were calculated. This approach provides one value for each well location with post-2010 data that can then be used for kriging. The maximum nitrate concentration in each well since January 1, 2010 was also used to compare to the kriging results. This comparison was performed to ensure that the kriging approach was not underestimating nitrate conditions in areas that have experienced elevated nitrate levels.

Several parameters associated with the geostatistical kriging approach were used to represent the spatial distribution of ambient nitrate concentrations in groundwater. The regional variability of nitrate in groundwater has been mapped within the proposed Management Zone with a method that precludes introducing inappropriate or inaccurate representations of nitrate concentrations when wells used for kriging computations are spatially quite distant from one another. To constrain the distance each data control point can have, a 1.5-mile search radius was employed. This means that if no other well with nitrate data within the analysis period is located within 1.5 miles of the control point, the spatial interpolation stops its expansion and does not assign a value of ambient nitrate past 1.5 miles from that

control point. The selection of this parameter can result in areas of unknown ambient nitrate concentrations. Spherical ordinary kriging was employed on the depth-dependent datasets for this proposed Management Zone, which fits a spherical variogram to the spatial patterns associated with changes in nitrate concentration. Weights derived from the structure of the variogram are used to interpolate concentrations at locations without measurements based on separation distances from known concentrations. Other parameters, such as grid spacing (0.1-mile spacing), were assigned to be small enough to allow for high resolution of the interpolated product. Additionally, nitrate data within a buffer zone of three miles outside the boundary of the proposed Management Zone were used to maximize the understanding and estimation of ambient nitrate conditions along the proposed Management Zone boundary. Variograms were calculated within ESRI ArcPro software using the Kriging tool and a spherical empirical semivariogram model (Oliver, 1990) using the projected coordinate system NAD 1983 California (Teale) Albers (in US feet). The minimum number of data points required (minimum neighbors) per kriged value is one (1) within the 1.5-mile search radius. There is no limit (maximum neighbors) for data points incorporated per kriged value. While kriging maintains the geostatistical information recorded in the original dataset, it does not invoke fluid transport mechanics and may produce rapid changes in concentration in regions with varied measurements. A spatial median filtering algorithm was applied to the interpolated dataset to smooth any particularly rapid changes in concentration.

Temporal Trends in Nitrate

Characterization of groundwater conditions in the proposed Management Zone also includes analysis of temporal trends in nitrate concentrations. Individual wells and regions with multiple groundwater quality measurements through time provide insights into past and future groundwater conditions. Two main approaches to trend analysis are recommended, including parametric and non-parametric statistical analyses of trends.

Parametric statistical analyses of trends assume a defined numerical relationship between the measured quantity and time, as well as normally distributed errors between the modeled and measured data. Parametric trends are estimated using a linear regression model in all wells with five or more data points (not including multiple measurements occurring on the same day, in which case a single median value is used). Five data points are the minimum sample size to attain a p-value less than 0.05 when performing a t-test for a normal distribution (Curtis et al., 2015). The slope hypothesis test is conducted for all linear trends, and only wells with a 95% confidence or greater (p less than 0.05) in the presence of a slope in the data were considered to have linear trends. The coefficient of determination (R^2) is also calculated for all trends to assess the linear regression model's fit to the data. R^2 values range from 0 to 1, with values closer to 1 representing better model fits. Linear trends with R^2 values less than 0.5 are not considered. Water quality changes can be seasonal, rapid, or otherwise not captured by a linear regression model, so these trends are only an approximation of changes in concentration over the period of record. Trends are analyzed over two periods of record, with long-term trends in wells with data preceding 2010 and recent trends considering post-2010 data only.

Both Mann-Kendall and Theil-Sen non-parametric analyses are additionally performed to characterize trends. Non-parametric analyses are performed on wells with five or more data points and over the same long-term and recent records as the parametric analysis. Mann-Kendall analyses determine whether

statistically significant increasing or decreasing monotonic trends exist (Mann, 1945; Kendall, 1975). Wells are considered to have a significant trend if the trend confidence exceeds 95% (i.e., p-value less than 0.05). Significant trends with a negative S-value are decreasing, while positive S-values are increasing. Once a significant trend is identified, a Theil-Sen slope analysis is performed to quantify the magnitude of the trend. The Theil-Sen analysis calculates the slope between all possible pairs of points and uses the median slope to estimate the trend magnitude (Theil, 1950; Sen, 1968; Gilbert, 1987). While the Mann-Kendall and Theil-Sen analyses determine whether statistically significant trends exist and estimate the trend magnitudes, the non-parametric methods do not test whether the data fit a particular model and are less suitable for making projections compared to parametric (e.g., linear) methods.

Evaluation of Inactive Drinking Water Wells

The Central Valley Water Board's February 28, 2022 PMZP comment letter sent to P1 Management Zones (Central Valley Water Board, 2022) identified a potential concern that not including data from inactive drinking water supply wells within the Management Zones may bias ambient Upper Zone nitrate analysis results.

To refrain from creating such a potential bias towards ambient Upper Zone nitrate analysis results by not including data from inactive drinking water supply wells, the location of inactive supply wells that have had nitrate exceedances were compared to the ambient nitrate map using the following approach: The DDW's online public water system database website was used in conjunction with the GAMA database to identify supply wells that are no longer used within the proposed Management Zone. The DDW website provides database files that include a file containing public water system well identification numbers and well status codes¹³. The wells from the DDW website are not accompanied by location coordinates, but these wells can be linked (using their primary station code ID) to nitrate groundwater quality data from the GAMA dataset which does provide well location coordinates. Within DDW's database, wells are assigned a status of "AB" for abandoned, "DS" for destroyed, "IR" for inactive raw, and "IU" for inactive unused. Wells with these various status designations are considered to be no longer actively used for drinking water. A map showing the location and status of public water supply wells that have exceeded the nitrate MCL is provided in **Attachment H Early Action Plan Appendix B-3 and C-3**. Public supply wells with past nitrate exceedances that have been abandoned, inactive, or destroyed can be seen in this map plotted with the ambient nitrate conditions in the Upper Zone since 2010. These wells are considered to be no longer actively used for drinking water, but they tend to plot spatially in areas or close to areas with elevated ambient nitrate.

¹³ Water quality database files are publicly accessible here https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/EDTlibrary.html (accessed November, 2025), including the supporting database file SITELOC, which contains primary station codes (well identification numbers) and well status codes that can be used to determine if a well has been abandoned, destroyed, or deemed inactive.

3. MANAGEMENT ZONE PARTICIPANTS

Participants in the proposed KWC Management Zone include both permitted dischargers and non-dischargers working collaboratively to facilitate efforts to achieve the goals of the Nitrate Control Program. Although permitted dischargers are responsible for compliance with the Nitrate Control Program, participation by other stakeholders who are non-dischargers is critical in efforts to achieve compliance. The sections below identify the permitted dischargers in each proposed P2 subbasin area, which of these dischargers are participating in the proposed P2 subbasin areas (as of the submittal of this FMZP), and the other key stakeholders currently coordinating with the KWC.

3.1. Management Zone Participants

3.1.1. Permitted Dischargers

Central Valley Water Board sent a NTC to dischargers in the Tulare Lake area, Kern Subbasin (Westside South) area, and the Kern Subbasin (Poso) area groundwater subbasin areas on December 29, 2023. To facilitate coordination with NTC letter recipients, the KWC requested and received the list of dischargers that were sent the NTC via certified mail. The KWC then worked with the Central Valley Water Board staff to refine the list as needed. The following sections summarize the permitted dischargers in the proposed P2 proposed Management Zone areas within the KWC by permit type and the status of their participation in each proposed P2 subbasin area.

Irrigated Lands Regulatory Program

Growers in the proposed KWC Management Zone are permitted to discharge under the ILRP, which works to prevent runoff from agricultural operations from impairing surface waters and address agricultural practices to reduce effects on groundwater quality and protect drinking water sources. Implementation of the ILRP occurs through water quality coalitions. A coalition (sometimes referred to as a “third-party”) collectively represents growers within its respective jurisdiction to assist them in their efforts to comply with ILRP requirements.

ILRP General Orders establish the regulatory requirements applicable to growers within each Coalition. The NTC with the Nitrate Control Program was sent to all Coalitions within the proposed P2 subbasin areas on December 29, 2023. On behalf of the growers enrolled under ILRP General Order R5-2013-0120-09 (*Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are Members of a Third-Party Group*), Coalition members within the proposed P2 proposed Management Zone areas within the KWC will comply with the Program as a participant in the KWC.

Concentrated Animal Feeding Operations

Concentrated Animal Feeding Operations (CAFOs) are authorized to discharge under various orders based on the facility and type of animal feeding operation. Participation in the proposed KWC Management Zone by the permittees authorized to discharge under a WDR is discussed in the sections below.

Milk Cow Dairies

Most milk cow dairies in the three P2 proposed groundwater subbasin areas are currently regulated under General Order R5-2013-0122 (*Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies*). The NTC with the Nitrate Control Program was sent to each permitted milk cow dairy on December 29, 2023. **Attachments B-4:** Tulare Lake area, **C-4:** Kern County (Westside South) area, and **D-4:** Kern County (Poso) area provide the list of dairies that are participants in their respective proposed P2 groundwater subbasin areas. These facilities collectively participate in the KWC through their CVDRMP membership (based on membership records provided by the CVDRMP as of November 6, 2024).

Confined Bovine Feeding Operations

Most confined bovine feeding operations located within the proposed P2 groundwater subbasin areas are regulated under General Order R5-2017-0058 (*Waste Discharge Requirements General Order for Confined Bovine Feeding Operations*). The NTC with the Nitrate Control Program was sent to each confined bovine feeding operation on December 29, 2023. **Attachments B-4:** Tulare Lake area, **C-4:** Kern County (Westside South) area, and **D-4:** Kern County (Poso) area provide the list of confined bovine feeding operations that are participants in their respective proposed P2 groundwater subbasin areas. These facilities collectively participate in the Management Zone through their CVDRMP membership (based on membership records provided by the CVDRMP as of November 6, 2024).

Poultry Operations

Poultry operations located within the proposed P2 groundwater subbasin areas are regulated under General Order R5-2016-0087 (as amended) (*Waste Discharge Requirements General Order for Poultry Operations; Poultry General Order*). Poultry operations not regulated under this General Order are included in Section 4.2 below. The NTC with the Nitrate Control Program was sent to each facility regulated under this General Order on December 29, 2023. **Attachments B-4:** Tulare Lake area, **C-4:** Kern County (Westside South) area, and **D-4:** Kern County (Poso) area provide the list of poultry facilities in their respective proposed P2 groundwater subbasin areas enrolled under the Poultry General Order. These permitted dischargers are collectively participating in the KWC and are being outreached to and coordinated with by representatives of the poultry industry, including the California Poultry Federation and Foster Poultry Farms. Under the Poultry General Order poultry operations are categorized as either Low Threat Operations or Full Coverage Operations. All poultry facilities in the proposed P2 groundwater subbasin areas are Full Coverage Operations.

Oil and Gas Operation

Some oil and gas operations located within the proposed P2 groundwater subbasin areas are regulated under General Order R5-2017-0035 (*Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Two (GO2)*) and General Order R5-2017-0036 (*Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three (GO3)*); together “Oil and Gas General Orders”). Oil and gas operations not regulated under the Oil and Gas General Orders are included in Section 4.3 below. The NTC with the Nitrate Control Program was sent to each facility regulated under this General Order on December 29, 2023. **Attachments B-4:** Tulare Lake area, **C-4:** Kern County (Westside South) area, and **D-4:** Kern County (Poso) area provide the list of oil and gas facilities in

their respective proposed P2 groundwater subbasin areas enrolled under the Oil and Gas General Orders. These permitted dischargers are collectively participating in the KWC and are being outreached to and coordinated with by representatives of the oil and gas industry, including the Valley Water Management Company and Western States Petroleum Association.

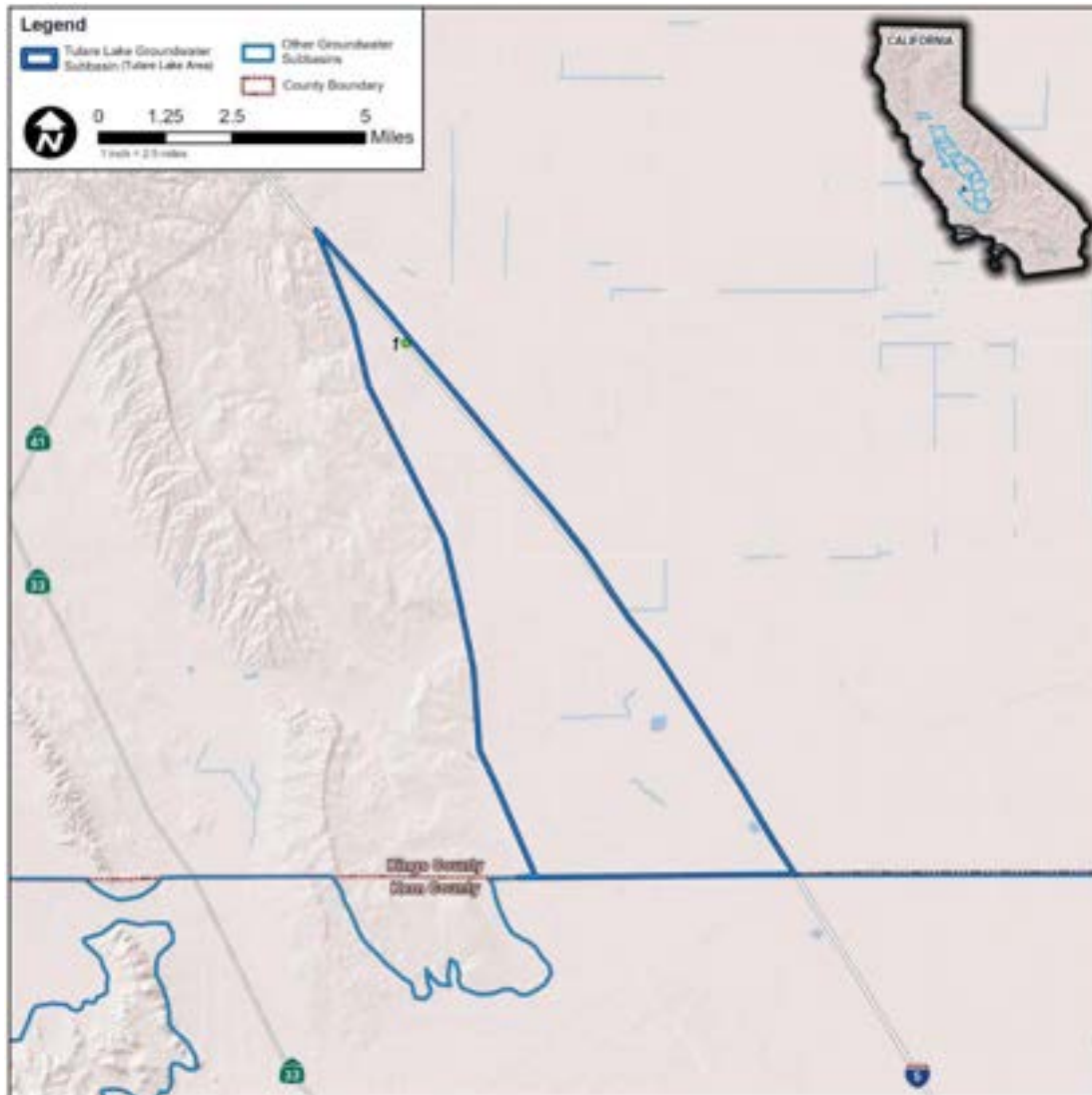
Individually Permitted Dischargers

The following tables list all of the facilities in the proposed P2 groundwater subbasin areas with individual WDRs that were sent a NTC with the Nitrate Control Program on December 29, 2023: **Table 3-1**: Tulare Lake Area, **Table 3-2**: Kern County (Westside South) area and **Table 3-3**: Kern County (Poso) area, **Figure 4-1** Tulare Lake area, **Figure 4-2** Kern County (Westside South) area, and **Figure 4-3** Kern County (Poso) area illustrate the location of each of these permitted facilities within their respective proposed groundwater subbasin areas. Map numbers in each figure correspond to the map numbers provided in the first column in each respective proposed P2 groundwater subbasin area table.

The KWC began outreach to these facilities soon after the NTC was sent on December 29, 2023. The right column in each table identifies each of the individually permitted facilities that have elected to participate in the KWC as of the submittal date of the FMZP (this information is also summarized in Section 1 – List of Participants in the Proposed Management Zone). If at the time of FMZP submittal it is known that a facility is planning to comply with the Nitrate Control Program via Path A, this information is noted in Tables 3-1 through 3-3. If these Path A selections are approved by the Central Valley Water Board, the KWC will coordinate with them during development of the KWC Management Zone Implementation Plan.

Table 3-1. Facilities in Proposed Tulare Lake Area with Individual WDRs

Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
1	Jackson Ranch Commercial Development Wastewater Treatment Facility	Non15	Southwest corner of Interstate 5 and Utica Ave.	Kings	Pending	3699	--



**Figure 3-1. Location of Permitted Facilities in the
Proposed Tulare Lake Area with Individual WDRs**

Table 3-2. Facilities in Proposed Kern County (Westside South) Area with Individual WDRs

Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
1	Aera Energy Employee Housing	Non15	Wagonwheel Street, McKittrick, CA 93251	Kern	2014-0153-DWQ	1999	--
2	Asphalto Oil Field, Asphalto Standard Lease	Oil/Gas	Section 23, Township 30S, Range 22E, MDB&M, CA	Kern	R5-2004-0058	3117	--
3	Belgian Anticline, McKittrick 1 & 1-3 Facility	Oil/Gas	SE of Lokern Road and West Side Highway 33, McKittrick, CA	Kern	69-19901	3115	--
4	Belgian Anticline, McKittrick 1-1 Facility	Oil/Gas	SE of Lokern Road & Lost Hills Road, McKittrick, CA 93251	Kern	69-199	3114	Yes
5	Belridge South Oil Field, Mission Lease	Oil/Gas	Belridge South Oil Field, Belridge, CA	Kern	68-271	3113	--
6	Buttonwillow Safety Roadside Rest Area	Non15	Interstate 5, Post Mile R54.1, Buttonwillow, CA 93206	Kern	2014-0153-DWQ	3002	--
7	Buttonwillow Tomato Processing Plant	Non15	36889 Highway 58, Buttonwillow, CA 93206	Kern	R5-2008-0067	1841	Yes
8	Buttonwillow Wastewater Treatment Facility	Non15	Sullivan Road - 1 1/2 Miles East off Buttonwillow Drive, Buttonwillow, CA 93206	Kern	R5-2009-0123	2709	Yes
9	Elk Hills Oil Field, 10G Class II-1 Waste Management Complex	Oil/Gas	Section 10, Township 31S, Range 24E, MDB&M, CA	Kern	73-042	3095	Yes
10	Five and Forty-Six Waste Water Treatment Facility	Non15	Highway 46 and I-5, Lost Hills, CA 93249	Kern	R5-2007-0151	2020	--
11	Horizon Nut LLC - Lost Hills	Non15	14663 Highway 33, Lost Hills, CA 93249	Kern	R5-2013-0006	2794	--
12	I-5 & Highway 58 Wastewater Treatment Facility	Non15	Highway 58 at I-5, Buttonwillow, CA 93206	Kern	R5-2007-0152	2696	--

Table 3-2. Facilities in Proposed Kern County (Westside South) Area with Individual WDRs

Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
13	Liberty Compost	Composting	12421 Holloway Road, Lost Hills, CA 93249	Kern	R5-2009-0018	3136	Yes
14	Lost Hills Processing Plant	Non15	13646 Highway 33, Lost Hills, CA 93249	Kern	99-075	2232	Yes
15	Lost Hills Wastewater Treatment Facility	Non15	21331 Highway 46, Lost Hills, CA 93249	Kern	87-113	2721	--
16	Maricopa Wastewater Disposal Facility	Non15	NW 1/4, of Section 7, Township 11N, Range 23W, SBB&M, Maricopa, CA	Kern	00-153	2673	Yes
17	Midway-Sunset and Buena Vista Oil Fields, Broad Creek 2 Facility	Oil/Gas	Section 2, Township 32S, Range 23E, MDB&M, CA	Kern	R5-2002-0223	3081	Yes
18	Midway-Sunset Oil Field, Buena Vista 1 Facility	Oil/Gas	Section 19, Township 31S, Range 23E, MDB&M, CA	Kern	5-01-026	3080	Yes
19	Midway-Sunset Oil Field, Buena Vista 2 Facility	Oil/Gas	Section 13 & 18, Township 31S, Range 22 & 23E, MDB&M, CA	Kern	5-01-027	3079	Yes
20	Midway-Sunset Oil Field, Havenstrite Lease	Oil/Gas	Midway-Sunset Oil Field, Maricopa, CA	Kern	Pending	3050	--
21	Midway-Sunset Oil Field, Holmes Lease	Oil/Gas	Maricopa, CA 93252	Kern	69-106	3045	--
22	Midway-Sunset Oil Field, Maricopa East Facility	Oil/Gas	Midway-Sunset Oil Field, Maricopa, CA	Kern	59-07301	3069	Yes
23	Midway-Sunset Oil Field, Maricopa West Facility	Oil/Gas	Midway-Sunset Oil Field, Maricopa, CA	Kern	59-073	3078	Yes
24	Midway-Sunset Oil Field, Pike Lease	Oil/Gas	SW of 7 Sisters Road & Petroleum Club Road, Taft, CA	Kern	R5-2002-0197	3086	--

Table 3-2. Facilities in Proposed Kern County (Westside South) Area with Individual WDRs

Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
25	Midway-Sunset Oil Field, S.P. Section 29 Lease	Oil/Gas	Midway-Sunset Oil Field, Taft, CA	Kern	R5-2002-0194	3084	--
26	Midway-Sunset Oil Field, S.P. Section 33 Lease	Oil/Gas	Midway-Sunset Oil Field, Maricopa, CA	Kern	R5-2002-0195	3085	--
27	Midway-Sunset Oil Field, SEC 19 & 24 Leases	Oil/Gas	Midway-Sunset Oil Field, Derby Acres, CA	Kern	R5-2005-0163	3088	--
28	Midway-Sunset Oil Field, Snook & Wells Lease	Oil/Gas	Midway-Sunset Oil Field, Maricopa, CA	Kern	59-030	3087	--
29	Midway-Sunset Oil Field, Southeast Taft Facility (SE Taft)	Oil/Gas	Midway-Sunset Oil Field, Taft, CA	Kern	01-029	3077	Yes
30	POM - Buttonwillow	Non15	23145 West Lerdo Highway, Buttonwillow, CA 93206	Kern	R5-2012-0099	2844	Yes
31	Taft Federal Prison Wastewater Treatment Facility	Non15	1510 Cadet Road, Taft, CA 93268	Kern	R5-2009-0054	2545	--
32	Taft Wastewater Treatment Facility	Non15	Airport, Taft, CA, 93268	Kern	5-00-080 (N15)	1909	--
33	Wasco Pistachio Processing Plant	Non15	16070 Wildwood Road, Wasco, CA 93280	Kern	R5-2018-0005	2396	Yes
34	Wasco State Prison Wastewater Treatment Facility	Non15	701 Scofield Avenue, Wasco, CA 93280	Kern	90-217	2610	Yes
35	Wonderful Pistachios & Almonds King Facility	Non15	10429 King Road, Lost Hills, CA 93249	Kern	R5-2015-0082	2172	Yes

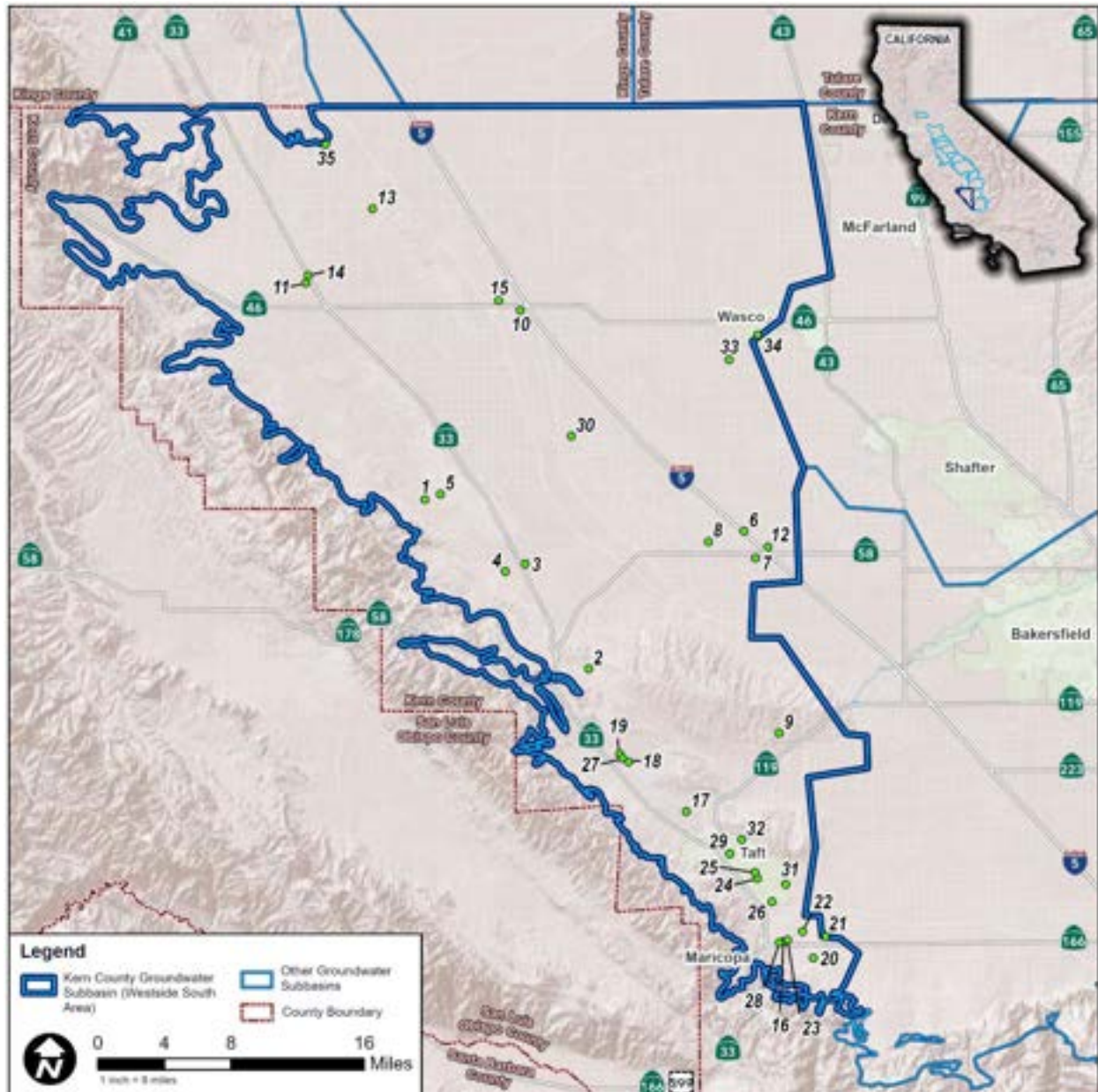


Figure 3-2. Location of Permitted Facilities in the
Proposed Kern County (Westside South) Area with Individual WDRs

Table 3-3. Facilities in Proposed Kern County (Poso) Area with Individual WDRs

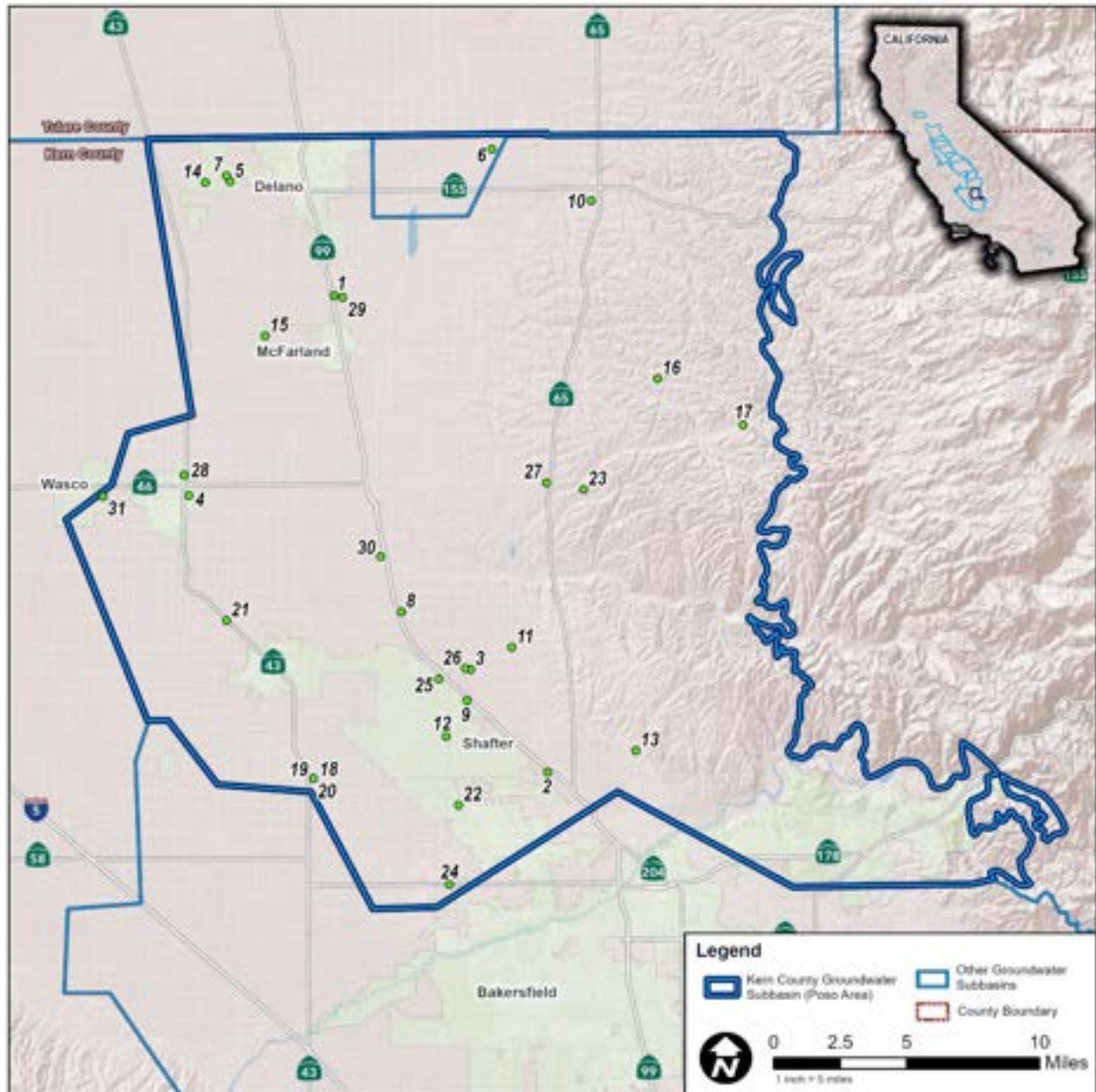
Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
1	ASV Wines McFarland Winery	Non15	31502 Peterson Road, McFarland, CA 93250	Kern	Pending	2846	Yes
2	Bidart Bros Bakersfield Potato Shed	Non15	34702 7th Standard Road, Bakersfield, CA 93314	Kern	R5-2014-0082	2394	Yes
3	Califia Farms LLC	Non15	33502 Lerdo Highway, Bakersfield, CA 93308	Kern	R5-2022-0053	2884	Yes
4	California Water Reclamation	Non15	591 J Street, Wasco, CA 93280	Kern	Pending	3637	--
5	Delano Biosolids Application Site	Non15	Near Lytle Road and Garces Highway, Delano, CA 93215	Kern	2004-0012-DWQ	2871	--
6	Delano Growers Grape Products	Non15	32351 Bassett Avenue, Delano, CA 93215	Kern	R5-2014-0064	1954	Yes
7	Delano Wastewater Treatment Facility	Non15	1107 Lytle Road, Delano, CA 93216	Kern	R5-2017-0052	2659	Yes
8	Flying J #613	Non15	17047 Zachary Avenue, Shafter, CA 93263	Kern	89-162	2022	--
9	Garlic Processing Plant Shafter	Non15	18602 Zerker Road, Bakersfield, CA 93314	Kern	R5-2020-0025	2200	Yes
10	Jasmin Oil Field, Quinn Lease	Oil/Gas	Jasmin Oil Field, Jasmin, CA	Kern	R5-2019-0043	3093	Path A
11	Kern County Sheriff's Lerdo Wastewater Treatment Facility	Non15	17824 Quality Road, Bakersfield, CA 93308	Kern	R5-2018-0014	2488	--
12	Kern Front Oil Field, Rosedale Spreading Basin (Discharge 003)	Oil/Gas	Kern Front Oil Field, Saco, CA	Kern	R5-2015-0127	3048	Yes
13	Kern Front Oil Field, Signal (AKA Crystal Fee) Lease	Oil/Gas	Kern Front Oil Field, Bakersfield, CA	Kern	82-064	3092	--

Table 3-3. Facilities in Proposed Kern County (Poso) Area with Individual WDRs

Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
14	Kern Valley State Prison Wastewater Treatment Facility	Non15	3000 West Cecil Avenue, Delano, CA 93215	Kern	R5-2007-0090	2171	--
15	McFarland Wastewater Treatment Facility	Non15	12941 Melcher Road, McFarland, CA 93250	Kern	R5-2008-0072	2674	--
16	Mount Poso Oil Field, Black Satin Lease	Oil/Gas	Section 24, Township 26S, Range 27E of Kern County, Kern County, CA 93250	Kern	R5-2016-0709	3072	--
17	Mount Poso Oil Field, Poscal Pac Villard Lease	Oil/Gas	SE 1/4 Section 28, Township 26S, Range 28E MDB&M, CA	Kern	R5-2002-0108	3083	--
18	North of the River Sanitary District Biosolids Land Application Area	Non15	28970 7th Standard Road, Shafter, CA, 93263	Kern	2004-0012-DWQ	2916	Yes
19	North of River Sanitary District Sills Reclamation Project	Non15	28970 7th Standard Road, Shafter, CA 93263	Kern	R5-2009-0088	2414	Yes
20	North of the River Sanitary District Sills Reclamation Project No. 2	Non15	1508 18th Street, #320, Bakersfield, CA, 93301	Kern	2016-0068-DDW	2497	Yes
21	North Shafter Farm Labor Camp	Non15	17213 Central Valley Highway, Shafter, CA 93263	Kern	00-049	2328	--
22	Payne Truck Wash	Non15	13421 Snow Road, Bakersfield, CA 93314	Kern	Pending Order	2360	--
23	Poso Creek Oil Field, McVan Area Treatment Facility (Sherwood's Reservoirs)	Oil/Gas	Poso Creek Oil Field, Famoso, CA	Kern	R5-2019-0024	3046	--
24	Rosedale Village Mobile Home Park	Non15	14035 Rosedale Highway, Bakersfield, CA 93314	Kern	2014-0153-DWQ	3020	--

Table 3-3. Facilities in Proposed Kern County (Poso) Area with Individual WDRs

Map ID	Facility Name	Permit Type	Permittee/Facility Address	County	Order No.	CV-SALTS ID	Management Zone Participant?
25	Shafter Carrot Packing Plant	Non15	6301 South Zerker Road, Shafter, CA 93623	Kern	R5-2021-0029	2395	Yes
26	Sun Pacific Bakersfield Packinghouse	Non15	33374 Lerdo Highway, Bakersfield, CA 93308	Kern	R5-2017-0126	2355	Yes
27	SUN-GRO Commodities, Inc.	Non15	34575 Famoso Road, Bakersfield, CA 93308	Kern		2848	--
28	Sunnygem Almond Processing Facility	Non15	500 North F Street, Wasco, CA 93280	Kern	R5-2014-0090	2788	--
29	Sunview Cold Storage Facility	Non15	31548 Peterson Road, McFarland, CA 93250	Kern	Pending	2762	Yes
30	TGC Cold Storage	Non15	16350 Driver Road, Bakersfield, CA 93308	Kern	75-281	1925	--
31	Wasco Wastewater Treatment Facility	Non15	5410 7th Street, Wasco, CA 93280	Kern	R5-2002-0198	2735	--



**Figure 3-3. Location of Permitted Facilities in the
Proposed Kern County (Poso) Area with Individual WDRs**

Other Stakeholders (Non-Dischargers)

Achieving Nitrate Control Program goals within the proposed P2 groundwater subbasin areas requires collaboration with a wide range of entities having various roles in the management of land use planning, management of water and wastewater, and community engagement. As non-dischargers, these entities did not receive a NTC; however, their participation in the planning and implementation of Management Zone activities is essential.

KWC identified organizations knowledgeable of the local communities in each proposed P2 groundwater subbasin area that could potentially assist in outreach to the community and provide input to the development and implementation of the EAP. **Table 3-3** lists categories of entities contacted during development of this FMZP. Efforts to identify specific stakeholders within each of these categories occurred through the following process:

- Identification of key stakeholders through local area knowledge;
- Inclusion of entities directly requesting to be included;
- Outreach to entities recommended by existing Management Zone participants; and
- Identification of potentially interested entities through the characterization process (see Section 2.1), e.g., specific county agencies, water districts or community service districts.

Attachment B-3: Tulare Lake area, **Attachment C-3:** Kern County (Westside South) area, and **Attachment D-3:** Kern County (Poso) area provide the current list of stakeholders identified for each proposed P2 groundwater subbasin area. Unless the entity was already participating in the development of the Management Zone, KWC or other identified Management Zone stakeholders directly reached out to the entities in Attachments B-3, C-3, and D-3 to inform them of ongoing efforts to develop the FMZP and the EAP for the proposed P2 subbasin areas. Regardless of the level of participation, unless an entity formally requests to be removed from the stakeholder list, the KWC will keep them on the contact list.

In anticipation of dischargers receiving their NTC, industry leader stakeholders had multiple meetings in early 2022 to prepare for the Nitrate Control Program. Once dischargers received their NTC from the Central Valley Water Board, the KWC held a stakeholder meeting on June 11, 2024. Topics discussed in the stakeholder meeting included: an introduction of the KWC and Nitrate Control Program, an overview of nitrate conditions, discharger commitment process, discharger outreach, contents of the EAP, potential interim drinking water solutions under the EAP, presentation of the draft EAP to provide opportunity for community participants to review and comment on the public draft EAP.

Table 3-4. Categories of Other Stakeholders in the Proposed KWC Management Zone	
Category	Key Role(s)
Counties	Board of Supervisors – Dissemination of information to County residents; support approval of EAP-related projects
	Planning and Community Development – Support approval of EAP-related projects
	Health Services Agency – Support implementation of EAP-related activities
Incorporated Communities ¹⁴	Given the presence of shopping centers ¹⁵ in these locations, some of these communities may be targeted for establishment of water fill stations. Coordination with these communities can facilitate establishment of these facilities.
Unincorporated Communities/ Census-Designated Places	
Central Valley Water Board	Ensure that EAP development and implementation is consistent with Nitrate Control Program requirements.
State Water Board DDW	Ensure that water fill stations or other replacement water alternatives meet state and federal regulations for drinking water.
Non-Governmental Organizations (NGOs)	Organizations represent various community interests within the proposed KWC Management Zone and can assist with implementation of EAP elements, especially activities related to community outreach.
Groundwater Sustainability Agencies	The GSAs located within the proposed KWC Management Zone are included in the MZP as Attachments B-1.3, C-1.3, and D-1.3. EAP implementation activities involving use of water will be coordinated with these agencies, which can also assist with dissemination of information within their jurisdictions.
Representative Organizations	Trade organizations may represent various facilities that are dischargers within the proposed KWC Management Zone. Key participants to date have been the California League of Food Producers, Central Valley Dairy Representative Monitoring Program (CVDRMP), Dairy Cares, Irrigated Lands Coalitions, Western United Dairymen and local Farm Bureaus. These non-dischargers can assist EAP implementation through dissemination of information through their members (which may be dischargers) and community outreach activities.

¹⁴ Some incorporated communities may be participating in the EAP as permitted dischargers subject to the requirements of the Nitrate Control Program.

¹⁵ Shopping centers includes public access areas such as: strip malls, grocery stores, gas stations, etc.

4. CURRENT NITRATE TREATMENT AND CONTROL EFFORTS OR MANAGEMENT PRACTICES

The Nitrate Control Program requires the FMZP to identify and summarize current nitrate treatment and control efforts or management practices being implemented by permitted dischargers participating in a Management Zone. Nitrate control practices for each General Order describe the minimum or baseline nitrate management requirements applicable to all permittees covered by their respective General Order. The requirements of each of these General Orders are applicable to permittees in the proposed P2 Management Zone areas. Dischargers permitted under individual WDRs typically have site-specific requirements for the management of nitrate or nitrogen-related constituents. The following subsections summarize existing nitrate treatment and control efforts or management practices being implemented by: (a) permittees under the ILRP and CAFO permit programs; and (b) Management Zone participants with an individual WDR.

4.1. Irrigated Lands Regulatory Program

General Order R5-2013-0120-09 establishes the current treatment and control requirements applicable to members of each Coalition, within each proposed P2 groundwater subbasin area. The ILRP groundwater nitrate management program, includes elements that address the evaluation of current nitrate contamination, monitoring of groundwater quality, development and evaluation of management practices to reduce the leaching of nitrate to groundwater, metrics of grower performance that reflect their potential leaching of nitrate to groundwater, and performance goals and measures used to evaluate grower progress in reducing leaching. The subsections below summarize the key reporting and monitoring elements associated with the protection of groundwater.

4.1.1. Groundwater Quality Assessment Report

The Groundwater Quality Assessment Report (GAR) designates high/low vulnerability areas within the Coalition regions where high vulnerability areas are land where groundwater contamination currently occurs or may occur due to conditions that may make pollution more likely (e.g., sandy soils, shallow groundwater). The GAR, is submitted within one year of the receipt of the Notice of Applicability from the Central Valley Water Board Executive Officer, and every 5 years thereafter. Ten agricultural coalitions (including coalitions that cover the KWC Management Zone area) formed the Central Valley Groundwater Monitoring Collaborative (CVGMC) and have combined efforts to produce a comprehensive Five-Year Assessment Report in 2021, which is currently being updated for 2026. The assessment reports must address the following objectives:

- Assess all available, applicable, and relevant data and information to determine the high and low vulnerability areas where discharges from irrigated lands may result in groundwater quality degradation;
- Establish priorities for implementation of monitoring and associated studies within high vulnerability areas;
- Provide a basis for establishing workplans to assess groundwater quality trends;
- Provide a basis for establishing workplans and priorities to evaluate the effectiveness of agricultural management practices and to protect groundwater quality; and

- Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.

4.1.2. Management Practices Evaluation Program (MPEP)

To meet the requirements of this Program, the Coalition must address the following six objectives:

- Determine the crop-specific coefficients for conversion of a measured crop yield to nitrogen removed.
- Determine acceptable ranges for the multi-year nitrogen applied/nitrogen removed ratios (A/R Ratio) by crop.
- Identify whether existing site-specific and/or commodity-specific management practices are protective of groundwater quality.
- Determine if newly implemented management practices are improving or may result in improving groundwater quality.
- Develop an estimate of the effect of Member's discharges of constituents of concern on groundwater quality.
- Utilize the results of evaluated management practices to improve the practices implemented on Member farms (not specifically evaluated, but having similar site conditions).

The Coalitions are required to submit a MPEP Report¹⁶ no later than 6 years from the approval of the MPEP workplan.

4.1.3. Groundwater Protection Formula, Values, and Targets

The purpose of the Groundwater Protection Formula is to generate a Groundwater Protection Value, expressed as either a nitrogen mass loading or a concentration that estimates the amount of nitrogen potentially leaching to groundwater. The Groundwater Protection Value reflects the total nitrogen applied, total removed nitrogen, recharge conditions, and other relevant and scientifically supported variables that influence potential leaching of nitrate that could reach groundwater in a township over a given period. The purpose of the Groundwater Protection Target is to identify the amount of nitrate that growers across a township could potentially leach to groundwater and not cause or contribute to an exceedance of the nitrate water quality objective. Key points relevant to the development of the Groundwater Protection Formula, Values, and Targets include:

- All ILRP agricultural Coalitions cooperatively developed the Groundwater Protection Formula, Values, and Targets;

¹⁶ The Phase 1 Report submitted in August 2024 can be found here:
<https://agmpep.com/#:~:text=Welcome%20to%20the%20Southern%20San,includes%20seven%20irrigated%20agricultural%20water> (accessed December 2025)

- Groundwater Protection Formula is the CV-SWAT model (Central Valley Soil and Water Assessment Tool). CV-SWAT is a physically based model that estimates the amount of nitrate that leaches past the bottom of the root zone;
- The Groundwater Protection Formula was submitted to the Central Valley Water Board in July 2021 and was approved in January 2022;
- Groundwater Protection Values for most of the High Vulnerability Townships were submitted in July 2021; and
- The Groundwater Protection Targets methodology and Township Targets were submitted in July 2022.

A Township Value will be compared to its corresponding Township Target. If the Value is greater than the Target, growers in the Township will be required to reduce their leaching of nitrate to a level that results in the Township Value becoming lower than the Township Target.

4.1.4. Groundwater Quality Trend Monitoring

The Groundwater Quality Trend Monitoring Program addresses the following two objectives:

- Determine current water quality conditions of groundwater relevant to irrigated agriculture; and
- Develop long-term groundwater quality information that can be used to evaluate the regional effects (i.e., not site-specific effects) of irrigated agriculture and its practices.

The monitoring program must provide a rationale for the number and locations of wells that considers the following:

- Variety of commodities produced in the coalition region;
- Groundwater vulnerability; and
- Groundwater contributing significant recharge to urban and rural communities where groundwater is a significant source of drinking water.

Monitoring occurs on an annual basis with a more comprehensive list of analytes sampled every five years.

4.1.5. Groundwater Quality Management Plan (GQMP)

Development of a GQMP is triggered: (1) when there is a confirmed exceedance of a water quality objective or applicable water quality trigger limit in a groundwater well and irrigated agriculture may cause or contribute to the exceedance; (2) in an area determined to be high vulnerability as part of the GAR process (see Section 5.1.1); (3) the Basin Plan requires the development of a management plan for constituent(s) discharged by irrigated agriculture; or (4) the Executive Officer determines that irrigated agriculture may be causing or contributing to exceedances of water quality objectives or a trend of degradation of groundwater that may threaten applicable Basin Plan beneficial uses. The primary elements of a GQMP include:

- Investigate potential irrigated agricultural sources of waste discharge to groundwater;

- Review physical setting formation for the plan area such as the geologic factors and existing water quality data;
- Develop a strategy with schedules and milestones to implement practices to ensure discharge from irrigated lands are meeting Groundwater Receiving Limitations;
- Ensure that adequate feedback monitoring is conducted to allow for evaluation of GQMP effectiveness; and
- Facilitate efficient board review of data collected on the progress of the GQMP.

A GQMP must include a schedule and milestones for implementation of management practices. The schedule must identify the time needed to identify new management practices necessary to meet the receiving water limitations as well as a schedule for implementing the new practices.

4.1.6. Grower Reporting Elements

Implementation of the General Order includes preparation of an annual Irrigation and Nitrogen Management Plan (INMP) and INMP Summary Report (INMPSR). The INMP remains on-farm and is not submitted to the Coalition; the INMPSR is submitted annually to the Coalition. Key reported elements include:

- Identification of fields by Assessor's Parcel Number (APN);
- Crops grown and acreage;
- Irrigation method;
- Irrigation management practices;
- Nitrogen management practices;
- All sources of nitrogen, including irrigation supply water, compost, manure, cover crops, and synthetic fertilizer; and
- Yield

All members of the Coalition must complete a Farm Evaluation every five years describing management practices implemented to protect groundwater quality. Key elements of the farm evaluation include:

- Crops grown and acreage;
- Location of farm;
- Private domestic water wells associated with enrolled APNs;
- Identification of on-farm management practices;
- Identification of soil and erosion risk areas;
- Surface water discharge points from the property;
- Identification of any areas in management plans; and
- Location of all wells including abandoned wells and wellhead protection practices in place.

Members within the GQMP area must also submit a Management Practices Implementation Report (MPIR). This survey lays out new or improved management practices implemented to address particular

water quality issues identified in the area. MPIRs are distributed to Coalition members according to a schedule defined by each Coalition in the GQMP. Coalitions prioritize growers required to complete groundwater MPIRs based on statistical analyses of INMP data for high-priority crops within the Coalition Area.

4.1.7. Coalition Reporting Elements

The Coalition must report the data submitted by growers each year in the Annual Report on Management Practice Implementation and Nitrogen Application. In this report the Coalition must provide:

- Total nitrogen removed:
 - The total amount of nitrogen removed from a specific INMP field must be calculated from the yield reported for that field using a crop-specific nitrogen removed coefficient.
 - Coalitions must publish crop coefficients (nitrogen removed coefficients) for 95% of the crops in the coalition region by March 1, 2021.
 - Coalitions must publish crop coefficients (nitrogen removed coefficients) for 99% of the crops in the coalition region by March 1, 2023.
 - For the remaining 1% of crops, it is acceptable to use estimated crop coefficients from similar crops.
- An evaluation of individual field data collected from Members' INMP Summary Reports. This evaluation includes the A/R Ratio and the difference between Nitrogen Applied and Nitrogen Removed (A-R) for the following comparisons:
 - A/R Ratio for the previous crop year (A/R_{1year}) by crop type
 - A/R Ratio as a running total of the previous three crop years (A/R_{3year}) by crop type
 - A-R for the previous crop year (A-R_{1year}) by crop type
 - A-R as a running total of the previous three crop years (A-R_{3year}) by crop type
- The data submitted by growers to the Coalition are also reported at the following levels:
 - Individual field-level data (A/R Ratio and A-R) by anonymous member identification (ID) - Each member is assigned a unique identifier that remains with the member for as long as they are a member.
 - Individual field-level management practice implementation data by anonymous member ID – any available management practice data reported on either the INMP Summary Reports, Farm Evaluations, and MPIR surveys for the previous crop year.
 - Individual field-level A/R Ratio and A-R data by anonymous APN ID - Each parcel is assigned a unique identifier that remains with the parcel for as long as it is enrolled in the ILRP.
 - Township-level aggregated A-R data.

4.2. Concentrated Animal Feeding Operation General Orders

All permittees regulated under the following General Orders implement the same nitrate management requirements in the proposed P2 groundwater subbasin areas.

4.2.1. Milk Cow Dairies

General Order R5-2013-0122 establishes the current treatment and control efforts of member dairies with respect to protecting groundwater from the impacts of nitrate. These requirements may be summarized as follows.

- Waste Management Plan (WMP) for the production area (Attachment B of the Dairy General Order) that addresses the following:
 - Sufficient storage capacity including all wastewater generated together with all precipitation on and drainage through manured areas, up to and including during a 25-year, 24-hour storm;
 - Adequate flood protection;
 - Proper design and construction of animal confinement areas, animal housing, manure and feed areas;
 - Operation and maintenance plan; and
 - No runoff of wastewater or contact rainwater.
- Nutrient Management Plan (NMP) and technical standards for nutrient management (Attachment C of the Dairy General Order) that includes the following:
 - Field-by-field nutrient (nitrogen, phosphorus, potassium and salt) budgets with application rates, timing, method of application;
 - Application-removal ratio of 1.4;
 - Specified sampling and analysis, including manure, irrigation water and harvested plant tissue; and
 - Wellhead protection, including setbacks and buffers.
 - Maintain minimum freeboard of two feet in aboveground lagoons and one foot in belowground lagoons.
- Construction standards for new and reconstructed lagoons as follows:
 - Tier 1: A lagoon designed to consist of a double liner constructed with 60- mil high density polyethylene or material of equivalent durability with a leachate collection and removal system (constructed in accordance with Section 20340 of title 27) between the two liners will be considered to be consistent with Resolution 68-16. Review for lagoons designed to this standard will be conducted in less than 30 days of receipt of a complete design plan package submitted to the Board.
 - Tier 2: A lagoon designed in accordance with California Natural Resource Conservation Service (NRCS) Conservation Practice Standard 313 (as described in the Information

Sheet) or equivalent and which the Discharger must demonstrate through submittal of technical reports that the alternative design is protective of groundwater quality.

- Tier 1 and Tier 2: Required design report, construction quality assurance plan, operation and maintenance plan, post construction report
- Tier 2, only: Required technical report and groundwater model that demonstrates the proposed lagoon is in compliance with applicable groundwater limitations, including calculations that demonstrate the amount and quality of seepage from the proposed lagoon and its effect on groundwater quality, and include proposed groundwater monitoring to evaluate the impact of lagoon seepage on groundwater quality.
- All dirt or unpaved corrals to be graded for positive drainage
- Several provisions applicable to the production area for the purpose of minimizing infiltration, ensuring the containment of water that has come into contact with waste, and separation of wastewater from clean rainfall runoff, where necessary.

Recommendations for additional solutions and upgrades to protect groundwater quality were included in the permit's required Summary Representative Monitoring Report (submitted April 2019). These recommendations include:

- Annual determination of a manure nitrogen export target and comparison against actual manure exports with the objective to increase manure-N exports over time.
- Installation of liquid manure flow meters on all dairies.
- Improved sampling protocols for solid manure nitrogen content and nitrogen harvest removal.
- Nitrogen use efficiency education coupled with feedback to dairy farmers regarding their performance (e.g., nitrogen use efficiency and whole-farm nitrogen balance) compared to the industry.

The State Water Board staff recently completed its review of General Order R5-2013-0122 and are recommending that this General Order should be remanded to the Central Valley Water Board for reconsideration and revision, as directed by the findings from staff's review (State Water Board, 2024). The State Water Board staff draft findings are currently undergoing public review and may be revised before being considered for adoption by the State Water Board at a future hearing. The outcome of this process is expected to be a revised General Order for milk cow dairies participating in the proposed Management Zone. Any such revisions to General Order R5-2013-0122 will be considered during the development of future Management Zone deliverables.

4.2.2. Confined Bovine Feeding Operations

Bovine General Order R5-2017-058 (as amended) establishes the current treatment and control efforts for Full Coverage Operations as follows:

- WMP for the production area (Attachment B of the Bovine General Order). Requirements are the same as in the Dairy General Order.

- NMP and technical standards for nutrient management (Attachment C of the Bovine General Order). Requirements are the same as in the Dairy General Order with the exception that the nitrogen application-removal ratio is a goal to be striven for using best efforts.
- Maintain a minimum freeboard of two feet in aboveground lagoons and one foot in belowground lagoons.
- Construction standards for new and reconstructed lagoons. Requirements are the same as in the Dairy General Order
- All dirt or unpaved corrals to be graded to promote drainage.
- Several provisions applicable to the production area for the purpose of minimizing infiltration, ensuring the containment of water that has come into contact with waste, and separation of wastewater from clean rainfall runoff, where necessary.
- Operation and Maintenance Plan (Items F and H of the WMP).

Bovine General Order R5-2017-058 establishes the reduced treatment and control efforts for Limited Time Operations (i.e., facilities housing animals for fewer than 24 days per calendar month) and Limited Population Operations (housing between 6 and 99 animal units¹⁷), because these operations are deemed to pose a low threat to water quality.¹⁸

4.2.3. Poultry Farms

All poultry growing operations housing more than 2,000 pounds (lbs.) of bird weight at any given time are required to be enrolled in the Central Valley Water Board Order R5-2016-0087-01 (Poultry General Order). The Poultry General Order regulates how poultry operations can manage waste generated by poultry facilities. Small backyard operations and facilities that operate for less than twelve weeks during a twelve-month period or for no more than three consecutive weeks per event do not need to enroll.

The Poultry General Order categorizes operations into two tiers of coverage based on their threat to water quality. Facilities that primarily conduct their operations indoors, do not generate process wastewater and do not store uncovered manure outdoors are considered Low Threat Operations. Pasture raised poultry operations are excluded from the Poultry General Order (R5-2019-0034). The Central Valley Water Board intends to develop separate general WDRs to regulate waste discharges by pasture raised poultry operations. However, at any time, the Central Valley Water Board has the authority to issue individual WDRs for any pasture raised poultry operation that could affect the quality of the waters of the state. Facilities that generate wastewater or that have a significant amount of manure exposed to the elements are considered Full Coverage Operations and must comply with the full range of requirements in the Poultry General Order. Low threat Operations have significantly lower reporting requirements.

To qualify as a Low Threat Operation, dischargers must be able to provide documentation that they meet all of the following criteria:

¹⁷ One animal unit equals 1,000 pounds of animal weight.

¹⁸ Additional criteria are included in the definition of Limited Time Operations and Limited Population Operations.

- i. The facility exports all manure/litter, or if applied to Discharger's cropland, has coverage under the ILRP;
- ii. The only wastewater generated by the facility consists of stormwater, and any stormwater that may have contacted more than a de minimis amount of manure and may pose a threat to water quality, is retained in a pond in conformance to the requirements of Pond Specifications C.1 and C.10.b of the Poultry General Order (Stormwater ponds do not trigger the requirements to obtain coverage under this Order provided the stormwater does not come in contact or commingle with waste);
- iii. The facility houses birds inside roofed structures with features to limit the entrance of precipitation into the poultry house;
- iv. The facility either stores all waste in a roofed structure with features to limit the entrance of precipitation or, throughout the year, removes all waste within 14 days of removal from such a roofed structure. During the wet season (October through May), waste stored outside such a roofed structure must either be removed from the facility within 72 hours of being deposited outdoors or covered with a weatherproof covering, except for times when wind events remove the covering, not to exceed 24 hours per event;
- v. Composting of manure, litter, or poultry carcasses is conducted under a roofed structure with features to limit the entrance of precipitation and on a concrete or an equivalent low permeability surface and free liquids are not released during the composting process;
- vi. Animals do not spend more than an aggregate of twenty percent of the time outdoors per year (i.e., the time-weighted average number of animals outdoors per day divided by the total number of animals at the facility must be equal to or less than 0.20 over the course of a year; any outdoor animal access areas have runoff controls in place); any outdoor watering equipment must be maintained to minimize spillage or leakage; and any outdoor feeding area must be maintained to regularly remove spilled or wet feed. Maintenance schedules must be designed to minimize impacts of water leakage or spilled feed on water quality.

Facilities are deemed to be Full Coverage Operations if the Operation has one or more of the following characteristics:

- Applies wastewater to cropland or applies manure/litter to cropland that does not have coverage under the ILRP;
- Has a wastewater pond that does not meet the requirements of Pond Specification C.10.b of the Poultry General Order;
- Has outdoor manure storage that does not meet the criteria in Finding 4.a.iv of the Poultry General Order (see above - item iv. for Low Threat Operations);
- Wastewater generated by the facility includes waste streams other than stormwater that has contacted manure; or
- Conducts an on-site composting operation that does not meet the requirements of Section 4.a.v of the Poultry General Order (see above – item v. for Low Threat Operations); if the facility meets all other criteria to qualify as a Low Threat Operation except Section 4.a.v of the Poultry General Order, then it only needs to implement the Full Coverage Operations requirements that relate to composting.

The Poultry General Order contains detailed general specifications as well as specifications applicable to the following: Ponds (where applicable), Production Areas, Land Applications and Composting. These specifications are stringently designed to meet Best Practical Treatment or Control to greatly limit the potential for groundwater pollution from poultry facilities and include groundwater monitoring, nutrient management plans, and stringent pond lining requirements for any existing pond found to be polluting or any new or reconstructed wastewater pond.

For Low Threat Operations, the Poultry General Order requires that a facility submit an Operation and Maintenance Plan that includes a Mortality Management Plan, Standard Operating Procedures for manure/litter storage and removal, backflow prevention maintenance and testing procedures and for poultry operations using a reverse osmosis unit on site, a description of the quantity of brine generated per specific time period, method and duration of on-site brine storage, and methods of brine disposal. For Full Coverage Operations, a WMP along with many other technical reports are required. When the Poultry General Order was adopted in 2016, it included a schedule for submittal of these various reports and certifications required to demonstrate that poultry facilities were in compliance with the General Order.

Low Threat Operations are required to submit an Annual Reports by August 1 of each year that includes the following.

- Identification of the beginning and end dates of the annual reporting period;
- Monthly maximum and monthly average number and type of animals within the boundaries of the facility during the reporting period;
- Copies of all manure tracking manifests for the reporting year;
- A description of mortality management practices; and
- Dates and results of testing, and description of any actions taken, for all mechanical backflow prevention devices.

4.3. Oil and Gas Operation General Order

General Order R5-2017-0035 (GO2) and General Order R5-2017-0036 (GO3) regulate how oil and gas production facilities may discharge produced wastewater from oil and gas extraction operations to land, including but not limited to produced wastewater disposal ponds. These Oil and Gas General Orders also allow discharge of produced wastewater to land for dust control and for construction activities and may discharge road mix within facility boundaries to enhance containment berms and roads. The primary difference between both Oil and Gas General Orders is how an oil and gas production facility would apply for general coverage under each. Both Oil and Gas General Orders provide coverage for facilities that exceed the maximum oil field discharge salinity limits for electrical conductivity, chloride, and boron as identified in *Water Quality Control plan for the Tulare Lake Basin; Second Edition, Revised January 2015* (Basin Plan), and began discharge of wastewater to pond(s) prior to November 26, 2014. The main difference between both Oil and Gas General Orders is that General Order R5-2017-0036 (GO3) also applies to oil and gas production facilities that discharge where first encountered groundwater is of poor quality or there is no first encountered groundwater and that discharge where the first encountered groundwater does not support beneficial uses as identified in the Basin Plan as Municipal and Domestic

Supply (MUN), or Agricultural Supply (AGR), or Industrial Service Supply (IND), or Industrial Process Supply (PRO).

The Oil and Gas General Orders establish the current treatment and control efforts of oil and gas production facilities with respect to protecting groundwater from the impacts of nitrate. These requirements may be summarized as follows.

- Treatment system bypass of untreated or partially treated waste is prohibited.
- Produced wastewater overflow from ponds is prohibited.
- Discharges of produced wastewater to ponds that could adversely impact any municipal or domestic supply well are prohibited.
- Collection, treatment, storage, discharge or disposal of wastes at the facility that result in the creation of a condition of pollution or nuisance is prohibited.
- All ponds shall be operated and maintained to prevent waste from concentrating to hazardous levels.
- Produced wastewater application rates for dust control or construction activities shall be applied at the minimum hydraulic loading rates necessary to perform the intended purpose and shall be consistent with an approved management plan.
- Produced wastewater application rates shall be at reasonable rates to preclude creation of a nuisance and unreasonable degradation of groundwater or surface water.
- Discharge of produced wastewater shall not cause groundwater to contain waste constituents in concentrations that exceed water quality objectives or adversely affect beneficial uses of groundwater as identified in the Basin Plan.
- Dischargers covered under General Order R5-2017-0036 (GO3) shall implement water quality management practices based on “best efforts,” as necessary to protect water quality and to maintain compliance with applicable water quality objectives.
- Provide a management plan (not applicable for facilities covered under General Order R5-2017-0036) to include:
 - Data characterizing the quality of produced wastewater that will be applied;
 - Application/use methods, application rates, and proposed frequencies of application;
 - Application areas;
 - Constituent loading rates;
 - A list of all management practices that will be implemented to ensure applied produced wastewater will remain where applied and not produce runoff; and
 - Demonstrate the discharges will be protective of water quality and will not adversely affect the beneficial uses of surface water or underlying groundwater.
- Provide a Monitoring Well Installation and Sampling Plan (MWISP) if an appropriate groundwater monitoring system is not in place. This is not applicable for facilities covered under General Order R5-2017-0036.

- Facilities covered under GO3 shall conduct a well survey to identify all water supply wells within one-mile of the ponds that receive produced wastewater and sample the identified domestic water supply wells.
- Monitoring and Reporting Program requires quarterly monitoring for nitrate in the produced wastewater discharge for both Oil and Gas General Orders and in groundwater monitoring for General Order R5-2017-0035 and in water supply wells for General Order R5-2017-0036.

4.4. Individual Permitted Dischargers

The nitrate management requirements for permittees with individual WDRs vary by permit. **Attachment B-5:** Tulare Lake area, **Attachment C-5:** Kern County (Westside South) area, and **Attachment D-5:** Kern County (Poso) area summarize the current nitrate treatment and control efforts, or management practices being implemented by each participant in their respective proposed P2 groundwater subbasin area as required by their existing individual WDR (primarily based on a review of documents available in the California Integrated Water Quality System (CIWQS) database) or as updated based on information provided by the permittee. For each discharger, summaries include a description of the facility with key processes that may affect the groundwater quality from their discharge practices. It also includes the nitrate management related requirements such as discharge prohibitions, discharge specifications, land application areas, groundwater limitation, and monitoring and reporting requirements.

5. EARLY ACTION PLAN DEVELOPMENT, UPDATE, AND IMPLEMENTATION

The Nitrate Control Program requires the establishment of EAPs for proposed Management Zones, defined as a plan that identifies community outreach activities and an implementation schedule that will ensure access to safe drinking water to those dependent on groundwater wells exceeding the nitrate drinking water standard of 10 milligrams per liter as nitrogen (mg/L-N). Per the regulations, the EAP is required to address the following requirements (Central Valley Water Board, 2020):

- i. A process to identify affected residents and the outreach utilized to ensure that impacted groundwater users are informed of and given the opportunity to participate in the development of proposed solutions;
- ii. A process for coordinating with other entities that are not permitted dischargers to address drinking water issues, which must include consideration of coordinating with impacted communities, domestic well users and their representatives, the State Water Board DDW, Local Planning Departments, Local County Health Officials, Groundwater Sustainability Agencies and others as appropriate;
- iii. Specific actions and a schedule of implementation that is as short as practicable to address the immediate drinking water needs of those initially identified within the Management Zone, or area of contribution for a Path A discharger, that are drinking groundwater that exceeds nitrate standards and that do not otherwise have interim replacement water that meets drinking water standards; and

- iv. Funding mechanism for implementing the EAP, which may include seeking funding from Management Zone participants, and/or local, state and federal funds that are available for such purposes.

The EAP identifies the Interim Replacement Water Program to be implemented in the proposed P2 groundwater subbasin areas (Tulare Lake area, Kern County (Westside South) area, and Kern County (Poso) area) to ensure access to safe drinking water for those dependent on groundwater wells exceeding the nitrate drinking water standard. The EAP developed for this FMZP applies to all the KWC proposed P2 groundwater subbasin areas; however, it may be expanded to cover residents within the non-prioritized Kern County (Kern River) subbasin area of the KWC Management Zone in the future. This would occur upon issuance of a NTC by the Central Valley Water Board to permitted dischargers within this portion of the Kern County Subbasin.

This FMZP section summarizes the key elements of the EAP developed for the KWC proposed P2 groundwater subbasin areas. Attachment F provides the complete EAP for the KWC proposed P2 groundwater subbasin areas. The Central Valley Water Board conditionally approved the EAP on February 23, 2025. For this FMZP submittal, the EAP was updated as needed to address Central Valley Water Board comments and to incorporate knowledge gained during the first full year of implementation of the EAP.

5.1. Development Approach

The EAP was developed as part of the stakeholder/community participant outreach process implemented to develop the proposed P2 groundwater subbasin areas. The following sections describe how available water quality/public water supply data and community outreach activities were coordinated to develop this EAP.

5.1.1. Identification of Public Water Supplies and Domestic Wells Potentially Exceeding Nitrate Water Quality Objective

Section 2.2.4 above along with the associated attachments for each proposed P2 groundwater subbasin area (Attachment B-2: Tulare Lake area, Attachment C-2: Kern County (Westside South) area, Attachment D-2: Kern County (Poso) area) describes the findings from the groundwater assessment that evaluated current nitrate water quality in the Upper Zone in the groundwater for each proposed P2 groundwater subbasin area. The ambient and maximum post-2010 nitrate concentrations in the Upper Zone groundwater underlying each proposed P2 groundwater subbasin areas are illustrated in map figures included in Attachment B-2: Tulare Lake area, Attachment C-2: Kern County (Westside South) area, Attachment D-2: Kern County (Poso) area.

5.1.2. Potentially Impacted Public Supply Wells

Section 2.1.1 above describes how residential water systems are classified in California. Attachments B-1.5 (Tulare Lake area), C-1.5 (Kern County (Westside South) area), and D-1.5 (Kern County (Poso) area) summarize the information known on the types of water systems present in each proposed P2 groundwater subbasin area. The EAP provides detailed information on the current known status of compliance with the nitrate drinking water standard in these systems.

By coupling the nitrate water quality findings, PWS information available from each proposed P2 groundwater subbasin area, and recent population estimates, the number of potentially impacted wells and well users were estimated for each proposed P2 groundwater subbasin area. There were no PWSs or public supply wells in the Tulare Lake area and no nitrate-impacted PWSs or public supply wells in the Kern County (Westside South) area. The Table provided in Appendix C-4 of the EAP (FMZP Attachment F) lists the PWSs in the Kern County (Poso) area and lists the compliance status and whether the system is out of compliance due to being impacted by elevated nitrate conditions. The PWSs that are out of compliance due to nitrate or due to nitrate plus another co-contaminant are summarized in Appendix B-8 and C-8 of the EAP (FMZP Attachment F) for the Kern County (Westside South) and (Poso) areas. In general, for each proposed P2 groundwater subbasin area (as of November/December 2025):

- *Tulare Lake area* - There are zero public water systems in the P2 Tulare Lake area of the KWC Management Zone.
- *Kern County (Westside South) area* - All PWSs are currently in compliance with nitrate.
- *Kern County (Poso) area* - Zero PWSs are currently out of compliance due to nitrate issues alone; five PWSs are currently out of compliance due to nitrate plus one or more additional co-contaminants. This finding translates to an estimated total population of zero people being served water from PWSs currently out of compliance due to nitrate contamination alone and 17,925 people from the PWSs currently out of compliance due to nitrate contamination plus one or more co-contaminants (in this case ranging from, 1,2,3-Trichloropropane [1,2,3-TCP], Arsenic [As], E. Coli [Coli], and Manganese [Mn]).

5.1.3. Potentially Impacted Domestic Wells

Appendices B-9 and C-9 of the EAP (FMZP Attachment F) illustrate the locations of potentially impacted domestic wells and areas of elevated nitrate (> 7.5 mg/L to 10 mg/L-N [orange areas], and > 10 mg/L-N [red areas]) for the Kern County (Westside South) and (Poso) areas. Domestic wells located within the boundaries of a PWS may or may not be used for drinking and were removed from the estimation of the number of potentially impacted domestic wells, due to the resident having access to regulated public water system drinking water. Estimates of domestic wells in each P2 area are listed below:

- There are approximately zero domestic wells located within the PWS residential service areas in the P2 Tulare Lake area.
- There are approximately 6 domestic wells within the PWS residential service areas of the Kern County (Westside South).
- There are approximately 267 domestic wells within the PWS residential service areas of the Kern County (Poso) area.

It is unknown whether any of these private domestic wells located within PWS residential service areas are still being used. The number of domestic wells outside of PWS service areas far outweighs those of unknown use status within PWS service areas. Smaller PWSs do not have a mappable service area associated with them, simply a physical address and number of connections. The domestic wells that may be located within these smaller PWS that do not have a documented service area mapped boundary readily available to the public are conservatively counted in the domestic well count in the category of domestic wells outside known PWS boundaries.

To estimate the number of domestic wells located outside PWS boundaries and potentially impacted by elevated nitrate, domestic wells were placed into six groups based on nitrate concentration levels in the Upper Zone of the groundwater:

- *Group 1* - Nitrate ≤ 2.5 mg/L-N;
- *Group 2* - Nitrate > 2.5 mg/L and ≤ 5.0 mg/L-N;
- *Group 3* - Nitrate > 5.0 mg/L and ≤ 7.5 mg/L-N;
- *Group 4* - Nitrate > 7.5 mg/L and ≤ 10 mg/L-N;
- *Group 5* - Nitrate > 10 mg/L-N; and
- *Group 6* - Unknown category because the domestic well(s) are located where insufficient nitrate data exist in the Upper Zone to perform the spatial interpolation of ambient nitrate conditions.

The total number of domestic wells located outside PWS boundaries was compared to the number of wells in each elevated nitrate category to provide an estimate of the percent of domestic wells potentially impacted by elevated nitrate in the groundwater for the Kern County (Westside South) and (Poso) areas. Tables provided in Appendices B-10 and C-10 of the EAP (FMZP Attachment F) summarize the results of this analysis.

To estimate the population potentially impacted by residents relying on domestic wells that may have elevated nitrate, 2020 census block population data were mapped (and updated based on county-based growth rate percentages from 2020-2024¹⁹ to provide a population estimate for 2025) and joined with the ambient Upper Zone nitrate concentrations occurring outside of PWS boundaries. The population was summed for census blocks outside PWS boundaries and within the Management Zone for those areas with nitrate concentrations in the Upper Zone (using the six categories of nitrate concentration described above). Tables provided in Appendices B-10 and C-10 of the EAP (FMZP Attachment F) summarize the results of this analysis.

The total estimated number of domestic wells located outside of PWS boundaries and the potential population associated with residents relying on groundwater that may have elevated nitrate concentrations are derived from two very different methodologies. Based on the estimated population in the potentially affected areas, it is likely that the estimated number of domestic wells located in those areas is underestimated based on information from the GSP efforts for the well inventory in the Kern County Subbasin. It may be possible during EAP implementation to improve the accuracy of current estimates by conducting additional parcel analysis (e.g., comparing the number of parcels inside and outside of PWS boundaries).

This analysis has some inherent uncertainty associated with domestic well locations and the ambient nitrate map. The initial assessment of nitrate conditions will be refined as additional Upper Zone

¹⁹ Population change percentages from the CA Department of Finance E-2 Report (California County Population Estimates and Components of Change) were used to estimate the population of each 2020 Census Block population using the counties' estimated growth rate percentage for each year of 2020 through 2024. The resultant 2025 population estimate is used to calculate an area-weighted population in the areas of interest.

groundwater nitrate data become available over time. Regardless of where in the Management Zone a domestic well is located, residents will have access to the domestic well testing program and emergency water replacement program as implemented through the EAP.

5.1.4. Community Outreach

KWC conducted several community outreach events for the proposed P2 Management Zone. This outreach, guided by the KWC Community Engagement Strategy (“Strategy”) (see Appendix A in the EAP), targeted potential nitrate-impacted residents to provide them with opportunities to participate in the development of this EAP. The Strategy was developed in accordance with the Guidance for Engaging Communities During Development of Early Action Plans (State Water Resources Control Board, 2020). The Strategy established the following objectives for KWC’s outreach process:

Objective 1 – Educate the public about the development and implementation of the EAP and opportunities for participation.

Objective 2 – Engage a diverse group of community members and non-dischargers representing different social, cultural, and economic elements of the population.

Objective 3 – Provide accurate, easy-to-understand, timely information on the development and implementation of short- and long-term drinking water solutions.

As the Strategy was implemented, it was adapted when needed to optimize engagement strategies. This Strategy will continue to be used during EAP implementation; it is considered a “living” document that will be updated, as needed.

KWC conducted a variety of community engagement activities to encourage active involvement of diverse social, cultural, and economic elements of the community (see Appendix E in the EAP for supporting documentation). In addition, the KWC implemented a number of other tasks to support public participation during EAP development. These are summarized as follows, but additional details are provided in the EAP:

- Establishment of a KWC website (<https://kwcmz.org/>), Facebook page (https://www.facebook.com/people/Kern-Water-Collaborative/61559784702746/?_rdr), Instagram (<https://www.instagram.com/kwc.mz/>), and YouTube (<https://www.youtube.com/@kernwatercollaborative>) to share information (e.g., meeting notices, answers to Frequently Asked Questions (FAQs) and provide an opportunity for interested parties to sign up for notification alerts so they may receive information related to Management Zone development and EAP implementation.
- The KWC website can be translated into Spanish using Google Translate. However, based on community input from residents and key community leaders/organizations, which may be language-based, KWC will evaluate the need for additional language translation of the website.
- Preparation of meeting notices (English and Spanish) for distribution. However, based on community input from residents and key community leaders/organizations, which may be language based, KWC will evaluate the need for additional language translation support.

- Outreach to interested stakeholders to assist with efforts to reach out to community residents.
- Opportunity to comment on PMZP, draft FMZP, and EAP documents.

Several non-discharger (community outreach and other stakeholder) meetings were held during EAP development. FMZP Attachment E summarizes these meetings; the presentations and other related information about these meetings are provided in Appendix E of the EAP.

5.2. Key Early Action Plan Elements

Attachment F to this FMZP is the proposed P2 Management Zone EAP. The key elements are summarized below. In the future, the EAP may be modified to address the potentially different needs of each proposed P2 groundwater subbasin area as those needs are defined.

- *Process to Identify Potentially Affected Areas* - Section 4 of the EAP describes the KWC's stepwise process to identify affected residents that may have a nitrate-impacted domestic well (> 7.5 mg/L-N) or may be connected to a PWS that is not compliant with the nitrate drinking water standard. The purpose of this effort is to develop a mailing list to facilitate the direct delivery of EAP-related information to potentially affected residents in KWC's proposed P2 Management Zone. This targeted outreach occurred in a timely manner as soon as EAP implementation began. Targeted outreach occurred at the same time KWC implemented general community outreach activities to the entire Management Zone so that all residents in KWC's proposed P2 groundwater subbasin areas were aware of the Interim Replacement Water Program.
- *Community Outreach* – Section 5 of the EAP describes the community engagement program that will continue during EAP implementation. This program was based on the existing Strategy developed to guide current outreach activities.
- *Interim Replacement Water Program* – Section 6 of the EAP describes the interim replacement water solutions that are being implemented in the proposed P2 Management Zone at no costs to residents. These solutions will be implemented until permanent, long-term solutions have been provided. The Interim Replacement Water Program began as soon as EAP implementation began and will continue until permanent solutions are in place. This program has two key components: (1) replacement water options designed to meet individual household needs including: (a) bottled water delivery; and (b) installation of a POU System in the home (where appropriate); and (2) implementation of water fill stations to meet additional community needs.

Implementation of the Interim Replacement Water Program includes a Residential Well Testing Program paid for by the KWC to verify residents requesting bottled water or POU Treatment System services in their home have nitrate-impacted drinking water, i.e., nitrate levels exceeding 10 mg/L-N. Any resident within a KWC proposed P2 groundwater subbasin area may request to have their well tested for nitrate. This well testing program is coordinated with other well testing programs in the area to the extent practical to provide opportunities for testing drinking water for other potential contaminants. In addition, where available, KWC will coordinate with other local and state agencies where opportunities arise to partner and obtain additional funding to address co-contaminants in the KWC proposed groundwater subbasin areas. While the Residential Well Testing Program supports the processing of requests to participate in the Interim Replacement Water Program, once EAP implementation began any resident

located in a KWC proposed P2 groundwater subbasin area may request to have their well tested for nitrate. The KWC is currently accepting applications for domestic well testing from residents in the non-prioritized Kern County (Kern River) portion of their Management Zone area and will implement the interim replacement water program for residents impacted by nitrate in their domestic wells.

5.3. Schedule of Implementation

KWC began implementation of the EAP on February 26, 2025. Figure 5-1 illustrates the general schedule and key milestones for EAP implementation in KWC's proposed P2 groundwater subbasin areas through 2026. The EAP contains a detailed schedule of implementation activities for each of the key components included in the general EAP implementation schedule which include the following: General and Targeted Resident Outreach, Interim Replacement Water Program, and Monitoring and Reporting. The Interim Replacement Water Program in the EAP will remain active until permanent solutions to address nitrate contamination are implemented in the KWC's proposed P2 groundwater subbasin areas.

Currently, submittal of the proposed P2 Management Zone MZIP's are expected to occur in late 2026 or early 2027. It is anticipated that the MZIP's will replace the EAP. It is assumed that the Central Valley Water Board will approve the MZIP's by the end of 2027. If the MZIP's are not approved by the end of 2027, then the EAP schedule will be updated/extended, as needed.

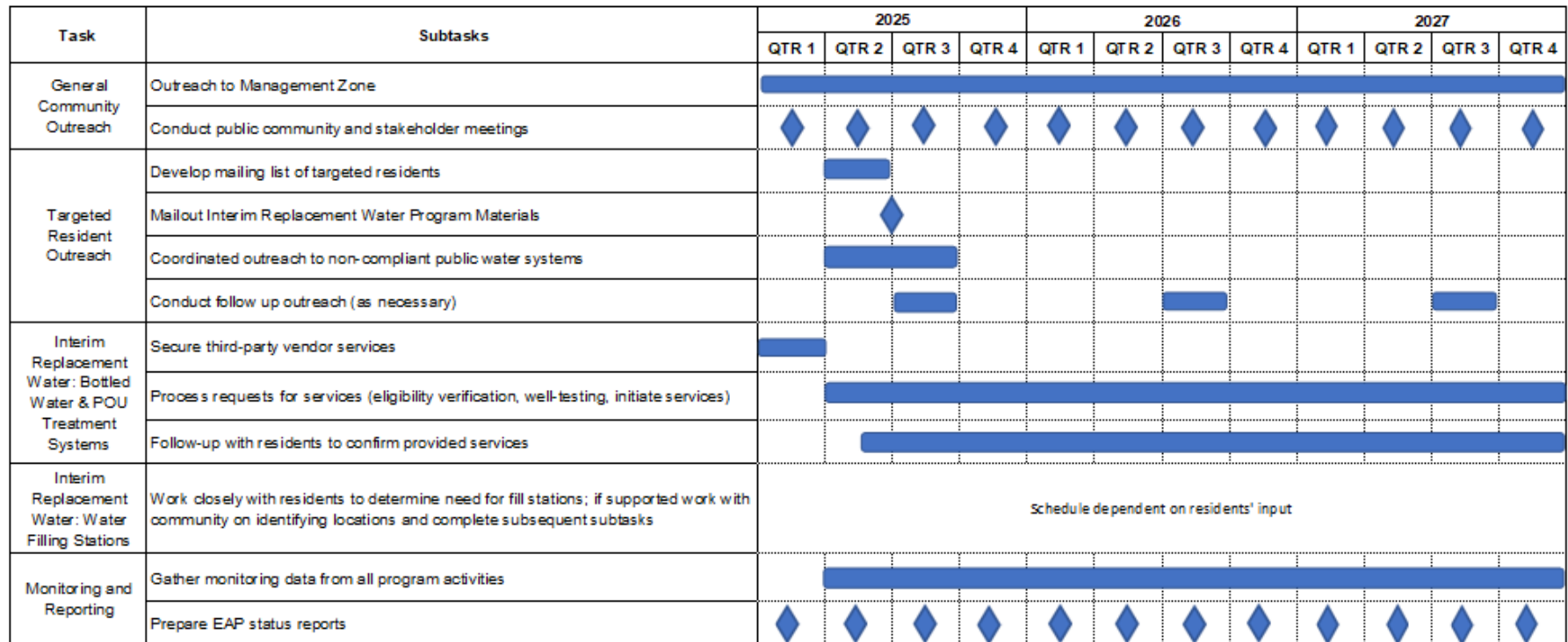


Figure 5-1. General Implementation Schedule for Proposed KWC Management Zone

5.4. Status of EAP Implementation Activities

EAP implementation activities began on February 26, 2025, following receipt of Central Valley Water Board’s Conditional Approval of the EAP by letter dated February 25, 2025. The following sections describe KWC’s EAP implementation activities since February 26, 2025 (See also Section 5.5 that presents the performance metrics being implemented by all proposed Management Zones).

5.4.1. Community Outreach Efforts

Once the Central Valley Water Board conditionally approved the KWC’s EAP, the KWC began implementing their EAP. As defined in Section 4 of the EAP, efforts were immediately underway to identify affected residents. The KWC implemented a comprehensive outreach and community engagement strategy to support the Priority 2 Management Zone efforts to communicate the availability of the Interim Replacement Water Program. Community outreach efforts combined email campaigns, media engagement, distribution of physical flyers, participation in educational gatherings and tabling at community events, to ensure that information reached diverse and historically under-represented communities across the Kern Poso and Kern Westside South Subbasins. These efforts were bilingual (English and Spanish) to be accessible and designed to expand awareness, build trust, and connect with residents.

On February 26, 2025, KWC launched email campaigns promoting the availability of the free well testing program application and the Household Qualification Survey. Since the implementation of the EAP, KWC has issued a total of 17 email campaigns, which are provided in the quarterly outreach reports in Attachment G and are summarized in Table 5-1. These emails have been a key component of KWC’s digital outreach efforts by directing residents to the well testing application, Household Qualification Survey, and increasing traffic to KWC’s website, social media platforms, and notifying residents of upcoming community events. KWC also expanded its outreach through participation in 11 hybrid educational gatherings, and tabling at 25 community events which are highlighted in Attachment G and are listed in Table 5-2. These activities included presentations at educational gatherings to inform residents of KWC’s mission, tabling at community events, and additional distribution flyer events. On November 16, 2025, KWC aired a Spanish-language public service announcement through Radio Bilingüe, a Latino public radio network serving diverse communities to promote awareness of the free nitrate well testing and the Interim Water Replacement Program support available. In addition, KWC was featured in local media outlets including the Kern Golden Empire Television, the Wasco Tribune, the Shafter Press, and Kern Sol News. Details of the community outreach KWC conducted are also available at their website (<https://kwcmz.org/community-outreach/>).

Table 5-1. EAP Implementation Email Campaigns		
Email Campaign	Purpose	Metrics
Feb 26, 2025 English and Spanish Email Campaign	Promote the well test application and the Household Qualification Survey	English Email: 139 Recipients, 98% open rate Spanish Email: 139 Recipients, 99% open rate

Table 5-1. EAP Implementation Email Campaigns		
Email Campaign	Purpose	Metrics
April 9, 2025 English/Spanish Email Campaign	Promote the well test application and the Household Qualification Survey	English/Spanish Email: 367 Recipients, 24% open rate
April 16, 2025 English/Spanish Email Campaign	KWC postcard and well testing flyer	English/Spanish Email: 383 Recipients, 30% open rate
April 19, 2025 English/Spanish Email Campaign	Resending the April 9 email campaign to increase engagement	English/Spanish Email: 367 Recipients, 40% open rate
April 20, 2025 English/Spanish Email Campaign	Resending the April 16 email campaign to increase engagement	English/Spanish Email: 383 Recipients, 54% open rate
April 28 2025 English/Spanish Email Campaign	Promote the well testing application	English/Spanish Email: 400 Recipients, 27% open rate
May 8, 2025 Newsletter	Spring 2025 outreach newsletter	English/Spanish Email: 397 Recipients, 33% open rate
May 10, 2025 Newsletter	Resending the May 8 newsletter campaign to increase engagement	English/Spanish Email: 397 Recipients, 33% open rate
May 20, 2025 English/Spanish Email Campaign	Promote upcoming community events	English/Spanish Email: 386 Recipients, 35% open rate
May 21, 2025 English/Spanish Email Campaign	Resending the May 20 email campaign to increase engagement	English/Spanish Email: 386 Recipients, 74% open rate
July 2, 2025 English/Spanish Email Campaign	Promote upcoming Buttonwillow community events	English/Spanish Email: 427 Recipients, 31% open rate
Aug 7, 2025 English/Spanish Email Campaign	KWC initiatives and updates	English/Spanish Email: 830 Recipients, 22% open rate
Aug 26, 2025 English/Spanish Email Campaign	Resending the Aug 7 email campaign to increase engagement	English/Spanish Email: 830 Recipients, 46% open rate
Oct, 2025 English/Spanish Email Campaign	Promoting participation in October outreach events	English/Spanish Email: 1,292, 25% open rate
Oct 22, 2025 English/Spanish Email Campaign	Promoting flyer material and Household Qualification Survey	English/Spanish Email: 1,274, 16% open rate
Oct 24, 2025 English/Spanish Email Campaign	Resending the Oct 22 email campaign to increase engagement	English/Spanish Email: 1,274, 17% open rate
Nov 20, 2025 English/Spanish Email Campaign	Promoting fall outreach achievements, flyer material, and Household Qualification Survey	English/Spanish Email: 1,265, 15% open rate

Table 5-2. Community Events and Educational Gatherings	
Community Events	
Buttonwillow Library Storytelling Event (Jan 23)	Delano Backpack Giveaway (July 27)
KWC Flyer Distribution Event (Feb 6)	KWC Flyer Distribution Event (Aug 2)
Wasco Resource Fair (Feb 18)	Shafter Community Market Event (Sept 5)
Lost Hills Color Run (Mar 1)	Wasco Rose Festival (Sept 6)
Wasco Resource Fair (Mar 15)	KWC Flyer Distribution Event (Q4)

NKSTHD Community Health Fair (Apr 26)	JG Boswell's Annual Health Fair (Oct)
Shafter Family Resource Fair (May 16)	Shafter's First Friday and Market (Nov 7, 2025)
Elk Hills Spring Festival (May 22)	North Kern Community School Community Event (Q4)
Lost Hills Lavender Festival (June 7)	Kiwanis International of Delano Community Event (Q4)
McFarland Library Petting Zoo Event (June 17)	Coats and Cuts 2025 Event (Q4)
Buttonwillow Firework Show (July 3)	Westside Family Fellowship Food Drive (Q4)
Buttonwillow Library Event (July 5)	Buttonwillow's Recreation and Parks District Community Event (Dec)
McFarland Library Magician Event (July 24)	
Educational Gatherings	
Delano Collaborative Meeting (April 1)	Buttonwillow Collaborative Meeting (Sept 22)
Wasco Collaborative Meeting (April 23)	Delano Alliance Meeting (Aug 5)
Lost Hills Collaborative Meeting (May 8)	McFarland Collaborative Meeting (Aug 12)
Lost Hills Community Advisory Board (May 13)	Delano Community Alliance Meeting (Q4)
Shafter Collaborative Meeting (May 21)	Wasco Community Meeting (Q4)
Lost Hills Community Advisory Board (June 10)	

5.4.2. Interim Water Replacement Program

As of February 26, 2025, KWC has been actively engaging community outreach as mentioned in Section 5.4.1. Through their efforts many residents have contacted the KWC for further information regarding the Nitrate Control Program and applied to the Residential Well Testing Program. Table 5-3 provides a summary of the elements of KWC's Interim Water Replacement Program as defined in Section 6 of the EAP. Water fill stations have not been implemented in these Management Zone areas because the KWC has been able to fulfill water replacement needs to date by working directly with local residents. Fill stations will remain an option and will be considered further during MZIP development based on community input demonstrating a need to install this replacement water alternative.

Table 5-3. Interim Water Replacement Program Summary as of December 2025	
Program Metrics	Quantity
Total Applications	152
Qualified/Incomplete	45 (29.6%)
Not Eligible	100 (65.8%)
Well Test indicates Nitrate Level <7.5 mg/L as N	3
Well Test indicates Nitrate Level 7.5 - 10 mg/L as N	1
Well Test indicates Nitrate Level >10 mg/L as N	3

Households Receiving Bottled Water	13
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5.5. EAP Implementation Metrics

At the request of the Central Valley Water Board’s Executive Officer and in coordination with Priority 1 Management Zone entities, the following metrics were used to track progress in the implementation of the Priority 1 EAPs:

- Location, forum type and general attendance figures for all outreach efforts;
- Number of residences tested for nitrates;
- Number of residences tested for other contaminants;
- Number of households being provided bottled water; and
- Number of operable fill stations/kiosks and usage information for each.

These metrics will continue to be used for proposed Priority 2 Management Zones. The KWC along with other Management Zone entities will provide the above information monthly to the Central Valley Salinity Coalition (CVSC). The CVSC then compiles the information into a report which is submitted to the CV-SALTS Executive Committee, which includes the Central Valley Water Board. The Central Valley Water Board’s Executive Officer shares this information with the Central Valley Water Board in the Executive Officer reports, which are prepared and disseminated approximately six times per year. The information is summarized into a dashboard format and is also publicly available on the CVSC’s website (<https://cvsalts.mljenv.com/>).

The Management Zones report this information in numeric and graphic formats. Reported information includes illustration of periodic reporting for the non-outreach metrics (e.g., number of residential wells tested, people being served bottled water, and kiosk usage information). In addition to providing periodic reporting of the metrics described above, the Management Zones also report summary statistics of combined outreach activities. The EAP (Attachments F) provides more details on the explanation of each EAP implementation metric reported to the CV-SALTS Executive Committee.

5.6. Management Zone Governance & Funding

The Management Zone is governed by the KWC, a non-profit public benefit corporation that filed for non-profit status on XXX. The KWC is a 501(c)(3) corporation established to organize and operate the proposed Kern Water Collaborative that will manage the proposed nitrate Management Zone encompassing the Kern County Subbasin and a small portion of the Tulare Lake subbasin.

The KWC was established for the following specific purpose: “To maintain and improve the quality of life in Kern County’s three groundwater basins/subbasins (Westside South, Poso, and Kern River), as well as within a small portion of Kings County’s Tulare Lake groundwater basin/subbasin located within the Dudley Ridge Water District boundaries and the Westside Water Quality Coalition’s boundaries. KWC accomplishes its mission by implementing programs that provide residents with access to safe drinking water and by engaging in activities aimed at investigating, protecting, and enhancing the quality of

groundwater drinking water supplies in the region.” **Attachment A** provides the By-laws of the KWC. The following sections describe elements of the governance of the Management Zone.

5.6.1. Roles and Responsibilities

The following sections summarize the key roles and responsibilities associated with the governance of the KWC.

Board of Directors (Article V)

The Board of Directors consists of eleven (11) directors. The term of office of each director is three years and until a successor has been appointed and qualified. The Board of Directors have general corporate powers to exercise and manage the corporation’s activities and affairs as described in the by-laws (see Attachment A). They also have specific powers related to proper implementation of the purposes of the corporation.

Officers (Article VI)

Elected officers of the corporation shall be a Chair, Vice Chair, Secretary, and Treasurer and must be on the Board of Directors. Offices of the Secretary and Treasurer may be combined and held by one person at the discretion of the Board. Officers are elected annually by and from among the directors. They serve one-year terms with no limit on the number of terms.

The Chair presides at meetings of the Board and exercises and performs the power and duties assigned by the Board. The Vice Chair assists the Chair of the Board and performs the duties of the Chair in the absence or incapacity of the Chair. Secretary keeps a book of minutes of all meetings, proceedings, and actions of the Board and committees of the Board and provides notice of all meetings. If the Chair/Vice Chair are absent or unable to serve, the Secretary can perform all the duties of the Chair. The Treasurer maintains adequate and correct books, accounts of the corporation’s properties and transactions, and financial statements and reports of the corporation.

Committees (Article VII)

Committees of the Board may be created by the Board of Directors by resolution. Each committee consists of two or more directors and no persons who are not directors. In addition, the Board may also establish Advisory Committees composed of any number of directors and/or other interested persons who are not directors. The role of the Advisory Committees is to provide advice and recommendations to the Board. Appointments to Advisory Committees are made by the Board or the Chair of the Board.

Management Zone Participants

Each Management Zone participant has signed an agreement with the KWC (**Attachment A-2**). Through this agreement, participants agree to comply with the Nitrate Control Program through contributing to and cooperating with KWC and other participants.

5.6.2. Funding Mechanism

Funding to implement the EAP and further develop Management Zone deliverables is currently provided by the participating dischargers based on a KWC Board-approved cost allocation. As part of its annual budgeting process, the Board will evaluate cost allocations among its participating dischargers.

5.7. Coordination with Other Programs

The following sections describe how the KWC intends to coordinate implementation of the Nitrate Control Program in the proposed Management Zone areas with other regulatory programs and dischargers.

5.7.1. SGMA and GSAs

It is anticipated that the MZ will continue to coordinate with GSAs during development of the MZIP, particularly with the development of water budget components, future SGMA water management projects and actions within the subbasins, and future land use changes.

5.7.2. Path A Facilities

The Nitrate Control Program provided recipients of the NTC in the Priority 2 areas of the KWC Management Zone the opportunity to select Path A compliance, i.e., comply with the Nitrate Control Program as an individual discharger. Within the Management Zone boundary, two permitted dischargers have submitted a Notice of Intent (NOI) to the Central Valley Water Board to comply with the Nitrate Control Program under Path A. At the time of submittal of this FMZP, the Central Valley Water Board has not approved the NOIs submitted by these dischargers. Given the uncertainty of the status of these facilities under the Nitrate Control Program, the KWC Management Zone has requested these NOI's from the Central Valley Water Board and when received, KWC will describe the coordination with each of these permitted dischargers during MZIP development.

- *Devils Den Oil Field, Fee (A & B) Lease (CVSALTS ID: 3099)* - The NOI generally limits the area of contribution to facility's footprint and downgradient of the discharge ponds, concluding that there is negligible potential for groundwater impacts. During MZIP implementation, the KWC will coordinate with the discharger to determine the exact boundary between the Kern County (Westside South) area and the discharger's area of contribution. Once the contribution boundary is established, KWC will be responsible for any tests requested outside of this boundary.
- *Jasmin Oil Field, Quinn Lease (CVSALTSID: 3093)* - The NOI generally limits the area of contribution to the vicinity of the facility and its reservoirs, concluding that there is negligible potential for groundwater impacts. During MZIP implementation, the KWC will coordinate with the discharger to determine the exact boundary between the Kern County (Poso) area and the discharger's area of contribution. Once the contribution boundary is established, KWC will be responsible for any tests requested outside of this boundary.

5.7.3. ILRP

Well testing regulatory requirements have been established for both the ILRP and permitted dischargers subject to the Nitrate Control Program. Given the overlap between these regulatory programs, the KWC Management Zone recognizes the importance of simplifying efforts by residents with the Management Zone to have their drinking water well tested. Accordingly, the KWC Management Zone will coordinate its Residential Well Testing Program with ILRP's Drinking Water Well Monitoring Program. If a resident

applying for a well test under the EAP well testing program is located on an enrolled parcel under the ILRP, the Management Zone will work with the resident and the associated parcel owner within the ILRP Coalition to determine if the well has already been sampled to satisfy ILRP well testing requirements. If the well has been tested and the test result indicates that nitrate exceeds the 10 mg/L-N threshold, the Management Zone will work with the resident and parcel owner to ensure the resident receives replacement water. Similarly, if the well has not been tested for nitrate, consistent with the EAP procedures, the Management Zone will work with all parties to get the well sampled and address any needs for replacement water. Regardless of the situation, the Management Zone will coordinate with all parties so that the resident can receive replacement water if warranted. Also, while the Management Zone is ready to assist residents with having their well tested, any action by the Management Zone under the NCP is not a substitute for nor does it satisfy domestic well testing requirements under the ILRP program.

5.7.4. Central Valley Dairy Representative Monitoring Program

The CVDRMP is working closely with selected dairy and confined bovine feeding operations within the Central Valley to implement a monitoring program to evaluate potential impacts of industry practices on first encountered groundwater. Domestic well testing is not part of the CVDRMP. However, the facilities permitted under the dairy/confined bovine feeding operation general orders and participants in the CVDRMP do test domestic wells and submit findings directly to the Central Valley Water Board. As a participant in the proposed Management Zones, the CVDRMP will encourage dairies and confined bovine feeding operations to share domestic well test results with the KWC to facilitate implementation of the KWC EAP in a more cost effective and efficient manner.

5.7.5. Others (as needed)

Any permittee that requests to join the KWC Management Zone after FMZP submittal, for whatever reason, must obtain approval from the KWC Staff and KWC Board chairperson. KWC staff will inform the permittee requesting Management Zone participation of the requirements to join, including for example the required level of financial support and necessary data submittals.

When a facility submits a Report of Waste Discharge (ROWD) to the Central Valley Water Board for a new or expanded discharge within the KWC Management Zone boundaries, the facility may elect to comply with the Nitrate Control Program through participation in the appropriate Management Zone. The KWC will work with the permittee and the Central Valley Water Board to support efforts by dischargers to join the Management Zone after FMZP submittal.

6. PREPARATION OF MANAGEMENT ZONE IMPLEMENTATION PLAN

The KWC Management Zone will work with the Central Valley Water Board during the review and acceptance of this FMZP. While that process is ongoing, the KWC Board will begin development of the MZIP for the Priority 2 areas within the Management Zone. The content of the MZIP will be consistent with the Nitrate Control Program regulations and outcome of ongoing discussions with Central Valley Water Board staff regarding interpretation of these regulations. The KWC Management Zone is committed

to submitting its MZIP for its Priority 2 areas to the Central Valley Water Board within six months after this FMZP is accepted by the Executive Officer, as required by the Nitrate Control Program.

7. REFERENCES

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ATTACHMENT A KERN WATER COLLABORATIVE GOVERNANCE

ATTACHMENT A-1: GOVERNANCE AND KWC BY-LAWS

BYLAWS
OF
KERN WATER COLLABORATIVE
(a nonprofit public benefit corporation)

ARTICLE I.

NAME

Section 1. Name. The name of this corporation is KERN WATER COLLABORATIVE (hereafter “KWC” or “corporation”).

ARTICLE II.

LOCATION OF PRINCIPAL OFFICE

Section 1. Principal Office. The principal office for the transaction of the activities and affairs of the corporation shall be located in California. The Board of Directors ("Board") may change the principal office from one location to another so long as the principal office remains in California.

ARTICLE III.

PURPOSES AND LIMITATIONS

Section 1. General Purposes. This corporation is a California Nonprofit Public Benefit Corporation and is not organized for the private gain of any person. It is organized under the Nonprofit Public Benefit Corporation Law for charitable purposes.

Section 2. Specific Purposes. Within the context of the general purposes stated above, the specific purpose of this corporation is to maintain and improve the quality of life in Kern County and the Dudley Ridge Water District Boundary within Kings County by implementing programs that will help provide access to safe drinking water for residents, and by engaging in activities with the goal of investigating, protecting or enhancing the quality of groundwater drinking water supplies for residents in the region.

Section 3. Limitations. No substantial part of the activities of this corporation shall consist of carrying on propaganda, or otherwise attempting to influence legislation, and the corporation shall not participate or intervene in any political campaign (including the publishing or distribution of statements) on behalf of any candidate for public office.

The property of this corporation is irrevocably dedicated to charitable purposes and no part of the net income or assets of this corporation shall ever inure to the benefit of any director or officer, or to the benefit of any private person.

ARTICLE IV.

MEMBERS

Section 1. Members. This corporation has no members. To the extent any donor, contributor, or other person is referred to as a “member” in any corporate materials, it shall be understood that such donor, contributor, or person is not a statutory member as contemplated by the California Nonprofit Public Benefit law, and has no voting or other rights in the corporation.

ARTICLE V.

BOARD OF DIRECTORS

Section 1. Powers.

(a) General Corporate Powers. Subject to the provisions and limitations of the California Nonprofit Public Benefit Corporation Law and any other applicable laws, the corporation's activities and affairs shall be managed, and all corporate powers shall be exercised, by or under the direction of the Board.

(b) Specific Powers. Without prejudice to the general powers set forth in subsection (a) above, but subject to the same limitations, the Board may do the following:

(1) Policies. Adopt policies, rules and procedures for the management and operation of the corporation.

(2) Administration. Retain an employee, or a management firm, or contract with another entity, to administer the day-to-day activities of the corporation. An individual paid to manage the day-to-day activities of the corporation shall be known as the Executive Director and may not also be a director on the Board. The Board may also employ, retain, or authorize the employment of such other employees, independent contractors, agents, accountants, and legal counsel as it from time to time deems necessary or advisable in the interest of the corporation, prescribe their duties and fix their compensation.

(3) Bonds. May require officers, agents, and employees charged by the corporation with responsibility for the custody of any of its funds or negotiable instruments to give adequate bond.

(4) Borrowing money. Borrow money and incur indebtedness on behalf of the corporation and cause to be executed and delivered for the corporation's purposes, in the corporate name, promissory notes, bonds, debentures, deeds of trust, mortgages, pledges, liens, and other evidences of debt and securities.

(5) Gifts. Receive and accept gifts, devises, bequests, donations, annuities and other securities, and endorsements of real and personal property, and use, hold and enjoy the same, both as to principal and income, to invest and re-invest the same or any part thereof for the furtherance of any objects,

interests or purposes of this corporation, and to act as trustee under any trust incidental to the receipt of gifts or other purposes of this corporation.

(6) Contributions. Make such contributions as the Board determines are necessary and advisable in furtherance of the interests and purposes of this corporation.

(7) Fiscal Year. Establish and change the fiscal year of the corporation.

(8) Contracts. Enter into contracts and agreements with individuals and with public and private entities for the advancement of the purposes for which the corporation is organized.

(9) Property. Acquire, construct, possess and sell real, personal, and intellectual property.

(10) Bank Accounts and Special Funds. Establish one or more bank accounts and/or special funds in order to accomplish and further the purposes of the corporation.

(11) Committees. Appoint committees as provided in these bylaws.

(12) Start-up costs. Authorize the re-payment of the start-up costs for this organization (including but not limited to any attorneys' and accountants' fees and costs, and filing fees for incorporation and for obtaining federal and state tax exempt status for the corporation) to the individuals and/or organizations that provided such funds.

(13) Other. Do and perform all acts and exercise all powers incidental to, or in connection with, or deemed reasonably necessary for the proper implementation of the purposes of the corporation.

Section 2. Number and Qualification/Limitations.

(a) Number. The Board shall consist of eleven (11) directors as follows:

- Three (3) directors appointed by the Kern River Watershed Coalition Authority (KRWCA)
- One (1) director appointed by the Buena Vista Coalition
- One (1) director appointed by the Cawelo Water District Coalition
- One (1) director appointed by the Westside Water Quality Coalition
- One (1) director appointed by the Valley Water Management Company
- One (1) director appointed by the Western States Petroleum Association (WSPA)
- One (1) director appointed by the Central Valley Dairy Representative Monitoring Program (CVDRMP)
- Two (2) directors appointed by the Board, one from each of the following groups: Publicly Owned Treatment Works (POTW) and Food Processors

(b) Qualifications. All directors must be individuals who are dedicated to the purposes of this corporation as set forth above. California law prohibits non-voting directors and alternates/proxies for directors. No employee or contractor of KWC may be a director on the Board at the same time.

Section 3. Appointments; Term of Office; Term limits. Directors shall be appointed as described in Section 2.(a) above. The term of office of each director shall be three (3) years and until a successor has been appointed and qualified. There shall be no limit on the number of terms a director may serve if he or she remains qualified and appointed to the Board. The Board may stagger the terms of the directors using any reasonable method.

Section 4. Removal of Directors. A director may be removed from the Board at any time, with or without cause, by the entity that appointed the director, or by a two-thirds (2/3) vote of all the directors on the Board at any properly called and noticed Board meeting.

Section 5. Vacancies on Board.

(a) Events Causing Vacancy. The vacancy or vacancies on the Board shall exist on the occurrence of the following:

- (1) The death or resignation of any director;
- (2) The removal of a director by the Board or by his/her appointing entity;
- (3) The declaration by resolution of the Board of a vacancy in the office of a director who has been declared of unsound mind by an order of court, convicted of a felony, or found by final order or judgment of any court to have breached a duty under Article 3 of Chapter 2 of the California Nonprofit Public Benefit Corporation Law; or
- (4) The increase of the authorized number of directors.

(b) Resignations. Except as provided below, any director may resign by giving written notice to the Chair or Secretary of the Board. The resignation shall be effective when the notice is given unless it specifies a later time for the resignation to become effective. Except on notice to the Attorney General of California, no director may resign if the corporation would be left without a duly appointed director or directors.

(c) Filling Vacancies. Vacancies on the Board may be filled by the organization originally appointing the director, or in the case of a Board-appointed director, by majority vote of the Board at any properly called and noticed meeting where a quorum is present. If the original appointing entity does not fill a vacancy within 90 days, then the Board may fill the vacancy with a qualified individual by majority vote at any properly called and noticed meeting where a quorum is present. The individual filling a vacant director position shall serve until the end of the term of the director whose vacancy he or she is filling.

(d) No Vacancy on Reduction of Number of directors. No reduction of the authorized number of directors shall have the effect of removing any director before that director's term of office expires.

Section 6. Board Meetings.

(a) Annual Meeting. The Board shall hold an annual meeting each year for purposes of organization, appointment of directors and election of officers, and transaction of other business. Notice of the annual meeting shall be given in accordance with subsection (c) below.

(b) Special Meetings. Special meetings of the Board for any purpose may be called at any time by the Chair or any two directors. Notice of any special meeting shall be given in accordance with subsection (c) below.

(c) Notice. Notice of the annual and any special meetings of the Board, specifying the time and place of the meeting, shall be given to each director at least seven (7) days before the meeting if sent by first-class mail or express mail service, or forty-eight (48) hours before the meeting if personally delivered or delivered by telephone (including a voice messaging system), or by electronic transmission by the corporation (Corporations Code Section 20).

Notice shall be deemed delivered when deposited in the U.S. mail or with an express mail service, postage prepaid, or when received if delivered personally or by telephone, or on its confirmation of delivery if by electronic transmission.

A notice, or waiver of notice, need not specify the purpose of any meeting of the board.

(d) Place of Meetings. The annual and any special meetings of the Board shall be held at any place within or outside California that has been designated by resolution of the Board or in the notice of the meeting or, if not so designated, at the principal office of the corporation.

(e) Meetings by Telephone or Video Conference or by Electronic Transmission. Directors may participate in a meeting of the Board through use of conference telephone, electronic video screen communication, or electronic transmission by and to the corporation (Corporation Code Sections 20 and 21).

Participation in a meeting through use of conference telephone or electronic video screen communication constitutes presence in person at that meeting as long as all directors participating in the meeting are able to hear one another.

Participation in a meeting through use of electronic transmission by and to the corporation, other than conference telephone and electronic video screen communication, constitutes presence in person at that meeting if both of the following apply:

(1) Each director participating in the meeting can communicate with all of the other directors concurrently.

(2) Each director is provided the means of participating in all matters before the Board, including, without limitation, the capacity to propose or interpose an objection to, a specific action to be taken by the corporation.

(f) Quorum/Act of the Board. A majority of the authorized number of directors shall constitute a quorum for the transaction of business, except to adjourn. Except as specifically provided in these bylaws or in the California Nonprofit Public Benefit Corporation

Law, every action taken or decision made by at least six (6) directors present at a duly held meeting at which a quorum is present shall be the act of the Board.

(g) Waiver of Notice. Notice of a meeting need not be given to any director who, either before or after the meeting, signs a waiver of notice, a written consent to the holding of the meeting, or an approval of the minutes of the meeting. The waiver of notice or consent need not specify the purpose of the meeting. All such waivers, consents, and approvals shall be filed with the corporate records or made a part of the minutes of the meeting. Notice of a meeting need not be given to any director who attends the meeting and does not protest, before or at the commencement of the meeting, the lack of notice to him or her.

(h) Adjournment. A majority of the directors present, whether or not a quorum is present, may adjourn any meeting to another time and place.

(i) Notice of Adjourned Meeting. Notice of the time and place of holding an adjourned meeting need not be given unless the original meeting is adjourned for more than twenty-four hours. If the original meeting is adjourned for more than twenty-four hours, notice of any adjournment to another time and place shall be given, before the time of the adjourned meeting, to the directors who were not present at the time of the adjournment.

(j) Board Action by Written Consent. Any action required or permitted to be taken by the Board may be taken without a meeting, if all members of the Board individually or collectively consent in writing to that action. The written votes shall be maintained for at least five years. An action by written consent shall have the same force and effect as a unanimous vote of the directors.

(k) Voting Power. For all purposes, the voting power of each voting director shall be one vote.

(l) Closed Sessions. Any meeting of the Board, or portion of a meeting, may be closed by the Chair so that only directors and individuals deemed necessary by the Chair are present.

(m) Attendance. Any director who misses three (3) consecutive Board meetings for any reason automatically loses his or her seat on the Board. The Board Secretary or Executive Director, if any, will immediately notify the removed director via email regarding the removal after the third missed Board meeting.

The Board may waive this provision as to a particular director by majority vote. The Board's waiver of the automatic removal provision can be based on an excuse acceptable to the Board or any other justification deemed appropriate by the Board. Any vacancy created by this provision shall be filled in accordance with Article V, Section 5(c) above.

Section 7. Compensation and Reimbursement. Directors shall not receive compensation for their services on the Board. Directors may receive such reimbursement of expenses as the Board may determine by resolution to be fair and reasonable at the time that the resolution is adopted.

Section 8. Property Rights. No director shall have any property rights in any assets of the corporation.

ARTICLE VI.

OFFICERS

Section 1. Officers of the Corporation. The elected officers of the corporation shall be a Chair, Vice-Chair, Secretary, and Treasurer. All elected officers must be directors on the Board. The offices of Secretary and Treasurer may be combined and held by one person, in the discretion of the Board. If combined, the officer shall be known as the "Secretary/Treasurer".

Section 2. Election of Officers. The elected officers of the corporation shall be elected annually by and from among the directors.

Section 3. Terms of Office; Term Limits. Elected officers shall serve at the pleasure of the Board for one-year terms. There is no limit on the number of terms an elected officer may serve if he or she is a director and continues to be elected to an officer position by the Board.

Section 4. Removal of Officers. Any officer may be removed from his/her officer position at any time, with or without cause, by a majority vote of the Board at any properly called meeting where a quorum is present.

Section 5. Resignation of Officers. An officer may resign at any time by giving written notice to the Chair or the Secretary. The resignation shall take effect as of the date the notice is received or at any later time specified in the notice and, unless otherwise specified in the notice, the resignation need not be accepted to be effective.

Section 6. Vacancies in Office. A vacancy in any office because of death, resignation, removal, disqualification, or any other cause may be filled by a majority vote of the directors present at any annual or special meeting of the Board where a quorum is present. The individual filling a vacant officer position shall serve until the end of the term of the officer whose vacancy he or she is filling.

Section 7. Responsibilities of Officers.

(a) Chair. The Chair of the Board shall preside at meetings of the Board and shall exercise and perform such other powers and duties as the Board may assign from time to time.

(b) Vice-Chair. If the Chair is absent or unable to serve, the Vice-Chair shall perform all duties of the Chair. When so acting, the Vice-Chair shall have all powers of and be subject to all restrictions on the Chair. The Vice-Chair shall have such other powers and perform such other duties as the Board or the Bylaws may prescribe.

(c) Secretary.

(i) Book of Minutes. The Secretary shall keep or cause to be kept, at the corporation's principal office or such other place as the Board may direct, a book of minutes of all meetings, proceedings, and actions of the Board, and committees of the Board. The minutes of meetings shall include the time and place that the meeting was held, whether the

meeting was annual or special, and, if special, how authorized, the notice given, and the names of those present at the Board and committee meetings. The Secretary shall keep or cause to be kept, at the principal office in California, a copy of the Articles of Incorporation and the Bylaws, as amended to date.

(ii) Notices and Other Duties. The Secretary shall give, or cause to be given, notice of all meetings of the Board and of its committees required by these Bylaws. The Secretary shall have such other powers and perform such other duties as the Board, the Chair, or the Bylaws may prescribe.

(iii) If the Chair and Vice-Chair are absent or unable to serve, the Secretary shall perform all the duties of the Chair. When so acting, the Secretary shall have all powers of and be subject to all restrictions of the Chair.

(d) Treasurer.

(i) Books of Account. The Treasurer shall keep and maintain, or cause to be kept and maintained, adequate and correct books and accounts of the corporation's properties and transactions. The Treasurer shall send or cause to be given to the directors such financial statements and reports as are required to be given by law, by these Bylaws, or by the Board. The books of account shall be open to inspection by any director at all reasonable times.

(ii) Deposit and Disbursement of Money and Valuables. The Treasurer shall deposit, or cause to be deposited, all money and other valuables in the name and to the credit of the corporation with such depositories as the Board may designate, shall disperse the corporation's funds as the Board may order, shall render to the Chair and the Board, when requested, an account of all transactions as Treasurer and of the financial condition of the corporation, and shall have such other powers and perform such other duties as the Board, the Chair, or the Bylaws may prescribe.

ARTICLE VII.

COMMITTEES

Section 1. Committees of the Board. The Board, by resolution, may create one or more committees of the Board, each consisting of two or more directors *and no persons who are not directors*, to serve at the pleasure of the Board. Appointments to committees of the Board shall be made by the Board. Any such committee, to the extent provided in the Board resolution, shall have all the authority of the Board, except that no committee, regardless of Board resolution, may:

(a) Fill vacancies on the Board or on any committee that has the authority of the Board;

(b) Provide compensation for directors for serving on the Board or on any committee;

(c) Amend or repeal Bylaws or adopt new Bylaws;

(d) Amend or repeal any resolution of the Board that by its express terms is not so amendable or repealable;

(e) Create any other committees of the Board or appoint the members of committees of the Board; or

(f) Approve any contract or transaction to which the corporation is a party and in which one or more of its directors has a material financial interest, except as special approval is provided for in Section 5233(d)(3) of the California Corporations Code.

Section 2. Executive Committee. The Executive Committee shall be a “standing committee of the board” subject to all the rules applicable to “committees of the board” described in this Article.

The Executive Committee shall consist of the elected officers - Chair, Vice-Chair, Secretary, and Treasurer. The Chair of the Board shall serve as the chair of the Executive Committee.

The Executive Committee shall have the authority specifically granted to it by motion of the Board from time to time.

Section 3. Notice Requirements for Committees of the Board. Written notice requirements for meetings of committees of the Board shall be the same as for Board meetings.

Section 4. Quorum for Committees of the Board. A majority of the voting members of any committee of the Board shall constitute a quorum, and the acts of a majority of the voting members present at a meeting at which a quorum is present shall constitute the act or recommendation of the committee.

Section 5. Advisory Committees. The Board may also establish advisory committees composed of any number of directors and/or other interested persons who are not directors. Appointments to advisory committees shall be made by the Board unless the Board delegates such authority to the Board Chair. Advisory committees shall provide advice and recommendations to the Board but shall not have the authority of the Board or any final decision making authority.

Section 6. Meetings by Telephone or Video Conference or by Electronic Transmission. Any meeting of a committee may be held by telephone or video conference or by electronic transmission in the same manner as for Board meetings.

ARTICLE VIII.

LIABILITY, INDEMNIFICATION, AND INSURANCE

Section 1. Liability. No volunteer director or officer shall be liable to third parties if the volunteer director or officer has met the requirements for good faith performance of his or her duties prescribed by the California Nonprofit Public Benefit Corporation Law and the corporation has met its duties relative to insurance required by the California Nonprofit Public Benefit Corporation Law.

Section 2. Right of Indemnity. To the fullest extent permitted by law, this corporation shall indemnify its directors, officers, employees, and other persons described in Section 5238(a) of the California Corporations Code, including persons formerly occupying any such position, against all expenses, judgments, fines, settlements and other amounts actually and reasonably incurred by them in connection with any "proceeding", as that term is used in that section, and including an action by or in the right of the corporation, by reason of the fact that the person is or was a person described in that section. "Expenses," as used in this Bylaw, shall have the same meaning as in Section 5238(a) of the California Corporations Code.

Section 3. Approval of Indemnity. On written request to the Board by any person seeking indemnification under Section 5238(b) or Section 5238(c) of the California Corporations Code, the Board shall promptly determine under Section 5238(e) of the California Corporations Code whether the applicable standard of conduct set forth in Section 5238(b) or Section 5238(c) has been met and, if so, the Board shall authorize indemnification.

Section 4. Advancement of Expenses. To the fullest extent permitted by law and except as otherwise determined by the Board in a specific instance, expenses incurred by a person seeking indemnification pursuant to these Bylaws in defending any proceeding covered by such indemnification shall be advanced by the corporation before final disposition of the proceeding, on receipt by the corporation of an undertaking by or on behalf of that person, that the advance will be repaid unless it is ultimately determined that the person is entitled to be indemnified by the corporation for those expenses.

Section 5. Insurance. The Board shall authorize the purchase and maintenance of an insurance policy or policies on behalf of its directors, officers, and employees against any liabilities, other than for violating provisions against self-dealing, incurred by the director, officer, or employee in such capacity or arising out of their status as such. Such policy shall meet the requirements set forth in Corporations Code Section 5239.

ARTICLE IX.

RECORDS AND REPORTS

Section 1. Maintenance of Corporate Records. The corporation shall keep:

- (a) Adequate corporate books and records of account;
 - (b) Written minutes of the proceeding of its Board and committees of the Board;
- and
- (c) A record of each director's name, address, telephone number, and electronic mail address, if any.

Section 2. Maintenance of Articles and Bylaws. The corporation shall keep at its principal office the original or a copy of the Articles of Incorporation and Bylaws, as amended to date.

Section 3. Inspection by Directors. Every director shall have the right to inspect the corporation's books, records, and documents to the extent allowed by the California Nonprofit Public Benefit Corporation Law.

Section 4. Annual Report. The Board shall cause an annual report to be sent to directors within 120 days after the end of the corporation's fiscal year. That report should contain the following information, in appropriate detail, for the fiscal year:

- (a) The assets and liabilities, including the trust funds, of the corporation as of the end of the fiscal year.
- (b) The principal changes in assets and liabilities, including trust funds.
- (c) The revenue or receipts of the corporation, both unrestricted and restricted to particular purposes.
- (d) The expenses or disbursements of the corporation for both general and restricted purposes.
- (e) Any information required by Section 5 of this article.

The annual report shall be accompanied by any report of independent accountants or, if there is no such report, by the certificate of an authorized officer of the corporation that such statement were prepared without audit from the corporation's books and records.

This requirement of an annual report shall not apply if the corporation receives less than \$25,000 in gross receipts during the fiscal year, provided, however, that the information specified above for inclusion in an annual report must be furnished annually to all directors who request it in writing.

Section 5. Annual Statement of Certain Transactions and Indemnifications.

If any of the following types of transactions or indemnifications occurred during the previous fiscal year, then as part of the annual report to all directors, or as a separate document if no annual report is issued, the corporation shall prepare and mail or deliver to each director a statement of any such transaction or indemnification within 120 days after the end of the corporation's fiscal year:

- (a) Any transaction:
 - (i) in which the corporation, its parent or its subsidiary was a party, and
 - (ii) in which an "interested person" had a direct or indirect material financial interest, and
 - (iii) which involved more than \$50,000, or was one of a number of transactions with the same "interested person" involving, in the aggregate, more than \$50,000.

The statement shall include a brief description of the transaction, the names of "interested persons" involved, their relationship to the corporation, the nature of their interest in the transaction and, if practicable, the amount of that interest, provided that if the transaction was with a partnership in which the "interested person" is a partner, only the interest of the partnership need be stated.

(b) Any indemnifications or advances aggregating more than \$10,000 which were paid during the fiscal year to any officer or director of the corporation.

ARTICLE X.

MISCELLANEOUS

Section 1. Fiscal Year. Unless changed by the Board, the fiscal year of the corporation begins on January 1 and ends on December 31 of each year.

Section 2. Conflicts of Interest. The Board will adopt a Conflict of Interest Policy and each Board member and committee member shall annually sign a statement that they have received, read, understood, and agreed to comply with such policy.

Section 3. Intellectual Property. All intellectual property prepared or purchased by or on behalf of the corporation, including but not limited to newsletters, educational, promotional, and training materials, contracts, trade names, logos, service marks, and donor lists and contact information, shall be the exclusive property of the corporation and Board members agree to deal with it as such. Board members agree that they will not sell, transfer, publish, modify, distribute, or use for their own purposes, the intellectual property belonging to the corporation without the prior approval of the Board memorialized in a writing signed by the Chair.

Section 4. Required Filings and Disclosures. The Board shall ensure that the required filings are made at applicable state and federal agencies, including but not necessarily limited to filings required by the Secretary of State, the Attorney General's office, the Internal Revenue Service, and the Franchise Tax Board.

KWC shall also comply with the disclosure requirements of federal and state agencies to which it is subject. Requirements which are applicable to KWC include but are not necessarily limited to making the corporation's annual tax returns (IRS Form 990) available to the public.

Section 5. Construction and Definitions. Unless the context requires otherwise, the general provisions, rules of construction, and definitions in the Nonprofit Public Benefit Corporation Law shall govern the construction of these Bylaws. Without limiting the generality of this provision, the singular includes the plural, the plural includes the singular, the masculine includes the feminine and neuter, and the term "person" includes both an individual and an entity.

ARTICLE XI.

AMENDMENTS

Section 1. Amendments. Subject to any limitations in the Nonprofit Public Benefit Corporation Law, these Bylaws may be amended, or repealed and new bylaws adopted, by a 2/3 vote of all the directors on the Board so long as a copy of the proposed amendments or new bylaws are provided to each director at least three (3) days prior to the meeting at which such amendments or new bylaws will be discussed and voted on.

ARTICLE XII.

DISSOLUTION

Section 1. Voluntary Dissolution by Vote. The corporation may be dissolved at any time by a two-thirds (2/3) vote of all the directors on the Board. If the Board votes in favor of dissolution, the directors shall promptly cease operations and proceed to wind up and dissolve the corporation.

Section 2. Remaining Assets. Upon the dissolution or winding up of the corporation, its assets remaining after payment, or provision for payment, of all debts and liabilities of this corporation shall be distributed to a nonprofit organization which is organized and operated exclusively for charitable purposes and which has established its tax exempt status under Section 501(c)(3) of the Internal Revenue Code.

CERTIFICATE OF SECRETARY

I certify that I am the duly elected and acting Secretary of the KERN WATER COLLABORATIVE, a California nonprofit public benefit corporation; that the above Bylaws, consisting of 14 typewritten pages including this page, are the Bylaws of this corporation as approved by the Board of Directors on June 3, 2022; and that they have not been amended or modified since that date.

Executed on the 2 day of September, 2022 at

Bakersfield, California.

Laura Brown
Laura Brown, Board Secretary

**ATTACHMENT A-2: MANAGEMENT ZONE AGREEMENT FOR
PERMITTEES IN THE KWC PRIORITY 2 MANAGEMENT ZONE FORM**

**KERN WATER COLLABORATIVE VOLUNTARY CONTRIBUTION AGREEMENT TO SUPPORT
EFFORTS RELATED TO WELL TESTING, REPLACEMENT WATER AND GROUNDWATER IMPROVEMENTS
IN KERN COUNTY’S WESTSIDE SOUTH, POSO AND KERN RIVER GROUNDWATER BASINS/SUBBASINS,
AND IN THE SMALL PORTION OF THE TULARE LAKE GROUNDWATER BASIN/SUBBASIN THAT IS
LOCATED WITHIN THE DUDLEY RIDGE WATER DISTRICT BOUNDARIES AND THAT ALSO EXISTS
WITHIN THE BOUNDARIES OF THE WESTSIDE WATER QUALITY COALITION**

This Voluntary Contribution Agreement (this “Agreement”) is entered into this ____ day of _____, 20____ (the “Effective Date”), by and between the KERN WATER COLLABORATIVE, a California nonprofit public benefit corporation (hereafter “KWC”) and the _____, (hereafter “Contributor”) (referred to individually as “Party” or collectively “Parties”).

BACKGROUND

1. On May 31, 2018, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) adopted amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to incorporate a Central Valley-Wide Salt and Nitrate Control Program (Basin Plan Amendments). The Basin Plan Amendments were approved by the State Water Resources Control Board (State Water Board) on October 16, 2019, and the Office of Administrative Law on January 15, 2020. Parts of the Basin Plan Amendments became effective upon Office of Administrative Law approval. Other parts became effective after receiving approval from the United States Environmental Protection Agency.
2. The Basin Plan Amendments include the Central Valley Water Board’s program to regulate nitrate discharges to groundwater (Nitrate Control Program). The Nitrate Control Program became effective on or about January 15, 2020.
3. The Nitrate Control Program applies to those that are regulated by the Central Valley Water Board for discharges or threatened discharges of nitrate to groundwater basins that are designated with the municipal and domestic supply (MUN) beneficial use. Application of the Nitrate Control Program to discharges that are subject to Central Valley Water Board authority is being implemented based on priorities set forth in the Basin Plan Amendments and as directed by the Central Valley Water Board.
4. The Nitrate Control Program, as adopted by the Central Valley Water Board, identifies the following six Priority 1 groundwater basins/subbasins, Kaweah, Turlock, Chowchilla, Tule, Modesto and, Kings; the following Priority 2 groundwater basins/subbasins, Yolo, Eastern San Joaquin, Delta-Mendota, Merced, Madera, Tulare Lake, Kern County (Westside South), and Kern County (Poso); and, designates the remaining areas as non-prioritized areas, which includes the Kern River groundwater basin/subbasin located in Kern County.¹ Compliance with the Nitrate Control Program is triggered by the issuance of a Notice to Comply from the Central Valley Water Board to permittees that discharge or threaten to discharge nitrate to groundwater. Upon receipt of the Notice to Comply, permitted dischargers need to select one of two pathways for complying with the Nitrate Control Program.
5. The Notice to Comply, as set forth in the Basin Plan Amendments, requires those that are permitted by the Central Valley Water Board to either meet the new requirements through an individual

¹ The groundwater basins/subbasins names and boundaries identified in this Agreement are from the Department of Water Resources Bulletin 118 as it existed in 2014 and as incorporated into the Basin Plan.

permitting approach (Pathway A) or voluntarily work with other permittees as a Management Zone (Pathway B).

6. Voluntary participation in a Management Zone is considered by the Central Valley Water Board to be an alternative compliance pathway to traditional permitting approaches and includes incentives that allow those voluntarily selecting Pathway B significant additional time to comply with the Nitrate Control Program.
7. Irrigated agriculture is permitted to discharge nitrate through the issuance of General Waste Discharge Requirements that apply to Members of Third-Party Groups and recognized Third Party Groups (Ag Coalitions) receive the Notice to Comply for growers that are Members of that Third Party Group. As directed in the General Waste Discharge Requirements issued by the Central Valley Water Board, Ag Coalitions select the compliance approach (i.e., pathway) for its members to comply with the Central Valley Water Board's Nitrate Control Program.
8. The Central Valley Dairy Representative Monitoring Program (CVDRMP) conducts monitoring on behalf of its dairy and bovine members and assists them with compliance with the Central Valley Water Board's Nitrate Control Program. The CVDRMP selects the compliance approach (i.e., pathway) for its Members for complying with the Central Valley Water Board's Nitrate Control Program.
9. On May 30, 2020, the Central Valley Water Board sent a Notice to Comply with the Nitrate Control Program to nitrate permitted dischargers and Ag Coalitions that have Members within the boundaries of the six identified Priority 1 basins.
10. On December 29, 2023, the Central Valley Water Board sent a Notice to Comply with the Nitrate Control Program to nitrate permitted dischargers and Ag Coalitions that have Members within the boundaries of the eight identified Priority 2 basins.
11. Permitted dischargers of nitrate need to inform the Central Valley Water Board of their decision to either elect Pathway A or Pathway B. For Members of Ag Coalitions, the Ag Coalition informs the Central Valley Water Board of its choice on behalf of its members. For Members of the CVDRMP, the CVDRMP informs the Central Valley Water Board of its Members located in relevant groundwater basins/subbasins and their selection of Pathway B by virtue of participation in the CVDRMP.
12. A Management Zone is defined to mean "[a] discrete and generally hydrologically contiguous area for which permitted discharger(s) participating in the Management Zone collectively work to meet the goals of the SNMP and for which regulatory compliance is evaluated based on the permittees collective impact, including any alternative compliance programs, on a defined portion of the aquifer. Where Management Zones cross groundwater basin or sub-basin boundaries, regulatory compliance is assessed separately for each basin or sub-basin. Management Zones must be approved by the Central Valley Water Board."
13. A Management Zone, at its discretion, may include basins and subbasins that are identified as being non-prioritized in the Water Quality Control Plan for the Tulare Lake Basin.
14. For those permitted dischargers that received the December 29, 2023, Notice to Comply and voluntarily decide to participate in a Management Zone, which includes Ag Coalition and CVDRMP representatives on behalf of their Members, a Preliminary Management Zone Proposal and Early Action Plan must be submitted to the Central Valley Water Board no later than December 28, 2024.

15. Permitted dischargers voluntarily working together as a Management Zone are responsible for developing and submitting a Final Management Zone Proposal within 180 days after Central Valley Water Board review of the preliminary proposal.
16. Six months after the Central Valley Water Board's Executive Officer accepts the Final Management Zone Proposal, the permittees, working voluntarily and collaboratively as a Management Zone, are responsible for developing and submitting a Management Zone Implementation Plan to the Central Valley Water Board.
17. Central components of the Central Valley Water Board's Pathway B alternative compliance approach include the need for permittees to be responsible for a program that tests domestic drinking water wells, provide access to safe drinking water when a drinking water well exceeds the nitrate drinking water standard of 10 mg/L and identify long-term drinking water solutions.
18. Some permitted dischargers located within the Westside South and Poso Priority 2 groundwater basins/subbasins, some permitted dischargers located within the unprioritized Kern River groundwater basin/subbasin, and permitted dischargers located in the small portion of the Tulare Lake groundwater basin/subbasin that is located within the boundaries of the Dudley Ridge Water District and that also exists within the boundaries of the Westside Water Quality Coalition, have decided to voluntarily work collaboratively as a Management Zone.
19. The Kern Water Collaborative (KWC) is a nonprofit public benefit corporation created to maintain and improve the quality of life within Kern County's three groundwater basins/subbasins (Westside South, Poso and Kern River) and within a small portion of Kings County's Tulare Lake groundwater basin/subbasin that is located within the Dudley Ridge Water District Boundaries and that also exists within the boundaries of the Westside Water Quality Coalition's boundaries (hereafter referred to as the Region) by providing groundwater testing and free drinking water for residents in the Region who are impacted by nitrate contamination. The KWC also seeks to improve the quality of life in the Region by identifying long-term drinking water needs for those in the Region that are impacted by nitrate contamination.
20. The Central Valley Water Board, at its sole discretion, may determine that permittees voluntarily contributing to KWC's efforts to improve quality of life in the Region otherwise satisfies a permittees responsibilities and obligations under Pathway B of the Nitrate Control Program.

TERMS OF VOLUNTARY CONTRIBUTION AGREEMENT

The Parties agree as follows:

1. Contributor has voluntarily determined, on its own accord, to voluntarily participate and contribute to KWC's program to improve quality of life in the Region.
2. As part of its efforts to improve quality of life in the Region, KWC agrees to make publicly available final reports and plans and data relied on for final reports and plans, except as limited by paragraph 12 of this Agreement, so that Contributor may use such information to meet its responsibilities and obligations under the Nitrate Control Program and as directed by the Central Valley Water Board.
3. Contributor understands that Contributors contributions will be used to support KWC in fulfilling its mission to maintain and improve the quality of life in the Region and to support KWC's efforts to

provide access to safe drinking water for residents, and by engaging in activities with the goal of investigating, protecting, or enhancing the quality of groundwater drinking water supplies for residents in the Region.

4. Contributor will be notified annually of its requested financial contribution to support KWC's efforts to improve quality of life in the Region.
5. The Parties agree to cooperate in seeking alternative funding sources for development and implementation of the program and the implementation thereof.
6. Contributor understands that compliance with the Nitrate Control Program is determined by the Central Valley Water Board and that the Central Valley Water Board may assess compliance separately for each groundwater basin/subbasin that is in the Region.
7. As part of its program, KWC will make available to the public, including the Central Valley Water Board, its final plans, reports and any data relied on to develop final plans and reports, except as otherwise limited by paragraph 12 of this Agreement.
8. Contributor may terminate this Agreement at any time upon giving a minimum of thirty (30) days' express written notification to the KWC. Any contributions made to KWC by a withdrawing Contributor prior to giving notice of withdrawal belongs to KWC as a nonprofit public benefit corporation and are not reimbursable by KWC to the withdrawing Contributor.
9. Contributor understands that, upon request by the Central Valley Water Board, KWC will convey to the Central Valley Water Board those contributors that support KWC's program and the identification of any former contributors that no longer support KWC's program.
10. The Parties shall indemnify, defend, and hold harmless the other Party, its officers, directors, members, managers, employees, agents, affiliates, successors, and permitted assigns (collectively, "Indemnified Party") against any and all losses, damages, liabilities, deficiencies, claims, actions, judgments, settlements, interest, awards, penalties, fines, costs, or expenses of whatever kind, including reasonable attorneys' fees, fees, and the costs of enforcing any right to indemnification under this Agreement, and the cost of pursuing any insurance providers, arising out of or resulting from any claim of a third party arising out of or occurring in connection with a Party's negligence, willful misconduct, or breach of this Agreement.
11. The Parties acknowledge that by contributing to KWC and supporting KWC's programs, the Parties make no representations or admissions whatsoever with respect to nitrate levels and possible contamination in groundwater that may exist within the Region.
12. The Parties, along with other KWC contributors, agree to work cooperatively to develop and implement KWC's mission to improve quality of life in the Region and shall not use information obtained through the development and implementation of KWC's mission to cause material harm to the other Party to this Agreement or other contributors to the KWC.
13. To the extent allowed by applicable law and State Water Board Order WQ 2018-0002, if KWC receives or obtains access to certain confidential information associated with Groundwater Protection Formula, Value and Targets and Irrigation and Nitrogen Summary Report Data from irrigated agricultural coalitions subject to Order R5-2013-0120-09, Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are Members of a Third Party Group, to assist in

development of KWC's program, KWC will take all reasonable steps to maintain confidentiality of such data and information.

14. The Agreement shall be interpreted and enforced pursuant to the laws of the State of California. It is agreed that in the event of any litigation arising hereunder, the Parties hereto shall submit to the jurisdiction of any court of competent jurisdiction within the State of California, County of Kern.
15. No waiver by any Party of any of the provisions of this Agreement shall be effective unless explicitly set forth in writing and signed by the Party so waiving. Except as otherwise set forth in this Agreement, no failure to exercise, or delay in exercising, any right, remedy, power, or privilege arising from this Agreement shall operate or be construed as a waiver thereof, nor shall any single or partial exercise of any right, remedy, power, or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, remedy, power, or privilege.
16. If any provision of the Agreement is found invalid or unenforceable, the balance of the Agreement shall remain in full force and effect.
17. The Agreement may be executed in counterparts with the same force and effect as if executed in one complete document by all Parties. The Parties agree that a photo-static or electronic copy of any signature is valid as an original copy of that signature.
18. This Agreement contains the entire agreement between the Parties with respect to the matters set forth in it. Any modifications, revisions, or changes to this Agreement must be made in writing and signed by both Parties.

IN WITNESS WHEREOF, the Parties have executed this Agreement effective on the date set forth above.

Date: _____

KERN WATER COLLABORATIVE:

By: _____

Signature of KWC Board Chair

David Halopoff

Print name of KWC Board Chair

Date: _____

By: _____

Signature of Contributor entity authorized representative

Print name of Contributor entity authorized representative

KERN WATER COLLABORATIVE PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment B-1

PREPARED FOR



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AB	Public Water Supply Well Status, Abandoned
APN	Assessor Parcel Number
AR	Public Water Supply Well Status, Active Raw
AR Difference or A-R	Difference Between Nitrogen Applied and Nitrogen Removed
AR Ratio or A/R	Ratio of Nitrogen Applied to Nitrogen Removed
AU	Public Water Supply Well Status Active Untreated
Basin Plans	Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin
BOD	Biochemical Oxygen Demand
BPA	Basin Plan Amendment
C	Public Water System Type, Community
CDP	Census Designated Place
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CETHP	California Environmental Health Tracking Program
CIWQS	California Integrated Water Quality System
Coalition	Kings River Water Quality Coalition
CVDRMP	Central Valley Dairy Representative Monitoring Program
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVHM2	Central Valley Hydrologic Model 2.0
CVSC	Central Valley Salinity Coalition
CVWB	Central Valley Water Board
CSD	Community Services District
CWD	Community Water District
CWS	Community Water System
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DS	Public Water Supply Well Status Destroyed
DUC	Disadvantaged Unincorporated Community
DWR	California Department of Water Resources
DWW	Drinking Water Watch
EC	Electrical Conductivity
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
FAQs	Frequently Asked Questions
FMZP	Final Management Zone Proposal
GAMA	Groundwater Ambient Monitoring and Assessment
GAC	Granular Activated Carbon

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Acronym	Meaning
GAR	Groundwater Quality Assessment Report
GIS	Geographic Information Systems
gpd	gallons per day
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrologic Conceptual Model
ILRP	Irrigated Lands Regulatory Program
INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status Inactive Raw
IU	Public Supply Well Status Inactive Untreated
IX	Ion Exchange
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
O&M	Operation and Maintenance
OAL	Office of Administrative Law
OWTS	Onsite Waste Treatment System
PMZP	Preliminary Management Zone Proposal
PN	Public Supply Well Status Pending
POU	Point of Use
PWS	Public Water System

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Acronym	Meaning
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children
WDR	Waste Discharge Requirements
WMP	Waste Management Plan
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

1. CHARACTERIZATION OF PROPOSED KWA MANAGEMENT ZONE: TULARE LAKE AREA

The subsections below describe the area encompassed by the proposed Tulare Lake Area of the Kern Water Collaborative (KWC) Management Zone, including general geographic and hydrologic characteristics, jurisdictions located within each planning area and key planning agencies and utilities. **Table 1-1** describes several key data sources for the Management Zone.

Table 1-1. Key Data Sources to Characterize the Proposed Kern Water Collaborative Management Zone		
Boundary Type	Source for Boundary Data	Comments
Groundwater Sustainability Agency (GSA)	DWR Map Viewer: https://sgma.water.ca.gov/webgis/index.jsp?appid=gas-master&rz=true Individual GSA links for finding “Interested Parties”: https://sgma.water.ca.gov/portal/gsa/all	GSA boundaries, and also a list of GSA “Interested Parties”
Groundwater Basin/Subbasin	DWR Bulletin 118: https://water.ca.gov/programs/groundwater-management/bulletin-118 Basin Boundary Geographic Information System (GIS) file: https://data.cnra.ca.gov/dataset/i08-b118-ca-groundwaterbasins-2016	DWR Bulletin 118 basin and subbasin boundaries
Water Districts	DWR coverage of water agencies in California: https://data.ca.gov/dataset/i03-waterdistricts	Irrigation Districts, water districts, community service areas, and community service districts
Public Water Supply Systems	California Drinking Water System Area Boundaries: https://gis.data.ca.gov/datasets/waterboards::california-drinking-water-system-area-boundaries/about	Division of Drinking Water
State Small Water Supply Systems	By request from County Environmental Health Departments (Kings and Kern Counties) By request from groundwater sustainability agencies	Boundary data is typically not available for SSWS (usually just an address)
Disadvantaged Communities (DAC)/Severely Disadvantaged Communities (SDAC)	DACs and SDACs boundaries available from DWR: https://gis.water.ca.gov/app/dacs/	Department of Water Resources (DWR)

1.1. Geography

The Tulare Lake area of the Kern Water Collaborative (KWC) Management Zone the portion of the 2003 DWR Bulletin 118 Tulare Lake Groundwater Subbasin boundary that is not covered by the Kings Water Alliance (as established in the Kings Water Alliance Preliminary Management Zone Proposal (PMZP) in March 2021 and Final Management Zone Proposal (FMZP) in August 2022). The Tulare Lake Area of the KWC Management Zone encompasses an area of approximately 32 square miles (20,669 acres).

The California Aqueduct runs along the western edge of the Tulare Lake Area of the KWC Management Zone. Interstate 5 provides the eastern boundary, and the Kern County line provides the southern boundary, creating a triangular sliver. There are no communities in this area of Kings County (**Figure 1-1**).

1.2. Jurisdictions

The triangular sliver of the Tulare Lake Area in the KWC Management Zone is within the Kings County, bounded on the west by the California Aqueduct, bounded on the east by Interstate 5, and bounded on the south by the county line between Kings County and Kern County (**Figure 1-1**).

1.3. Groundwater Sustainability Agencies

Groundwater Sustainability Agencies (GSAs), established under the Sustainable Groundwater Management Act (SGMA), are comprised of water users in the area. GSAs are required to list interested parties, including irrigation districts, public water supply systems, coalitions, etc. that are involved with the management of groundwater resources in the area. One GSA covers land in the proposed Tulare Lake Area of the KWC Management Zone: Southwest Kings GSA (**Figure 1-2**).

GSAs are required to prepare Groundwater Sustainability Plans (GSP), which include, but are not limited to a Hydrogeologic Conceptual Model (HCM), determination of groundwater conditions in the area (including water quality), and estimates of historical, current and projected water budget components including annual groundwater pumping. These and other GSP elements provide useful information with regard to the management of nitrate in groundwater. DWR, which oversees the development of GSPs for each basin or subbasin subject to SGMA, has established a web-based portal for GSA documentation.¹

The information provided in **Attachment B-1.3** provides a brief summary of the Southwest Kings GSA, including points of contact, information about who makes up the GSA, and other interested parties that have been contacted by the GSAs²

¹ GSA boundaries: <https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true>

² GSA-information including points of contact, interested parties, and member agencies are derived from reported information each GSA provided to DWR found here: <https://sgma.water.ca.gov/portal/gsa/all>

1.4. Water Management Entities

One water district lies within the proposed Tulare Lake Area of the KWC Management Zone: the Dudley Ridge Water District. This entity distributes water for irrigation, drinking, or other purposes. **Figure 1-3** illustrates the location of the water management areas within and adjacent to the proposed Management Zone.

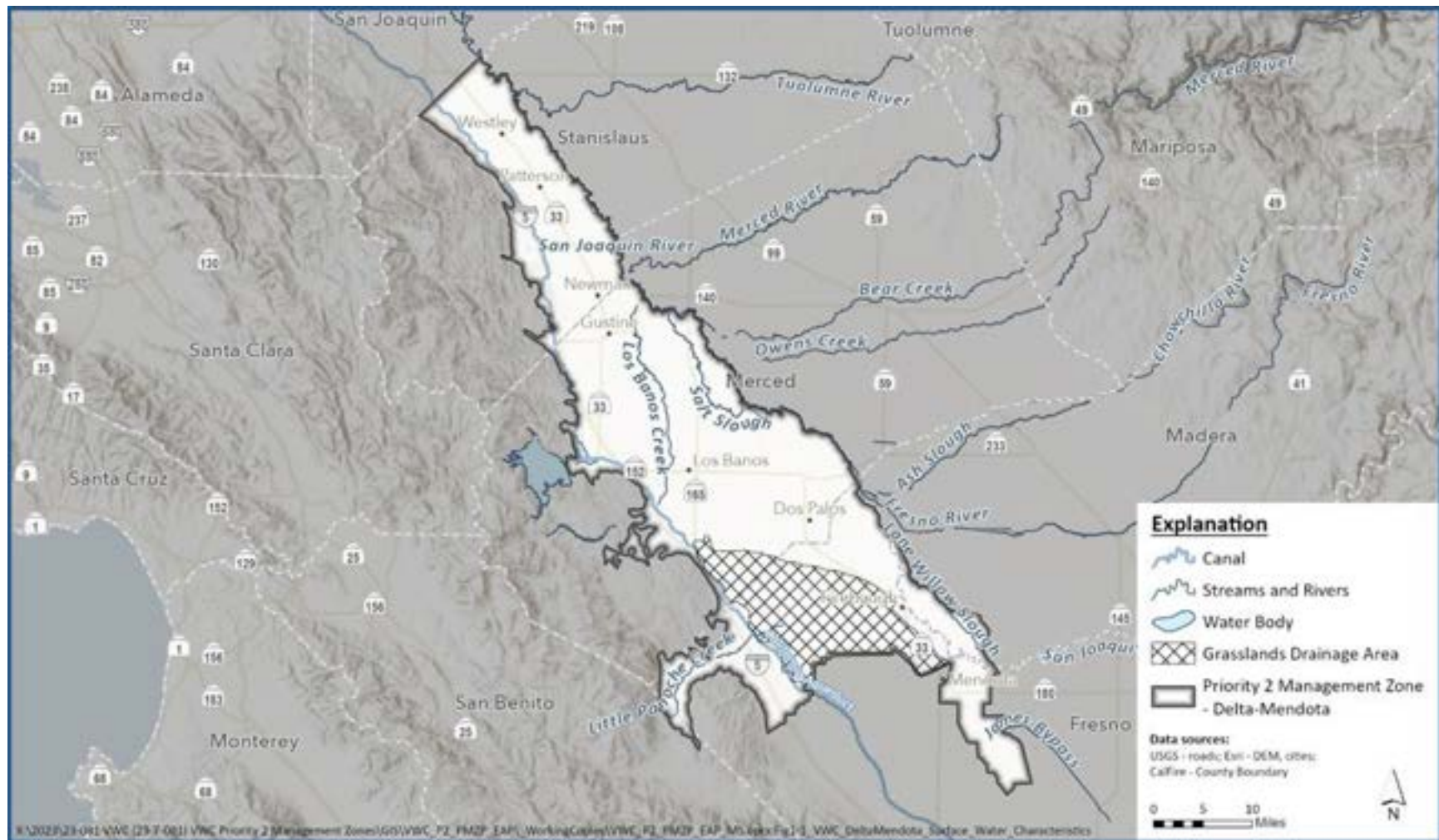


Figure 1-1. Surface Water Characteristics of the Proposed Tulare Lake Area of the KWC Management Zone

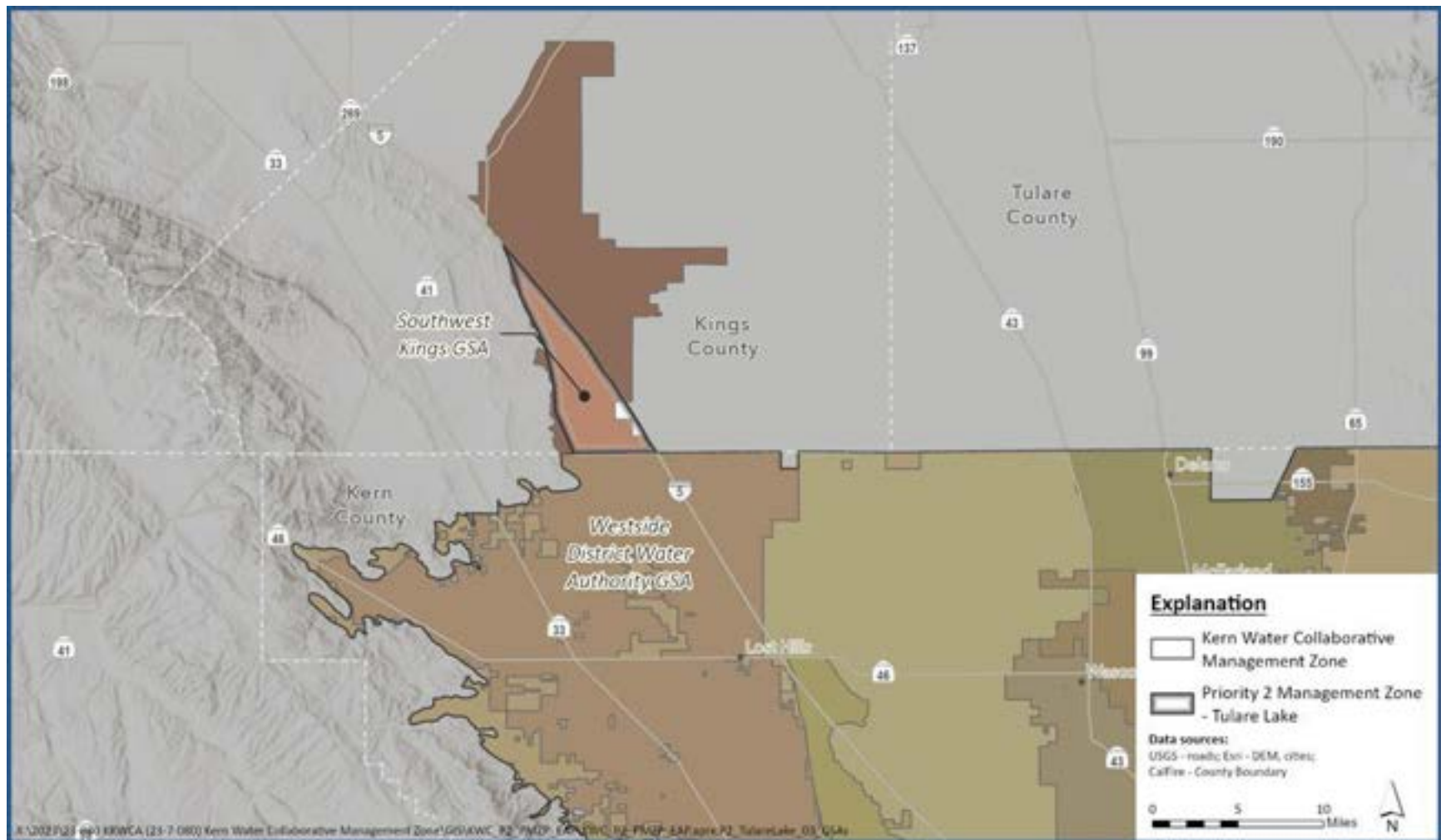


Figure 1-2. Groundwater Sustainability Agencies Established within and Adjacent to the Proposed Tulare Lake Area of the KWC Management Zone

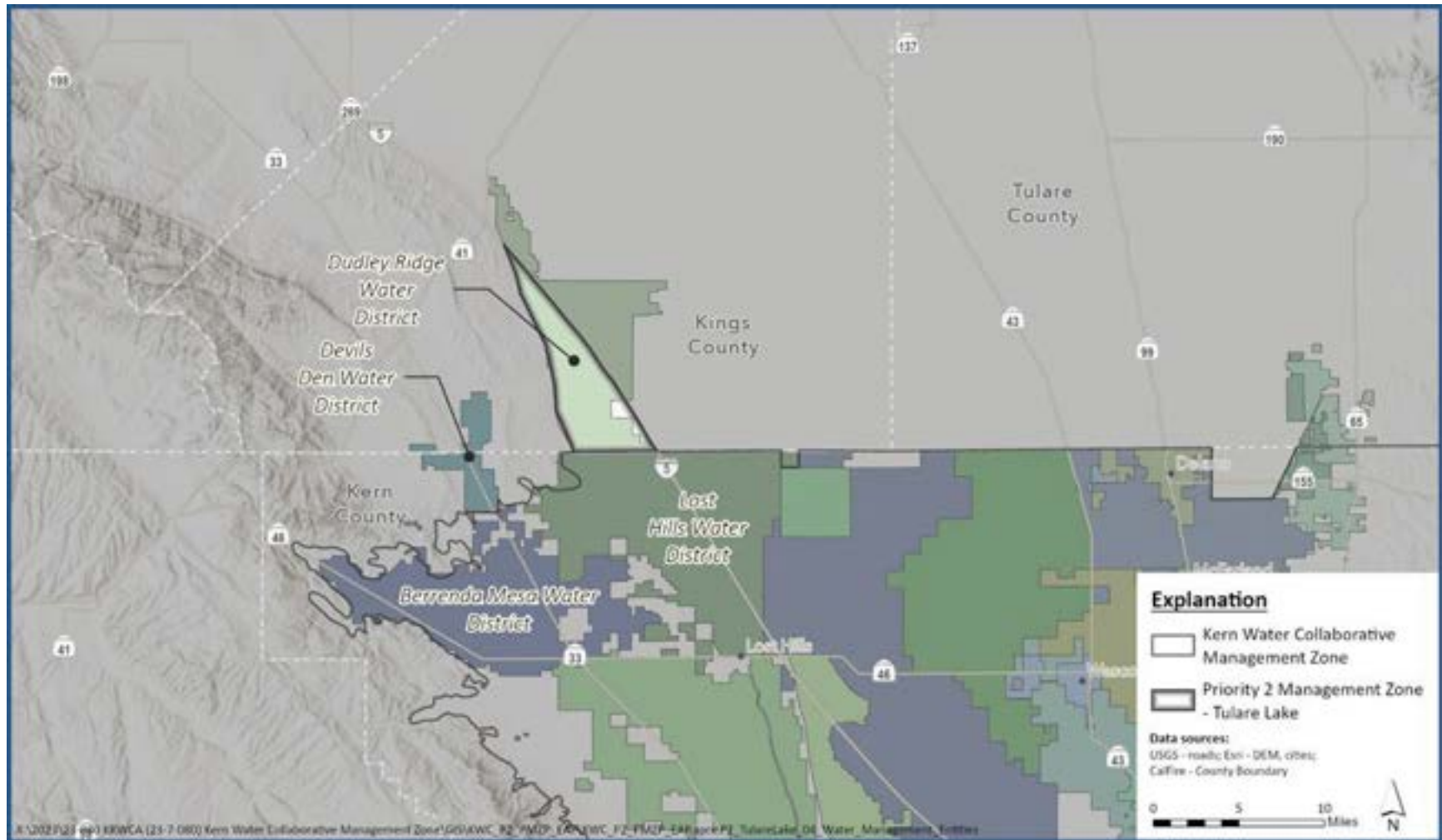


Figure 1-3. Water Management Entities Located within and Adjacent to the Proposed Tulare Lake Area of the KWC Management Zone

1.5. Drinking Water Systems

Section 2.2 in the FMZP summarizes how drinking water systems are classified. The information provided in the following section presents the Public Water Systems (PWS) within the proposed Tulare Lake Area of the KWC Management Zone.

1.5.1. Public Water Systems

No public water systems exist within the proposed Tulare Lake Area of the KWC Management Zone.

1.6. Disadvantaged Communities and Severely Disadvantaged Communities

No Disadvantaged Communities (DACs) and no Severely Disadvantaged Communities (SDACs) are found in the proposed Tulare Lake Area of the KWC Management Zone.

1.7. Land Use

Table 1-2 and **Figure 1-4** provide the land use characteristics of the proposed Tulare Lake Area of the KWC Management Zone associated with agricultural activity (based on provisional 2023 DWR land use designations). Land use is predominantly made up of Deciduous Fruits and Nuts (53%).

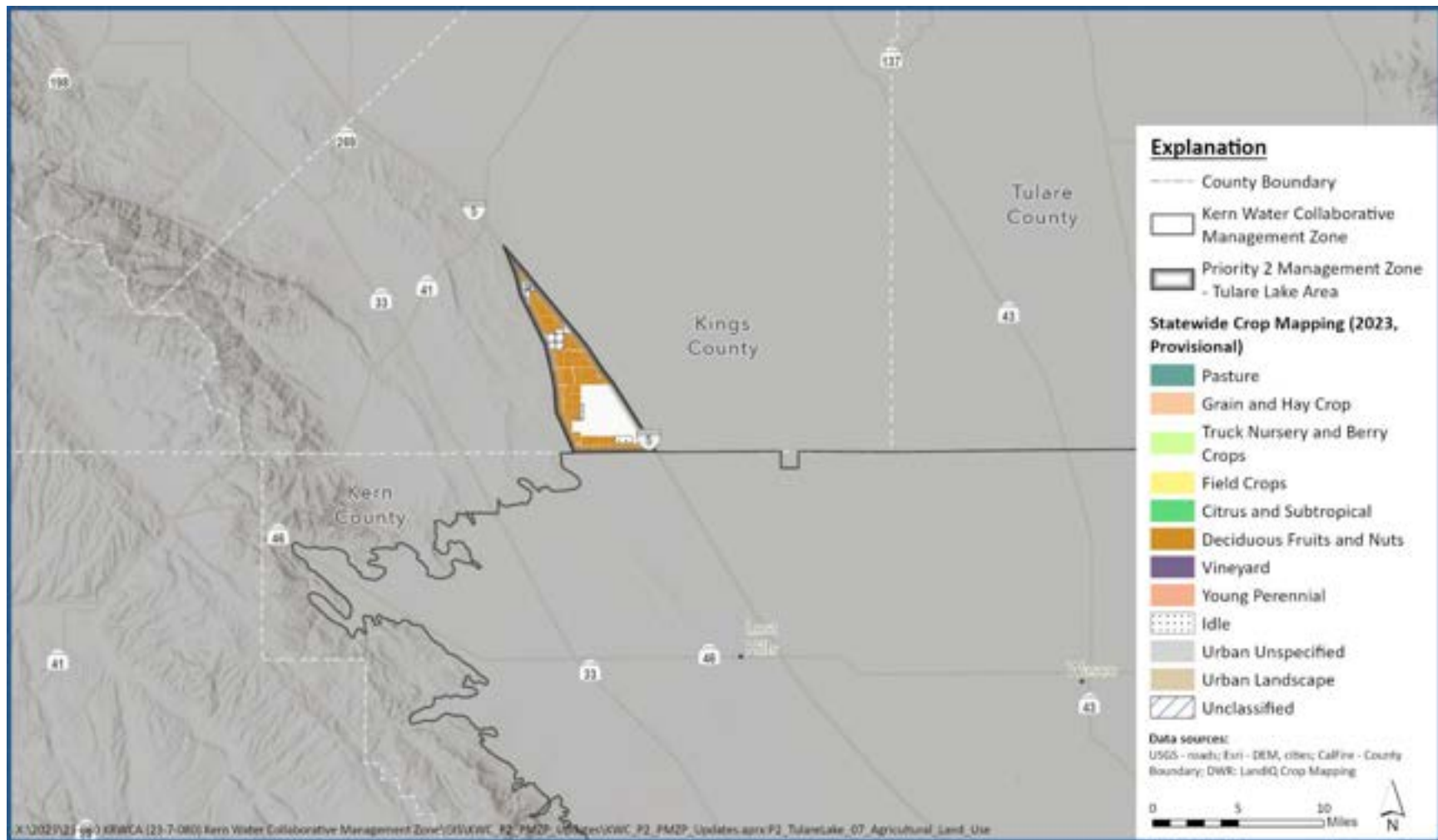


Figure 1-4. Agricultural Land Use in the Proposed Tulare Lake Area of the KWC Management Zone

Table 1-4. Land Use Summary for the Proposed Tulare Lake Area of the KWC Management Zone			
Land Use Designation	Area (sq. mi.)	Area (Acres)	Percent of Total Management Zone Area
D - Deciduous Fruits and Nuts	17.0	10,901	52.74%
I - Idle	2.7	1,715	8.30%
V - Vineyard	0.1	60	0.29%
X - Unclassified	0.2	108	0.52%
Total Mapped Land Use Area	20.0	12,784	61.85%
Unmapped	12.3	7,885	38.15%
TOTAL	32.3	20,669	100.00%

ATTACHMENT B-1.3 GROUNDWATER SUSTAINABILITY AGENCIES WITHIN THE PROPOSED TULARE LAKE AREA OF THE KERN WATER COLLABORATIVE MANAGEMENT ZONE

One GSA is located within the proposed Tulare Lake area of the KWC Management Zone

Southwest Kings GSA

- Point of Contact: Deanna Jackson, Executive Director, 944 Whitley Avenue, Suite E, Corcoran, CA 93212, (559) 762-7240, djackson@tcwater.org; <http://tcwater.org/>
- Member Agency: Dudley Ridge Water District, Tulare Lake Reclamation District No. 761, Tulare Lake Basin Water Storage District, Kettleman City Community Services District and the County of Kings
- Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

KERN WATER COLLABORATIVE PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment B-2

PREPARED FOR



PREPARED BY



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DUC	Disadvantaged Unincorporated Community
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DWW	Drinking Water Watch
EC	Electrical Conductivity
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program
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INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status Inactive Raw
IU	Public Supply Well Status Inactive Untreated
IX	Ion Exchange
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
O&M	Operation and Maintenance
OAL	Office of Administrative Law
OWTS	Onsite Waste Treatment System
PMZP	Preliminary Management Zone Proposal
PN	Public Supply Well Status Pending
POU	Point of Use
PWS	Public Water System

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Acronym	Meaning
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children
WDR	Waste Discharge Requirements
WMP	Waste Management Plan
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

1. CHARACTERIZATION OF PROPOSED KWA MANAGEMENT ZONE: TULARE LAKE AREA

This subsection includes an overview of the hydrogeology, groundwater elevations and flow directions, a description of the delineation of the Upper Zone of the groundwater system, and the characterization of nitrate in groundwater for the proposed Tulare Lake area of the Kern Water Collaborative (KWC) Management Zone.

1.1. Hydrogeology

The hydrogeology of the proposed Tulare Lake area of the KWC Management Zone is described in California's DWR Bulletin 118 (B118) description of the Tulare Lake Subbasin (DWR, 2006) and the Basin Settings chapter of the Tulare Lake Subbasin Groundwater Sustainability Plan (GSP) (Geosyntec, 2022). B118 describes the Tulare Lake Subbasin as a subbasin of the San Joaquin Valley Groundwater Basin that is bounded in on the north by the Kings River and Kings Subbasin, to the south by the Kings-Kern county line, and on the west by: 1) the California Aqueduct, 2) the eastern boundary of Westside Groundwater Subbasin, and 3) Tertiary marine sediments of the Kettleman Hills. The eastern side is bounded by the western boundaries of the Tule and Kaweah Groundwater Subbasins. The southern half of the Tulare Lake Subbasin, which encompasses the Tulare Lake Area of the KWC Management Zone, lies on the former Tulare Lake bed in Kings County (DWR, 2006).

According to DWR's Bulletin 118 (2006), the Tulare Lake Subbasin contains sediments of younger and older alluvium, flood-basin deposits, lacustrine and marsh deposits, and continental deposits. The younger alluvium is made up of a heterogeneous complex of interstratified discontinuous beds of unsorted to fairly well-sorted clay, silt, sand, and gravel. Although this unit is very permeable, it is located largely above the water table. Older alluvium in the subbasin consists of poorly sorted lenticular deposits of clay, silt, sand, and gravel, which may be slightly consolidated or cemented. Older alluvium is the major aquifer unit in the subbasin, due to it being moderately to highly permeable with sufficient yields to wells. Although flood basin deposits are not as transmissive, they do contain some lenses of moderately to poorly permeable sand layers that may be locally productive for small water demands. Lacustrine and marsh deposits make up the majority of the clay interfingers that provide confinement to the aquifer. The lacustrine and marsh deposits include the Corcoran Clay (E-Clay), which can be found in the subbasin at depths ranging from around 300 to 900 feet below ground surface. Continental deposits typically yield low quantities of water to wells due to being moderately to poorly permeable consisting of poorly sorted lenticular deposits of clay, silt, sand, and gravel.

The HCM from the Tulare Lake Subbasin GSP (Geosyntec, 2022) emphasizes that the only physical boundaries of the Tulare Lake Subbasin are the Kettleman Hills on the southwestern edge and the Kings River on the northeastern edge of the Subbasin (Geosyntec, 2022). A major feature of the Tulare Lake Subbasin is the large-scale lacustrine deposits that accumulated in shallow lakes that developed from internal drainage. The lacustrine Corcoran Clay (E-Clay) was deposited, with thicknesses as high as 300 feet. Other thick deposits of lacustrine sediments have accumulated in Tulare Lake. The fine-grained lacustrine deposits of the ancestral and former Tulare Lake are known as the "clay plug" and are significant

for controlling the movement of groundwater in the central portion of the Subbasin below the Corcoran Clay (E-Clay).

Five significant bounding conditions historically influence groundwater flow in the Tulare Lake Subbasin: 1) Kettleman Hills on the southwest; 2) Kings River alluvial fan on the northeast; 3) Arroyo Pasajero fan on the northwest; 4) Tulare Lake clay beds in the central portion of the subbasin; and 5) the Kaweah and Tule River alluvial fans on the east. The role of the Corcoran Clay (E-Clay) is to divide the Subbasin into two aquifer systems: an unconfined to semi-confined aquifer system above the Corcoran Clay and a confined aquifer system below the Corcoran Clay.

A generalized conceptual cross section derived from an east-west cross section covering the southern part of the Tulare Lake Subbasin, that shows the northeastern part of the Tulare Lake area of the KWC Management Zone is provided in **Figure 1-1**, and more detailed information on the hydrogeology of the Tulare Lake Subbasin can be found in the Tulare Lake Subbasin GSP document's HCM section. The conceptual hydrogeologic cross sections are adapted from that GSP document and illustrate the general thickness and extents of the various deposits and formations that play important roles in the hydrogeology of the Tulare Lake area of the KWC Management Zone. The generalized cross sections also illustrate the interbedded nature and extents of finer-grained materials within the Tulare Lake Subbasin.

The hydrogeology of the Tulare Lake Subbasin plays a role in the vulnerability of the basin to nitrate contamination. The high vulnerability area mapping on behalf of the Westside Water Quality Coalition (or "Coalition") was updated in 2021 as part of the Central Valley Groundwater Monitoring Collaborative (CVGMC) Five-Year Assessment Report (CVGMC, 2021). This assessment included the refinement of the high vulnerability areas based on additional groundwater quality data, particularly exceedances of the maximum contaminant level (MCL) for nitrate of 10 mg/L as nitrogen (N). The physical intrinsic vulnerability depends on the presence of physical hydrogeologic characteristics and land use and water management practices that may contribute to constituents migrating to groundwater. The presence of hydrogeologic characteristics that enable potential contaminants to reach groundwater more readily make a location more vulnerable to groundwater contamination compared to locations with hydrogeologic characteristics that impede the ability of contaminants to reach groundwater or attenuate the contamination. The high vulnerability areas (HVAs) that cover the proposed Tulare Lake area of the KWC Management Zone are presented in **Figure 1-2**.

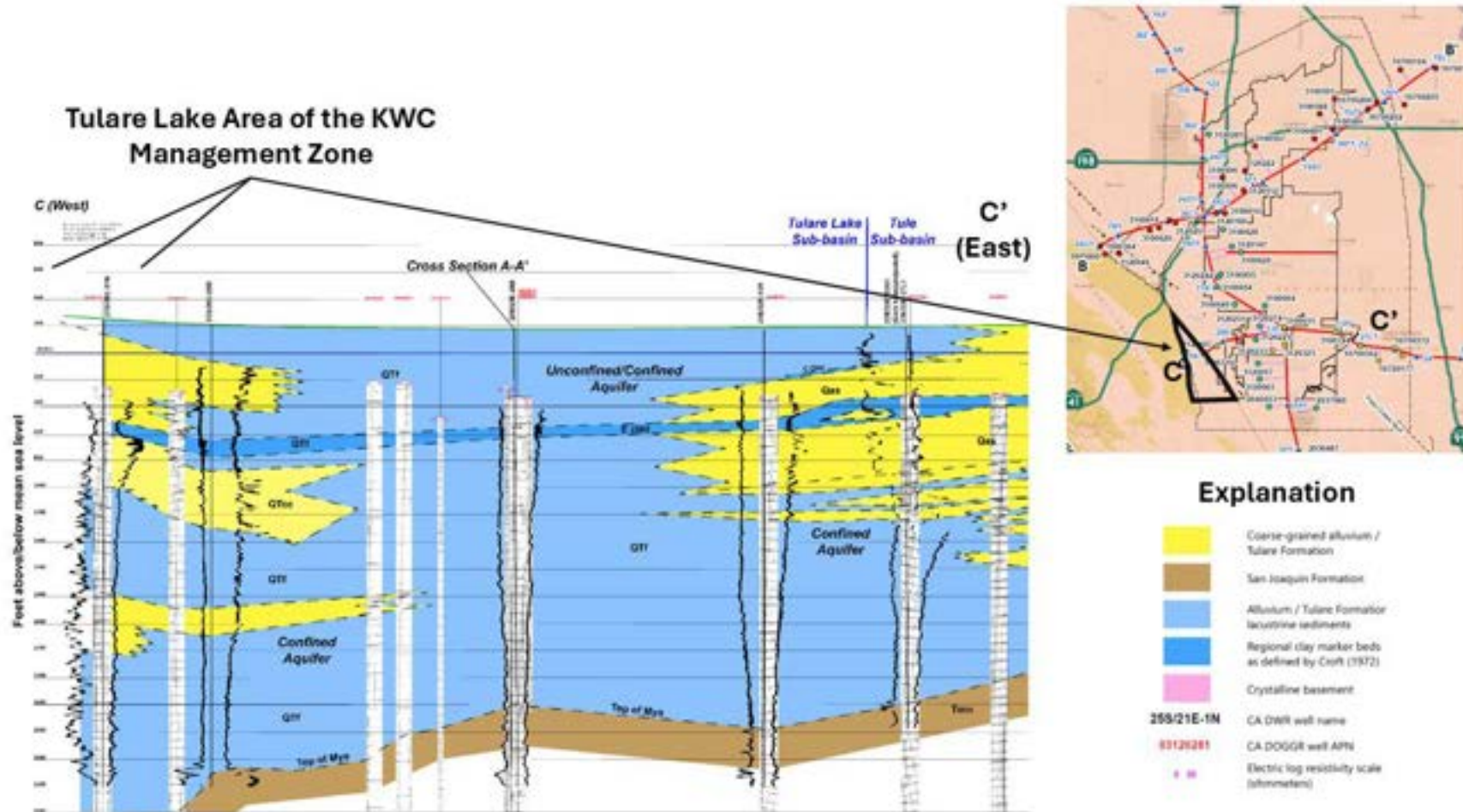
1.2. Groundwater Elevations and Flow

Groundwater elevation data are lacking in the Tulare Lake area of the KWC Management Zone. DWR's Spring 2025 groundwater elevation contour mapping and the Tulare Lake Subbasin's 2022 GSP documentation do not provide information about groundwater elevations or flow directions in the Tulare Lake area of the KWC Management Zone.

The focus of the Nitrate Control Program is on the Upper Zone as described in Section 1.3 below. Groundwater movement in this document focuses primarily on the unconfined portion of the groundwater aquifer, which does not have sufficient information to make an analysis of groundwater elevations or flow directions in the unconfined or deeper portions of the groundwater system within this area of the proposed KWC Management Zone.

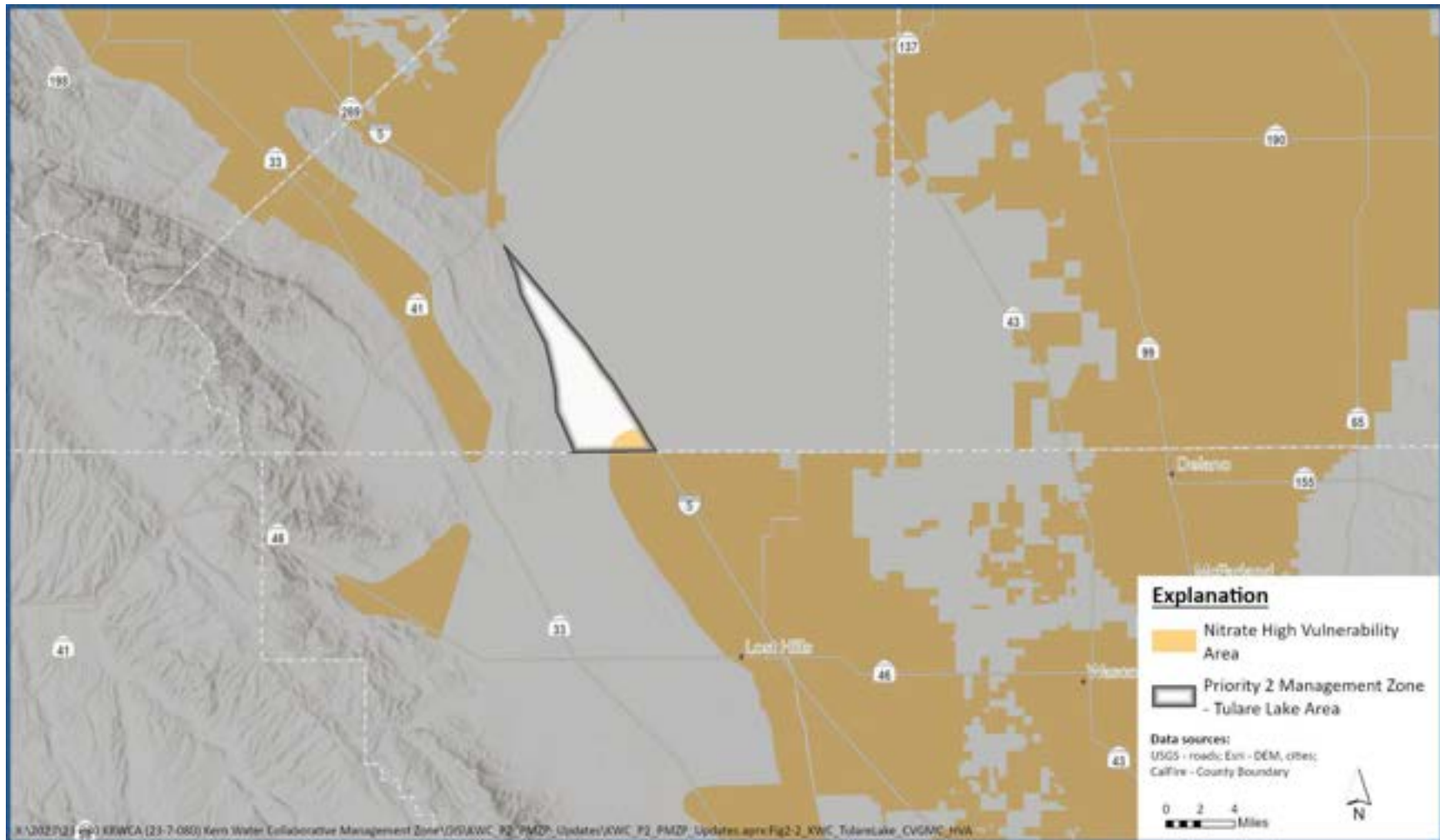
1.2.1. Areas of Potential Contribution

A determination of potential impacts to groundwater associated with downgradient migration of nitrate in the unconfined portion of the groundwater system from the proposed Tulare Lake area of the KWC Management Zone is not possible at this time due to a lack of groundwater elevation data in the area. Using the Spring 2025 groundwater elevation contours from DWR, no hydraulic gradients or flow directions could be quantified along the boundaries of the proposed Management Zone. Gradients would not be calculated along the edge of alluvial materials and the terminus of the Upper Zone, and no gradients would be calculated along proposed Management Zone boundaries that border Priority 1 (P1) or Priority 2 (P2) areas. Most of the boundaries of the P2 proposed Management Zone areas of KWC (Tulare Lake Subbasin portion, Kern County (Westside South), and Kern County (Poso)) border other P2 Proposed Management Zones or P1 Management Zones, with the exception of the southeastern border of the Kern County (Westside South) area and the southern boundary of the Kern County (Poso) area, which border the non-prioritized Kern County (Kern River) area. The Tulare Lake area of the KWC Management Zone borders the remaining portion of the Kings Water Alliance P2 Tulare Lake Management Zone to the east, and the Kern County (Westside South) P2 area of the KWC Management Zone to the south. Therefore, despite the lack of groundwater elevation data in this area, gradients would not be calculated for this area of the KWC Management Zone since all of its borders are either the edge of the alluvium (to the west) or already under the purview of the Nitrate Control Program (through Kings Water Alliance or KWC).



Source: Adapted from Tulare Lake Subbasin Amended GSP, Geosyntec 2022

Figure 1-1. Conceptual Cross Section A-A' for the Kern County Groundwater Subbasin (Southwest to Northeast)



Source: CVGMC, 2021

Figure 2-2. High Vulnerability Areas in and Around the Proposed Tulare Lake Area of the KWC Management Zone

1.3. Upper Zone Delineation

The delineation of the Upper Zone is described in detail in Final Management Zone Proposal (FMZP) Section 2.2.3. **Figure 2-3a** shows the depth to the bottom of the Upper Zone in the proposed Tulare Lake area of the KWC Management Zone, as previously delineated to support CV-SALTS analyses (e.g., LSCE et al., 2016). The depth of the bottom of the Upper Zone is shallowest in the southwest, where depths are as shallow as about 290 feet. The deepest depths to the bottom of the Upper Zone occur in the east, where the depths are as deep as 320 feet.

Figure 2-3b provides the depth to the bottom of the Lower Zone in the proposed Tulare Lake area of the KWC Management Zone, as previously delineated to support CV-SALTS. The depth to the bottom of the Lower Zone ranges from as shallow as about 650 feet in the northwest, to as deep as about 830 feet below ground surface in the east.

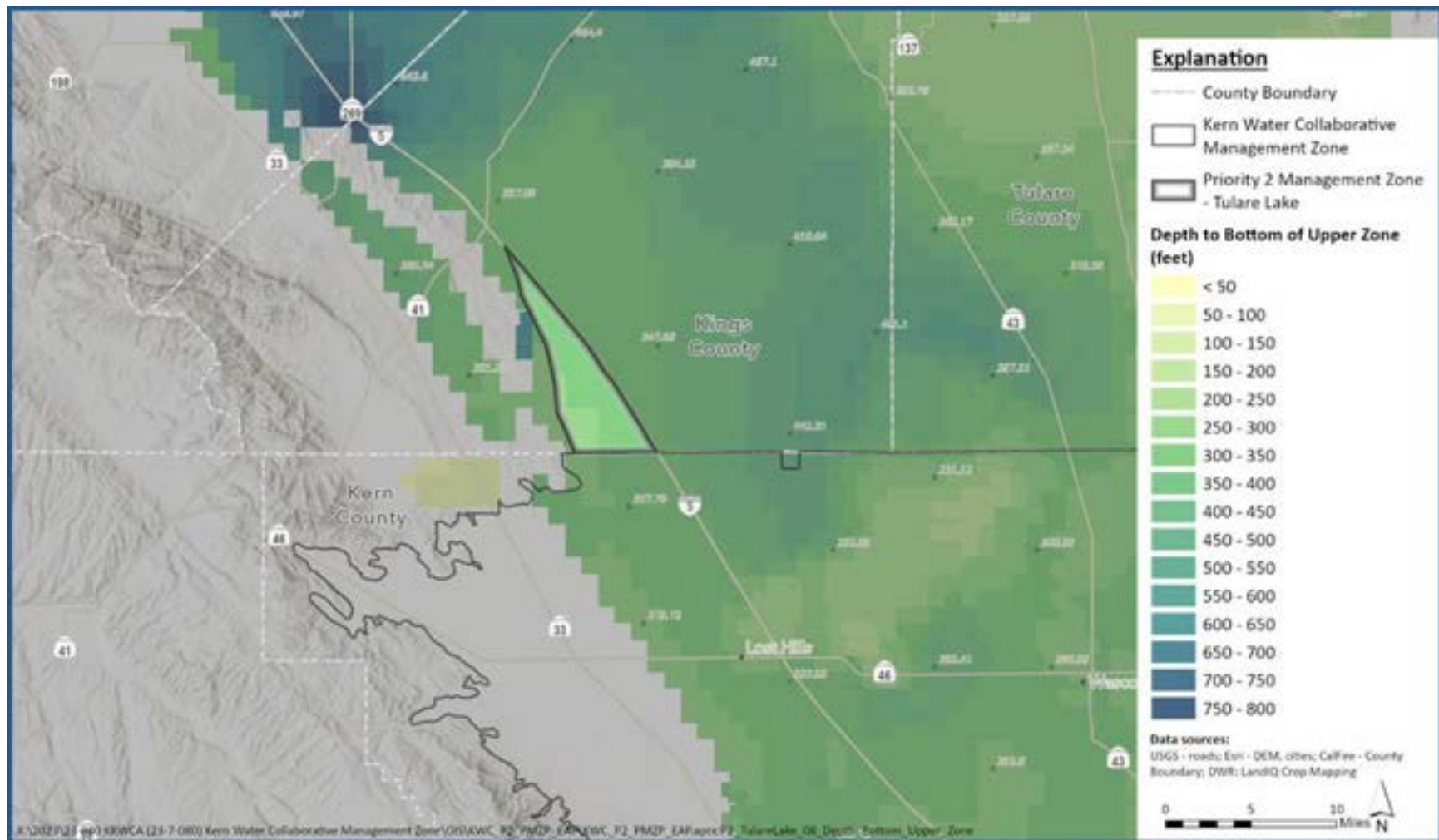
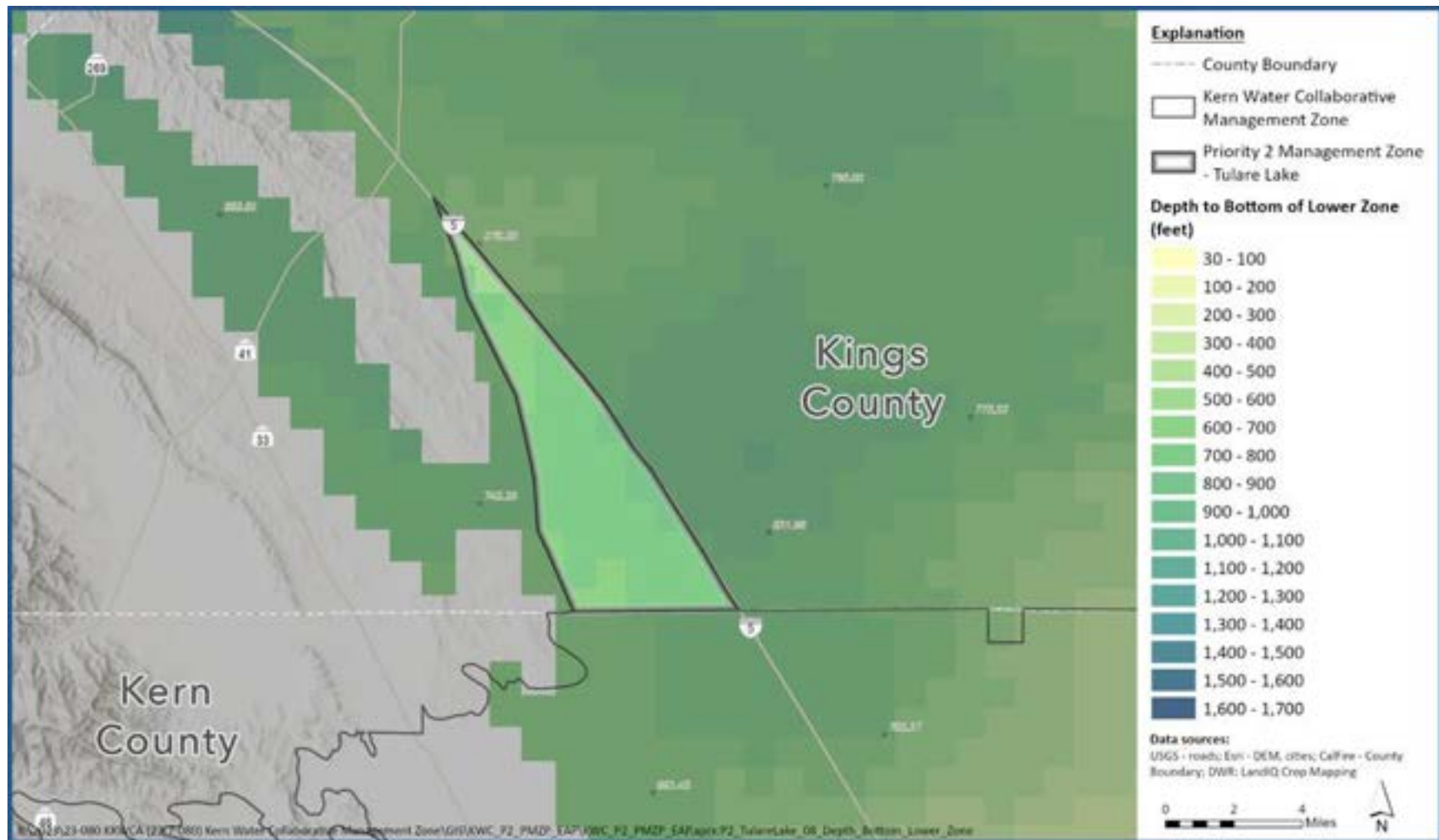


Figure 2-3a. Depth to the Bottom of the Upper Zone, Proposed Tulare Lake Area of the KWC Management Zone



1.4. Nitrate Water Quality

To characterize nitrate concentrations in groundwater beneath and adjacent to the proposed Tulare Lake area of the KWC Management Zone, available groundwater quality data were compiled, organized, and used to determine ambient conditions and trends that indicate where nitrate conditions are improving, degrading, or where there is no significant trend. This section describes groundwater nitrate data sources (**Table 2-2**), existing ambient nitrate conditions, nitrate trends analyses, and an evaluation of inactive drinking water wells. Very few wells have nitrate data in the area, and none of them have recent nitrate data available.

Table 2-2. Summary of Wells with Nitrate Data Located in the Proposed Tulare Lake Area of the KWC Management Zone by Source (All Well Types & Depths)			
Source¹	All Well Depth Categories		
	Wells with Nitrate Data	Wells with Post-2010 Nitrate Data	Wells with Post-2010 Nitrate MCL Exceedance
DWR ²	5	0	0
Total	5	0	0

1.4.1. Existing Ambient Conditions

Nitrate measurements and well data were compiled for the proposed Tulare Lake area of the KWC Management Zone from publicly available data sources and complemented by data requests to counties and local groundwater sustainability agencies. Nitrate data were summarized by data source, depth, and recent nitrate exceedances in **Table 2-3**. There are zero wells with recent nitrate measurements (since January 2010) in the proposed Management Zone area, so it is not known if any wells in the area have had a recent nitrate measurement that exceeds the drinking water MCL.

Figure 2-4 shows the spatial distribution of wells with nitrate measurements by depth category. Wells were categorized into an appropriate depth category (Upper Zone, Lower Zone, Below Lower Zone, and Unknown) to produce GIS coverages of the wells with nitrate data. Many more Upper Zone wells have nitrate data than Lower and Below Lower Zone wells. Upper Zone wells occur in the central and eastern portion of the proposed Tulare Lake area of the KWC Management Zone. Deeper wells completed in the Lower or Below Lower Zones are mainly located near the communities of Lost Hills, Buttonwillow, and along the western central area of the proposed Tulare Lake area of the KWC Management Zone. There are no Upper Zone wells with nitrate measurements since 2010 so no high resolution spatial analyses of nitrate in the Upper Zone, Lower Zone, and Below Lower Zone were performed.

¹ Data sources originated from the GAMA website (<https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/>, accessed October 2025).

² DWR conducts groundwater sampling and is provided by GAMA.

1.4.2. Groundwater Nitrate Trends Analysis

The methodology to perform temporal trends analyses on the groundwater nitrate data in the proposed Management Zone is provided in Section 2.2.3 of the main KWC FMZP document. The groundwater nitrate trends analysis includes parametric and non-parametric trends analyses for the full record of measurements for a particular well as well as a more recent view, utilizing data records since 2010. Trends analyses are only performed for wells with at least five measurements in the time period of interest. There are zero wells in the Tulare Lake area of the KWC Management Zone that have a sufficient number of nitrate measurements to perform the trends analysis.

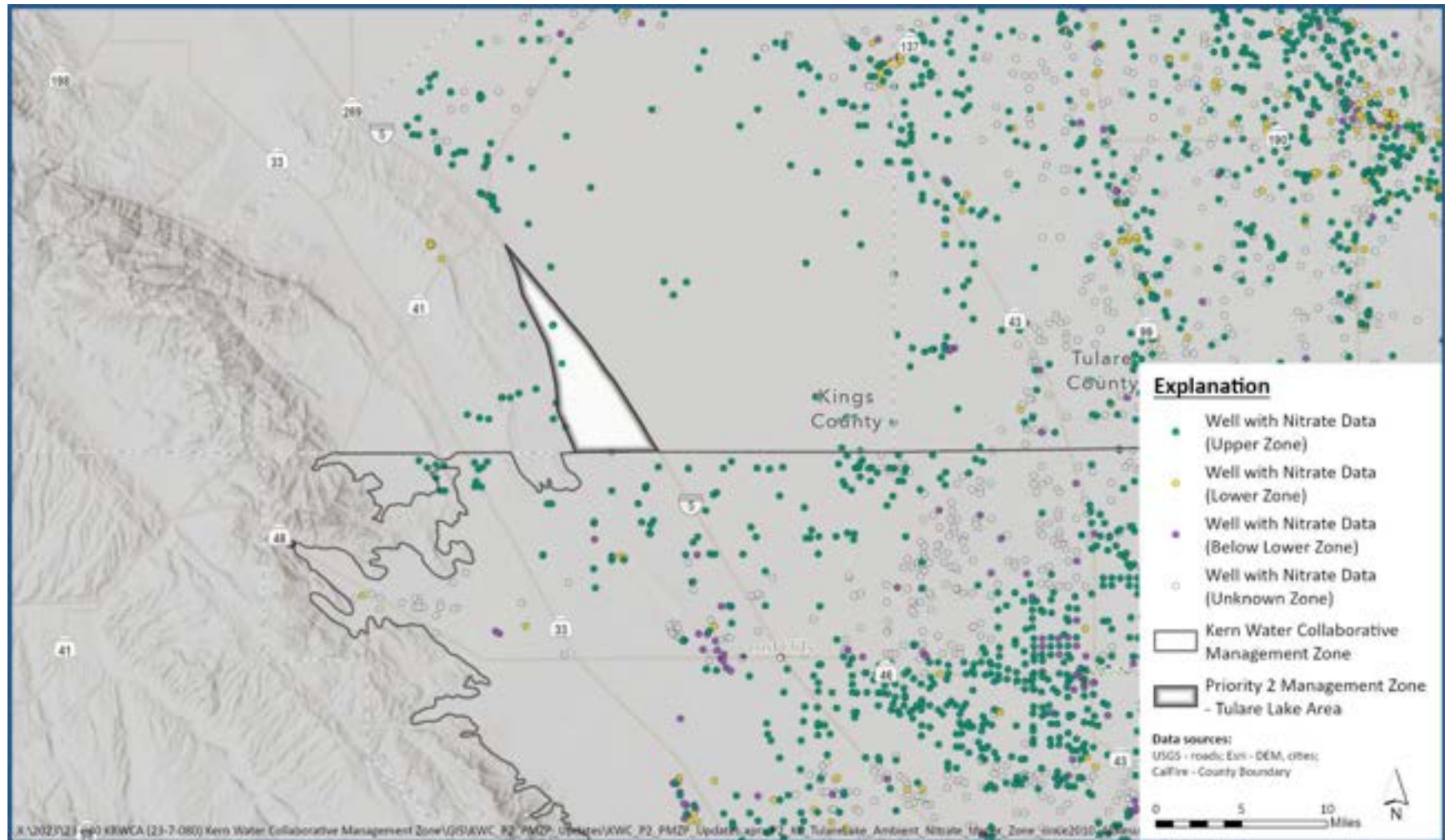


Figure 2-4. Wells with Nitrate Data within the
Proposed Tulare Lake Area of the KWC Management Zone by Depth Category

Table 2-3 Wells with Nitrate Measurements in the Proposed Tulare Lake Area of the KWC Management Zone by Depth Category				
Depth Category	All Wells with Nitrate Data	Wells with Post-2010 Nitrate Data	Wells with Post-2010 Nitrate > 10 mg/L-N	Percent of Wells with Post-2010 Nitrate Data > 10 mg/L-N
Upper	5	0	0	-
Lower	0	0	0	-
Below Lower	0	0	0	-
Unknown	0	0	0	-
Total	5	0	0	-

1.4.3. Evaluation of Inactive Drinking Water Wells

The location of inactive supply wells that have had nitrate exceedances was compared to the ambient nitrate map of recent conditions to help determine if there is any bias in the Upper Zone nitrate analysis. The DDW's online public water system database website was used in conjunction with the GAMA database to identify supply wells within the proposed Tulare Lake area of the KWC Management Zone with an inactive status. The DDW website provides database files that include a file containing public water system well identification numbers and well status codes. The wells from the DDW website are not accompanied by location coordinates, but these wells can be linked (using their primary station code ID) to nitrate groundwater quality data from the GAMA dataset which does provide well location coordinates. No public supply wells exist in the Tulare Lake area of the KWC Management Zone, and no public supply wells in the Tulare Lake area are listed as inactive wells (considered to be no longer actively used for drinking water) that have exceeded the nitrate MCL in the past. This indicates that the nitrate analysis performed for this document is not biased due to inactive public drinking water supply wells.

2. REFERENCES

California's DWR Groundwater Bulletin 118 – Kern Subbasin, 2006. Tulare Lake Hydrologic Region, San Joaquin Valley Groundwater Basin.

Central Valley Groundwater Monitoring Collaborative (CVGMC). 2021. Five-Year Assessment Report

Geosyntec, 2022. Tulare Lake Subbasin, Amended Groundwater Sustainability Plan, Developed for Mid-Kings River GSA, South Fork Kings GSA, El Rico GSA, Southwest Kings GSA, and Tri-County Water Authority, July 2022.

ATTACHMENT B-3 PROPOSED TULARE LAKE AREA NON- DISCHARGER STAKEHOLDERS CONTACT LIST

No contact list exists for non-discharger stakeholders in the Tulare Lake Area because no communities/non-discharger stakeholders were identified during EAP development. If during EAP implementation communities/non-discharger stakeholders are identified, then a non-discharger stakeholders contact list will be developed for the Tulare Lake area.

**ATTACHMENT B-4 PERMITTED MILK COW DAIRIES, CONFINED
BOVINE FEEDING OPERATIONS, POULTRY
OPERATIONS, AND OIL/GAS OPERATIONS IN THE
PROPOSED TULARE LAKE AREA**

There are no permitted milk cow dairies, confined bovine feeding operations, poultry operations, and oil/gas operations in the proposed Tulare Lake area.

**ATTACHMENT B-5 CURRENT NITRATE TREATMENT AND CONTROL
EFFORTS OR MANAGEMENT PRACTICES FOR
INDIVIDUAL PERMITTED DISCHARGERS IN
PROPOSED TULARE LAKE AREA**

There are no individual permitted dischargers in the proposed Tulare Lake area.

KERN WATER COLLABORATIVE PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment C-1

PREPARED FOR



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AB	Public Water Supply Well Status, Abandoned
APN	Assessor Parcel Number
AR	Public Water Supply Well Status, Active Raw
AR Difference or A-R	Difference Between Nitrogen Applied and Nitrogen Removed
AR Ratio or A/R	Ratio of Nitrogen Applied to Nitrogen Removed
AU	Public Water Supply Well Status Active Untreated
Basin Plans	Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin
BOD	Biochemical Oxygen Demand
BPA	Basin Plan Amendment
C	Public Water System Type, Community
CDP	Census Designated Place
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CETHP	California Environmental Health Tracking Program
CIWQS	California Integrated Water Quality System
Coalition	Kings River Water Quality Coalition
CVDRMP	Central Valley Dairy Representative Monitoring Program
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVHM2	Central Valley Hydrologic Model 2.0
CVSC	Central Valley Salinity Coalition
CVWB	Central Valley Water Board
CSD	Community Services District
CWD	Community Water District
CWS	Community Water System
DAC	Disadvantaged Community
DDW	Division of Drinking Water
DS	Public Water Supply Well Status, Destroyed
DUC	Disadvantaged Unincorporated Community
DWR	California Department of Water Resources
DWW	Drinking Water Watch
EC	Electrical Conductivity
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program

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Acronym	Meaning
EPA	Environmental Protection Agency
FAQs	Frequently Asked Questions
FMZP	Final Management Zone Proposal
GAMA	Groundwater Ambient Monitoring and Assessment
GAC	Granular Activated Carbon
GAR	Groundwater Quality Assessment Report
GIS	Geographic Information Systems
gpd	gallons per day
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrogeological Conceptual Model
ILRP	Irrigated Lands Regulatory Program
INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status, Inactive Raw
IU	Public Supply Well Status, Inactive Untreated
IX	Ion Exchange
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
O&M	Operation and Maintenance
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Acronym	Meaning
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POU	Point of Use
PWS	Public Water System
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children
WDR	Waste Discharge Requirements
WMP	Waste Management Plan
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

1. CHARACTERIZATION OF PROPOSED KWC MANAGEMENT ZONE: KERN COUNTY (WESTSIDE SOUTH) AREA

The subsections below describe the area encompassed by the proposed Kern County (Westside South) Area of the Kern Water Collaborative (KWC) Management Zone, including general geographic and hydrologic characteristics, jurisdictions located within each planning area and key planning agencies and utilities. **Table 1-1** describes several key data sources for the Management Zone.

Table 1-1. Key Data Sources to Characterize the Proposed Kern Water Collaborative Management Zone		
Boundary Type	Source for Boundary Data	Comments
Groundwater Sustainability Agency (GSA)	DWR Map Viewer: https://sgma.water.ca.gov/webgis/index.jsp?appid=gas-master&rz=true Individual GSA links for finding “Interested Parties”: https://sgma.water.ca.gov/portal/gsa/all	GSA boundaries, and also a list of GSA “Interested Parties”
Groundwater Basin/Subbasin	DWR Bulletin 118: https://water.ca.gov/programs/groundwater-management/bulletin-118 Basin Boundary Geographic Information System (GIS) file: https://data.cnra.ca.gov/dataset/i08-b118-ca-groundwaterbasins-2016	DWR Bulletin 118 basin and subbasin boundaries
Water Districts	DWR coverage of water agencies in California: https://data.ca.gov/dataset/i03-waterdistricts	Irrigation districts, water districts, community service areas, and community service districts
Public Water Supply Systems	California Drinking Water System Area Boundaries: https://gis.data.ca.gov/datasets/waterboards::california-drinking-water-system-area-boundaries/about	Division of Drinking Water
State Small Water Supply Systems	By request from County Environmental Health Departments (Kings and Kern Counties) By request from groundwater sustainability agencies	Boundary data are typically not available for SSWS (usually just an address)
Disadvantaged Communities (DAC)/Severely Disadvantaged Communities (SDAC)	DACs and SDACs boundaries available from DWR: https://gis.water.ca.gov/app/dacs/	Department of Water Resources (DWR)

1.1. Geography

The Kern County (Westside South) Area of the KWC Management Zone represents the western portion of the 2003 Department of Water Resources (DWR) Bulletin 118 Kern County Groundwater Subbasin boundary. The Kern County (Westside South) Area of the KWC Management Zone encompasses an area of approximately 1,284 square miles (821,984 acres).

The California Aqueduct runs through the center of the proposed Kern County (Westside South) Area from the northern boundary running south-southeast toward the southeastern border, and almost parallel to the southeastern border. The edge of the alluvial aquifer or Central Valley Floor borders the western edge of the proposed Kern County (Westside South) area of the KWC Management Zone. The northern edge coincides with the Kern County line, and the eastern side follows a somewhat north-south line west of Delano and Wasco, and east of Taft. There are five main communities in this area of Kern County (**Figure 1-1**):

- Lost Hills
- Buttonwillow
- McKittrick
- Taft
- Maricopa.

1.2. Jurisdictions

The Kern County (Westside South) Area in the KWC Management Zone is bounded on the north by the Kern County line, bounded on the west by the edge of the alluvium, and bounded on the east by a line that stretches from highway 43 south to the east side of the community of Maricopa (**Figure 1-1**).

1.3. Groundwater Sustainability Agencies

Groundwater Sustainability Agencies (GSAs), established under the Sustainable Groundwater Management Act (SGMA), are comprised of water users in the area. GSAs are required to list interested parties, including irrigation districts, public water supply systems, coalitions, etc. that are involved with the management of groundwater resources in the area. There are thirteen GSAs that cover land in the proposed Kern County (Westside South) Area of the KWC Management Zone (**Figure 1-2**):

- Buena Vista Water Storage District GSA
- El Rico GSA
- Henry Miller Water District GSA
- Kern Groundwater Authority GSA
- North Kern Water Storage District GSA
- Rosedale-Rio Bravo Water Storage District GSA

- Semitropic Water Storage District GSA
- Shafter-Wasco Irrigation District GSA
- Southwest Kings GSA
- Tri-County Water Authority GSA - Tule
- West Kern Water District GSA
- Westside District Water Authority GSA
- Wheeler Ridge-Maricopa GSA

GSAs must prepare Groundwater Sustainability Plans (GSP), which include, but are not limited to a Hydrogeological Conceptual Model (HCM), determination of groundwater conditions in the area (including water quality), and estimates of historical, current and projected water budget components including annual groundwater pumping. These and other GSP elements provide useful information with regard to the management of nitrate in groundwater. DWR, which oversees the evaluation of GSPs developed for each basin or subbasin subject to SGMA, has established a web-based portal for GSA documentation.¹

The information provided in **Attachment C-1.3** provides a brief summary of each GSA, including points of contact, information about who makes up the GSA, and other interested parties that have been contacted by the GSAs²

1.4. Water Management Entities

There are several irrigation districts, water districts, community service areas, and community service districts that manage and distribute water within the proposed Kern County (Westside South) Area of the KWC Management Zone. These entities distribute water for irrigation, drinking, or other purposes. **Figure 1-3** illustrates the locations of these water management areas within and adjacent to the proposed Management Zone:

- | | |
|---|---------------------------------|
| • Aera Energy | • Devils Den Water District |
| • Belridge Water Storage District | • Dudley Ridge Water District |
| • Berrenda Mesa Water District | • Henry Miller Water District |
| • Buena Vista Water Storage District | • Kern National Wildlife Refuge |
| • Buttonwillow Community Water District | • Lost Hills Water District |
| • CA Corrections Department Wasco State Prison Reception Center | • Lost Hills Water District |
| • CA Parks And Recreation Department - Tule Elk | |

¹ GSA boundaries: <https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true>.

² GSA-information including points of contact, interested parties, and member agencies are derived from reported information each GSA provided to DWR found here: <https://sgma.water.ca.gov/portal/gsa/all>.

- Maricopa, City of
- North Kern Water Storage District
- Pond Poso Improvement District
- Rosedale - Rio Bravo Water Storage District
- Semitropic Water Service District
- Shafter - Wasco Irrigation District
- Taft, City of
- Wasco, City Of
- West Kern Water District
- Wheeler Ridge - Maricopa Water Storage District

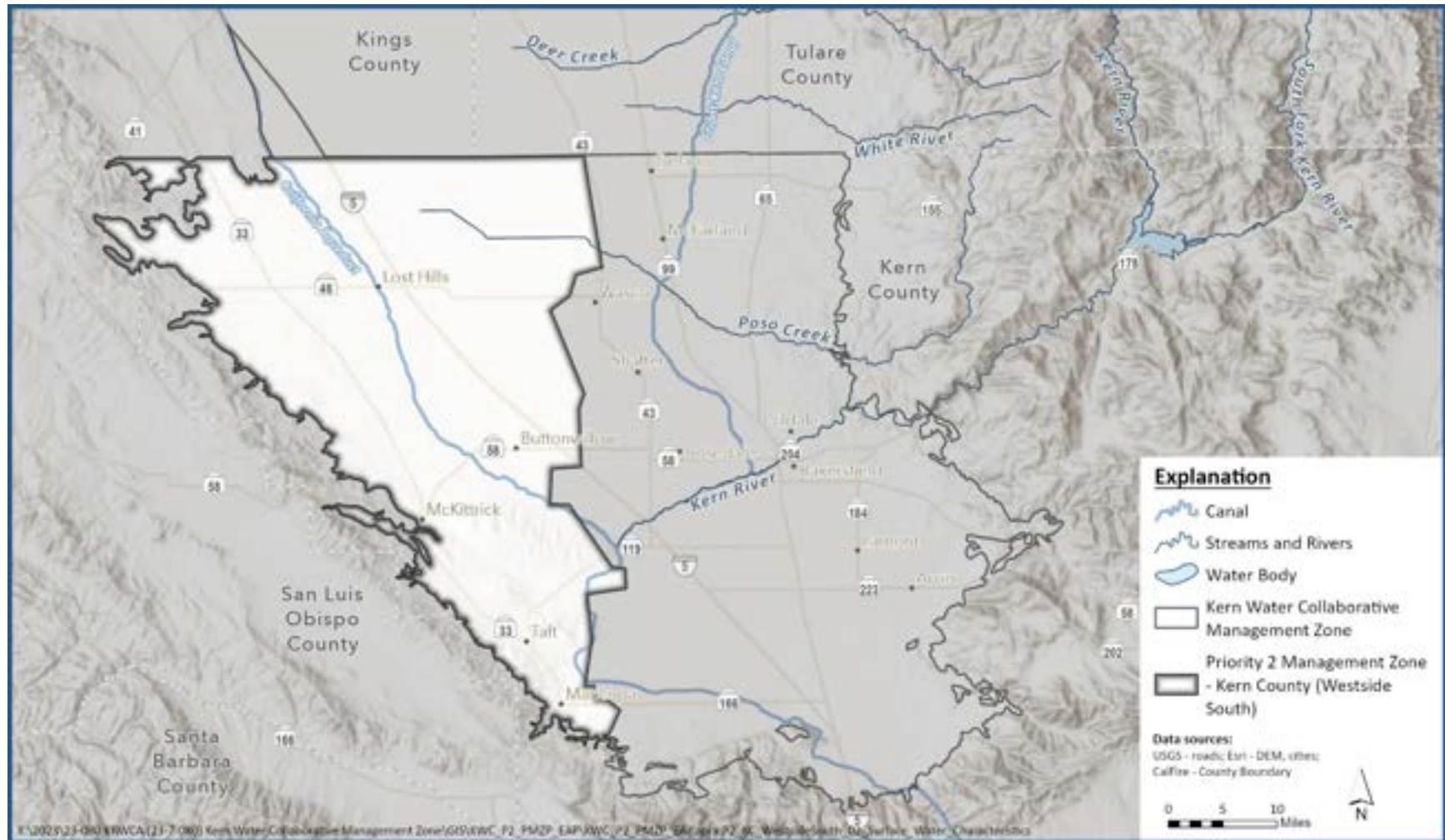


Figure 1-1. Surface Water Characteristics of the
Proposed Kern County (Westside South) Area of the KWC Management Zone

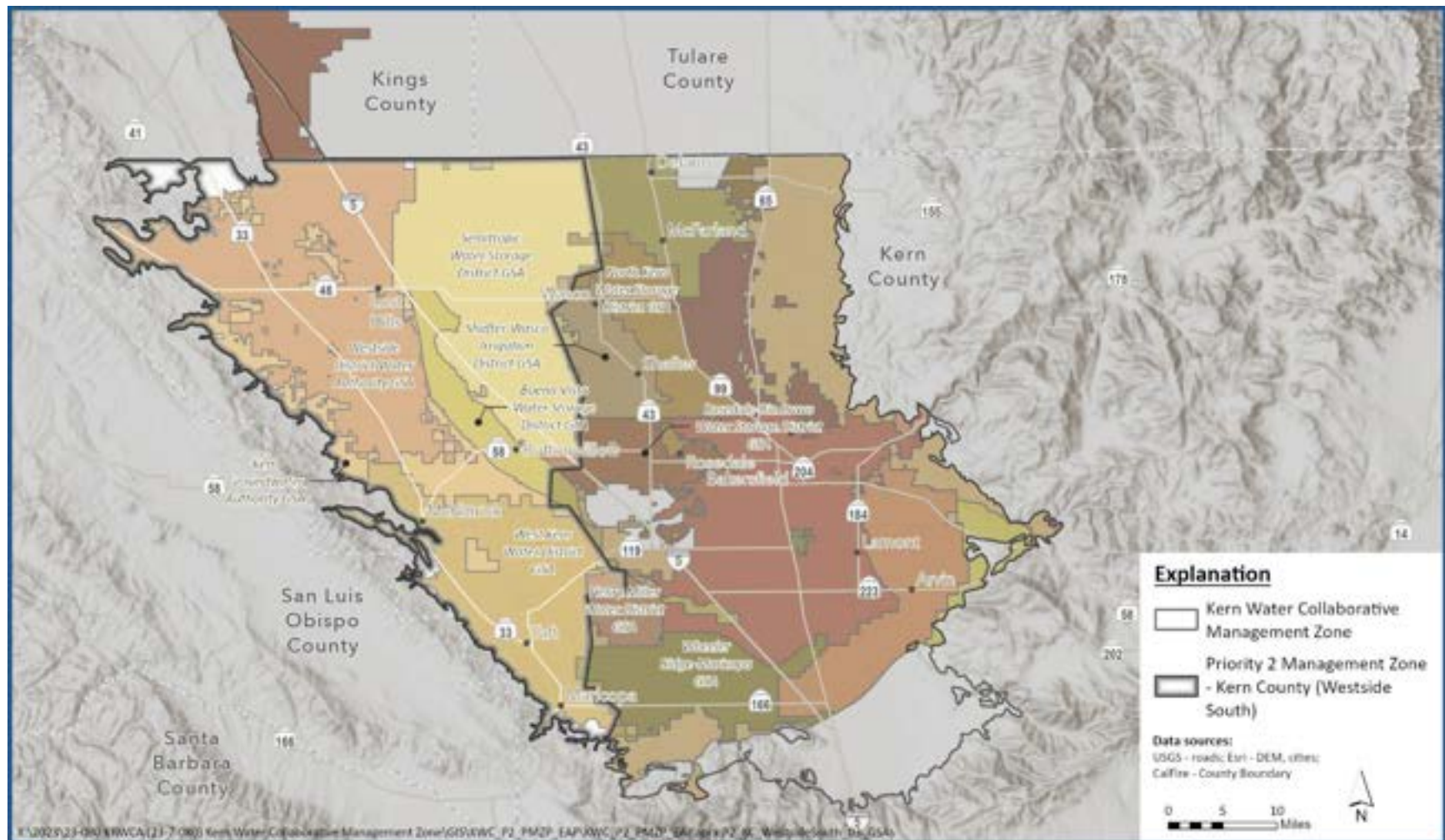


Figure 1-2. Groundwater Sustainability Agencies Established within and Adjacent to the Proposed Kern County (Westside South) Area of the KWC Management Zone

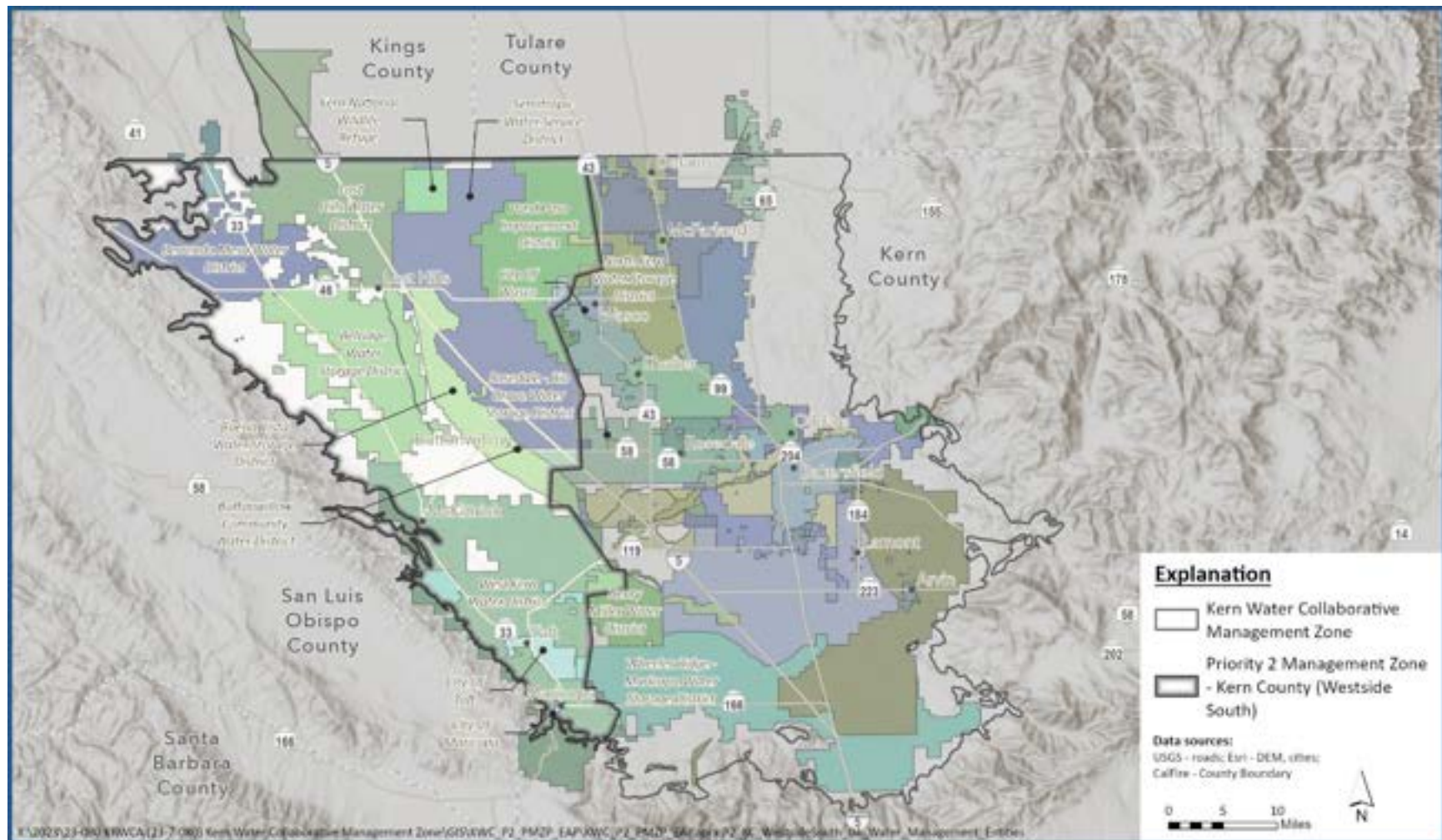


Figure 1-3. Water Management Entities Located within and Adjacent to the Proposed Kern County (Westside South) Area of the KWC Management Zone

1.5. Drinking Water Systems

Section 2.2 in the FMZP summarizes how drinking water systems are classified. The information provided in the following section presents the Public Water Systems (PWS) within the proposed Kern County (Westside South) Area of the KWC Management Zone.

1.5.1. Public Water Systems

Figure 1-4 provides the locations of PWS boundaries within the proposed Kern County (Westside South) area of the KWC Management Zone. There are 11 Public Water Systems with known GIS boundary data in the proposed Kern County (Westside South) Area of the KWC Management Zone. These systems appear to be currently active, according to the State Water Board’s Drinking Water Watch (<https://sdwis.waterboards.ca.gov/PDWW/>, accessed in November 2025). For more information about Public Water Systems in the proposed Kern County (Westside South) Area of the KWC Management Zone, see Appendix C in the Early Action Plan (Attachment H to this FMZP).

1.6. Disadvantaged Communities and Severely Disadvantaged Communities

One Disadvantaged Community (DAC) and ten Severely Disadvantaged Communities (SDACs) exist in the proposed Kern County (Westside South) Area of the KWC Management Zone. **Table 1-2** summarizes the population of DACs and SDACs, and **Figure 1-5** shows the locations of DACs and SDACs within and adjacent to the proposed Kern County (Westside South) Area of the KWC Management Zone. **Table 1-3** summarizes the characteristics of DACs and SDACs in the proposed Kern County (Westside South) area of the KWC Management Zone. DAC and SDAC status is based on DWR mapping that utilizes 2020 American Community Survey (ACS) population estimates and GIS coverage of DAC and SDAC census places within the proposed Kern County (Westside South) Area of the KWC Management Zone.

1.7. Land Use

Table 1-4 and **Figure 1-6** provide the land use characteristics of the proposed Kern County (Westside South) Area of the KWC Management Zone associated with agricultural activity (based on provisional 2023 DWR land use designations). Land use is predominantly made up of Deciduous Fruits and Nuts (21%).

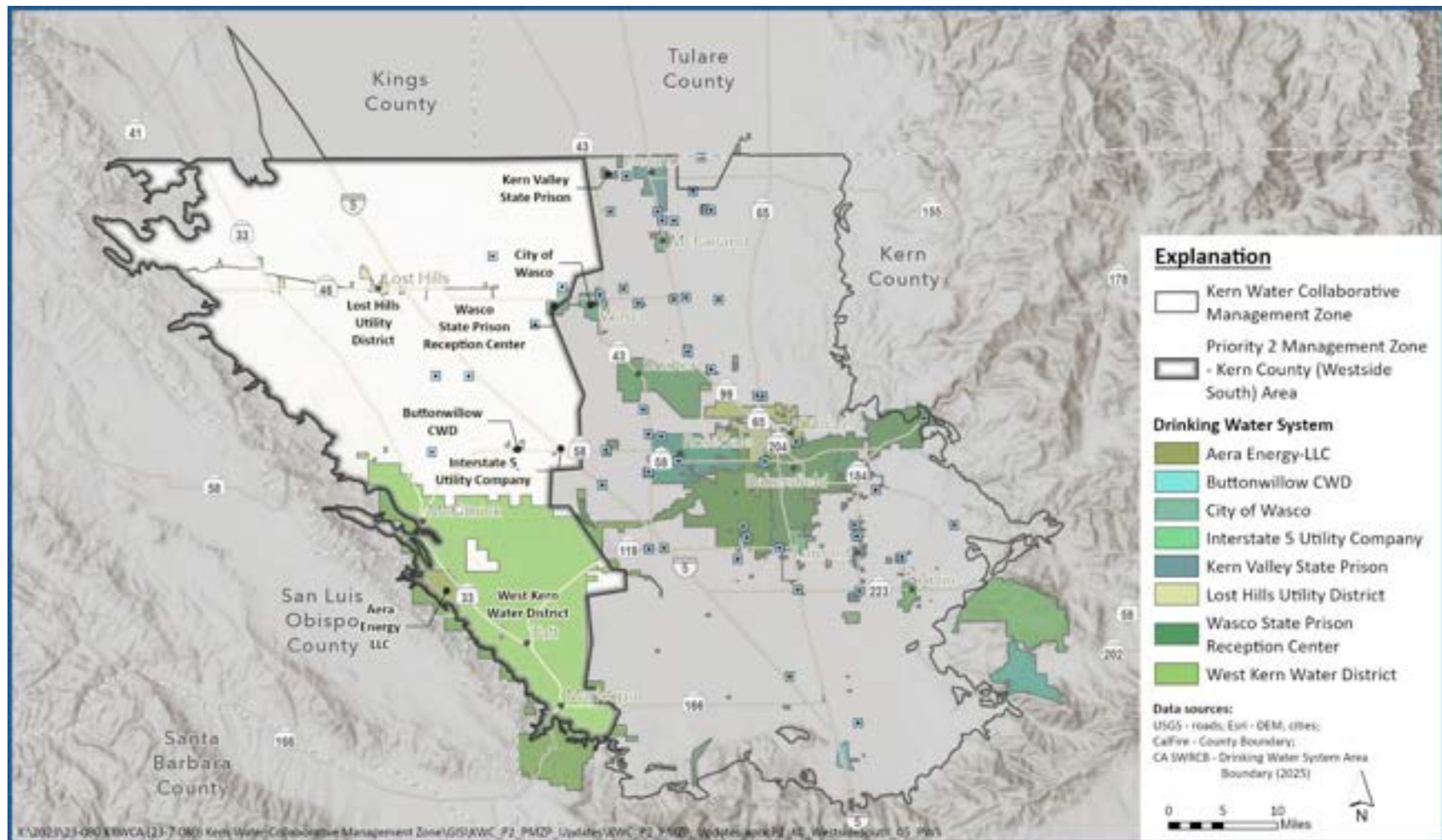
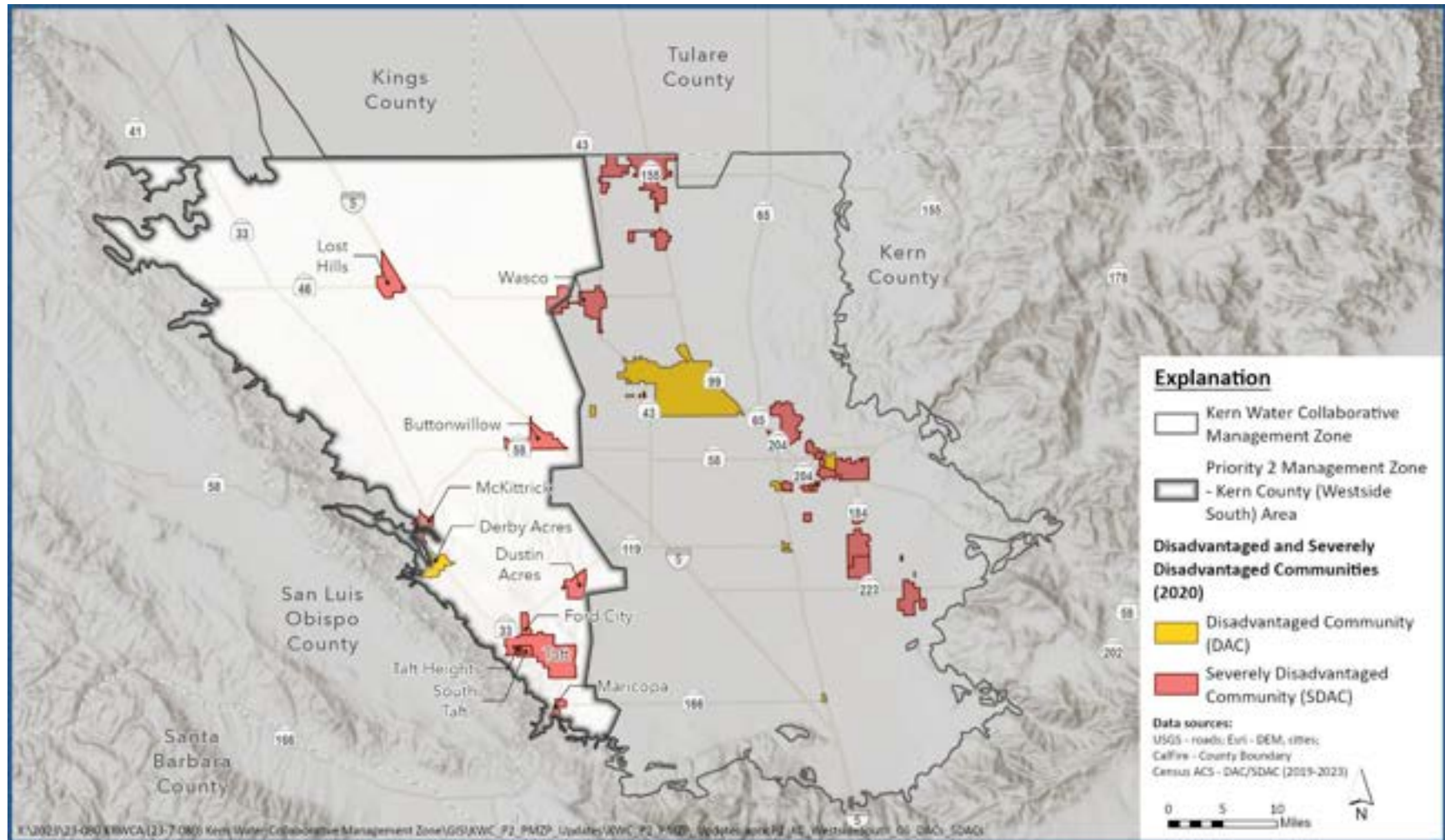


Figure 1-4. Public Water System Boundaries within and Adjacent to the Proposed Kern County (Westside South) Area of the KWC Management Zone



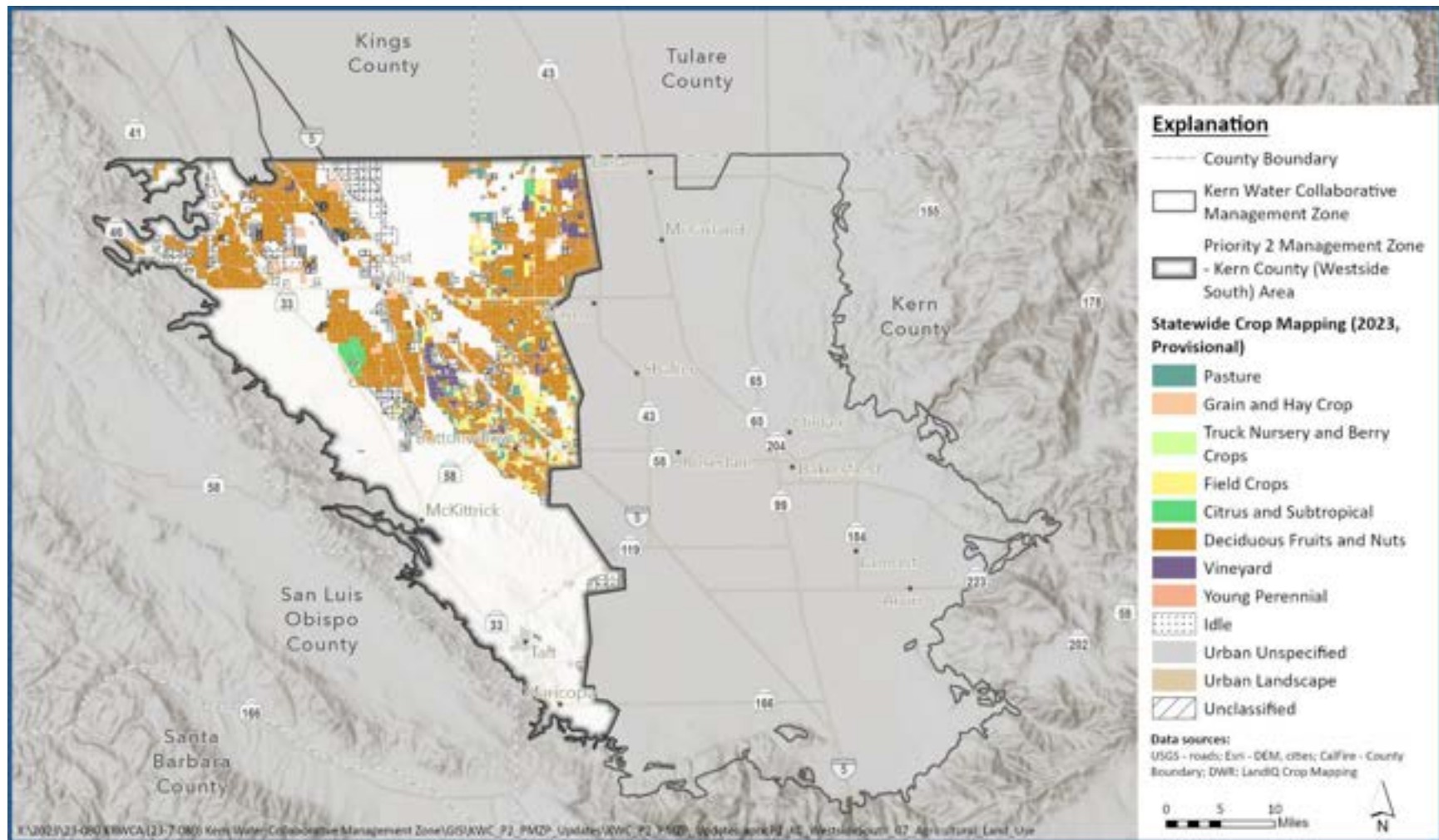


Figure 1-6. Agricultural Land Use in the Proposed Kern County (Westside South) Area of the KWC Management Zone

Table 1-2. Population of DACs and SDACs Located in the Proposed Kern County (Westside South) Area of the KWC Management Zone			
Approximate Location/Community	Type (DAC or SDAC)	DAC Population (calculated by fraction of DAC area in Management Zone)	DAC Area in Management Zone (Acres)
Buttonwillow	Severely Disadvantaged Community	1,337	4,433
Derby Acres	Disadvantaged Community	301	2,290
Dustin Acres	Severely Disadvantaged Community	677	2,353
Ford City	Severely Disadvantaged Community	4,352	982
Lost Hills	Severely Disadvantaged Community	2,376	3,561
Maricopa	Severely Disadvantaged Community	1,024	937
McKittrick	Severely Disadvantaged Community	102	1,510
South Taft	Severely Disadvantaged Community	2,100	689
Taft	Severely Disadvantaged Community	8,564	9,774
Taft Heights	Severely Disadvantaged Community	2,000	189
Wasco	Severely Disadvantaged Community	4,711	1,802

NOTE: DWR used the 2020 US Census American Community Survey data for its census place Disadvantaged Communities (DAC) data. The estimated population presented here represents a 2024 estimate of population in the DAC/SDAC geographic areas based on county-specific growth rate percentages on 2020 census block data.

Table 1-3. DAC and SDAC Characteristics in the Proposed Kern County (Westside South) Area of the KWC Management Zone					
Category	Number of Locales	Acres in Management Zone	Population in Management Zone	Total DAC and SDAC Acres	Total DAC and SDAC Population Estimate
DACs	1	2,290	301	27,544	28,518
SDACs	10	27,243	26,228		

Table 1-4. Land Use Summary for the Proposed Kern County (Westside South) Area of the KWC Management Zone			
Land Use Designation	Area	Area (Acres)	Percent of Total Management Zone Area
	(sq. mi.)		
C - Citrus and Subtropical	7.6	4,853	0.59%
D - Deciduous Fruits and Nuts	273.5	175,039	21.29%
F - Field Crops	32.5	20,777	2.53%
G - Grain and Hay Crops	21.6	13,825	1.68%
I - Idle	100.7	64,418	7.84%
P - Pasture	15.7	10,069	1.22%
T - Truck Nursery and Berry Crops	8.1	5,159	0.63%
U - Urban	6.4	4,092	0.50%
UL - Urban Landscape	0.2	130	0.02%
V - Vineyard	17.1	10,953	1.33%
X - Unclassified	13.3	8,502	1.03%
YP - Young Perennial	1.7	1,091	0.13%
Total Mapped Land Use Area	498.3	318,908	38.80%
Unmapped	786.1	503,076	61.20%
TOTAL	1284.3	821,984	100.00%

ATTACHMENT C-1.3 GROUNDWATER SUSTAINABILITY AGENCIES WITHIN THE PROPOSED KERN COUNTY (WESTSIDE SOUTH) AREA OF THE KERN WATER COLLABORATIVE MANAGEMENT ZONE

There are thirteen GSAs that are located within the Kern County (Westside South) Area of the KWC Management Zone

Buena Vista Water Storage District GSA

Point of Contact: Tim Ashlock, Engineer Manager, 525 North Main Street, PO Box 756, Buttonwillow, CA 93206, 661-764-2901, tim@bvh2o.com; www.bvh2o.com

Member Agency: N/A

Other Interested Parties: N/A

El Rico GSA

Point of Contact: Jeof Wyrick, Chairman, El Rico GSA 101 W. Walnut Street | Pasadena, CA 91103 626-583-3000 | jwyrick@jgboswell.com

Member Agency: Alpaugh Irrigation District, City of Corcoran, Corcoran Irrigation District, County of Kings, Lovelace Reclamation District No. 739, Melga Water District, Salyer Water District, Tulare Lake Basin Water Storage District, and Tulare Lake Drainage District.

Other Interested Parties: N/A

Henry Miller Water District GSA

Point of Contact: Jeof Wyrick, President, Chairman, 101 W. Walnut Street, Pasadena, CA 91103, 626-583-3000, jwyrick@jgboswell.com

Member Agency: California Water District

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Kern Groundwater Authority GSA

Point of Contact: Kristin Pittack, Senior Water Resources Planner, 7080 N Whitney Avenue, Suite 101, California, Fresno, CA 93720, 760-223-5062, kpittack@rinconconsultants.com

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

North Kern Water Storage District GSA

Point of Contact: David Hampton, General Manager, 33380 Cawelo Ave., Bakersfield, CA 93308, 661-393-2696, dhampton@northkernwsd.com; www.northkernwsd.com/

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Rosedale-Rio Bravo Water Storage District GSA

Point of Contact: Dan Bartel, Engineer-Manager, 849 Allen Road, Bakersfield, CA 93314, 661-589-6045, dbartel@rrbwsd.com; www.rrbwsd.com

Member Agency: Agape Mutual Water System, Allen Road Mutual Water System; Brock Mutual Water Company; Enos Lane Public Utility District; Gooselake Water Company; Harvest Moon Mutual Water Company; Heath Brimhall P.O.A.; Kranenburg Water System; Maher Mutual Water Company; Manon Manor Mutual Water Company; Mustang Mutual Water System; Nord Road Water Association; North Kranenburg Water System; Schweikart Water System; Stockdale Ranchos Mutual Water Company; Vaughn Water Company; Wegis Mutual Water Company; Western Acres Mutual Water Company

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Semitropic Water Storage District GSA

Point of Contact: Jason Gianquinto, General Manager, 1101 Central Ave, Wasco, CA 93280, (661) 758-5113, jgianquinto@semitropic.com; www.Semitropic.com

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Shafter-Wasco Irrigation District GSA

Point of Contact: Kris Lawrence, General Manager, 16294 Central Valley Hwy, Wasco, CA 93280, 661-440-8559, klawrence@swid.org; www.swid.org

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Southwest Kings GSA

Point of Contact: Deanna Jackson, Executive Director, 944 Whitley Avenue, Suite E, Corcoran, CA 93212, (559) 762-7240, djackson@tcwater.org; <http://tcwater.org/>

Member Agency: Dudley Ridge Water District, Tulare Lake Reclamation District No. 761, Tulare Lake Basin Water Storage District, Kettleman City Community Services District and the County of Kings

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Tri-County Water Authority GSA – Tulare Lake

Point of Contact: Deanna Jackson, Executive Director, 944 Whitley Avenue, Suite E, Corcoran, CA 93212, (559) 762-7240, djackson@tcwater.org; <http://tcwater.org/>

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

West Kern Water District GSA

Point of Contact: Greg Hammett, General Manager, 800 Kern St, Taft, CA 93268, 661-763-3151, ghammett@wkwd.org

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Westside District Water Authority GSA

- Point of Contact: Mark Gilkey, General Manager, 21908 Seventh Standard Road, McKittrick, CA 93251, 661-633-9022, mgilkey@westsidewa.org
- Member Agency: Belridge Water Storage District; Berrenda Mesa Water District; and Lost Hills Water District
- Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Wheeler Ridge-Maricopa GSA

- Point of Contact: Sheridan Nicholas, Engineer-Manager, 12109 HWY 166, BAKERSFIELD, CA 93313, (661) 527-6075, snicholas@wormwsd.com; www.wormwsd.com
- Member Agency: Buena Vista Water Storage District GSA Henry Miller Water District GSA Cawelo Water District GSA Kern Groundwater Authority GSA City of McFarland GSA Pioneer GSA Semitropic Water Storage District GSA West Kern Water District GSA Greenfield County Water District GSA Kern River GSA Olcese Water District GSA
- Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

KERN WATER COLLABORATIVE PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment C-2

PREPARED FOR



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AB	Public Water Supply Well Status, Abandoned
APN	Assessor Parcel Number
AR	Public Water Supply Well Status, Active Raw
AR Difference or A-R	Difference Between Nitrogen Applied and Nitrogen Removed
AR Ratio or A/R	Ratio of Nitrogen Applied to Nitrogen Removed
AU	Public Water Supply Well Status Active Untreated
Basin Plans	Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin
BOD	Biochemical Oxygen Demand
BPA	Basin Plan Amendment
C	Public Water System Type, Community
CDP	Census Designated Place

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Acronym	Meaning
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CETHP	California Environmental Health Tracking Program
CIWQS	California Integrated Water Quality System
Coalition	Kings River Water Quality Coalition
CVDRMP	Central Valley Dairy Representative Monitoring Program
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVHM2	Central Valley Hydrologic Model 2.0
CVSC	Central Valley Salinity Coalition
CVWB	Central Valley Water Board
CSD	Community Services District
CWD	Community Water District
CWS	Community Water System
DAC	Disadvantaged Community
DDW	Division of Drinking Water
DS	Public Water Supply Well Status Destroyed
DUC	Disadvantaged Unincorporated Community
DWR	California Department of Water Resources
DWW	Drinking Water Watch
EC	Electrical Conductivity
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
FAQs	Frequently Asked Questions
FMZP	Final Management Zone Proposal
GAMA	Groundwater Ambient Monitoring and Assessment
GAC	Granular Activated Carbon
GAR	Groundwater Quality Assessment Report
GIS	Geographic Information Systems
gpd	gallons per day
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrologic Conceptual Model
ILRP	Irrigated Lands Regulatory Program
INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status Inactive Raw
IU	Public Supply Well Status Inactive Untreated
IX	Ion Exchange

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Acronym	Meaning
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
O&M	Operation and Maintenance
OAL	Office of Administrative Law
OWTS	Onsite Waste Treatment System
PMZP	Preliminary Management Zone Proposal
PN	Public Supply Well Status Pending
POU	Point of Use
PWS	Public Water System
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children

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Acronym	Meaning
WDR	Waste Discharge Requirements
WMP	Waste Management Plan
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

1. CHARACTERIZATION OF PROPOSED KWC MANAGEMENT ZONE: KERN COUNTY (WESTSIDE SOUTH) AREA

This subsection includes an overview of the hydrogeology, groundwater elevations and flow directions, a description of the delineation of the Upper Zone of the groundwater system, and the characterization of nitrate in groundwater for the proposed Kern County (Westside South) area of the Kern Water Collaborative (KWC) Management Zone.

1.1. Hydrogeology

The hydrogeology of the proposed Kern County (Westside South) Area of the KWC Management Zone is described in California's Department of Water Resources (DWR) Bulletin 118 (B118) description of the Kern County Subbasin (DWR, 2006) and the Basin Settings chapter of the Kern County Subbasin Groundwater Sustainability Plan (GSP) (GEI, 2019 and GEI, 2022). B118 describes the Kern County Subbasin as a subbasin of the San Joaquin Valley Groundwater Basin bounded in the north by the Kern County line, and on the west by the marine sediments of the San Emigdio Mountains and Coast Ranges (DWR, 2006).

The GSP's hydrogeological conceptual model provides details about the regional geologic and structural setting in the greater Kern County Subbasin (GEI, 2022). Tectonic activity elevated the Coast Ranges and formed the Sierra Nevada while deforming the crust along the proto-San Andreas and present-day San Andreas fault, which led to the formation of the structural traps for oil and gas accumulation on the west side of the Subbasin. A marine embayment also formed, allowing seas to advance and retreat in the area, which resulted in the deposition of both continental and marine sediments. When the seas retreated, continental sediments from alluvial and fluvial systems were deposited. Brackish and freshwater lakes also formed within the Subbasin, resulting in thick deposits of clay, including the Corcoran Clay, which occurs in the eastern half of the proposed Kern County (Westside South) Area of the KWC Management Zone (generally east of Lost Hills). The Corcoran Clay occurs laterally in the north Subbasin (approximately 34 miles wide in extent) from Delano to Lost Hills and narrows to the south, where it is not a confining bed in the Kern Fan Area. The Corcoran Clay is a member of the Tulare Formation that divides the upper and lower units of permeable deposits in this Formation, while also providing confining properties to the permeable deposits in the lower Tulare Formation. Groundwater beneath the Corcoran Clay is typically confined to semiconfined. On the west side of the Subbasin (including parts of the Westside South area), the Tulare Formation is also divided into upper and lower units by potential equivalents to the Corcoran Clay that are reported locally (GEI, 2022).

The Tulare Formation is overlain by the Kern River Formation, which consists of poorly sorted, lenticular deposits of clay, silt, sand, and gravel derived from the Sierra Nevada. The Kern River Formation is thinner on the west side of the Kern County Subbasin and is found at elevations lower than the alluvial deposits that make up a portion of the regional aquifer system. The Quaternary alluvial deposits in the Westside South area include alluvial, lacustrine, and marsh-dominated facies in the northeast. On the western and southern portions of the Westside South area, alluvial, debris flow-dominated facies occur derived from Coast Range sediments (GEI, 2022).

The tectonic activity resulted in a fold belt on the west side of the Subbasin that includes the anticlines: Kettleman Hills, Lost Hills, Elk Hills, and at the east boundary of the fold-belt, Buttonwillow and Semitropic anticlines. These structures act as restrictions to groundwater flow. The west side of the Subbasin differs from the eastern portions of the Subbasin due to these anticline structures, as well as the lithologic sources of deposits (the west contains more Coastal Range-sourced marine deposits resulting in clays and silts and some sands), and the thickness of fresh water bearing deposits and their sources of groundwater recharge (the west contains more restrictive localized groundwater systems with poorer quality water). Limited groundwater production occurs on the western-southern corridor of the Kern County (Westside South) area; the remaining eastern portion of the Kern County (Westside South) Area generally has groundwater extraction in the alluvium and Tulare Formation with confined conditions below the Corcoran Clay (or local equivalent) (GEI, 2022). **Figure 1-1a** and **Figure 1-1b** illustrate the a) surficial geology and cross-section location and b) the conceptual cross-section and principal aquifer units in the Kern County Subbasin, including the Westside South.

The hydrogeology of the Kern County Subbasin plays a role in the vulnerability of the basin to nitrate contamination. The high vulnerability area mapping on behalf of the Westside Water Quality Coalition, Buena Vista Coalition, and Kern River Watershed Coalition Authority (or “Coalitions”) was updated in 2021 as part of the Central Valley Groundwater Monitoring Collaborative (CVGMC) Five-Year Assessment Report (CVGMC, 2021). This assessment included the refinement of the high-vulnerability areas based on additional groundwater quality data, particularly exceedances of the maximum contaminant level (MCL) for nitrate of 10 mg/L as nitrogen (N). The physical intrinsic vulnerability depends on the presence of physical hydrogeologic characteristics and land use and water management practices that may contribute to constituents migrating to groundwater. The presence of hydrogeologic characteristics that enable potential contaminants to reach groundwater more readily makes a location more vulnerable to groundwater contamination compared to locations with hydrogeologic characteristics that impede the ability of contaminants to reach groundwater or attenuate the contamination. The high vulnerability areas (HVAs) that cover the proposed Kern County (Westside South) Area of the KWC Management Zone are presented in **Figure 1-2**.

1.2. Groundwater Elevations and Flow

Groundwater flow is described from two main sources for the Kern County (Westside South) Area of the KWC Management Zone: DWR’s Spring 2025 groundwater elevation contour mapping and the Kern Subbasin’s draft 2024 GSP documentation of generalized groundwater flow in the Kern County Subbasin (GEI, 2024). Groundwater elevation contour data and corresponding groundwater elevation point data were downloaded from the DWR SGMA Data Viewer (DWR, 2024). The data summarized correspond to groundwater elevation contours of the water table (unconfined) aquifer and point data from Spring 2025 (**Figure 1-3a**). A groundwater depression exists in the northeastern part of the proposed Kern County (Westside South) Area of the KWC Management Zone in the unconfined portion of groundwater. In the unconfined aquifer, groundwater levels are highest in the south, with elevations over 230 feet in the south. According to the Spring 2025 contour lines, groundwater in the unconfined aquifer flows to the north, toward the groundwater depression, where groundwater elevations are lower than -100 feet. DWR did not have any control points to map to aid in the understanding of the unconfined groundwater flow directions on the western corridor of the Kern County (Westside South) Area of the KWC Management Zone.

The generalized groundwater flow directions, as developed for the Kern County Subbasin GSP (GEI, 2024), indicate that groundwater flows are guided by tectonic features of anticlines and synclines, including from the West Fold Belt Anticlines (**Figure 1-3b**). Groundwater along the western corridor of the Kern County (Westside South) area of the KWC Management Zone flows northeast off the Coast Ranges and southward along the San Joaquin Valley Syncline. On the east side of the San Joaquin Valley Syncline (in the northeastern portion of the Kern County (Westside South) Area), groundwater tends to flow to the north-northwest (**Figure 1-3b**).

The focus of the Nitrate Control Program is on the Upper Zone, as described in Section 1.3 below. The description of groundwater movement in this document focuses primarily on the Upper Zone of the groundwater system, which may not represent the movement of all groundwater present in deeper zones within the proposed Management Zone.

1.2.1. Areas of Potential Contribution

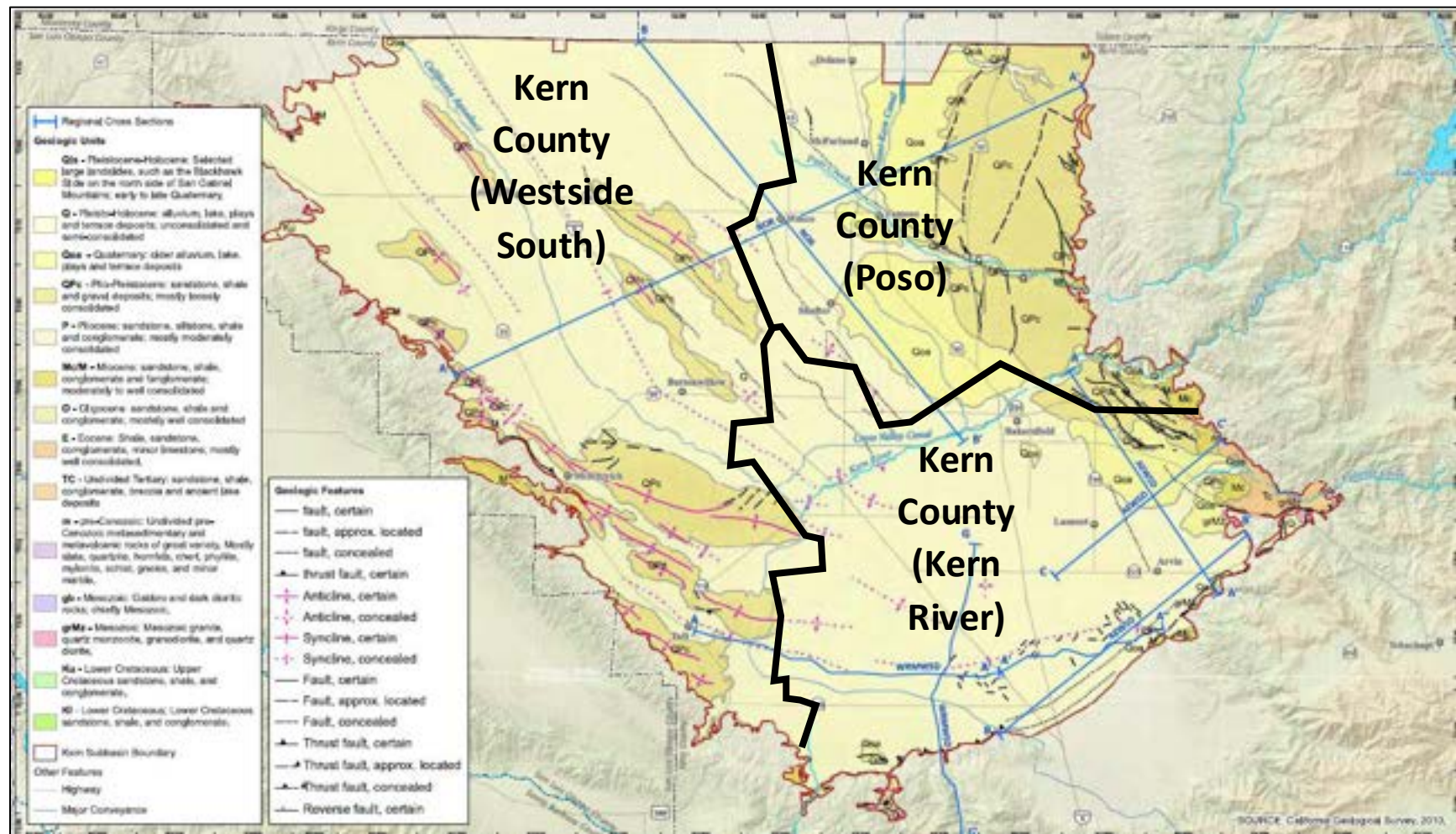
This section evaluates potential impacts to groundwater associated with downgradient migration of nitrate in the unconfined portion of the groundwater system from the proposed Kern County (Westside South) Area of the KWC Management Zone. Using the Spring 2025 groundwater elevation contours from DWR, hydraulic gradients and flow directions can be quantified along the boundaries of the proposed Management Zone. No gradients are calculated along the edge of alluvial materials and the terminus of the Upper Zone. No gradients are calculated along proposed Management Zone boundaries that border Priority 1 (P1) or Priority 2 (P2) areas. Most of the boundaries of the P2 proposed Management Zone areas of KWC (Tulare Lake Subbasin portion, Kern County (Westside South)), and Kern County (Poso) border other P2 Proposed Management Zones or P1 Management Zones, with the exception of the southeastern border of the Kern County (Westside South) Area and the southern boundary of the Kern County (Poso) area, which border the non-prioritized Kern County (Kern River) Area.

The gradients developed from the Upper Zone aquifer contour map listed in the table below (**Table 2-1**) follow a north-to-south pattern from the northeastern proposed Kern County (Westside South) Management Zone boundary for the portion that borders the non-prioritized Kern County (Kern River) Area of the KWC Management Zone. This section of the P2 boundary is discretized into major segments of distinct groundwater flow direction characteristics. No gradients were calculated along the western portion of the proposed Kern County (Westside South) Area of the KWC Management Zone boundary, as this represents the edge of alluvial materials and the terminus of the Upper Zone. Gradients are not calculated along the northern proposed border, as this corresponds to the Tulare Lake Subbasin (covered in terms of the Nitrate Control Program by KWC and KWA) and the Tule Subbasin (covered by the Tule Subbasin Management Zone). Hydraulic gradients and directions are provided in **Table 2-1** to quantify potential areas of contribution associated with possible downgradient migration of nitrate from within the proposed Kern County (Westside South) Area of the KWC Management Zone. Groundwater flows in and out of the proposed P2 areas of the KWC Management Zone along its border with adjacent subbasin areas. The adjacent subbasin areas and their Nitrate Control Program's basin priority are also listed in the table.

The table lists the direction of groundwater flow and indicates whether the flow is entering (in) or exiting (out) of the proposed Management Zone (or flowing parallel to the boundary line). The area of potential

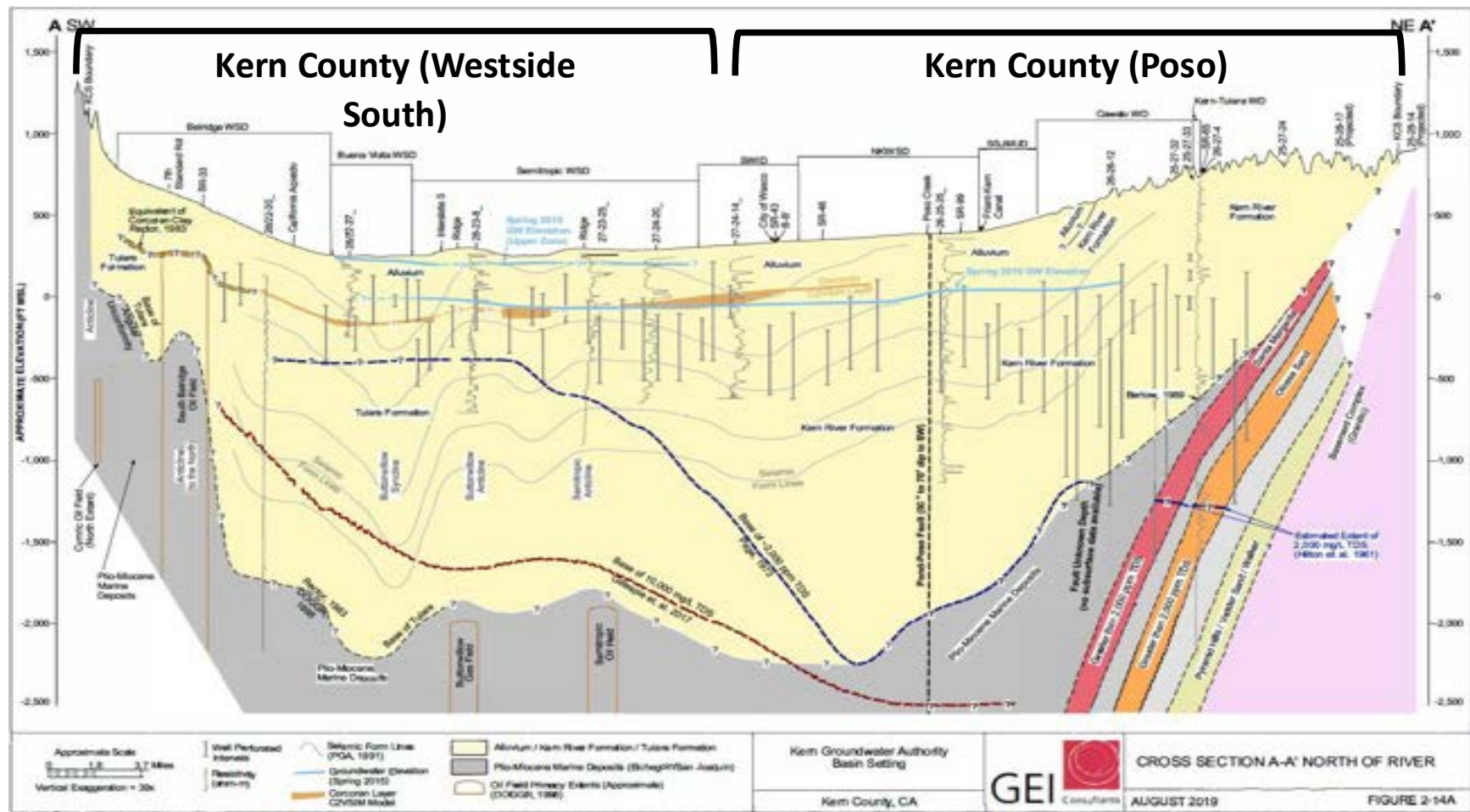
contribution associated with nitrate originating from the proposed Management Zone corresponds with spatial areas along the proposed Management Zone border where groundwater elevation contours indicate that groundwater flows out of the proposed Management Zone and into the adjacent subbasin area. The eastern border of the proposed Kern County (Westside South) Area of the KWC Management Zone is divided into five main segments based on similar characteristics of the Spring 2025 groundwater flow direction and magnitude of hydraulic gradients. There is one small segment (about three miles long) of the southeastern border between Brite Road and Buena Vista Creek where the DWR contour lines suggest groundwater is migrating outside of the P2 Kern County (Westside South) Area of the KWC Management Zone and into KWC Management Zone's non-prioritized Kern County (Kern River) Area. Nitrate concentrations are unknown in the Upper Zone in this area. Another small area along the border of the P2 Kern County (Westside South) where groundwater may be migrating into the KWC Management Zone's non-prioritized Kern County (Kern River) Area in the southeast from A W Noon Park south to Highway 166 (a stretch of about 5 miles). This area has nitrate levels in the Upper Zone above 10 mg/L as N and unknown levels of nitrate. Groundwater flows parallel to the boundary or into the Kern County (Westside South) Area of the KWC Management Zone for the remainder of the border that is not adjacent to a P2 or P1 area.

The KWC recognizes that there is uncertainty with the quantification of the areas of potential contribution described above due to hydraulic gradients calculated from specific seasons and years, the portion of the groundwater system represented by the groundwater elevation contours, and the existing data available to prepare the ambient nitrate map. The KWC also recognizes that this analysis represents a snapshot in time, as represented by DWR's Spring 2025 groundwater elevation contour and the currently available nitrate concentration data. As additional information is developed, including groundwater flow assessments performed for GSP implementation purposes, the areas of potential nitrate contribution will be revisited for future work for the Nitrate Control Program, especially the Management Zone Implementation Plan. Coordination efforts between the P2 proposed Management Zone areas and the groundwater sustainability agencies in their areas are underway.



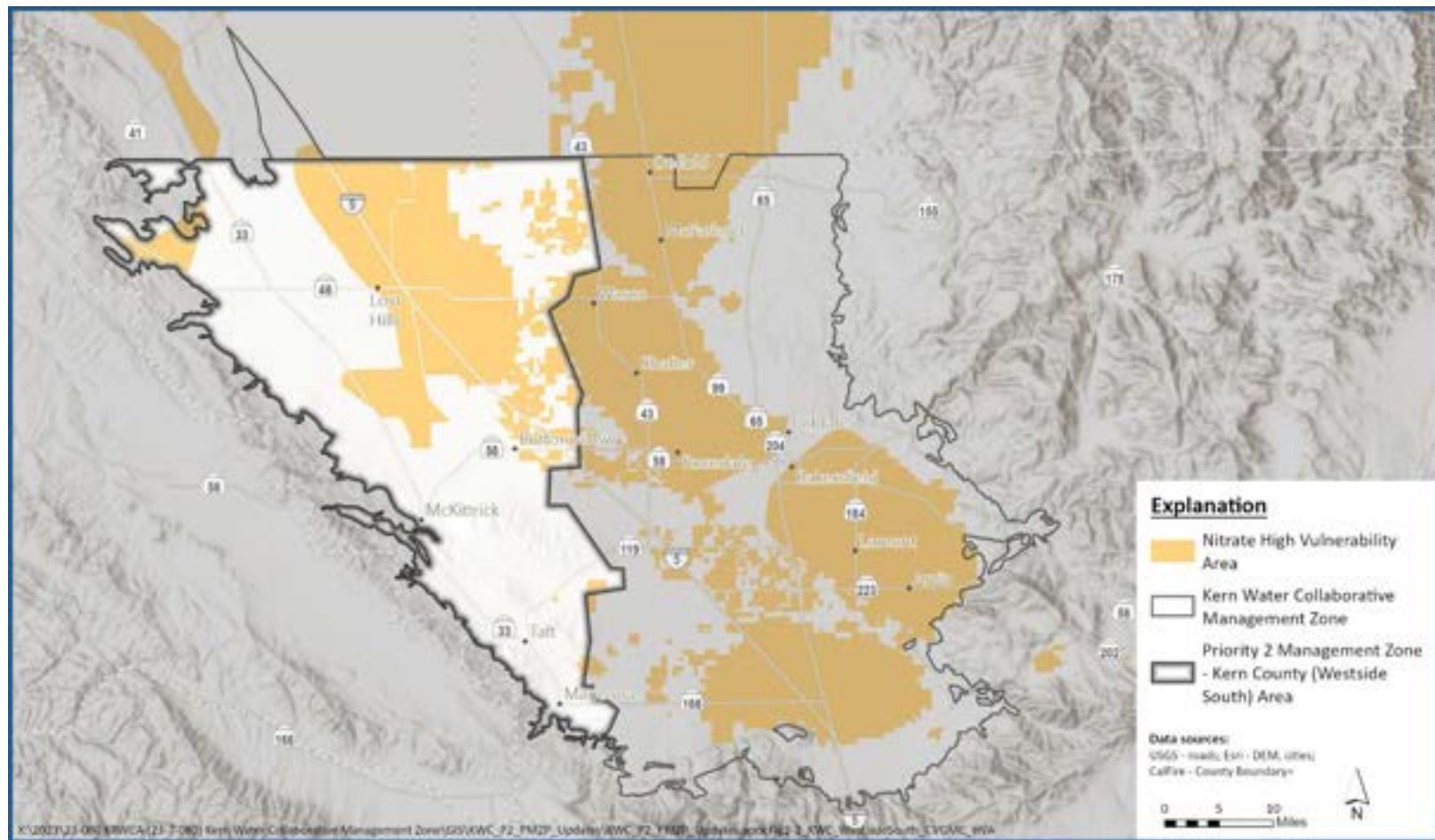
Source: Adapted from Kern Groundwater Authority Amended GSP, GEI Consultants 2019

Figure 1-1a. Conceptual Cross-Section Location Map for the Kern County Groundwater Subbasin



Source: Adapted from Kern Groundwater Authority Amended GSP, GEI Consultants 2019

Figure 1-1b. Conceptual Cross Section A-A' for the Kern County Groundwater Subbasin (Southwest to Northeast)



Source: CVGMC, 2021

**Figure 2-2. High Vulnerability Areas in and Around the
Proposed Kern County (Westside South) Area of the KWC Management Zone**

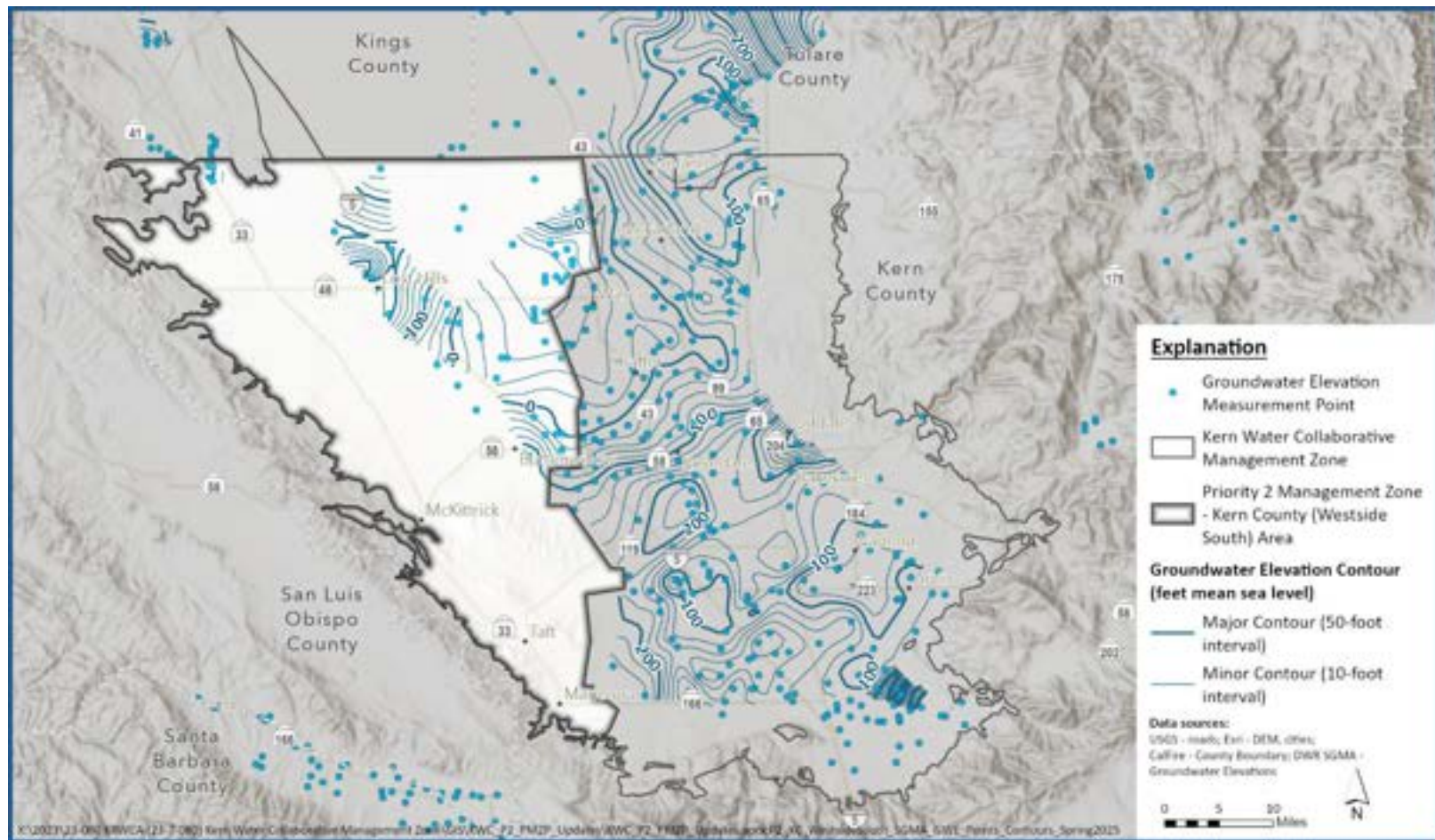


Figure 2-3a. Contours of Equal Groundwater Elevation in the Proposed Kern County (Westside South) Area of the KWC Management Zone, Spring 2025

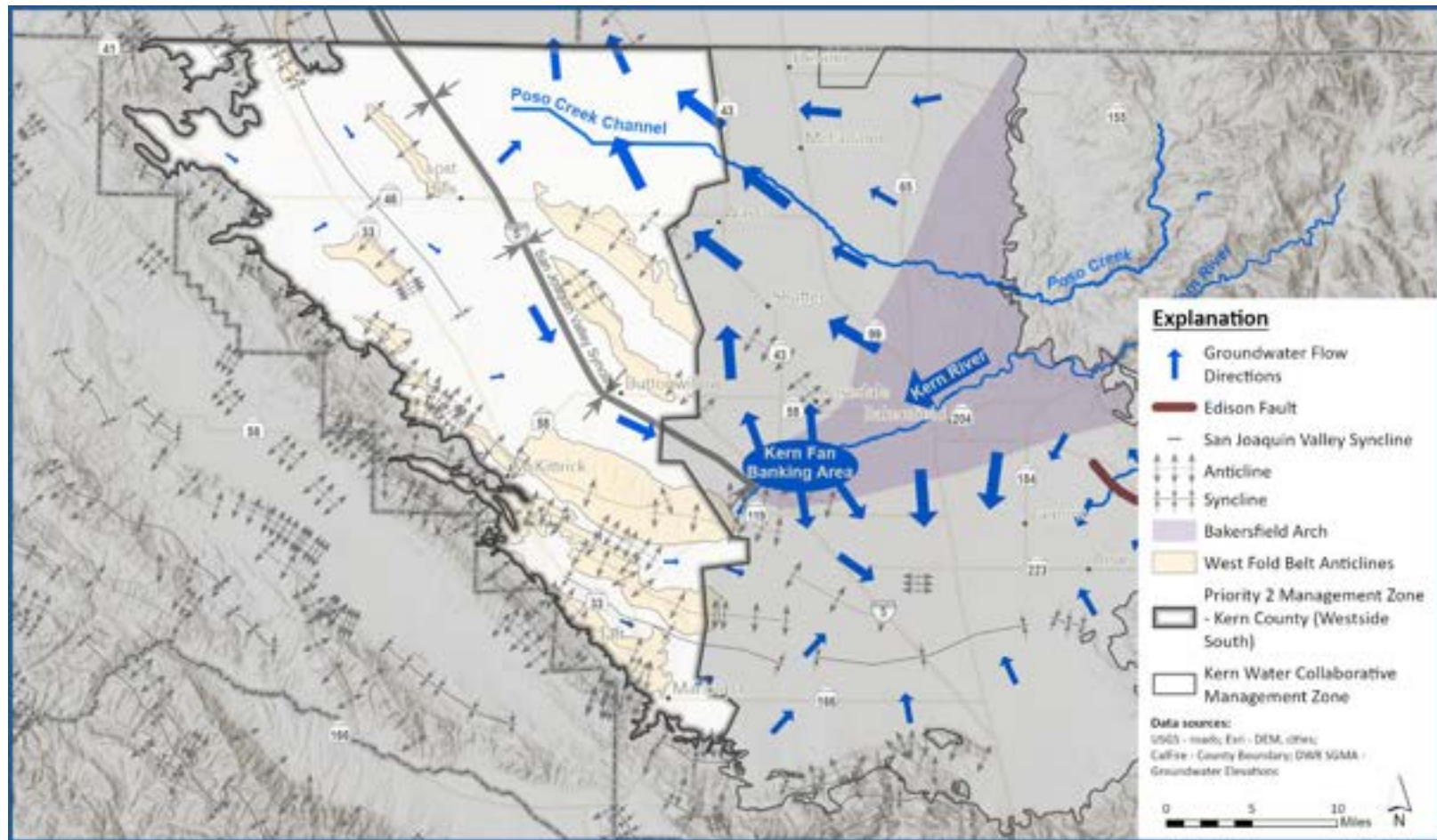


Figure 2-3b. Generalized Groundwater Flow Directions in the Proposed Kern County (Westside South) Area of the KWC Management Zone, (Kern County Subbasin GSP, 2024)

Description of Area Along Proposed MZ Border	Approximate Hydraulic Gradient (ft/ft)	GWE Contour Data Source	GW Flow Direction (In/Out of Proposed Management Zone)	Ambient Post-2010 Nitrate Level (mg/L as N)	Adjacent Subbasin and Priority
Southeastern border from the intersection of the Kern County (Westside South), (Poso), and (Kern River) areas south to Interstate 5	0.0025	Spring 2025 (DWR)	North (parallel)	>7.5 mg/L as N	Kern County (Kern River) (Not Prioritized)
Small east-west jog of the border between I-5 and Brite Rd	0.0043	Spring 2025 (DWR)	Northeast (In)	>10mg/L as N, Unknown	Kern County (Kern River) (Not Prioritized)
Small north-south jog of the border between Brite Rd and Buena Vista Creek	0.0037	Spring 2025 (DWR)	Northeast (Out)	Unknown	Kern County (Kern River) (Not Prioritized)
Southeastern border from the Buena Vista Creek/Tule Elk State Natural Reserve south to A W Noon Park	0.0018	Spring 2025 (DWR)	Northwest (parallel)	Unknown	Kern County (Kern River) (Not Prioritized)
Southeastern border from A W Noon Park south to Highway 166	0.0022	Spring 2025 (DWR)	Northeast (Out)	Unknown and >10 mg/L as N	Kern County (Kern River) (Not Prioritized)

1.3. Upper Zone Delineation

The delineation of the Upper Zone is described in detail in Final Management Zone Proposal (FMZP) Section 2.2.3. **Figure 2-4a** shows the depth to the bottom of the Upper Zone in the proposed Kern County (Westside South) Area of the KWC Management Zone, as previously delineated to support CV-SALTS analyses (e.g., LSCE et al., 2016). The depth of the bottom of the Upper Zone is shallowest in the north and northeast, where depths are as shallow as less than 200 feet. The deepest depths to the bottom of the Upper Zone occur in the north-central and central area of the proposed Kern County (Westside South) area of the KWC Management Zone where the depths are as deep as 435 feet.

Figure 2-4b provides the depth to the bottom of the Lower Zone in the proposed Kern County (Westside South) Area of the KWC Management Zone, as previously delineated to support CV-SALTS. The depth to the bottom of the Lower Zone ranges from as shallow as about 200 feet in the area northeast of the Lost Hills area, to as deep as about 900 feet below ground surface in the northwest.

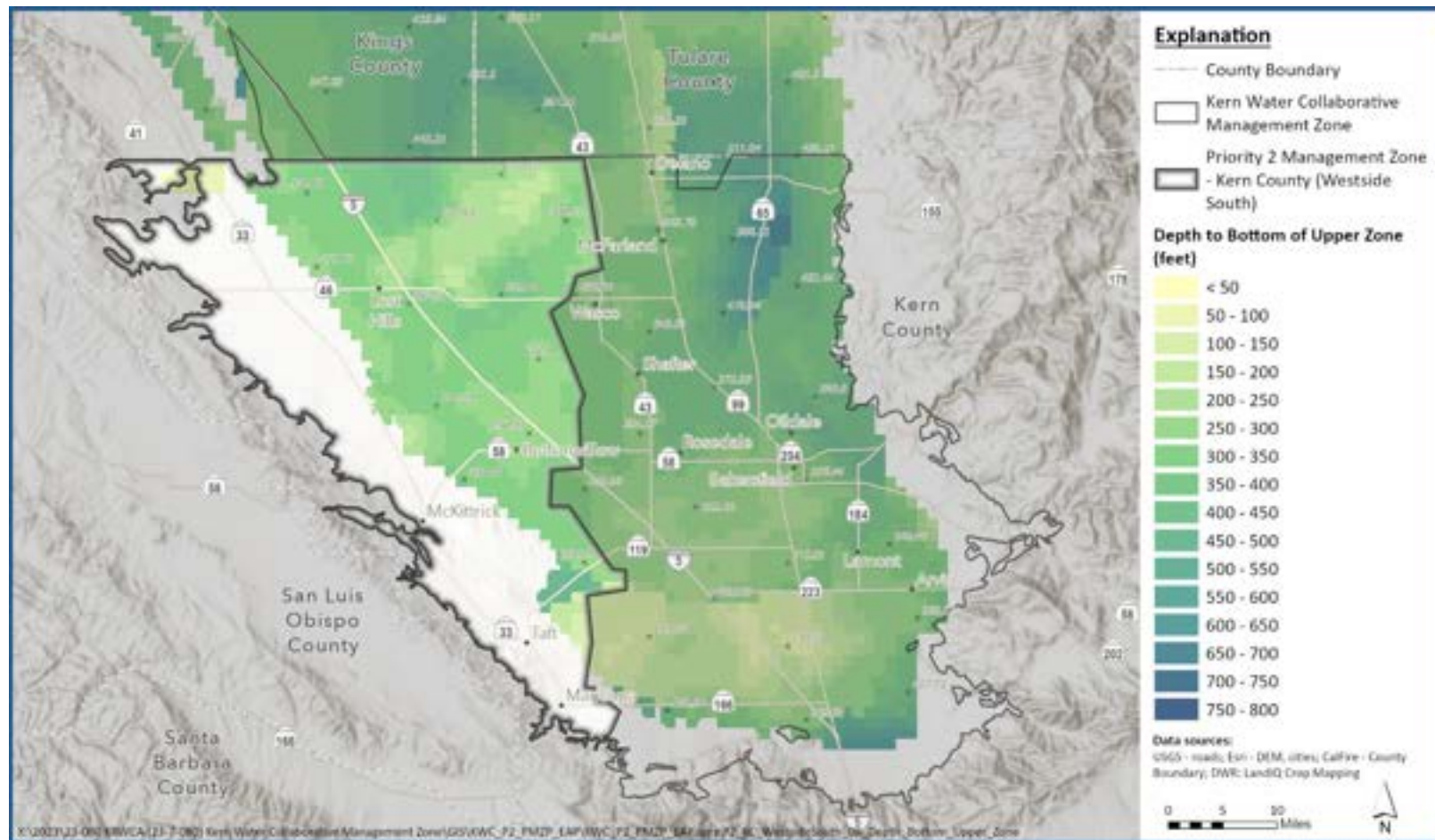


Figure 2-4a. Depth to the Bottom of the Upper Zone, Proposed Kern County (Westside South) Area of the KWC Management Zone

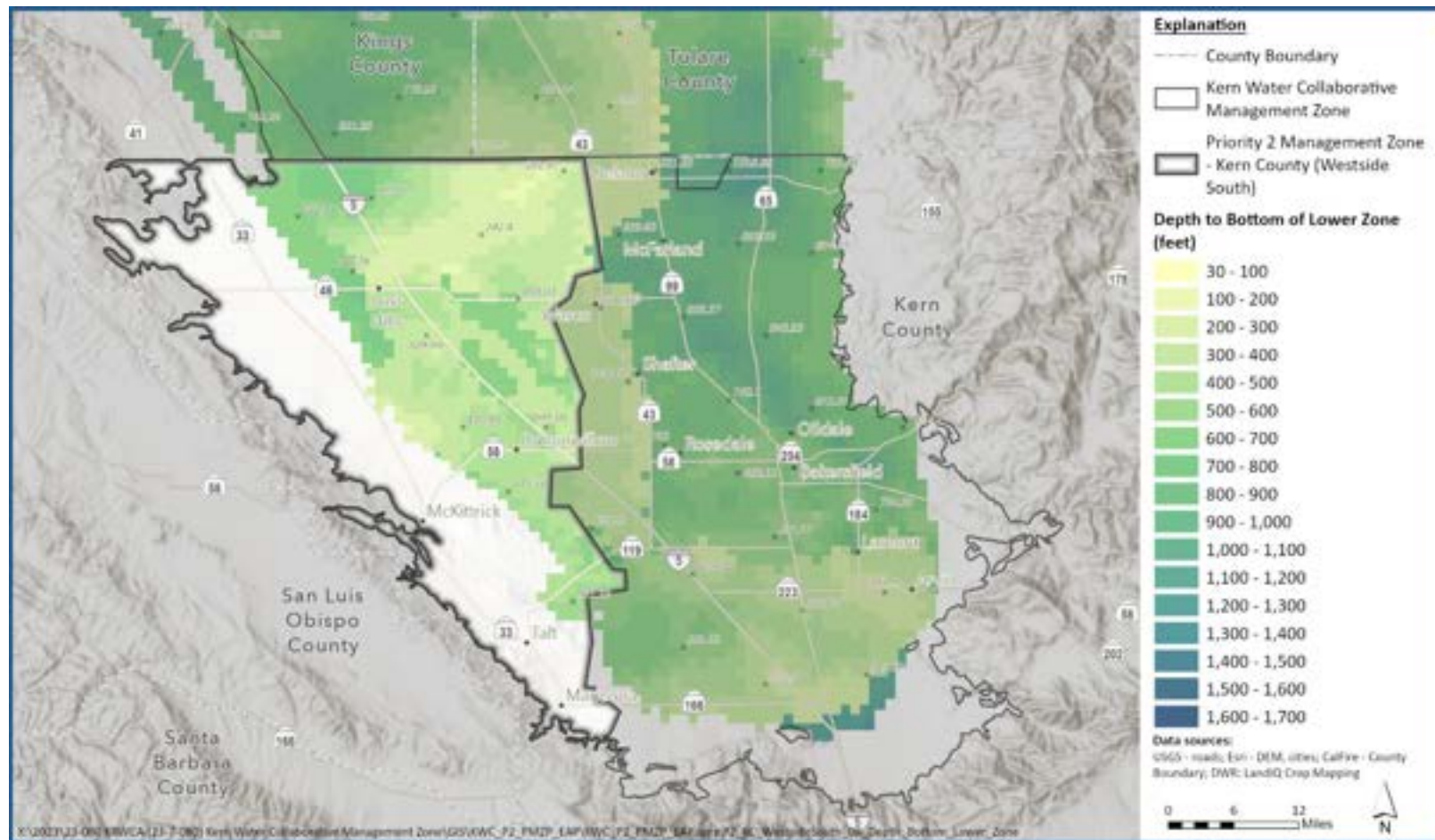


Figure 2-4b. Depth to the Bottom of the Lower Zone, Proposed Kern County (Westside South) Area of the KWC Management Zone

1.4. Nitrate Water Quality

To characterize nitrate concentrations in groundwater beneath and adjacent to the proposed Kern County (Westside South) Area of the KWC Management Zone, available groundwater quality data were compiled, organized, and used to determine ambient conditions and trends that indicate where nitrate conditions are improving, degrading, or where no significant trend exists. This section describes groundwater nitrate data sources (**Table 2-2**), existing ambient nitrate conditions, nitrate trends analyses, and an evaluation of inactive drinking water wells.

Table 2-2. Summary of Wells with Nitrate Data Located in the Proposed Kern County (Westside South) Area of the KWC Management Zone by Source (All Well Types & Depths)			
Source ¹	All Well Depth Categories		
	Wells with Nitrate Data	Wells with Post-2010 Nitrate Data	Wells with Post-2010 Nitrate MCL Exceedance
Division of Drinking Water ²	42	34	3
DWR ³	708	0	0
GAMA ⁴	0	0	0
Irrigated Lands ⁵	88	88	21
Regulated Facilities ⁶	206	182	88
USGS ⁷	81	22	3
Management Zone ⁸	1	1	0
County ⁹	0	0	0
Total	1,126	327	115

¹ Data sources originated from the GAMA website (<https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/>, accessed October 2025).

² These wells are from Public Water Systems with data from GAMA.

³ DWR conducts groundwater sampling and is provided by GAMA.

⁴ GAMA data originates from the GAMA Program, which sampled private domestic wells, as well as other supply wells and monitoring wells.

⁵ These are drinking water wells tested as required by the Irrigated Lands Regulatory Program (ILRP), with data made available through GAMA.

⁶ These are mostly monitoring wells from Water Board regulated facility cleanup and permitted sites with data made available through GAMA.

⁷ These are wells sampled by the U.S. Geological Survey, with data made available through GAMA.

⁸ These are domestic wells sampled by the Management Zone since implementation of the Early Action Plan.

⁹ Nitrate data were requested from county entities in the Management Zone and represent nitrate data from well permit samples or State Small Water System samples, when available.

1.4.1. Existing Ambient Conditions

Nitrate measurements and well data were compiled for the proposed Kern County (Westside South) area of the KWC Management Zone from publicly available data sources and complemented by data requests to counties and local groundwater sustainability agencies. Nitrate data were summarized by data source, depth, and recent nitrate exceedances in **Table 2-3**. There are 327 wells with recent nitrate measurements (since January 2010) in the proposed Management Zone, and 35 percent of them have had a nitrate measurement that exceeds the drinking water MCL.

Figure 2-5 shows the spatial distribution of wells with nitrate measurements by depth category. Wells were categorized into an appropriate depth category (Upper Zone, Lower Zone, Below Lower Zone, and Unknown) to produce GIS coverages of the wells with nitrate data. There are many more Upper Zone wells compared to Lower and Below Lower Zone wells with nitrate data. Upper Zone wells occur in the central and eastern portion of the proposed Kern County (Westside South) Area of the KWC Management Zone. Deeper wells completed in the Lower or Below Lower Zones are mainly located near the communities of Lost Hills, Buttonwillow, and along the western central area of the proposed Kern County (Westside South) Area of the KWC Management Zone. The map in **Figure 2-6** shows the locations of all Upper Zone wells with nitrate measurements since 2010. This figure also illustrates the locations of Upper Zone wells that have had at least one nitrate sample that exceeded the MCL. Upper Zone wells with data since 2010 show many nitrate exceedances located in the central portion of the proposed Kern County (Westside South) Area of the KWC Management Zone, with more wells exceeding the nitrate MCL concentrated in the north compared to the south.

High resolution spatial analyses of nitrate in the Upper Zone, Lower Zone, and Below Lower Zone were performed using the nitrate dataset described above. The Upper Zone remains the focus of the Nitrate Control Program Management Zone work, but analyses of deeper aquifer zones were completed to provide insight into conditions throughout the entire groundwater aquifer system as data are available. This includes the following steps:

- Annual average nitrate concentrations were calculated for each well for the years 2010-2025 to yield one average nitrate concentration representing recent conditions.
- Wells with nitrate data outside the proposed P2 areas of the Management Zone and within a buffer zone of three miles around the P2 areas of the Management Zone boundaries were compiled and used in the high resolution analysis because nitrate occurrence does not cease at the border of the Management Zone.
- Geospatial interpolation (kriging) of the well point data from each individual well depth category (Upper, Lower, and Below Lower Zones) was performed using a search radius of 1.5 miles.

- Gap areas were shown to exist where post-2010 nitrate well data in a specific depth zone (Upper, Lower, and Below Lower Zones) were insufficient to produce the spatial interpolation using the 1.5 mile search criterion¹⁰.

Figure 2-7a illustrates the average post-2010 nitrate concentrations for all Upper Zone wells in the proposed Kern County (Westside South) Area of the KWC Management Zone. This figure also shows the interpolated ambient Upper Zone post-2010 nitrate as well as the gap areas where insufficient Upper Zone nitrate data exist. High nitrate concentrations exist in several relatively small spatial areas throughout the proposed Kern County (Westside South) Area of the KWC Management Zone, including areas in the center, northwest and south of Lost Hills, and in the vicinity of Buttonwillow. Insufficient recent Upper Zone nitrate data are available throughout the south, northwest, and northeastern areas. **Figures 2-7b** and **2-7c** provide the average post-2010 nitrate concentrations for the Lower and Below Lower Zones, respectively. There are fewer recent nitrate groundwater data available for the Lower Zone compared to the Below Lower Zone, but there are some areas of elevated nitrate seen in the Lower and Below Lower Zones (south of Lost Hills).

To test if the ambient average post-2010 nitrate presented in **Figure 2-7a** is potentially underestimating conditions in the Upper Zone, the maximum post-2010 nitrate concentration from each well (point data) is overlain atop the interpolated ambient Upper Zone nitrate in **Figure 2-8**. This map provides a comparison between the shaded colors representing the average annual post-2010 nitrate and the colored dots that represent the maximum measured nitrate in individual wells since 2010. The maximum post-2010 nitrate concentration is presented for the Upper Zone wells in the Management Zone to verify that the identification of areas with potentially elevated nitrate is not underestimated from wells that may have more recently begun to exceed the nitrate MCL. There is good agreement between the ambient post-2010 average-based interpolated Upper Zone nitrate to the maximum Upper Zone nitrate concentrations in individual wells, with very few exceptions. Several individual wells plot on top of or very close to another well with different maximum concentrations despite both assumed to be completed in the Upper Zone. This demonstrates the heterogeneity and variability inherent to groundwater quality conditions, as well as the availability and quality of the dataset. Nitrate data for Upper Zone wells may have a maximum nitrate concentration exceeding the MCL but are located adjacent to other wells that have no measured nitrate concentrations above the MCL. The KWC recognizes that there is some inherent uncertainty associated with this analysis, and also recognizes that the recent ambient nitrate coverage is subject to refinement as additional Upper Zone groundwater nitrate data become available.

1.4.2. Groundwater Nitrate Trends Analysis

The methodology to perform temporal trends analyses on the groundwater nitrate data in the proposed Management Zone is provided in Section 2.2.3 of the main KWC FMZP document. The groundwater nitrate trends analysis includes parametric and non-parametric trends analyses for the full record of

¹⁰ The 1.5 mile search radius was selected to refine the local ambient nitrate mapping for the proposed Management Zone and recognize the potential variability inherent in groundwater nitrate concentrations spatially. This search radius reduces the reliance on well data from farther away that may not represent local nitrate conditions.

measurements for a particular well as well as a more recent view, utilizing data records since 2010. Trends analyses are only performed for wells with at least five measurements in the time period of interest. Identified trends are categorized by magnitude of concentration change annually. The magnitude of change in concentration is equivalent to the best fitting linear slope for parametric trends and the Theil-Sen slope for non-parametric trends. Slopes are calculated for wells with statistically significant trends. Trends in nitrate changing more than 1 mg/L/yr (i.e., 1/10th the MCL for nitrate annually) are considered “increasing” or “decreasing” depending on trend direction. Trends changing less than or equal to 1 mg/L/yr but more than 0.1 mg/L/yr are considered “slightly increasing” or “slightly decreasing”. Trends changing less than or equal to 0.1 mg/L/yr are considered “neutral” and represent small but statistically significant upward or downward changes in concentration. Parametric trends are summarized by depth zone, trend period, and trend magnitude in **Table 2-4a**. Non-parametric trends are summarized in **Table 2-4b**.

Wells with trend analysis results are mapped and symbolized with different colors denoting trend results and different shapes denoting well depth. Upper Zone wells are circles, Lower Zone wells are squares, Below Lower Zone wells are triangles, and wells in unknown depth zones are diamonds. Trends increasing at rates exceeding 1 mg/L/yr are red, and slightly increasing trends are orange. Neutral trends with rates less than or equal to 0.1 mg/L/yr are yellow. Decreasing trends are shades of green with darker shades representing rates exceeding 1 mg/L/yr. Trends not meeting minimum criteria are grey. Trends not meeting minimum criteria are not necessarily stable but do not meet conditions for statistical significance.

Long-term trends are analyzed only in wells with at least one data point prior to 2010. Long-term parametric and non-parametric trends are displayed in **Figures 2-9a** and **2-9b**. The recent trend analysis considers only measurements taken after 2010. Recent parametric and non-parametric trends are displayed in **Figures 2-10a** and **2-10b**. Although most wells with nitrate data do not meet the conditions for estimating parametric (linear) or non-parametric trends, many of those wells that do meet the conditions show both increasing or decreasing trends. Spatially, the wells with decreasing trends are mostly located in the central part of the proposed Management Zone area in areas with elevated ambient nitrate in the Upper Zone. There are a few wells along the eastern border that indicate increasing nitrate trends.

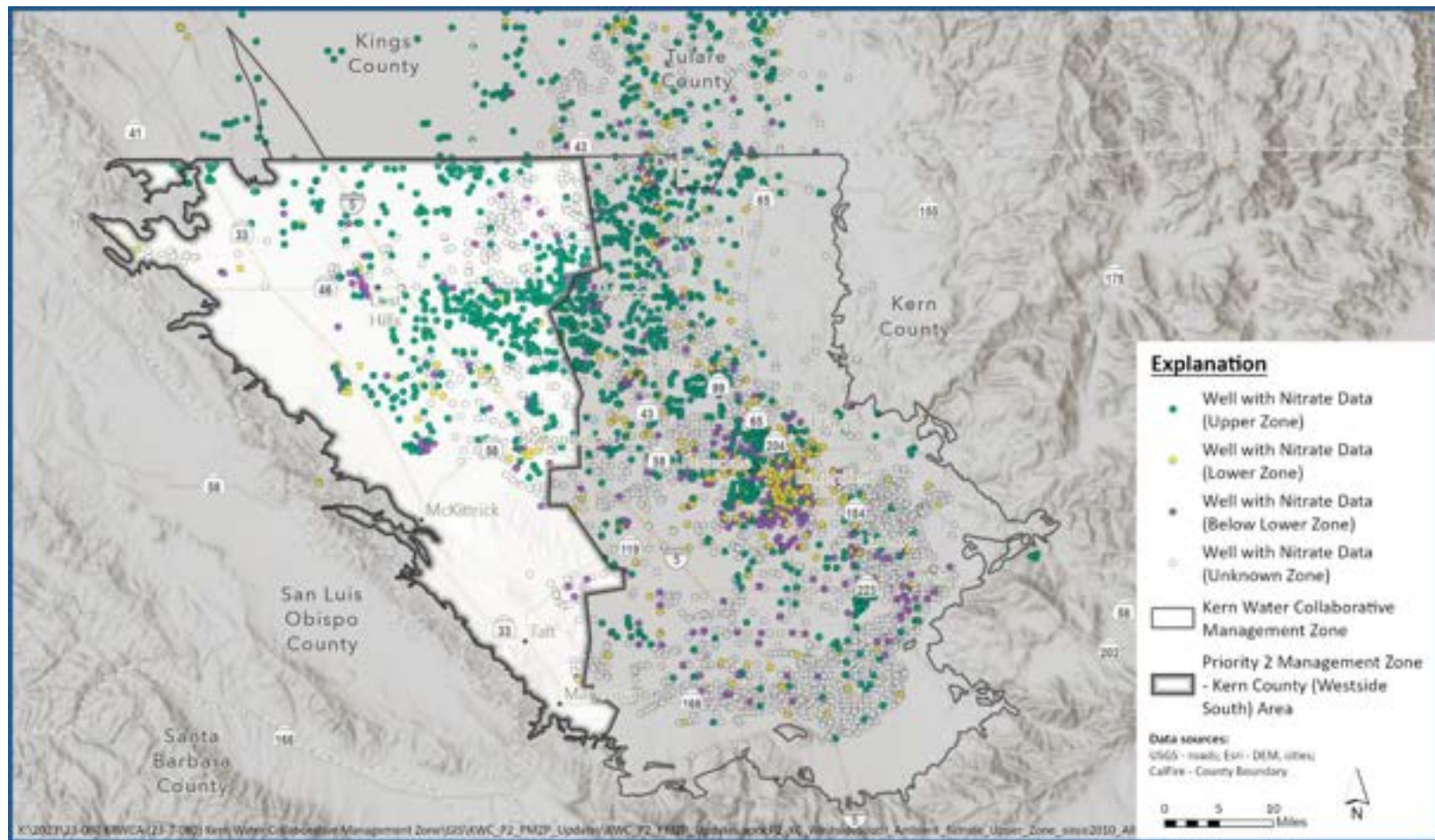


Figure 2-5. Wells with Nitrate Data within the
Proposed Kern County (Westside South) Area of the KWC Management Zone by Depth Category

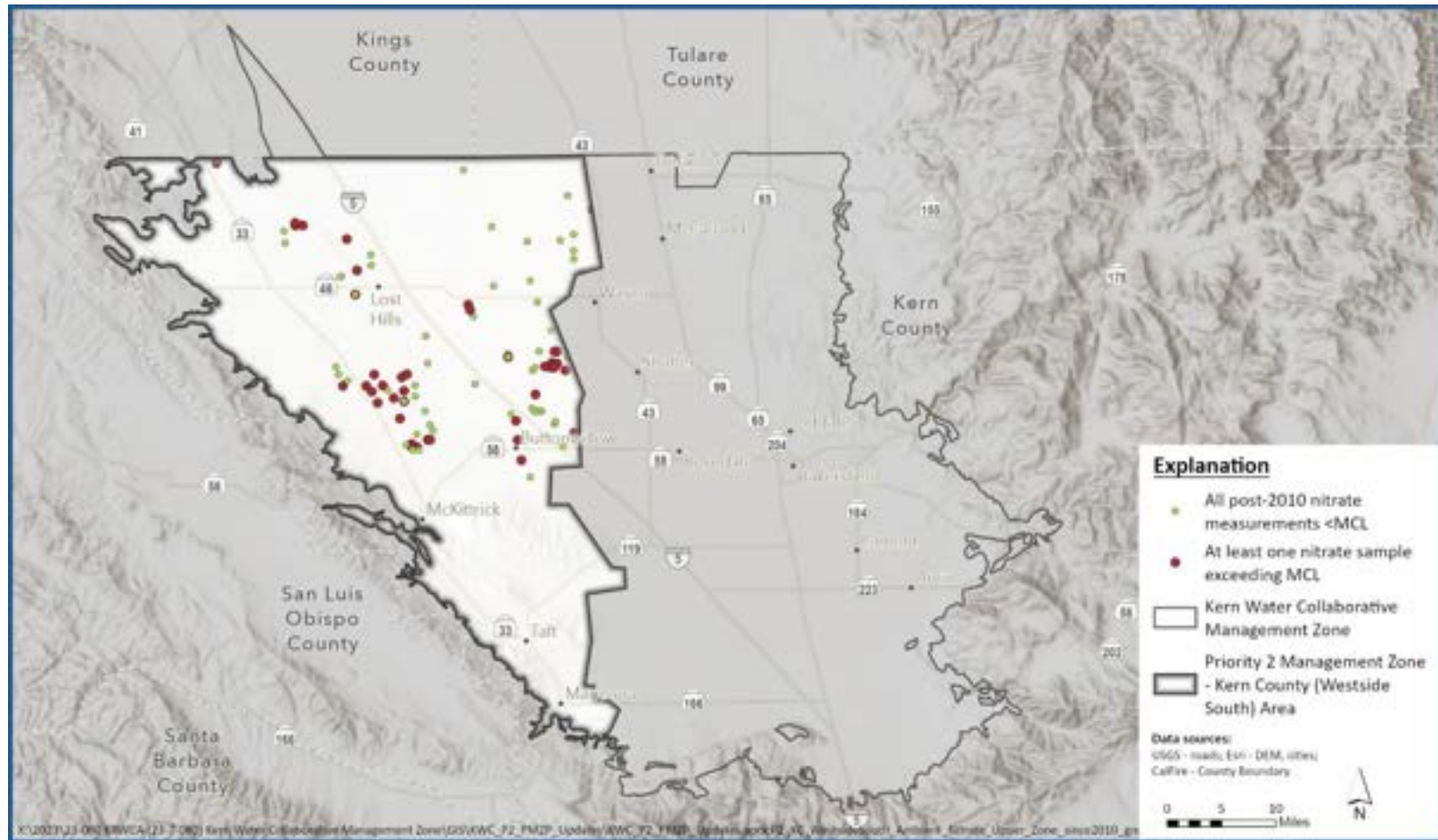
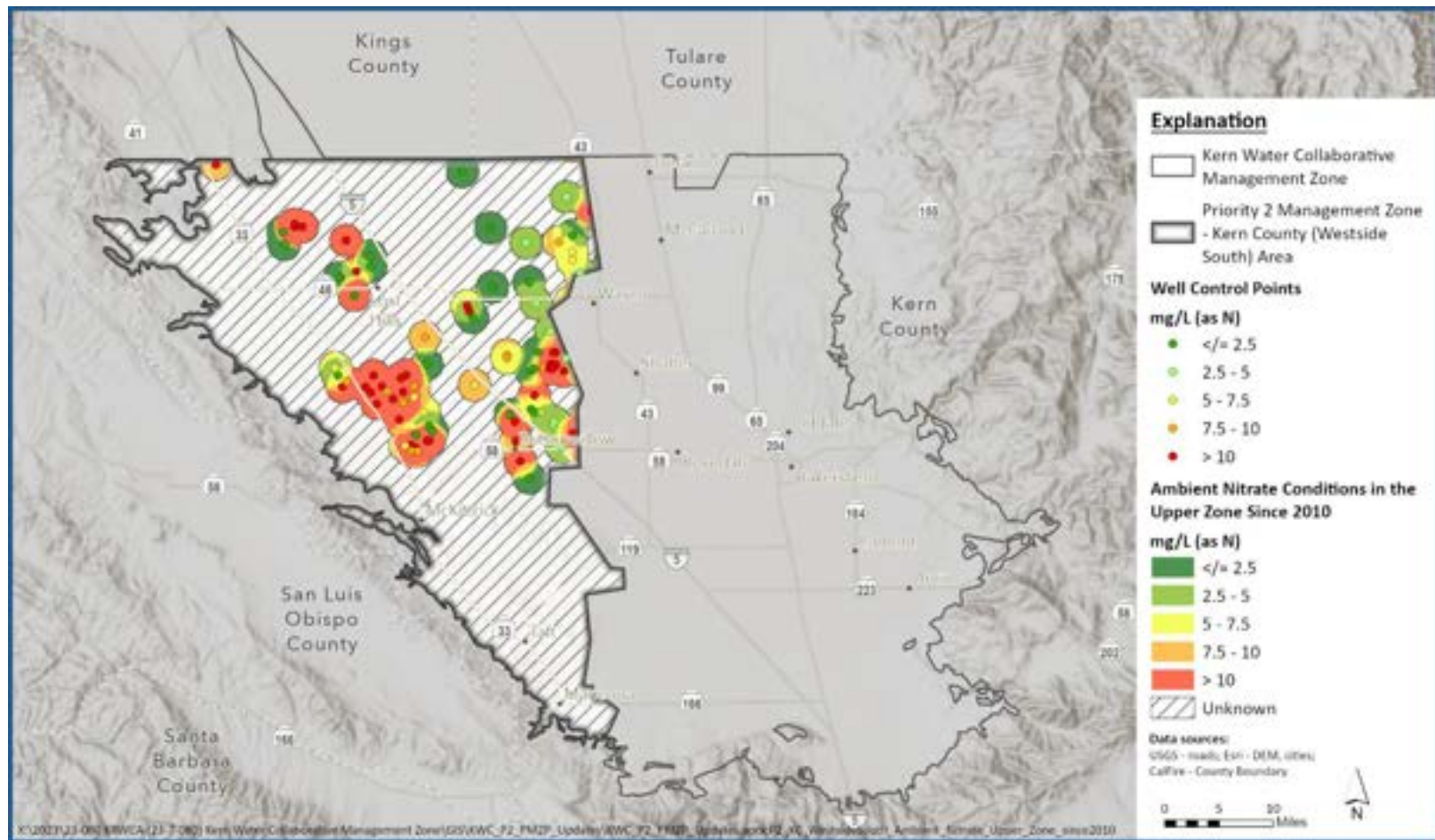
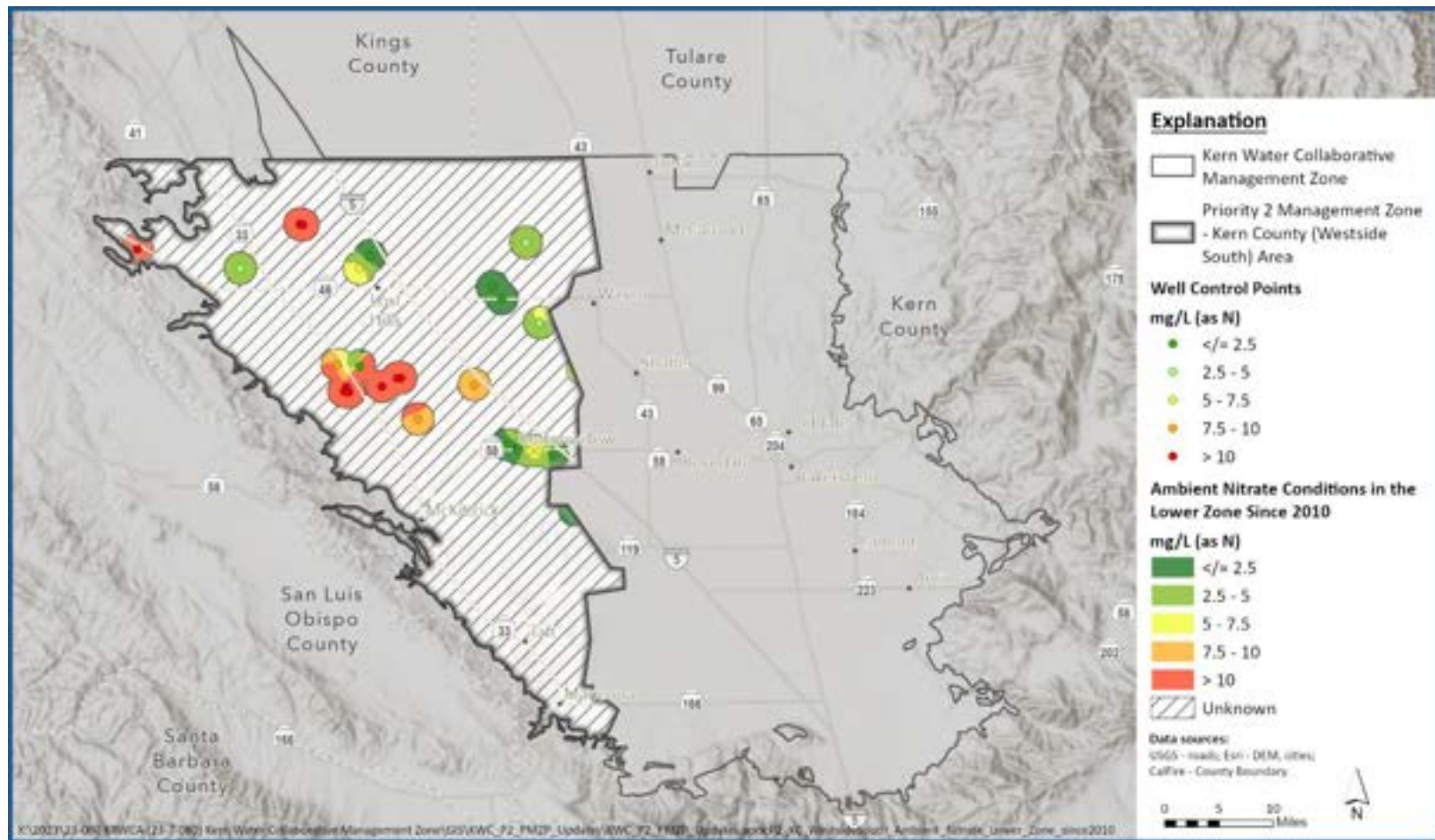


Figure 2-6. Upper Zone Wells with Nitrate Data and Nitrate Concentrations > 10 mg/L-N (Post-2010) in the Proposed Kern County (Westside South) Area of the KWC Management Zone



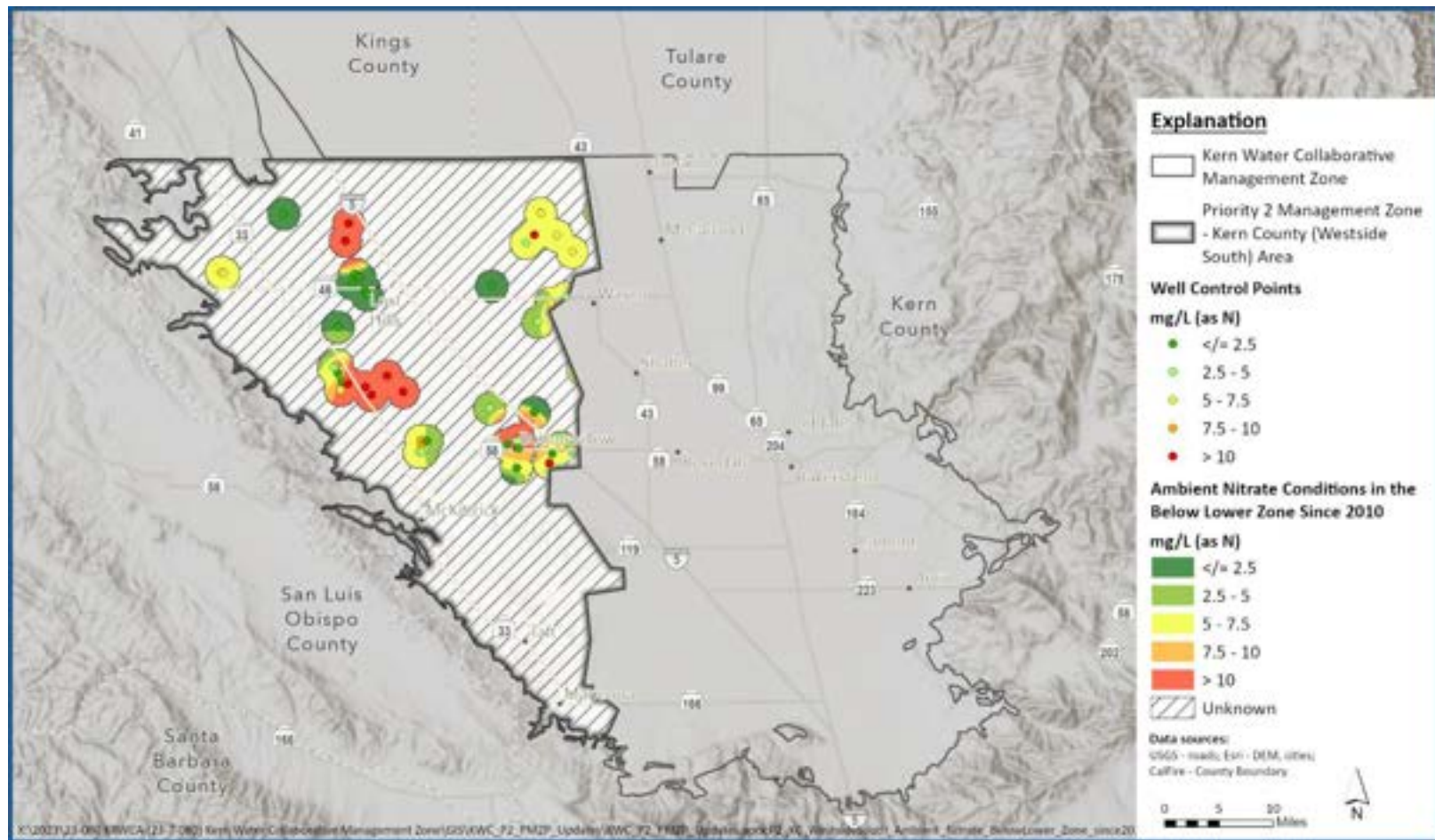
Note: This map was developed using the best available groundwater nitrate data from January 2010 to October 2025 for wells completed in the Upper Zone. This map is subject to refinement as additional data become available.

Figure 2-7a. Ambient Post-2010 Nitrate Concentrations in the Upper Zone of Groundwater Underlying the Proposed Kern County (Westside South) Area of the KWC Management Zone



Note: This map was developed using the best available groundwater nitrate data from January 2010 to October 2025 for wells completed in the Lower Zone. This map is subject to refinement as additional data become available.

Figure 2-7b. Ambient Post-2010 Nitrate Concentrations in the Lower Zone of Groundwater Underlying the Proposed Kern County (Westside South) Area of the KWC Management Zone



Note: This map was developed using the best available groundwater nitrate data from January 2010 to October 2025 for wells completed in the Below Lower Zone. This map is subject to refinement as additional data become available.

Figure 2-7c. Ambient Post-2010 Nitrate Concentrations in the Below Lower Zone of Groundwater Underlying the Proposed Kern County (Westside South) Area of the KWC Management Zone

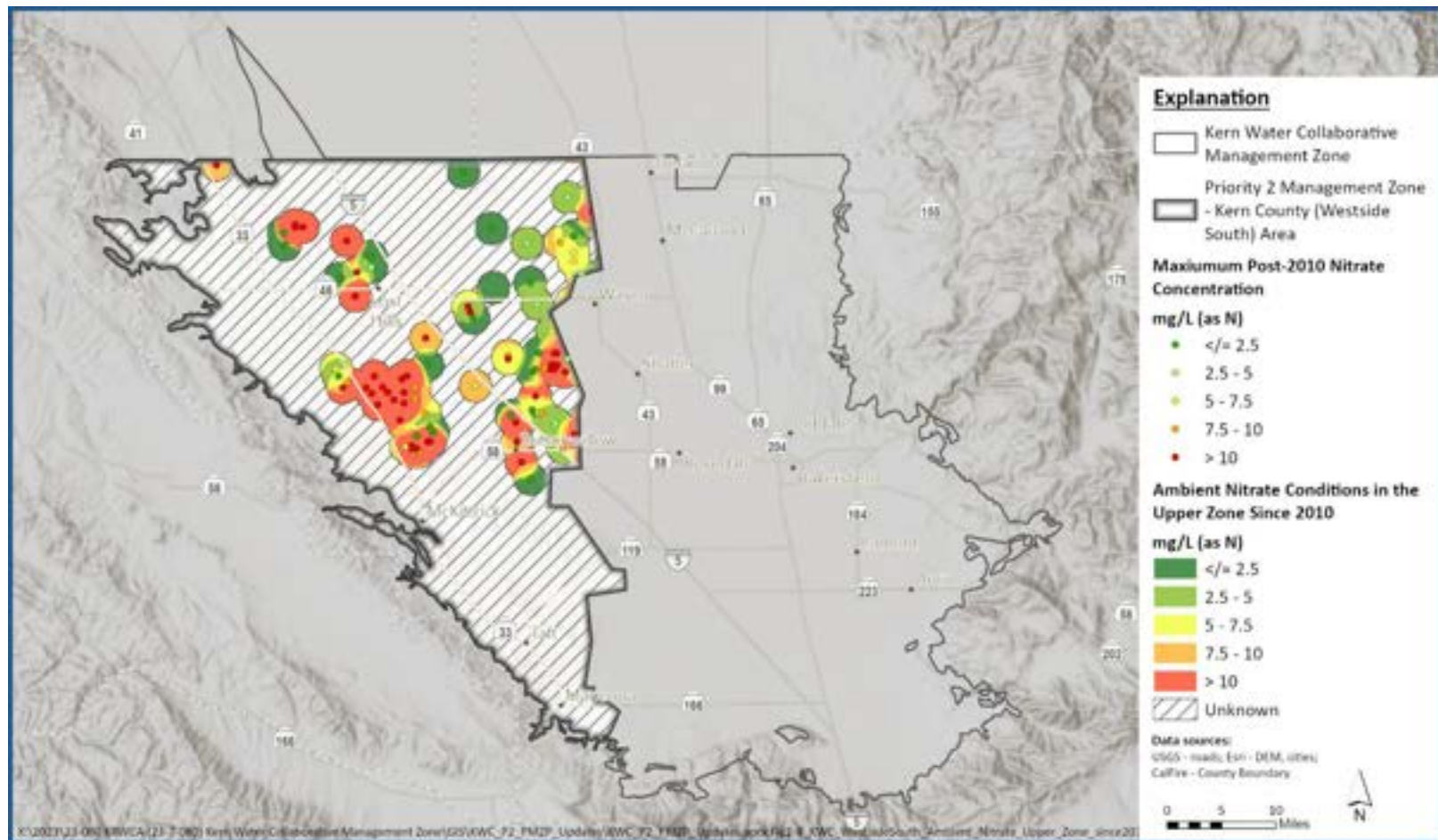


Figure 2-8. Maximum Post-2010 Nitrate in Wells Completed in the Upper Zone with Ambient Groundwater Underlying the Proposed Kern County (Westside South) Area of the KWC Management Zone



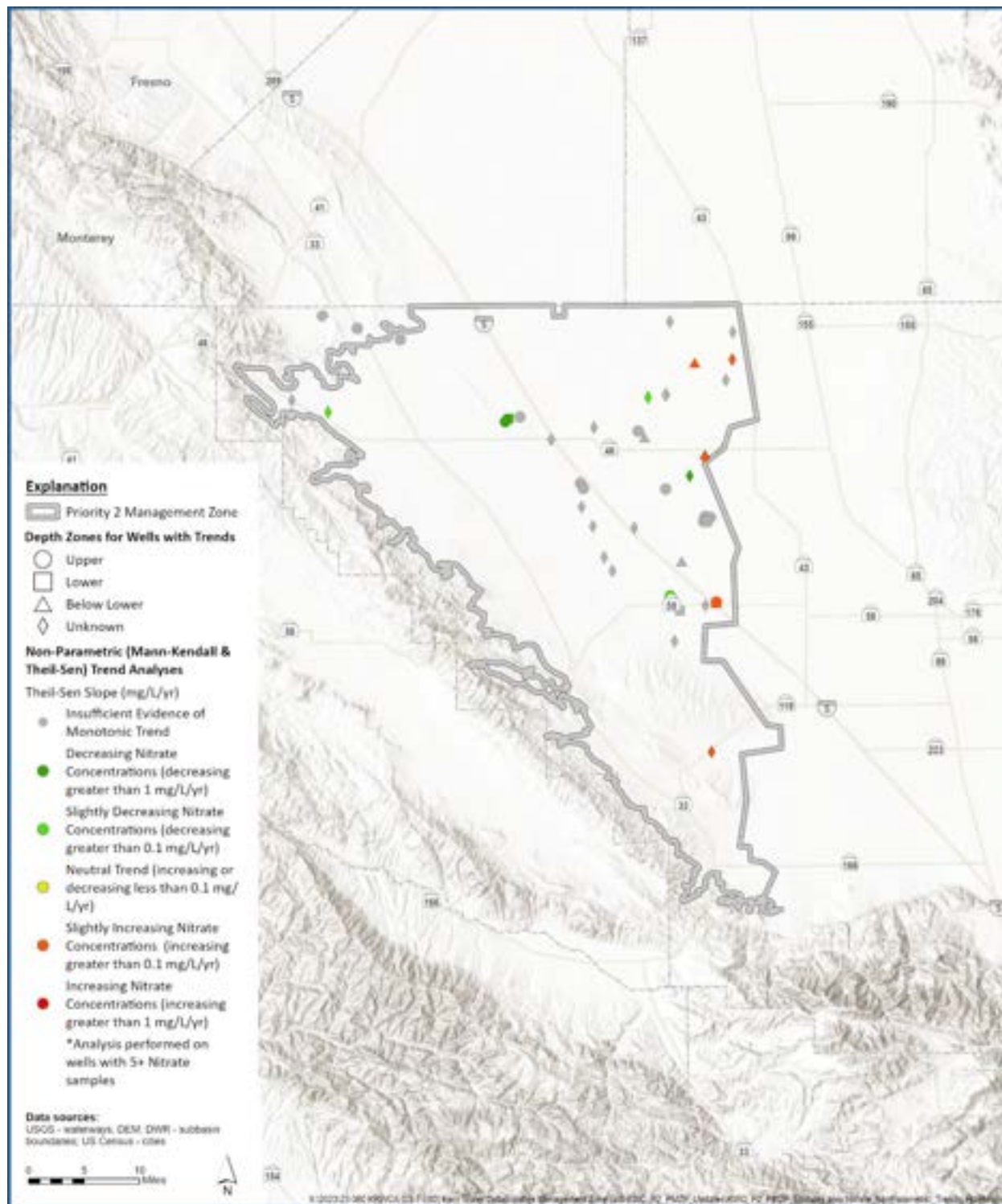


Figure 2-9b. Historical (Long-Term) Non-Parametric Trends in Nitrate

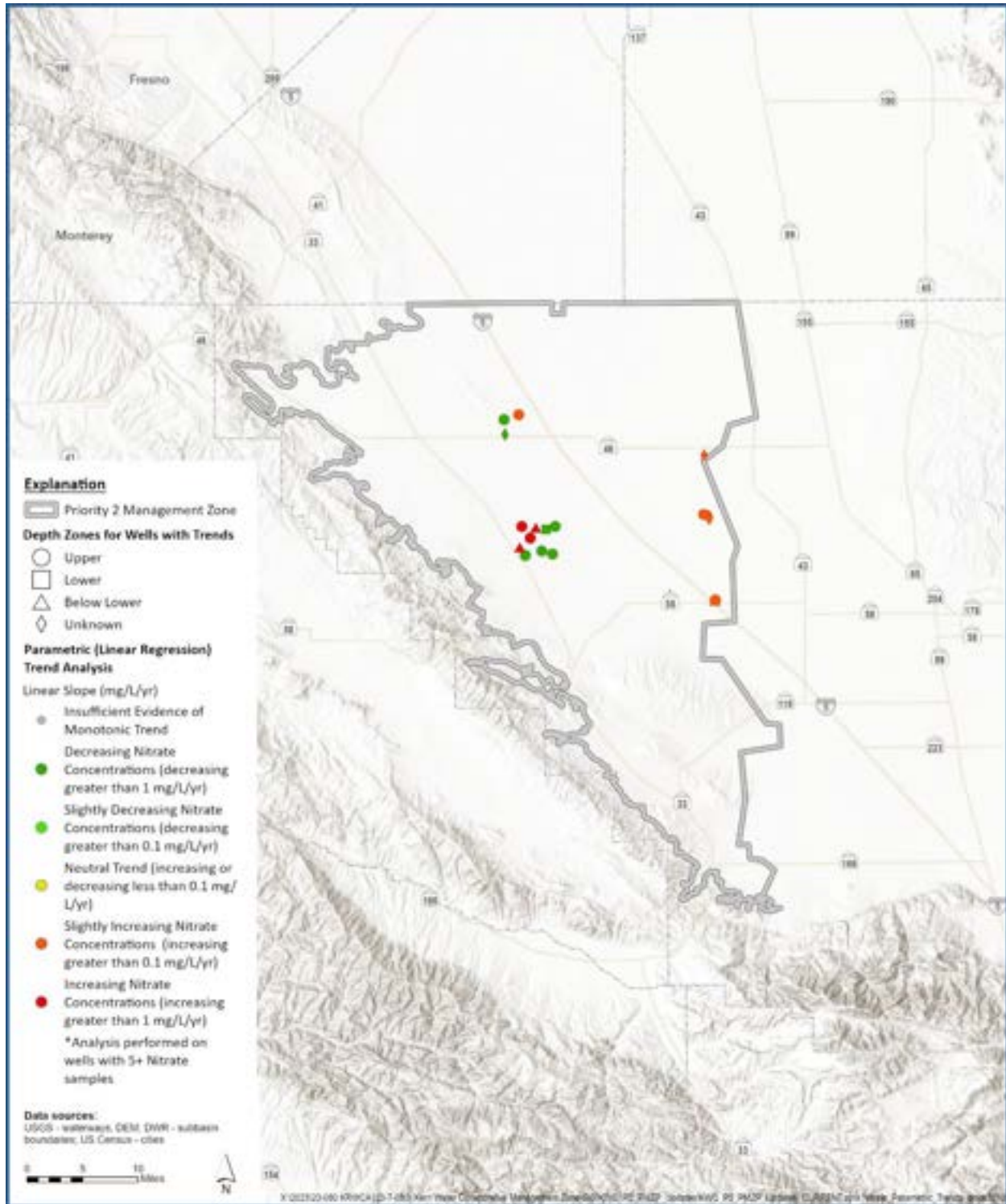


Figure 2-10a. Recent (Post-2010) Parametric Trends in Nitrate

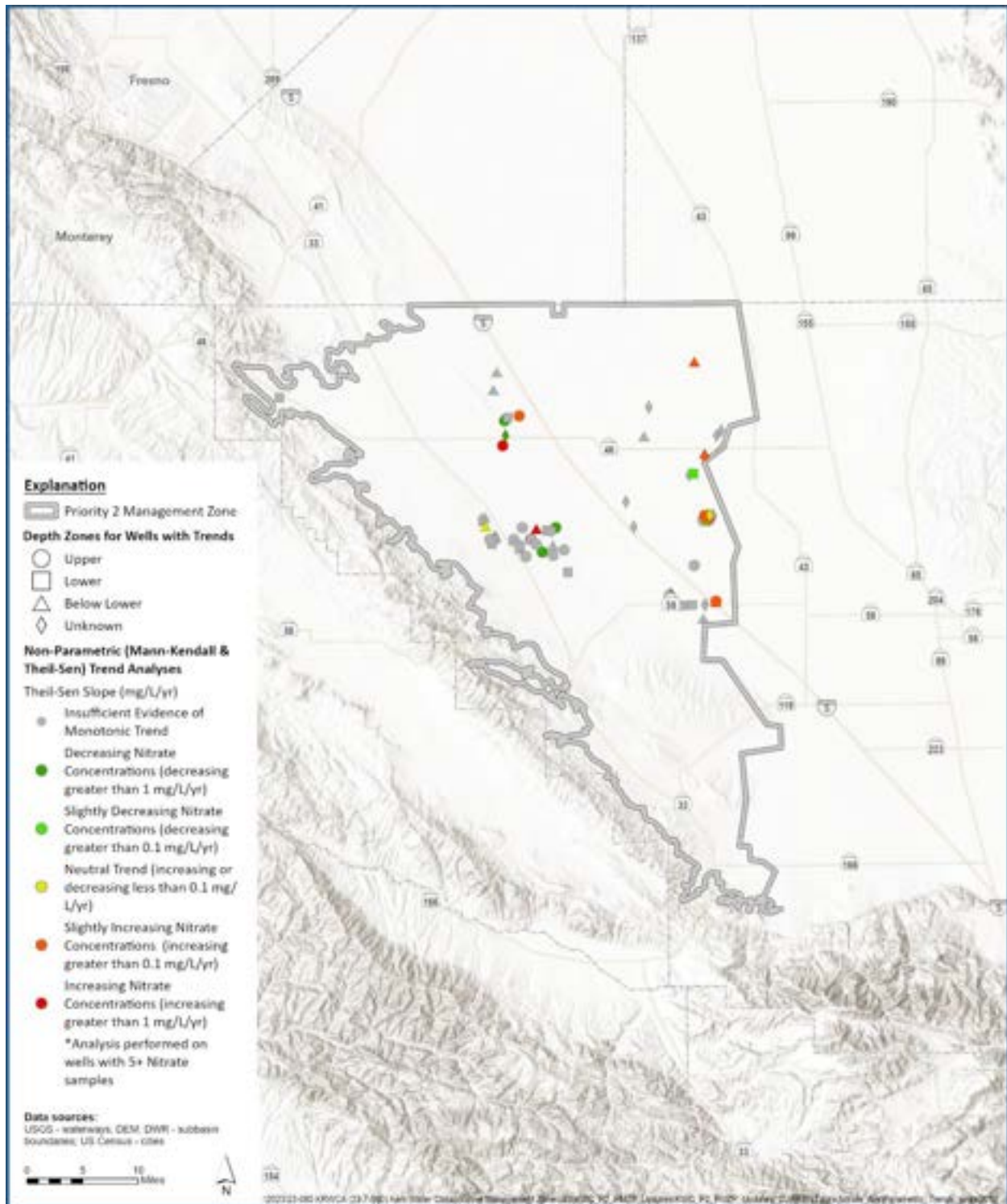


Figure 2-10b. Recent (Post-2010) Non-Parametric Trends in Nitrate

Table 2-3 Wells with Nitrate Measurements in the Proposed Kern County (Westside South) Area of the KWC Management Zone by Depth Category				
Depth Category	All Wells with Nitrate Data	Wells with Post-2010 Nitrate Data	Wells with Post-2010 Nitrate > 10 mg/L-N	Percent of Wells with Post-2010 Nitrate Data > 10 mg/L-N
All	3	1	0	0%
Upper	446	143	49	34%
Upper / Lower	3	2	0	0%
Lower	37	25	12	48%
Lower / Below Lower	4	4	0	0%
Below Lower	91	69	18	26%
Unknown	472	35	15	43%
Outside Central Valley Floor	70	48	21	44%
Total	1,126	327	115	35%

Table 2-4a Parametric (Linear) Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Westside South) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Linear Trend	Not Meeting Conditions for Linear Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
All	Long Term	2	1	0	0	1	0	0
	Recent	1	1	0	0	0	0	0
Upper	Long Term	17	13	1	0	1	2	0
	Recent	23	13	5	0	0	3	2
Upper and Lower	Long Term	1	1	0	0	0	0	0
	Recent	1	1	0	0	0	0	0
Lower	Long Term	3	2	1	0	0	0	0
	Recent	11	10	1	0	0	0	0

Table 2-4a Parametric (Linear) Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Westside South) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Linear Trend	Not Meeting Conditions for Linear Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
Lower and Below Lower	Long Term	2	2	0	0	0	0	0
	Recent	2	1	0	1	0	0	0
Below Lower	Long Term	8	5	0	0	0	3	0
	Recent	25	21	1	0	0	1	2
Unknown	Long Term	24	14	1	5	1	3	0
	Recent	20	16	1	0	0	3	0
Outside Central Valley Floor	Long Term	7	4	0	2	0	0	1
	Recent	21	17	0	3	0	1	0
All Wells with Nitrate Data	Long Term	64	42	3	7	3	8	1
	Recent	104	80	8	4	0	8	4

* This means that the well has sufficient data to be tested for the parametric (linear) analysis, but the nitrate concentration data's trend does not meet the minimum criteria for statistical significance.

Table 2-4b Non-Parametric Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Westside South) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Non-Parametric Trend	Not Meeting Conditions for Non-Parametric Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
All	Long Term	2	0	0	0	2	0	0
	Recent	1	1	0	0	0	0	0

Table 2-4b Non-Parametric Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Westside South) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Non-Parametric Trend	Not Meeting Conditions for Non-Parametric Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
Upper	Long Term	17	13	1	2	0	1	0
	Recent	23	14	3	1	0	3	2
Upper and Lower	Long Term	1	0	0	0	1	0	0
	Recent	1	1	0	0	0	0	0
Lower	Long Term	3	2	1	0	0	0	0
	Recent	11	10	0	1	0	0	0
Lower and Below Lower	Long Term	2	1	0	0	1	0	0
	Recent	2	1	0	1	0	0	0
Below Lower	Long Term	8	5	0	0	0	3	0
	Recent	25	16	1	1	1	4	2
Unknown	Long Term	24	17	2	2	0	3	0
	Recent	20	11	2	1	1	5	0
Outside Central Valley Floor	Long Term	7	4	0	2	0	0	1
	Recent	21	14	1	4	0	1	1
All Wells with Nitrate Data	Long Term	64	42	4	6	4	7	1
	Recent	104	68	7	9	2	13	5

* This means that the well has sufficient data to be tested for the non-parametric analysis, but the nitrate concentration data's trend does not meet the minimum criteria for statistical significance.

1.4.3. Evaluation of Inactive Drinking Water Wells

The locations of inactive supply wells that have had nitrate exceedances were compared to the ambient nitrate map of recent conditions to help determine if there is any bias in the Upper Zone nitrate analysis.

The DDW's online public water system database website was used in conjunction with the GAMA database to identify supply wells within the proposed Kern County (Westside South) Area of the KWC Management Zone with an inactive status. The DDW website provides database files that include a file containing public water system well identification numbers and well status codes. The wells from the DDW website are not accompanied by location coordinates, but these wells can be linked (using their primary station code ID) to nitrate groundwater quality data from the GAMA dataset, which does provide well location coordinates. A map showing the location and status of public water supply wells that have exceeded the nitrate MCL is provided in **Attachment H Early Action Plan Appendix B-3**. Public supply wells with past nitrate exceedances that have been abandoned, inactive, or destroyed can be seen in this map plotted with the ambient nitrate conditions in the Upper Zone since 2010. There are zero public supply wells in the Kern County (Westside South) Area that are listed as inactive wells (considered to be no longer actively used for drinking water) that have exceeded the nitrate MCL in the past. This indicates that the nitrate analysis performed for this document is not biased due to inactive public drinking water supply wells.

2. REFERENCES

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Department of Water Resources (DWR). 2024. SGMA Data Viewer. Available at:
<https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#currentconditions>.

GEI Consultants, 2019. Kern Groundwater Authority, Amended Groundwater Sustainability Plan.

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GEI Consultants, 2024. Kern Groundwater Authority, Draft Amended Groundwater Sustainability Plan.

ATTACHMENT C-3 PROPOSED KERN COUNTY (WESTSIDE SOUTH) AREA NON-DISCHARGER STAKEHOLDERS CONTACT LIST

Outreach to Other Stakeholders in the Proposed Kern County (Westside South) Area

Category	Entity	Contact(s)
Water Providers	Kern County Water Agency	Michelle Anderson, 3200 Rio Mirada Dr, Bakersfield, CA 93308, (661) 634-1400, info@kcwa.com
	Lost Hills Water District	Mark Gilkey, General Manager, 800 Aqueduct Lost Hills, CA 93249, (661) 797-2311
	Berrenda Mesa Water District	Mark Gilkey, General Manager, 14823 Hwy 33 Lost Hills, CA 93249-9734, CA 93249, (661) 797-2671
	City of Wasco	Luis Villa, Public Works Director, 801 8th Street, Wasco, CA 93280, (661) 758-7273, luvilla@cityofwasco.org
	Belridge Water Storage District	Mark Gilkey, General Manager, (661) 762-7316, 21908 Seventh Standard Road, McKittrick, CA 93251
GSAs within Management Zone	Westside District Water Authority GSA	Mark Gilkey, General Manager, 21908 7th Standard Road McKittrick, CA 93251, (661) 633-9022, mgilkey@westsidewa.org
	Kern Groundwater Authority GSA	Valerie Kincaid, Manager, 1800 30th Street, Suite 280, Bakersfield, CA 93301, (916) 264-2046, vkincaid@pariskincad.com
	Semitropic Water Storage District GSA	Jason Gianquinto, General Manager, 1101 Central Avenue, Wasco, CA 93280-0877, (661) 758-5113, jgianquinto@semitropic.com
	West Kern Water District GSA	Greg Hammett, General Manager, 800 Kern Street, Taft, CA 93268, (661) 763-3151, ghammett@wkwd.org
	Buena Vista Water Storage District GSA	Tim Ashlock, Engineer-Manager, 525 North Main Street, Buttonwillow, CA 93206, (661) 764-2901, tim@bvh2o.com
	North Kern Water Storage District GSA	David Hampton, General Manager, 33380 Cawelo Ave, Bakersfield, CA 93308, (661) 393-2696, dhampton@northkernwsd.com
	Shafter-Wasco Irrigation District GSA	Kris Lawrence, General Manager, 16294 Hwy 43, Wasco, CA 93280, (661) 440-8559, klawrence@swid.org
	Rosedale-Rio Bravo Water Storage District GSA	Dan Bartel, Engineer-Manager, 849 Allen Road, Bakersfield CA, 93314, (661) 589-6045, dbartel@rrbwsd.com
	Henry Miller Water District GSA	Jeof Wyrick, President / Chairman, P.O. Box 9759, Bakersfield CA 93389, (626) 583-3000, jwyrick@igboswell.com
	Wheeler Ridge-Maricopa GSA	Sheridan Nicholas, Engineer-Manager 12109 CA-166, Bakersfield, CA 93313, (661) 527-6075, snicholas@wormwsd.com
	Southwest Kings GSA, Tri-County Water Authority GSA – Tulare Lake	Deanna Jackson, Executive Director, 944 Whitley Ave, Corcoran, CA 93212 (559) 762-7240, djackson@tcwater.org
GSAs Adjacent to Management Zone	El Rico GSA	Jeof Wyrick, Chairman, 1001 Chase Ave., Corcoran Ca 93212 (626) 583-3000, jwyrick@igboswell.com
	Kern Water Bank GSA	Jonathan Parker, Geologist, 1620 Mill Rock Way, Suite 500, Bakersfield, CA 93311, (661) 303-7069, jparker@kwb.org
	Southern San Joaquin Municipal Utility District GSA	Roland Gross, General Manager, 11281 Garzoli Ave, Delano, CA 93215, (661) 725-0610, roland@ssjmud.org

Outreach to Other Stakeholders in the Proposed Kern County (Westside South) Area

Category	Entity	Contact(s)
	South Delta Water Agency	John Herrick, Counsel and Manager, 4255 Pacific Ave., Suite 2, Stockton, CA 95207, (209) 956-0150, jherrlaw@aol.com
Industry, Trade and NGOs	Kern County 4-H	Laurie Sue McKinney, lsmcinney@ucanr.edu , (661) 868-6235
	ACWA Ag Committee	Anjanette Shadley, Ag Committee Chair
	Almond Board of California	Lynn Jordan, ljordan@almondboard.com , (209) 343-3237
	Blue Diamond Growers	Anthony Scudder, ascudder@bdgrowers.com (559) 470-9731
	California League of Food Producers	Trudi Hughes, trudi@clfp.com , (916) 640-8150
	California Poultry Federation	Bill Mattos, bill_mattos@yahoo.com
	California Rural Legal Assistance – Delano Office	Nick Jensen, njensen@crla.org , (209) 577-3811 ext. 2912; Delano: (661) 725-4350
	California Women of Agriculture – Kern County Chapter	kerncountycwa@gmail.com
	Central Valley Clean Water Association	Debbie Mackey, Executive Officer, 700 R. Street, Suite 200, Sacramento, CA 95811 (916) 330-2705, eoofficer@cvcwa.org
	Central Valley Dairy Representative Monitoring Program	J.P. Cativiela, 915 L Street, Suite C-431, Sacramento, CA 95814 (916) 261-6556, jcativiela@cogentcc.com
	Clean Water Action	Jennifer Clary, State Director, 350 Frank H. Ogawa Plaza, Suite 200, Oakland, CA 94612, (415) 369-9160, jclary@cleanwater.org
	Community Water Center	Kjia Rivers, kjia.rivers@communitywatercenter.org ; (916) 706-3346
	Dairy Cares	J.P. Cativiela, Regulatory Director, 915 L Street Suite C-438, Sacramento, CA 95814 (916) 441-3318, jcativiela@cogentcc.com
	Leadership Council for Justice and Accountability	Michael Claiborne, mclaiborne@leadershipcounsel.org
	Manufacturers Council of the Central Valley	Maryn Pitt, Executive Director, maryn@mccv.org ; (209) 523-0886
	Milk Producers Council	Geoff Vanden Heuvel, Director of Regulatory and Economic Affairs, 222 S. Thor Street, #20, Turlock, CA 95380, (209) 250-1801, geoff@milkproducers.org
	Self-Help Enterprises	Eddie Ocampo, eddieo@selfhelpenterprises.org 8445 W. Elwin Ct., Visalia, CA 93291, (559) 651-1000
	Kern County Farm Bureau	Jenny Holtermann, 1800 30 th Street, Suite 390, Bakersfield, CA 93301, kcfb@kerncfb.com , (661) 397-9635
	Sustainable Conservation	Charles Delgado, Policy Director, suscon@suscon.org
	Water Association of Kern County	Jenny Holtermann, Executive Director, info@wakc.com , (661) 746-3300
	Western United Dairymen	Paul Sousa, Director of Environmental Services & Regulatory Affairs, 1315 K Street, Modesto, CA 95354, (209) 527-6453, pauls@westernuniteddairymen.com
	California Independent Petroleum Association	Rock Zierman, Chief Executive Officer, 1001 K Street, 6 th Floor, Sacramento, CA 95814, rock@cipa.org , (916) 447-1177
	Valley Water Management Company	Jason Meadors, General Manager, 7500 Meany Avenue, Bakersfield, CA 93308, (661) 410-7500

Outreach to Other Stakeholders in the Proposed Kern County (Westside South) Area

Category	Entity	Contact(s)
	Western States Petroleum Association	Catherine Reheis-Boyd, President and CEO, 1415 L Street, Suite 900, Sacramento, CA 95814, (916) 498-7750
	Buena Vista Coalition	Tim Ashlock, P.O. Box 756, Buttonwillow, CA 93206, (661) 324-1101, tim@bv2o.com
	Kern River Watershed Coalition Authority	Nicole Bell, KRWCA Manager, 1800 30th Street, Suite 200, Bakersfield, CA 93301, (661) 616-6500, nbell@krwca.org
	Westside Water Quality Coalition	Morgan Campbell, 5555 California Ave. Ste 209, Bakersfield, CA 93309, (661) 487-0856, mcampbell@westsidewa.org
Consultants	The Catalyst Group, Inc.	<ul style="list-style-type: none"> Charles Gardiner, Charles@catalystgroupca.com, (415) 419-5133 (Office); (415) 999-0316 (Mobile) Aaron, Aaron@catalystgroupca.com
	Rincon Consultants, Inc.	Kristin Pittack, Kern County Subbasin Plan Manager – SGMA Point of Contact between Groundwater Management Entities and DWR, kpittack@rinconsultants.com
Regulators	Central Valley Regional Water Quality Control Board	<ul style="list-style-type: none"> Adam Laputz, (916) 464-4726, Adam.laputz@waterboards.ca.gov Angela Cleaver, (916) 464-4649, Angela.Llaban@waterboards.ca.gov
Education/School Districts	California State University Bakersfield	<ul style="list-style-type: none"> S. Aaron Hegde, Ph.D., Environmental Resource Management Program Director, (661) 654-2495, shedge@csb.edu Dr. Chandra Commuri, Public Policy and Administration Department Chair, (661) 654-6140, ccommuri@csb.edu Linda Altamirano, Public Policy and Administration Support Coordinator, (661) 654-2197, laltamirano2@csb.edu 9001 Stockdale Hwy, Bakersfield, CA 93311
	Bakersfield College	(661) 395-4011, Panorama Campus (Main), 1801 Panorama Drive, Bakersfield, CA 93305
	Taft College	(661) 763-7700, Cougar Court, Taft, California 93268
	Lost Hills Union School District	Jackie Villa, Email via school website, (661) 797-2941
	Taft Union High School District	Gina Fields, asktuhsd@taftunion.org , (661) 763-2300
	Semitropic Elementary School District	Angelica Fernandez, Email via school website, (661) 758-6412 ext 120
	Wasco Union Elementary School District	Pedro Ramirez, (661) 758-7100
	Wasco Union High School District	Gracie Saldana, (661) 758-8447
	Pond Union Elementary School District	Alex Lopez, alopez@pond.k12.ca.us , (661) 792-2545
	Delano Joint Union High School District	(661) 725-4000
	Maple Elementary School District	Patty De Julian, pdejulian@mapleschool.org , (661) 746-4439
	Buttonwillow Union School District	Tierney Ballard, Email via school website, (661) 764-5166
	Kern High School District	Graci Ashmore, Email via school website, (661) 827-3154
	McKittrick Elementary School District	Dawn Bourelle, Email via school website, (661) 762-7303
	Midway School District	Shawna Taylor, Staylor@midwaytigers.com , (661) 768-4344

Outreach to Other Stakeholders in the Proposed Kern County (Westside South) Area

Category	Entity	Contact(s)
	Taft City School District	Lori Slaven, lslaven@taftcity.org , (661) 763-1521
	Elk Hills School District	Shara Neufeld, Shneufeld@elkhills.org , (661) 765-7431
	Maricopa Unified School District	Michael Coleman, mcoleman@musd.email , (661) 769-8231 x 202
	Lakeside Union School District	Tamara Barnard-Robertson, tbr@lakesideusd.org , (661) 836-6658
	Rio Bravo-Greeley Union School District	Blanca Gomez, Email via school website, (661) 589-2696
	Reef-Sunset Unified School District	Lorena Venegas, lvenegas@rsusd.org , (559) 386-9083 ext. 1027
Kern County	Board of Supervisors	<ul style="list-style-type: none"> Phillip Peters (District 1), (661) 868-3650, district1@kerncounty.com Jeff Flores (District 3), (661) 868-3670, district3@kerncounty.com David Couch (District 4), (661) 868-3680, district4@kerncounty.com 1115 Truxtun Ave, 5th Floor, Bakersfield, CA 93301
	KernCOG	<ul style="list-style-type: none"> Ahron Hakimi, Executive Director, (661) 635-2901 Rob Ball, Deputy Director – Planning, (661) 635-2902 Becky Napier, Deputy Director – Administration, (661) 635-2910
	Community Development	Lorelei H. Oviatt AICP, Director, (661) 862-5050, kerncd@kerncounty.com , Public Services Building, 2700 “M” Street., Suite 250, Bakersfield, CA 93301-2370
	Public Health	<ul style="list-style-type: none"> Brynn Carrigan, Director, brynn@kerncounty.com Kristopher Lyon, MD, EMT, FACEP, FAEMS, Health Officer, lyonk@kerncounty.com Carly Dawson, Assistant to the Director, (661) 868-0233, dawsonc@kerncounty.com Michelle Corson, Media Relations, (661) 868-0288, corsonm@kerncounty.com
	Community Action Partnership of Kern	info@capk.org , (661) 336-5236
	First 5 Kern	Amy Travis, Executive Director, (661) 328-8888
	Buttonwillow Community Resource Center	42600 HWY 58, Buttonwillow, CA 93206, (661) 764-9405
	Lost Hills Family Resource Center	14823 Office Lane, Lost Hills, CA 93249, (661) 797-3042
	West Side Outreach and Learning Center	500 Cascade Place, STE. C, Taft, CA 93268, (661) 763-4246
	Local Agency Formation Commission	(661) 716-1076, 5300 Lennox Ave, Suite 303, Bakersfield, CA 93309
	Buttonwillow Chamber of Commerce and Ag.	Tina Neri, (661) 764-5406
	Taft District Chamber of Commerce	Taftchamber@gmail.com , (661) 765-2165
	Wasco Chamber of Commerce	Vicki Hight, (661) 758-2746
Kern County Communities	Maricopa (Incorporated)	(661) 769-8279, 400 California Street, Maricopa, CA 93252-0550

Outreach to Other Stakeholders in the Proposed Kern County (Westside South) Area

Category	Entity	Contact(s)
	Taft (Incorporated)	<ul style="list-style-type: none"> Dave Noerr, Mayor, dnoerr@cityoftaft.org Orchel Krier, Mayor Pro Tem, okrier@cityoftaft.org Josh Bryant, Council Member, jbryant@cityoftaft.org Carlos Chavira, Council Member, cchavira@cityoftaft.org Ron Waldrop, Council Member, rwaldrop@cityoftaft.org Yvette Mayfield, MMC, City Clerk, (661) 763-1222 Ext. 116, ymayfield@cityoftaft.org Darnell Willard, CMC, Deputy City Clerk, (661) 763-1222 Ext.122, dwillard@cityoftaft.org Craig Jones, City Manager, (661) 763-1222 Ext. 111, cjones@cityoftaft.org Michelle Kincaid, Administrative Assistant to the City Manager, (661) 763 1222 Ext 112, mkincaid@cityoftaft.org Chris Krejci, Public Works Supervisor, (661) 829 9009, ckrejci@cityoftaft.org <p>209 East Kern Street, Taft, CA 93268, (661) 763-1222</p>
Kern County Communities (cont.)	Wasco (Incorporated)	<ul style="list-style-type: none"> Gilberto Reyna (District 1), Council Member, gireyna@cityofwasco.org Vincent R. Martinez (District 2), Council Member, (661) 758-7214, vimartinez@cityofwasco.org Valentin Medina (District 3), Council Member - Mayor Pro Tem, vamedina@cityofwasco.org Eduardo Saldana (District 4), Council Member, edsaldana@cityofwasco.org Alex Garcia (District 5), Council Member - Mayor, algarcia@cityofwasco.org Maria O. Martinez, City Clerk, (661) 758-7214, cityclerk@cityofwasco.org Scott Hurlbert, City Manager, (661) 758-7215, schurlbert@cityofwasco.org Neomi Perez, Communication & Marketing Specialist, (661) 779-009, neperez@ci.wasco.ca.us Luis Villa, Public Works Director, (661) 758-7271, luvilla@cityofwasco.org Kameron Arnold, Deputy Public Works Director, (661) 758-7204, kaarnold@cityofwasco.org <p>Planning Division, (661) 758-7250 746 8th Street, Wasco, CA 93280, (661) 758-7200</p>
	Buttonwillow (Unincorporated)	<ul style="list-style-type: none"> Buttonwillow Community Resource Center, (661) 764-9405, 42600 HWY 58, Buttonwillow, CA 93206 Buttonwillow Recreation and Park District, P.O. Box 434, Buttonwillow, CA 93206 Megan Lucas, Recreation Supervisor, (661) 764-5205, mlucas@buttonwillowprd.com Les Clark III, General Manager (Contracted), (661) 763-4246, les@wsrpd.com
	Ford City (Unincorporated)	

Outreach to Other Stakeholders in the Proposed Kern County (Westside South) Area

Category	Entity	Contact(s)
	Lost Hills (Unincorporated)	
	South Taft (Unincorporated)	
	Taft Heights (Unincorporated)	
Kings County	Board of Supervisors	<ul style="list-style-type: none"> Richard Valle (District 2), Supervisor, (559) 852 – 2365, richard.valle@co.kings.ca.us Diane Badasci, Deputy Clerk, Diane.Badasci@co.kings.ca.us Francesca Lizaola, Francesca.Lizaola@co.kings.ca.us 1400 W. Lacey Blvd , Hanford CA 93230
	KingsCOG	<ul style="list-style-type: none"> Terri King, Executive Director, (559) 852-2678, terri.king@co.kings.ca.us Joel Gandarilla, Executive Assistant, (559) 852-2787, joel.gandarilla@co.kings.ca.us
	Community Development Agency	(559) 852-2670, kcg.c.planning@co.kings.ca.us , 400 W. Lacey Blvd., Bldg. #6, Hanford, CA 93230
	Public Health	<ul style="list-style-type: none"> Rose Mary Rahn, BSN, PHN, Public Health Director, Milton Teske, MD, Health Officer, (559) 584-1401, 330 Campus Dr. Hanford, CA 93230
	Kings Community Action Organization	(559) 582-4386, 1130 N. 11th Avenue, Hanford, CA 93230
	First 5 Kings County	(559) 584-1401, 330 Campus Dr. Hanford, CA 93230
	Local Agency Formation Commission (LAFCO)	(559) 852-2680, 1400 W. Lacey Blvd., Hanford, CA 93230
	Kings County: Local Primacy Agency (LPA)	(559) 584-1411, 330 Campus Drive, Hanford, CA 93230

ATTACHMENT C-4 PERMITTED MILK COW DAIRIES, CONFINED BOVINE FEEDING OPERATIONS, POULTRY OPERATIONS, AND OIL/GAS OPERATIONS IN THE PROPOSED KERN COUNTY (WESTSIDE SOUTH) AREA

Table 1. Milk Cow Dairies and Confined Bovine Feeding Operations in the Proposed Kern County (Westside South) Area Management Zone that are Management Zone Participants through CVDRMP Membership			
CV-SALTS ID	WDID No.	Facility Name	Address
Enrolled Under General Order R5-2013-0122 – Milk Cow Dairies			
132	5D155084001	VP Legacy Farms	28349 Los Angeles Street, Shafter, CA 93263
206	5D155093001	Avalon Dairy Farms	27125 Pond Road, Wasco, CA 93280
327	5D155073001	Goyenette Dairy	6041 Brandt Road, Buttonwillow, CA 93206
365	5C15NC00050	Maya Dairy	18451 Wildwood Road, Buttonwillow, CA 93206
563	5D155061002	Poso Creek Family Dairy	13437 Gun Club Road, Wasco, CA 93280
701	5C15NC00009	Faial Farms 2 Dairy	18683 Magnolia Avenue, Shafter, CA 93263
709	5D155087001	Whiteside Dairy	16461 Scofield Avenue, Wasco, CA 93280
716	5C15NC00019	Boschma & Sons Dairy	24794 Sherwood Avenue, Wasco, CA 93280
762	5C15NC00045	West-Star North Dairy	26953 Riverside Street, Buttonwillow, CA 93313
Enrolled Under General Order R5-2017-0058 – Confined Bovine Feeding Operations			
1620	5C15NC00235	Pond Heifer Ranch	11695 Jumper Avenue, Wasco, CA 93280
Permitted Under Unknown WDR Order No.¹			
17	5C15NC00041	JDS Ranch Dairy	27333 Garces Highway, Wasco, CA 93280

¹ Order number was not included in Central Valley Water Board's February 2024 list of facilities in Priority 2 areas that received a Notice to Comply with the Nitrate Control Program

Table 2. Poultry Operations in the Proposed Kern County (Westside South) Area Management Zone that are Management Zone Participants through a Poultry General Order (Enrolled as a Full Coverage Operation)

CV-SALTS ID	WDID No.	Facility Name	Address
1235	5C15NC00210	Central Valley Eggs, LLC	Wasco, CA 93280

Table 3. Oil/Gas Operations in the Proposed Kern County (Westside South) Area Management Zone that are Management Zone Participants through an Oil and Gas General Order

CV-SALTS ID	WDID No.	Facility Name	Address
Enrolled Under General Order R5-2017-0035 – Oil Field Discharges to Land			
3042	5D152020N05	Belridge South Oil Field, Section 2 Lease (Dehydration Plant 2)	Belridge South Oil Field, Missouri Triangle, CA
3043	5C15NC00233	Belridge South Oil Field, Section 27 Lease (Water Plant 27)	Belridge South Oil Field, Missouri Triangle, CA
3044	5C15NC00232	Belridge South Oil Field, Section 20 Lease (Dehydration Plant 20)	Belridge South Oil Field, Missouri Triangle, CA
3070	5C15NC00251	Chico-Martinez Oil Field, Mitchel Lease	Chico-Martinez Oil Field, McKittrick, CA
3057	5C15NC00216	Midway-Sunset Oil Field, Moco 35 Lease	Midway-Sunset Oil Field, Maricopa, CA
3064	5C15NC00230	Lost Hills Oil Field, Lost Hills One Lease	Lost Hills Oil Field, Lost Hills, CA
3063	5C15NC00217	Lost Hills Oil Field, Lost Hills Two Lease	Lost Hills Oil Field, Lost Hills, CA
Enrolled Under General Order R5-2017-0036 – Oil Field Discharges to Land			
3056	5C15NC00240	Midway-Sunset Oil Field, Shale 14 Lease (AFS Dehydration Plant)	Midway-Sunset Oil Field, Fellows, CA
3071	5C15SC00070	Cymric Oil Field, Sheep Springs Lease	Cymric Oil Field, McKittrick, CA
3104	5D153229N02	Cymric Oil Field, Clifford Trust Lease	Cymric Oil Field, McKittrick, CA

3649	5C15NC00248	Lockwood Dehydration Plant, Midway-Sunset Oil Field	Midway-Sunset Oil Field, CA
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Table 4. Oil/Gas Operations in the Proposed Kern County (Westside South) Area Management Zone through an Oil and Gas General Order with Unknown Status of Management Zone Participation at Time of FMZP Submittal			
CV-SALTS ID	WDID No.	Facility Name	Address
Enrolled Under General Order R5-2017-0035 – Oil Field Discharges to Land			
3076	5C15SC00004	Midway-Sunset Oil Field, Sheehan Lease	Midway-Sunset Oil Field, Maricopa, CA
Enrolled Under General Order R5-2017-0036 – Oil Field Discharges to Land			
3125	5D152018009	Antelope Hills Oil Field, Hopkins A Lease	Antelope Hills Oil Field, North Belridge, CA
3119	5D152018009	Antelope Hills Oil Field, Hopkins A South Lease	Antelope Hills Oil Field, North Belridge, CA
3124	5D152018009	Antelope Hills Oil Field, Phippen Lease	Antelope Hills Oil Field, North Belridge, CA
3123	5D152018009	Antelope Hills Oil Field, Pickrell-Mitchel Lease	Antelope Hills Oil Field, Lost Hills, CA
3122	5D152018009	Antelope Hills Oil Field, Pickrell-Williams Lease	Antelope Hills Oil Field, Lost Hills, CA 93249
3121	5D152018009	Antelope Hills Oil Field, Voigt Lease	Antelope Hills Oil Field, North Belridge, CA
3120	5D152018009	Antelope Hills Oil Field, Williams Lease	Antelope Hills Oil Field, North Belridge, CA
3111	5C15UK00003	Carneros Creek Oil Field, Santa Fe Lease	Carneros Creek Oil Field, Lost Hills, CA
3065	5C15UK00003	Carneros Creek Oil Field, Stanford (Standard) Lease	Carneros Creek Oil Field, Lost Hills, CA
3109	5C15UK00003	Carneros Creek Oil Field, Theta (30) Lease	Carneros Creek Oil Field, Lost Hills, CA
3654	5C15NC00269	Cymric Oil Field, Ball Lease	SW 1/4, Section 35, Township 30S, Range 21E
3053	5C15NC00223	Cymric Oil Field, Lehi-Richardson Lease	Cymric Oil Field, McKittrick, CA
3052	5C15NC00225	Cymric Oil Field, Temblor Lease	Cymric Oil Field, McKittrick, CA
3051	5C15NC00250	Cymric Oil Field, USL Lease	Cymric Oil Field, McKittrick, CA
3090	5D153242001	McDonald Anticline Oil Field, M&B (aka Mitchel) Lease	NW 1/4 Section 21 Township 28S Range 20E MDB&M

Table 4. Oil/Gas Operations in the Proposed Kern County (Westside South) Area Management Zone through an Oil and Gas General Order with Unknown Status of Management Zone Participation at Time of FMZP Submittal

CV-SALTS ID	WDID No.	Facility Name	Address
3089	5D153242001	McDonald Anticline Oil Field, Theta Lease	NW of 7th Standard Road / 33 Highway, Kern County, CA
3068	5C15NC00273	McKittrick Oil Field, McKittrick Lease	McKittrick Oil Field, McKittrick, CA
3047	5C15NC00246	Midway- Sunset Oil Field, Berry and Ewing Lease	Midway-Sunset Oil Field, Taft, CA
3581	5C15NC00272	Midway-Sunset Oil Field, Jameson Trust Lease	SW of Petroleum Club Road/West Side Highway (33), Maricopa, CA 93252
3055	5C15NC00221	Midway-Sunset Oil Field, Section 32 Lease	Midway-Sunset Oil Field, Fellows, CA
3580	5C15NC00272	Midway-Sunset Oil Field, Shell Lease	SW of Midoil Road/Terrace Dr, Taft, CA 93268
3582	5C15NC00272	Midway-Sunset Oil Field, Virginia Lands Lease	SW of Midoil Road/Terrace Dr, Taft, CA 93268
3062	5C15NC00249	Midway-Sunset Oil Field, Webber Lease	Midway-Sunset Oil Field, Fellows, CA

ATTACHMENT C-5 CURRENT NITRATE TREATMENT AND CONTROL EFFORTS OR MANAGEMENT PRACTICES FOR INDIVIDUAL PERMITTED DISCHARGERS IN PROPOSED KERN COUNTY (WESTSIDE SOUTH) AREA

Belgian Anticline, McKittrick 1-1 Facility

Facility Description (CV-SALTS ID: 3114)

Valley Water Management Company (Valley Water) is authorized to discharge non-hazardous oilfield wastewater under WDR Order 69-199. The Belgian Anticline, McKittrick 1-1 Facility is Southeast of Lokern Road and Lost Hills Road, McKittrick, CA 93251. At the time of this WDR, the following statements were made: usable groundwater in the area are confined to Little Santa Maria Valley and other small alluviated valleys in the Belgian Anticline Oil Field south of McKittrick and to the area generally east of Buena Vista Slough about seven miles northeast of the disposal sumps. These groundwaters are used for domestic and industrial supply and for irrigation.

The facility consists of interconnected side-by-side ponds, used for the disposal of produced wastewater via evaporation and percolation. Incoming wastewater is discharged into a netted oil and water cleaning pond, ten pass-through ponds, and ten evaporation and percolation ponds. Pipelines that discharge into the oil and water cleaning ponds are owned and operated by Valley Water member companies. Wastewater usually flows through the oil and water cleaning ponds and evaporation and percolation ponds in sequence. The pass-through ponds adjacent to the larger evaporation and percolation ponds can control the flow into the evaporation and percolation ponds. Each evaporation and percolation pond in the pond system can be operated independently or jointly in series. The underground movement of percolating wastewaters is restricted by a structurally high ridge, confining it from usable groundwater.

Nitrate Management Requirements

Table 1 summarizes the nitrate management-related requirements in this facility's WDR.

Table 1. Summary of Belgian Anticline, McKittrick 1-1 Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none">• Discharge shall not cause a pollution of ground or surface waters• There shall be no direct discharge to the surface of the ground, unlined sumps, drainage channels, or other facilities in the Little

Table 1. Summary of Belgian Anticline, McKittrick 1-1 Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<p>Santa Maria Valley which would permit their infiltration to useable groundwater.</p> <ul style="list-style-type: none"> There shall be no direct discharge to surface facilities east of the structurally high ridge formed by the south plunging nose of South Belridge oil field and the north plunging nose of Elk Hills oil field except during periods of storm runoff.
Monitoring & Reporting	<ul style="list-style-type: none"> Produced Wastewater Monitoring – quarterly grab sample for Total Kjeldahl Nitrogen (TKN), nitrate as nitrogen (N), nitrite as N, ammonia as N, and total nitrogen. Groundwater Monitoring – quarterly grab sample for TKN, nitrate as N, nitrite as N, ammonia as N, total nitrogen.

Buttonwillow Tomato Processing Plant

Facility Description (CV-SALTS ID: 1841)

J. G. Boswell Tomato Company is authorized to discharge wastewater under WDR Order R5-2008-0067 for the operation of its Buttonwillow Tomato Processing Plant. The facility is located at 36889 Highway 58, Buttonwillow, CA. The underlying groundwater beneficial uses are MUN, AGR, IND, PRO, REC-1, REC-2, and WILD.

Seasonally, the facility processes approximately 6,600 tons of tomatoes per day to produce about 1,050 tons of tomato paste product. Primary sources of wastewater generated at the facility include wastewater from conveying tomatoes, tomato rinsing processes, and general cleaning and rinsing of equipment. The processing season falls between June and October, averaging about 90 days per season, during which the facility operates 24 hours per day and seven days per week.

Tomatoes enter the facility in trucks and are weighed and graded. The tomatoes are initially rinsed and conveyed from trucks on an elevated unloading area with wastewater from the facility. Before being delivered to the hand-sorting area, the tomatoes are further rinsed with well water and separated from other matter. From the sorting area, tomatoes are delivered to the choppers for processing and then to mix tanks for further processing. Tomatoes unsuitable for processing such as seeds and peels are separated from the wastewater by screens and diverted to trucks for use as cattle feed.

All wastewater generated at the facility is combined into the main pond. The discharge is pumped from the main pond through a pipeline to the irrigation standpipe located adjacent to the Use Area. Wastewater pumped from the main pond into the irrigation standpipe is mixed

with irrigation water according to crop requirements. The discharge is blended with a combination of supply water from two onsite supply wells which is then applied to the 618-acre Use Area using flood irrigation. Typical crops in the Use Area include, but are not limited to, alfalfa, sudan grass, cotton, and wheat.

Nitrate Management Requirements

Table 2 summarizes the nitrate management-related requirements in this facility's WDR.

Table 2. Summary of Buttonwillow Tomato Processing Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of waste to surface waters or surface water drainage courses is prohibited. Bypass or overflow of untreated wastes, except as allowed by WDR Provision E.2 of the Standard Provisions, is prohibited. Discharge of treated wastewater in a manner or location other than described in the WDR Order is prohibited.
Effluent Limitations	<ul style="list-style-type: none"> The monthly average discharge shall not exceed 4.8 million of gallons per day (mgd).
Discharge Specifications	<ul style="list-style-type: none"> Application of waste constituents to the designated Use Area shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the designated Use Area, including the nutritive value of organic and chemical fertilizers and of the wastewater shall not exceed the annual crop demand. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.
Solid Specifications	<ul style="list-style-type: none"> Any handling and storage of solids and sludge at the facility or in the Use Area shall be temporary, and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of the WDR Order.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment or storage component associated with the facility shall not cause or contribute to groundwater containing constituent concentrations in excess of 10 mg/L for nitrate as N or natural background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – weekly composite sample for TKN, ammonia, nitrate as N, and total nitrogen.

Table 2. Summary of Buttonwillow Tomato Processing Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> • Use Area Monitoring – daily wastewater loading and monthly wastewater and fertilizer nitrate loading calculations. Annual nitrate as N, TKN, and total nitrogen soil grab samples at 2, 4, and 6 feet. • Settling Solids Monitoring – annual nitrate as N, TKN, and total nitrogen composite sample or each time solids are removed from the pond for disposal but need not be sampled more frequently than monthly. • Groundwater Monitoring – quarterly grab sample for TKN, ammonia, nitrate as N, and total nitrogen.

Buttonwillow Wastewater Treatment Facility

Facility Description (CV-SALTS ID: 2709)

Buttonwillow County Water District (Discharger) is authorized to discharge wastewater under WDR Order No. R5-2009-0123. The Discharger's wastewater treatment facility (WWTF) is located in the northeast quarter of Section 13, Township 29S, Range 23E, Mount Diablo Base & Meridian (MDB&M), and approximately a quarter of a mile northeast of the unincorporated community of Buttonwillow in Kern County. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

The WWTF includes two treatment trains, each with a capacity of 0.075 million gallons per day (mgd), for a total designed daily average flow of 0.15 mgd. The treatment system at the WWTF includes a lift station, mechanical bar screen, two equalization tanks, two denitrification tanks, two bio-tanks, two membrane tanks, two aerated sludge tanks, three concrete-lined sludge drying beds, two 22.5 acre-ft unlined storage ponds, and approximately 50 acres of use area.

Nitrate Management Requirements

Table 3 summarizes the nitrate management-related requirements in this facility's WDR.

**Table 3. Summary of Buttonwillow Wastewater Treatment Facility WDR
Nitrate Management-Related Requirements**

Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of waste to surface waters or surface water drainage courses is prohibited. • Bypass or overflow of untreated wastes is prohibited. • Discharge of waste classified as hazardous is prohibited. • Discharge of waste classified as “designated” in a manner that causes violation of groundwater limitations, is prohibited.
Effluent Limitations	<ul style="list-style-type: none"> • Total nitrogen in effluent discharged to the effluent pond or use area shall not exceed the monthly average of 10 mg/L.
Discharge Specifications	<ul style="list-style-type: none"> • Monthly average discharge flow shall not exceed 0.15 mgd. • No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that caused violation of groundwater limitations.
Recycling Specifications	<ul style="list-style-type: none"> • Use of undisinfected secondary treated recycled water shall be limited to flood irrigation of fodder, fiber, and seed crops not eaten by humans or for grazing of non-milking cattle and shall comply with the provisions of Title 22. • The perimeter of the use area shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties not owned or controlled by the Discharger. • Recycling of WWTF effluent shall be at reasonable agronomic rates considering the crop, soil, climate, and irrigation management plan. The annual nutrient loading of the use area, including the nutritive value of organic and chemical fertilizers and recycled water, shall not exceed crop demand.
Groundwater Limitations	<ul style="list-style-type: none"> • Release of waste constituents from any treatment or storage component associated with the discharge shall not cause or contribute to groundwater containing constituents in excess of the concentrations specified below or natural background quality whichever is greater: <ul style="list-style-type: none"> ○ Nitrate as N of 10 mg/L ○ Total Coliform Organisms of 2.2 MPN/ 100 mL ○ For constituents identified in Title 22, the MCLs quantified therein. ○ For Electrical Conductance, 1,600 umhos/ cm.

Table 3. Summary of Buttonwillow Wastewater Treatment Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> Release of waste constituents from any treatment or storage component associated with the discharge shall not cause or contribute to groundwater containing taste or odor-producing constituents in concentrations that cause nuisance or adversely affect beneficial uses.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – monthly computation of total nitrogen and a quarterly 24-hour composite sample for General Minerals.

Elk Hills Oil Field, 10G Class II-1 Waste Management Complex

Facility Description (CV-SALTS ID: 3095)

Williams Brother Engineering Company (Discharger) operates the Elk Hills Oil Field, 10G Class II-1 Waste Management Complex (Facility) and is authorized to discharge oil field wastewater under WDR Order No. 73-42. The facility is located in Section 10, Township 31S, Range 24E, Mount Diablo Base and Meridian (MDB&M) in Kern County. The underlying groundwater in this location is unusable because of high salinity and has no known beneficial use.

Wastewater discharge is limited to fluid wastes that may be treated and disposed by means of spreading and mixing with soils. Anticipated wastewater discharge volumes is 10,000 gallons per day (gpd). The Discharger utilizes bacteria present in the soil for the decomposition of the oily waste. The time required to decompose the waste is dependent upon moisture content of the soil, temperature of the soil, and type of hydrocarbons applied. Wet soil was observed to inhibit consumption of the sludge. The Discharger will not saturate the disposal area as this limits the amount of oily wastewater which can be treated.

Nitrate Management Requirements

Table 4 summarizes the nitrate management-related requirements in this facility's WDR.

Table 4. Elk Hills Oil Field, 10G Class II-1 Waste Management Complex WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Specifications	<ul style="list-style-type: none"> Disposal or any discharge of waste materials shall not cause a nuisance or pollution of ground or surface waters. Discharge shall be limited to fluid wastes that may be treated and disposed by means of spreading and mixing with soils. The discharge shall be limited to wastes from the development, production, processing, or transportation of petroleum or

Table 4. Elk Hills Oil Field, 10G Class II-1 Waste Management Complex WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<p>petroleum products, related oily or greasy materials and small quantities of fluid Group 2 materials.</p> <ul style="list-style-type: none"> • There shall be no discharge to surface water channels or drainageways either by surface overflow or subsurface percolation. • All runoff emanating from the disposal area shall be contained on property owned or controlled by the discharger.
Monitoring & Reporting	<ul style="list-style-type: none"> • The Discharger shall monitor each load of waste discharged to the Land Farm and report to the Regional Board the types of material discharged during the quarter, the total quantity discharged of each type, and the waste haulers used for each type of material.

Liberty Compost

Facility Description (CV-SALTS ID: 3136)

Nitrate Management Requirements

Synagro West, LLC (Discharger) is authorized to discharge wastewater under WDR Order R5-2009-0018. Liberty Compost (Facility) is located in Section 4, Township 26S, Range 20E, Mount Diablo Base and Meridian (MDB&M) in Kern County. The underlying groundwater beneficial uses are MUN, AGR, and IND.

The Discharger owns and operates a 162-acre biosolids composting facility which consists of one waste management unit (Unit). The Unit contains three composting subunits totaling 135 acres and an approved 27-acre composting subunit on which finished product can be stored. The Discharger composts municipal biosolids originating from wastewater treatment plants and transported to the facility by truck. The wastes treated at the Facility are classified as non-hazardous solid waste. Liquid residual wastes are collected in composite-lined impoundments and allowed to evaporate. Biosolids used for composting are tested by the generator prior to shipment to the composting facility. Only biosolids that meet the requirements for non-hazardous biosolids are accepted for composting.

Table 5 summarizes the nitrate management-related requirements in this facility's WDR.

Table 5. Summary of Liberty Compost WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of hazardous waste or designated waste is prohibited. • Discharge of wastes outside of a Unit or to a closed Unit is prohibited. • Discharge of waste constituents to the unsaturated zone or to groundwater is prohibited. • Discharged wastes shall not cause the release of pollutants or waste constituents in a manner which could cause a condition of degradation, contamination, or pollution of groundwater to occur.
Discharge Specifications	<ul style="list-style-type: none"> • Discharged wastes shall be limited to biosolids that are compostable residuals from municipal wastewater treatment facilities. These wastes will be mixed with bulking agents consisting of paper pulp, food processing and agricultural byproducts, yard residues, and organic liquids (residuals from animal and food processing facilities) from agricultural, commercial, and residential sources. • Liquids removed from a surface impoundment may be recycled onto the compost piles.
Facility Specifications	<ul style="list-style-type: none"> • The Discharger shall immediately notify the Central Valley Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste containment facilities or precipitation and drainage control structures.
Monitoring & Reporting	<ul style="list-style-type: none"> • Sludge Monitoring – For each source of municipal sludge received and for each load check performed, the Discharger shall provide analytical results for the following constituents: TKN, nitrogen, and nitrates.

Lost Hills Nut and Fruit Roll Plant

Facility Description (CV-SALTS ID: 2232)

Roll International Corporation (Roll), Paramount Farms Inc. (Paramount), and Berrenda Mesa Water District (are authorized to discharge wastewater under WDR Order 99-075 for the operation of the Lost Hills Nut and Fruit Roll Plant. Roll and Paramount own and operate the facility and the District own the Reclamation Area which are all located approximately three miles northwest of Blackwells Corner on Highway 33 in Bakersfield California. The underlying groundwater beneficial uses are PRO, AGR, REC-1, REC-2, WILD, WARM, GWR, and RARE.

Roll and Paramount process and pack pistachios, almonds, and fruit rolls. The facility generates wastewater from pistachio processing and packing, almond blanching, and fruit roll production. Hulling season begins in early September and lasts up to five weeks while fruit roll production, almond blanching, pistachio and almond nut rinsing, roasting, and packing run almost year-round. The facility consists of four Pistachio Hullers (Nos. 1-4), one experimental huller (Pistachio A/O Line), pistachio roasters, an almond blanching unit, and a fruit roll production facility.

All wastewater streams are mixed in a concrete sump prior to discharge. The combined wastewater is then routed through Hydrasieves to remove particles larger than 0.062 inches. After passing through the Hydrasieves, the wastewater is discharged to the four holding ponds or used for furrow irrigation of the 1,243 acres of farmland owned by the District, referred to as the reclamation area. Irrigation water is used as necessary to supplement the crop water requirements. Solids removed by the Hydrasieves and solid waste from the holding ponds are collected and tilled into an additional 240 acres of farmland owned by the discharger.

Nitrate Management Requirements

Table 6 summarizes the nitrate management-related requirements in this facility's WDR.

Table 6. Summary of Lost Hills Nut and Fruit Roll Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of wastes to surface waters or surface water drainage courses is prohibited. Bypass of screens or overflow of untreated or partially treated waste is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> During the pistachio hulling season (roughly five weeks beginning in early September) <ul style="list-style-type: none"> Maximum daily discharge shall not exceed 10.7 million gallons. 30-day average discharge shall not exceed 9.4 mgd. 30-day average discharge shall not exceed 0.55 mgd the rest of the year.
Groundwater Limitations	<ul style="list-style-type: none"> Discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents greater than background water quality.
Reclamation Area Specifications	<ul style="list-style-type: none"> Wastewater shall be distributed evenly, utilizing the entire active area.

Table 6. Summary of Lost Hills Nut and Fruit Roll Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> Wastewater application to the reclamation area shall be at a reasonable rates considering the crop, soil, climate, and irrigation management system. <ul style="list-style-type: none"> Nutritive loading of the disposal area, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the crop demand.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent monitoring prior to discharge to reclamation area or holding ponds – weekly grab sample during pistachio hulling season, quarterly for the rest of the year for TKN. Semiannual grab samples for ammonia as N and nitrate as N. Reclamation Area Soil Profile Monitoring – annual grab sample for nitrate as N, Kjeldahl-Nitrogen and total nitrogen at depths of 6 feet from ten representative sample locations. Calculations on the nitrogen loading rate including the types of crops and the crop nitrogen demand.

Maricopa Wastewater Disposal Facility

Facility Description (CV-SALTS ID: 2673)

The City of Maricopa (City) operates a wastewater disposal facility on a 5.77-acre parcel of land leased from the United States Bureau of Land Management (USBLM). The City and USBLM are authorized to discharge wastewater under WDR Order No. 5-00-153. The facility is in the northwest quarter of Section 7, Township 11N, Range 23W, San Bernardino Base & Meridian (SBB&M). The underlying groundwater beneficial uses are MUN and IND.

The facility serves 10 businesses, one school, and 275 households, while remaining households in the city are served by septic systems. The influent is primarily domestic waste which, transported via sewer lines, is discharged into one of two disposal ponds without any primary or secondary treatment. The City intends to operate one pond as an aerated pond and plans to install an aerator. The disposal ponds encompass 2.25 acres. Oil extraction activity around the City has caused significant subsidence in the area, according to USBLM, therefore, all wastewater must be maintained within the designated disposal area at all times.

Nitrate Management Requirements

Table 7 summarizes the nitrate management-related requirements in this facility's WDR.

Table 7. Summary of Maricopa Wastewater Disposal Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of waste to surface waters or surface water drainage courses is prohibited. Overflow of waste is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> Monthly average discharge shall not exceed the calculated capacity of the facility's disposal ponds. All influent and effluent must be maintained within the designated disposal area.
Groundwater Limitations	<ul style="list-style-type: none"> Discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than background water quality, except of electrical conductivity (EC).
Monitoring & Reporting	<ul style="list-style-type: none"> No nitrate management-related monitoring and reporting requirements.

Midway-Sunset and Buena Vista Oil Fields, Broad Creek 2 Facility

Facility Description (CV-SALTS ID: 3081)

Valley Water is authorized to discharge non-hazardous oilfield wastewater under WDR Order R5-2002-0223. Valley Water operates the Broad Creek No. 2 Facility in the Midway-Sunset and Buena Vista Oil Fields. The facility is in Section 2, Township 32S, Range 23E, Mount Diablo Base and Meridian (MDB&M). Based upon Finding Numbers 12-20 of the WDR, there is no groundwater in the region that can be reasonably be expected to be used for domestic/municipal, agricultural, or industrial supply.

The facility is divided into two disposal areas, the New Area and the Old Area. The New Area consists of 22 unlined surface impoundments (ponds). Produced water flows by pipeline to a series of inlet cleaning ponds for removal of any sediment and residual oil before discharging into surface impoundments. The impoundments in the New Area are interconnected by piping. Upon filling, produced water flows by gravity into the next succeeding impoundment, approximately three feet lower in elevation. The facility's maximum disposal capacity is 70,000 barrels/day (2,940,000 gallons per day [gpd]) in the New Area. The Old Area consists of 15 unlined surface impoundments. Only one impoundment is used by a single oil producer.

Nitrate Management Requirements

Table 8 summarizes the nitrate management-related requirements in this facility's WDR.

Table 8. Summary of Midway Sunset and Buena Vista Oil Fields, Broad Creek 2 Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Acceptance, treatment, or discharge of "hazardous waste" is prohibited. Discharges to surface water or surface water drainage courses are prohibited except for stormwater discharges permitted by an active National Pollutant Discharge Elimination System (NPDES) permit or for facilities exempt from the NPDES permitting requirements. Discharge of wastes other than wastewater associated with the production of crude oil is prohibited.
Monitoring & Reporting	<ul style="list-style-type: none"> Wastewater Monitoring – at least once annually, a representative sample of the wastewater to be taken at the point of discharge into the initial “cleaning” pond and at the point of discharge into a minimum of two of the evaporation/percolation ponds, one of which shall be the last pond containing water for nitrate/nitrite as nitrate and nitrate/nitrite as N analysis.

Midway-Sunset Oil Field, Buena Vista 1 Facility

Facility Description (CV-SALTS ID: 3080)

Valley Water is authorized to discharge non-hazardous oilfield wastewater under WDR Order 5-01-026. The Buena Vista No. 1 Facility is on 45-acres in Section 19, Township 31S, Range 23E, MDB&M. The first encountered groundwater occurs in the oil producing Tulare Formation greater than 800 feet in depth and is of poor water quality with a Total Dissolved Solids level greater than 4,000 milligrams per liter (mg/L). There is no demonstrated beneficial uses; it is hydraulically isolated from usable groundwater in the southern San Joaquin Valley; is not used or likely to be used in the foreseeable future, and without extensive treatment is not suitable for domestic/municipal supply. The overlying alluvium also contains no groundwater.

The facility contains 29 unlined surface impoundments with a maximum capacity of 11,000 barrels per day (462,000 gpd) of wastewater for disposal by solar evaporation and percolation. Produced water flows by pipeline to a series of inlet cleaning ponds for removal of any sediment and residual oil before discharging into the surface impoundments, which are interconnected by piping. Upon filling, wastewater discharges by gravity into the next succeeding impoundment, approximately three feet lower in elevation.

Nitrate Management Requirements

Table 9 summarizes the nitrate management-related requirements in this facility’s WDR.

Table 9. Summary of Midway-Sunset Oil Field, Buena Vista 1 Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Acceptance, treatment, or discharge of “hazardous waste” is prohibited. Discharge of wastes other than wastewater associated with the production of crude oil is prohibited. Discharges to surface water or surface water drainage courses are prohibited except for stormwater discharges permitted by an active NPDES permit or for facilities exempt from the NPDES permitting requirements.
Monitoring & Reporting	<ul style="list-style-type: none"> Wastewater Monitoring – at least once annually, a representative sample of the wastewater to be taken at the point of discharge into the initial “cleaning” pond and at the point of discharge into a minimum of two of the evaporation/percolation ponds, one of which shall be the last pond containing water. Samples are to be analyzed for nitrate/nitrite as nitrate and nitrate/nitrite as N.

Midway-Sunset Oil Field, Buena Vista 2 Facility

Facility Description (CV-SALTS ID: 3079)

Valley Water is authorized to discharge non-hazardous oilfield wastewater under WDR Order 5-01-027. The Buena Vista No. 2 facility is on 22-acres in Section 13, Township 31S, Range 22E, and Section 19, Township 31S, Range 23E, MDB&M. Based upon Finding Numbers 10-17 of the WDR, there is no groundwater in the region that can be reasonably be expected to be used for domestic/municipal, agricultural, or industrial supply. The facility consists of 13 unlined surface impoundments and 27 Class II wastewater injection wells. Approximately 5,000 barrels per day (210,000 gpd) is discharged to the impoundments and 75,000 barrels per day (3,150,000 gpd) to the injection wells. The facility has a maximum capacity of 110,000 barrels per day (4,620,000 gpd).

Nitrate Management Requirements

Table 10 summarizes the nitrate management-related requirements in this facility’s WDR.

Table 10. Summary of Midway-Sunset Oil Field, Buena Vista 2 Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Acceptance, treatment, or discharge of “hazardous waste” is prohibited.

Table 10. Summary of Midway-Sunset Oil Field, Buena Vista 2 Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> Discharge of wastes other than wastewater associated with the production of crude oil is prohibited. Discharges to surface water or surface water drainage courses are prohibited except for stormwater discharges permitted by an active NPDES permit or for facilities exempt from the NPDES permitting requirements.
Monitoring & Reporting	<ul style="list-style-type: none"> Wastewater Monitoring – at least once annually, a representative sample of the wastewater to be taken at the point of discharge into the initial “cleaning” pond and at the point of discharge into a minimum of two of the evaporation/percolation ponds, one of which shall be the last pond containing water. Samples are to be analyzed for nitrate/nitrite as nitrate and nitrate/nitrite as N.

Midway-Sunset Oil Field, Maricopa East Facility

Facility Description (CV-SALTS ID: 3069)

Valley Water is authorized to discharge non-hazardous oilfield wastewater under WDR Order 59-073-01. The Central Valley Water Board issued Monitoring and Reporting Program (MRP) R5-2016-0823 to Valley Water for discharges to the Maricopa East Facility disposal ponds. The facility consists of 3 large ponds used for the treatment and subsequent disposal of oil field produced wastewater via evaporation and percolation. Produced water flows by pipeline to a series of inlet cleaning ponds for removal of any sediment and residual oil before discharging into surface impoundments. Wastewater confined to the sumps located in the Upper Midway Valley, on exposed Tulare Formations, or on the alluvium of Maricopa Flats south of the axis of the southeastward plunging “thirty-five anticline” will not pose a threat of pollution to usable groundwaters in the area.

Nitrate Management Requirements

Table 11 summarizes the nitrate management-related requirements in this facility’s WDR.

Table 11. Summary of Midway-Sunset Oil Field, Maricopa East Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge shall not cause a pollution of adjacent surface or underlying groundwaters.
Monitoring & Reporting	<ul style="list-style-type: none"> Produced Wastewater Monitoring – quarterly grab sample for nitrate as N, nitrite as N, ammonia as N, and TKN.

Table 11. Summary of Midway-Sunset Oil Field, Maricopa East Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> Groundwater Monitoring – quarterly grab sample for nitrate as N, nitrite as N, ammonia as N, and TKN.

Midway-Sunset Oil Field, Maricopa West Facility

Facility Description (CV-SALTS ID: 3078)

Valley Water is authorized to discharge non-hazardous oilfield wastewater under WDR Order 59-073. The facility consists of ponds used for the treatment and subsequent disposal of oil field produced wastewater via evaporation and percolation. Produced water flows by pipeline to a series of inlet cleaning ponds for removal of any sediment and residual oil before discharging into surface impoundments. Wastewater confined to the sumps located in the Upper Midway Valley, on exposed Tulare Formations, or on the alluvium of Maricopa Flats south of the axis of the southeastward plunging “thirty-five anticline” will not pose a threat of pollution to usable groundwaters in the area.

Nitrate Management Requirements

Table 12 summarizes the nitrate management-related requirements in this facility’s WDR.

Table 12. Summary of Midway-Sunset Oil Field, Maricopa West Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge shall not cause a pollution of adjacent surface or underlying groundwaters.
Monitoring & Reporting	<ul style="list-style-type: none"> No nitrate management-related monitoring and reporting requirements.

Midway-Sunset Oil Field, Southeast Taft Facility (SE Taft)

Facility Description (CV-SALTS ID: 3077)

Valley Water is authorized to discharge non-hazardous oilfield wastewater under WDR Order 5-01-029. The Southeast Taft Facility is on 47-acres in Sections 17 and 18, Township 32S, Range 24E, MDB&M. The first encountered groundwater occurs in the Alluvium, with perched groundwater occurring at a depth of 120-150 feet and is of poor water quality with a Total Dissolved Solids level ranging from 3,170 to 5,420 mg/L. There is no demonstrated beneficial uses; no groundwater in the Alluvium north of the facility; it is hydraulically isolated from usable groundwater in the southern San Joaquin Valley; is not used or likely to be used in the

foreseeable future, and without extensive treatment is not suitable for domestic/municipal supply.

Nitrate Management Requirements

Table 13 summarizes the nitrate management-related requirements in this facility's WDR.

Table 13. Summary of Midway-Sunset Oil Field, Southeast Taft Facility (SE Taft) WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none">• Acceptance, treatment, or discharge of “hazardous waste” is prohibited.• Discharge of wastes other than wastewater associated with the production of crude oil is prohibited.• Discharges to surface water or surface water drainage courses are prohibited except for stormwater discharges permitted by an active NPDES permit or for facilities exempt from the NPDES permitting requirements.
Monitoring & Reporting	<ul style="list-style-type: none">• Wastewater Monitoring – at least once annually, a representative sample of the wastewater to be taken at the point of discharge into the initial “cleaning” pond and at the point of discharge into a minimum of two of the evaporation/percolation ponds, one of which shall be the last pond containing water. Samples analyzed for nitrate/nitrite as nitrate and nitrate/nitrite as N.

POM - Buttonwillow

Facility Description (CV-SALTS ID: 2844)

Sandridge Partners, L.P. owns and POM Wonderful, LLC operates the POM – Buttonwillow processing plant which is authorized to discharge process wastewater under WDR Order R5-2012-0099. The facility is located at 23145 Lerdo Highway in Spicer City, an unincorporated community in Kern County. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

Process wastewater at the facility consist of evaporator condensate, plant cleaning wash water, non-contact cooling water, and boiler blowdown. Wastewater generated at the facility passes through parabolic screens to remove solids and then discharged to two unlined settling/storage ponds. Solids, including skins, pulp, and other organic waste, is collected and transported offsite for use as cattle feed. The blended water in the ponds is land applied to Reuse Areas via drip, sprinkler, or flood irrigation depending on the type of crops being grown. Crops grown in the Reuse Areas include grains and alfalfa as well as pistachio and pomegranate trees.

Nitrate Management Requirements

Table 14 summarizes the nitrate management-related requirements in this facility's WDR.

Table 14. Summary of POM - Buttonwillow WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of waste, including storm water containing waste, to surface water drainage courses is prohibited. • Bypass of untreated wastes or partially treated wastes is prohibited. • Discharge or overflow of untreated wastes, except as allowed in the WDR Standard Provisions E.2, is prohibited. • Discharge of wastewater in a manner or location other than that described in the WDR Order is prohibited. • Storage of solids on areas without means to prevent leachate generation and infiltration into the ground is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> • Monthly discharge flow rate shall not exceed an average of 38,500 gpd. Daily discharge flow rate shall not exceed a maximum of 500,000 gpd. • No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or mass that causes violation of Groundwater Limitations of the WDR Order. • Discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times. • Discharger shall monitor solids accumulation in the wastewater treatment/storage ponds, and shall periodically remove solids as necessary to maintain adequate treatment and storage capacity.
Reuse Area Specifications	<ul style="list-style-type: none"> • Crops shall be grown on the Reuse Areas. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake. • Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the percolation of wastewater and irrigation water below the root zone (i.e., deep percolation). • Application of waste constituents shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management. The annual nutritive loading to the Reuse Areas, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand.

Table 14. Summary of POM - Buttonwillow WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment, reclamation, or storage component associated with the discharge shall not cause or contribute to groundwater containing constituent concentrations in excess of the concentrations of nitrate as N or natural background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Pond Effluent Monitoring – quarterly grab sample for nitrate as N, TKN, ammonia, and total nitrogen. Reuse Area Monitoring – daily wastewater loading, monthly total hydraulic loading, and monthly nitrogen loading. Soil Monitoring – annual representative soil profile samples for nitrate as N, and TKN.

Wasco Pistachio Processing Plant

Facility Description (CV-SALTS ID: 2396)

Primex Farms, LLC (Primex Farms) is authorized to discharge wastewater under WDR Order R5-2018-0005 for the operation of its Wasco pistachio processing facility. The facility is located at 16070 Wildwood Rd, about five miles west/southwest of the community of Wasco in Kern County. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

Primex Farms generates two wastewater streams during the processing season, which typically extends for about 50 days from mid-August to end of September. One is the process wastewater from the washing and sorting of the raw pistachios as the pistachios arrive at the facility, and the second is wash/rinse water from the cleaning of the processing equipment and storage silos, as well as any stormwater runoff that collects onsite. Process wastewater is discharged via floor drains and gravity flows to a sump inside the facility, which is then pumped over a vibrating screen to remove solids. Primex Farms discharges both waste streams to about 235-acres of adjacent land application areas (LAA), but they are not blended in the retention pond. Most of the LAA acreage (~ 195 acres) is currently planted with pistachio trees, with an approximately 35-acre parcel that is fallow.

Nitrate Management Requirements

Table 15 summarizes the nitrate management-related requirements in this facility's WDR.

**Table 15. Summary of Wasco Pistachio Processing Plant WDR
Nitrate Management-Related Requirements**

Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of wastes to surface waters or surface water drainage courses is prohibited. • Bypass of untreated wastes or partially treated wastes is prohibited. • Discharge of wastewater in a manner or location other than that described in the report of waste discharge and herein is prohibited.
Flow Limitations	<ul style="list-style-type: none"> • Monthly average discharge flow of wastewater to the retention pond and LAA shall not exceed a season average of 1.5 million gpd.
Discharge Specifications	<ul style="list-style-type: none"> • No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of the WDR Order. • Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. • Discharge shall always remain within the permitted waste treatment/containment structures and LAA.
Groundwater Limitations	<ul style="list-style-type: none"> • Release of waste constituents from any treatment unit, storage unit, delivery system, or LAA associated with the facility shall not cause or contribute to groundwater containing nitrate as N concentrations above 10 mg/L or in excess of background quality, whichever is greater.
Land Application	<ul style="list-style-type: none"> • Application of waste constituents, including nitrogen, to the LAA shall be at reasonable agronomic rates to preclude creation of a nuisance and unreasonable degradation of groundwater. The annual nutritive loading to the LAA, including the nutritive value of organic and chemical fertilizers and of the wastewater and nutrients in applied irrigation water and available in the root zone shall not exceed the annual crop demand. • Crops shall be grown in the LAA. Crops shall be selected based on nutrient uptake, consumptive use of water, volume of the wastewater to be applied, available acreage, and irrigation requirements to maximize crop uptake of waste constituents. • Discharger shall ensure that water, Biochemical Oxygen Demand (BOD), and nitrogen are applied and distributed uniformly across each LAA field. Discharger shall implement changes to the irrigation system and/or operational practices as needed to ensure compliance with this requirement.

Table 15. Summary of Wasco Pistachio Processing Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> Volume of wastewater applied to the LAA on any single day shall not exceed reasonable agronomic rates based on the vegetation grown, pre-discharge soil moisture conditions, and weather conditions. Hydraulic loading of wastewater and supplemental irrigation water including precipitation shall be at reasonable agronomic rates designed to: maximize crop nutrient uptake; maximize breakdown of organic waste constituents in the root zone; and minimize the percolation of waste constituents below the root zone.
Management Plan	<ul style="list-style-type: none"> Wastewater and Nutrient Management Plan – the Plan must include management practices that will ensure wastewater, irrigation water, commercial fertilizers and soil amendments are applied at agronomic rates.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent monitoring prior to discharge to LAA – weekly grab sample for nitrite as N, nitrate as N, ammonia as N, and total nitrogen. Source Water Monitoring – semi-annual grab sample for nitrate as N, TKN and total nitrogen. LAA Monitoring – annual nitrate loading calculations from wastewater, fertilizers and supplemental irrigation water. Soil Monitoring – annual representative soil profile samples for nitrate as N and TKN.

Wasco State Prison Wastewater Treatment Facility

Facility Description (CV-SALTS ID: 2610)

The California Department of Corrections, Planning and Corrections Division (Discharger) is authorized to discharge wastewater under WDR Order No. 90-217. Wasco State Prison Wastewater Treatment Facility (Facility) is located in Section 8, Township 27S, Range 24E, Mount Diablo Base and Meridian (MDB&M). The underlying groundwater beneficial uses are MUN and AGR.

The Facility's treatment scheme includes a mechanically cleaned bar screen and two, 4-million-gallon capacity aerated lagoons followed by two, 2.5-million-gallon capacity sedimentation ponds. The sedimentation ponds are alternately taken offline annually for cleaning. Sludge is spread on property controlled by the Discharger.

A single-lined pond is used to store treated wastewater for land application during the crop growing season. A second unlined storage pond is used for additional storage of wastewater as needed. The combined capacity of the storage ponds will be 380-acre feet. Typically, treated wastewater storage will increase between October and March and decrease during the remainder of the year as crop irrigation needs are met. The ponds have a maximum depth of about 14 feet when full and cover a total area of approximately 35 acres. Wastewater disposal is accomplished through flood irrigation of about 230 acres of alfalfa. Irrigation tailwater is captured and returned to the fields.

Nitrate Management Requirements

Table 16 summarizes the nitrate management-related requirements in this facility's WDR.

Table 16. Summary of Wasco State Prison Wastewater Treatment Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of wastes to surface water or surface water drainages is prohibited. • Bypass or overflow of untreated or partially treated waste is prohibited. • Discharge of wastes classified as hazardous or designated is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> • Monthly average daily discharge flow shall not exceed 0.81 million gallons. • Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas. • Irrigation or impoundment of wastewater shall not occur within 500 feet of any domestic well or within 100 feet of any irrigation well unless it is demonstrated to the satisfaction of the Executive Officer that a lesser distance is justified. • Use of reclaimed wastewater shall be limited to flood irrigation of fodder, fiber, and seed crops. • Application of wastewater to the reclamation area shall not exceed, including fertilizers, what is reasonably necessary for the crop. • Storage ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 25 years, distributed monthly in accordance with historical rainfall

Table 16. Summary of Wasco State Prison Wastewater Treatment Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	patterns. Freeboard in all ponds shall never be less than 2 feet measured vertically.
Groundwater Limitations	<ul style="list-style-type: none"> • Discharge, in combination with other sources, shall not cause underlying groundwater to: <ul style="list-style-type: none"> ○ Contain waste constituents in concentrations statistically greater than the receiving water limits, where specified below, or background water quality where not specified. ○ Contain chemicals, heavy metals, or trace elements in concentrations that adversely affect beneficial uses or exceed maximum contaminant levels. ○ Contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. ○ Contain concentrations of chemical constituents in amounts that adversely affect agricultural use.
Monitoring & Reporting	<ul style="list-style-type: none"> • Effluent Monitoring – A monthly grab sample for Kjeldahl nitrogen as N and nitrate as N. • Sludge Monitoring – when sludge is removed from ponds, but prior to disposal, a composite sample shall be analyzed, on a dry weight basis, for total solids (%), nitrogen (total, $\text{NH}_4\text{-N}$, and $\text{NO}_3\text{-N}$), total phosphorus, total potassium, total PCBs, and totals of specific metals (Pb, Zn, Cu, Ni, Cd, and Ag). Analytical results shall be submitted to the Executive Officer. • Annual Land Management Reports – By 30 January of each year, the Discharger shall submit an annual summary report on the land management operation after the conclusion of the crop season. The report shall discuss total water application over the season; the total wastewater applied; the total nutrients removed through harvest of crop. In short, the report shall present a mass balance relative to pollutants of concern and hydraulic loading.

Wonderful Pistachios & Almonds King Facility

Facility Description (CV-SALTS ID: 2172)

Wonderful Pistachios & Almonds LLC (Wonderful) is authorized to discharge wastewater under WDR Order R5-2015-0082 for the operation of its Wonderful Pistachios & Almonds King Facility. The facility is located at 10429 King Road, Lost Hills, CA. The underlying groundwater beneficial uses are AGR, IND, PRO, REC-1, REC-2, WARM, WILD, and GWR.

Waste streams at the facility are generated from the hulling operation (hulling wastewater), and various processes including equipment sanitation, clean-in-place, filter backwash, plant washdown, boiler blowdown, water softener regeneration wastewater, cooling tower blowdown, and condensates from the pasteurizer (process wastewater), and seasoning and roasting operation (roasting wastewater). The facility operates year-round with the harvest season from August to September, lasting approximately 30 to 45 days.

During the harvest season, approximately 150 to 200 million pounds of pistachios are processed. Pistachios are transported to the facility and pre-cleaned. Leaves, twigs, and other debris are removed and transferred to a temporary green waste area onsite where the material is ground and shipped offsite to a broker for use as compost or feedstock material. Immediately after pre-cleaning, pistachios are hulled. During the hulling process, water is introduced to facilitate the removal of the hulls and to clean the pistachios. Wastewater generated from this process contains pistachio hulls and some shells and skins. The wastewater is collected in a concrete pit and then pumped through parabolic screens (hydrasieves) to separate the solids from water. The screened solids are shipped offsite to local farms for use as a cattle feed.

The facility has two holding ponds (north and south ponds) that are hydraulically connected with a total capacity of 55 million gallons. The north pond is the primary pond which is divided into five smaller holding ponds (Ponds 1 through 5) while the south pond (Pond 6) is used for emergency storage. Process wastewater generated at the facility is combined with hulling wastewater in the holding ponds and then discharged to the 640-acre LAA during the harvest season. The remainder of the year this waste stream is discharged to holding Pond 5 and then to 27 acres of farmland owned by the discharger.

Nitrate Management Requirements

Table 17 summarizes the nitrate management-related requirements in this facility's WDR.

**Table 17. Summary of Wonderful Pistachios & Almonds King Facility WDR
Nitrate Management-Related Requirements**

Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of waste to surface waters or surface water drainage courses is prohibited. • Discharge of waste classified as ‘designated’, as defined in the Water Code section 13173, in a manner that causes violation of groundwater limitations, is prohibited. • Treatment system bypass or overflow of untreated wastes is prohibited, except as allowed by the WDR Standard Provisions E.2. • Discharge of wastewater in a manner or location other than described in the WDR Order.
Effluent and Mass Loading Limitations	<ul style="list-style-type: none"> • During the harvest season, the location after the holding ponds and before comingled wastewater is discharged to the 640-acre LAA (EFF-001) shall not exceed a monthly average daily flow of 4.05 mgd, a maximum daily flow of 5.5 mgd, or a total annual flow of 110 million gallons per year (mgy). • During the non-harvest season, the location after the holding pond and before wastewater is discharged to the 27-acre LAA (EFF-002) shall not exceed a monthly average daily flow of 0.05 mgd, a daily maximum flow of 0.35 mgd, or a total annual flow of 15 mgy.
Discharge Specifications	<ul style="list-style-type: none"> • No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of Groundwater Limitations of the WDR Order. • Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. • Discharge shall remain within the permitted waste treatment/containment structures and LAAs at all times. • Discharger shall operate all systems and equipment to optimize the quality of the discharge.
Land Application	<ul style="list-style-type: none"> • Crops shall be grown in the LAA. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to minimize crop uptake of water and nutrients. • Application of waste constituents to the LAAs shall be at reasonable agronomic rates to preclude creation of a nuisance and degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the LAAs, including the nutritive value of organic and chemical fertilizers and of the wastewater shall not exceed the annual crop demand.

Table 17. Summary of Wonderful Pistachios & Almonds King Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> Hydraulic loading of wastewater and supplemental irrigation water shall be at reasonable agronomic rates.
Solid Specifications	<ul style="list-style-type: none"> Any drying, handling and storage of solids at the facility shall be temporary, and controlled and contained in a manner that minimizes leachate formation and precludes the development of odor nuisance conditions and infiltration of waste constituent into soils in a mass or concentration that will violate groundwater limitations of the WDR Order.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any component of any treatment, storage, delivery system, or LAA associated with the discharge shall not cause or contribute to groundwater containing constituent concentrations in excess of 10 mg/L for nitrate as N or natural background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – weekly grab sample for TKN, nitrate as N, nitrite as N, ammonia as N, and total nitrogen. LAA Monitoring – monthly nitrogen loading rates from the wastewater and fertilizer. Soil Monitoring – annual soil profile grab samples for nitrate as N, ammonia as N, and TKN at depths of 2.5, 5, 7.7, and 10 feet.

KERN WATER COLLABORATIVE PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment D-1

PREPARED FOR



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AB	Public Water Supply Well Status, Abandoned
APN	Assessor Parcel Number
AR	Public Water Supply Well Status, Active Raw
AR Difference or A-R	Difference Between Nitrogen Applied and Nitrogen Removed
AR Ratio or A/R	Ratio of Nitrogen Applied to Nitrogen Removed
AU	Public Water Supply Well Status Active Untreated
Basin Plans	Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin
BOD	Biochemical Oxygen Demand
BPA	Basin Plan Amendment
C	Public Water System Type, Community
CDP	Census Designated Place
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CETHP	California Environmental Health Tracking Program
CIWQS	California Integrated Water Quality System
Coalition	Kings River Water Quality Coalition
CVDRMP	Central Valley Dairy Representative Monitoring Program
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVHM2	Central Valley Hydrologic Model 2.0
CVSC	Central Valley Salinity Coalition
CVWB	Central Valley Water Board
CSD	Community Services District
CWD	Community Water District
CWS	Community Water System
DAC	Disadvantaged Community
DDW	Division of Drinking Water
DS	Public Water Supply Well Status Destroyed
DUC	Disadvantaged Unincorporated Community
DWR	California Department of Water Resources
DWW	Drinking Water Watch
EC	Electrical Conductivity
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program

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Acronym	Meaning
EPA	Environmental Protection Agency
FAQs	Frequently Asked Questions
FMZP	Final Management Zone Proposal
GAMA	Groundwater Ambient Monitoring and Assessment
GAC	Granular Activated Carbon
GAR	Groundwater Quality Assessment Report
GIS	Geographic Information Systems
gpd	gallons per day
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrologic Conceptual Model
ILRP	Irrigated Lands Regulatory Program
INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status Inactive Raw
IU	Public Supply Well Status Inactive Untreated
IX	Ion Exchange
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
O&M	Operation and Maintenance
OAL	Office of Administrative Law

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Acronym	Meaning
OWTS	Onsite Waste Treatment System
PMZP	Preliminary Management Zone Proposal
PN	Public Supply Well Status Pending
POU	Point of Use
PWS	Public Water System
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children
WDR	Waste Discharge Requirements
WMP	Waste Management Plan
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

1. CHARACTERIZATION OF PROPOSED KWC MANAGEMENT ZONE: KERN COUNTY (POSO) AREA

The subsections below describe the area encompassed by the proposed Kern County (Poso) Area of the Kern Water Collaborative (KWC) Management Zone, including general geographic and hydrologic characteristics, jurisdictions located within each planning area and key planning agencies and utilities. **Table 1-1** describes several key data sources for the Management Zone.

Table 1-1. Key Data Sources to Characterize the Proposed Kern Water Collaborative Management Zone		
Boundary Type	Source for Boundary Data	Comments
Groundwater Sustainability Agency (GSA)	DWR Map Viewer: https://sgma.water.ca.gov/webgis/index.jsp?appid=gas-master&rz=true Individual GSA links for finding “Interested Parties”: https://sgma.water.ca.gov/portal/gsa/all	GSA boundaries, and also a list of GSA “Interested Parties”
Groundwater Basin/Subbasin	DWR Bulletin 118: https://water.ca.gov/programs/groundwater-management/bulletin-118 Basin Boundary Geographic Information System (GIS) file: https://data.cnra.ca.gov/dataset/i08-b118-ca-groundwaterbasins-2016	DWR Bulletin 118 basin and subbasin boundaries
Water Districts	DWR coverage of water agencies in California: https://data.ca.gov/dataset/i03-waterdistricts	Irrigation Districts, water districts, community service areas, and community service districts
Public Water Supply Systems	California Drinking Water System Area Boundaries: https://gis.data.ca.gov/datasets/waterboards::california-drinking-water-system-area-boundaries/about	Division of Drinking Water
State Small Water Supply Systems	By request from County Environmental Health Departments (Kings and Kern Counties) By request from groundwater sustainability agencies	Boundary data is typically not available for SSWS (usually just an address)

Table 1-1. Key Data Sources to Characterize the Proposed Kern Water Collaborative Management Zone		
Boundary Type	Source for Boundary Data	Comments
Disadvantaged Communities (DAC)/Severely Disadvantaged Communities (SDAC)	DACs and SDACs boundaries available from DWR: https://gis.water.ca.gov/app/dacs/	Department of Water Resources (DWR)

1.1. Geography

The Kern County (Poso) Area of the KWC Management Zone represents the northeastern portion of the 2003 Department of Water Resources (DWR) Bulletin 118 Kern County Groundwater Subbasin boundary. The Kern County (Poso) Area of the KWC Management Zone encompasses an area of approximately 658 square miles (421,107 acres).

The Friant Kern Canal runs approximately north-south on the west-central side of the proposed Kern County (Poso) Area. Poso Creek runs east to northwest from the eastern border to the northwest between the communities of McFarland and Wasco. The Kern River runs through the southeastern corner of the proposed Kern County (Poso) Area of the KWC Management Zone. The edge of the alluvial aquifer or Central Valley Floor borders the eastern edge of the proposed Kern County (Poso) Area of the KWC Management Zone. The northern edge coincides with the Kern County line, and the southern side follows a somewhat east-west line south of Rosedale and Oildale. Six main communities lie in this area of Kern County (**Figure 1-1**):

- Delano
- McFarland
- Wasco
- Shafter
- Rosedale
- Oildale

1.2. Jurisdictions

The Kern County (Poso) Area in the KWC Management Zone is bounded on the north by the Kern County line, bounded on the east by the edge of the alluvium, bounded on the south by an east-west line that goes south of Rosedale to Oildale, and bounded on the west by a line that stretches from highway 43 south to the west side of the community of Rosedale (**Figure 1-1**).

1.3. Groundwater Sustainability Agencies

The Kern County (Poso) Area in the KWC Management Zone is bounded on the north by the Kern County line, bounded on the east by the edge of the alluvium, bounded on the south by an east-west line that goes south of Rosedale to Oildale, and bounded on the west by a line that stretches from highway 43 south to the west side of the community of Rosedale (**Figure 1-1**).

- Arvin GSA
- Cawelo Water District GSA
- Delano-Earlimart Irrigation District GSA
- Eastern Tule GSA
- Kern Groundwater Authority GSA
- Kern River GSA
- Kern-Tulare Water District GSA-Kern County
- Kern-Tulare Water District GSA-Tule
- North Kern Water Storage District GSA
- Olcese Water District GSA
- Rosedale-Rio Bravo Water Storage District GSA
- Semitropic Water Storage District GSA
- Shafter-Wasco Irrigation District GSA
- Southern San Joaquin Municipal Utility District
- Tri-County Water Authority GSA - Tule

GSAs are required to prepare Groundwater Sustainability Plans (GSP), which include, but are not limited to a Hydrogeological Conceptual Model (HCM), determination of groundwater conditions in the area (including water quality), and estimates of historical, current and projected water budget components including annual groundwater pumping. These and other GSP elements provide useful information with regard to the management of nitrate in groundwater. DWR, which oversees the evaluation of GSPs developed for each basin or subbasin subject to SGMA, has established a web-based portal for GSA documentation.¹

The information provided in **Attachment D-1.3** provides a brief summary of each GSA, including points of contact, information about who makes up the GSA, and other interested parties that have been contacted by the GSAs²

¹ GSA boundaries: <https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true>

² GSA-information including points of contact, interested parties, and member agencies are derived from reported information each GSA provided to DWR found here: <https://sgma.water.ca.gov/portal/gsa/all>

1.4. Water Management Entities

There are several irrigation districts, water districts, community service areas, and community service districts that manage and distribute water within the proposed Kern County (Poso) Area of the KWC Management Zone. These entities distribute water for irrigation, drinking, or other purposes. **Figure 1-3** illustrates the locations of these water management areas within and adjacent to the proposed Management Zone:

- Anne Sippi Clinic (The) - Riverside Ranch
- Bakersfield, City of
- Brock Mutual Water Company
- CA Corrections Department, Kern Valley State Prison
- CA Corrections Department, Wasco State Prison Reception Center
- California Water Service Company - Bakersfield
- California Water Service Company - North Garden
- Cawelo Water District
- Choctaw Valley Mutual Water Company
- Delano, City of
- Delano - Earlimart Irrigation District
- Delano Grower S Grape Products
- East Niles Community Services District
- Four Twenty 420 Club
- Garlic Company (The)
- Kern - Tulare Water District
- Kern County Water Agency
- Lerdo Sheriff's Facility
- Maher Mutual Water Company
- McFarland, City of
- Meadows of The Kern Mutual Water Company
- Nord Road Water Association
- North Kern Water Storage District
- North of The River Municipal Water District
- Oildale Mutual Water Company
- Olcese Water District
- Pond Poso Improvement District
- Poplar Avenue Community
- Rag Gulch Water District
- Richgrove Community Service District
- Rosedale - Rio Bravo Water Storage District
- Rosedale Ranch Irrigation District
- Round Mountain Water Company
- Schweikart Water System
- Semitropic Water Service District
- Shafter, City of
- Shafter - Wasco Irrigation District
- Southern San Joaquin Municipal Utility District
- Vaughn Water Company
- Wasco, City of

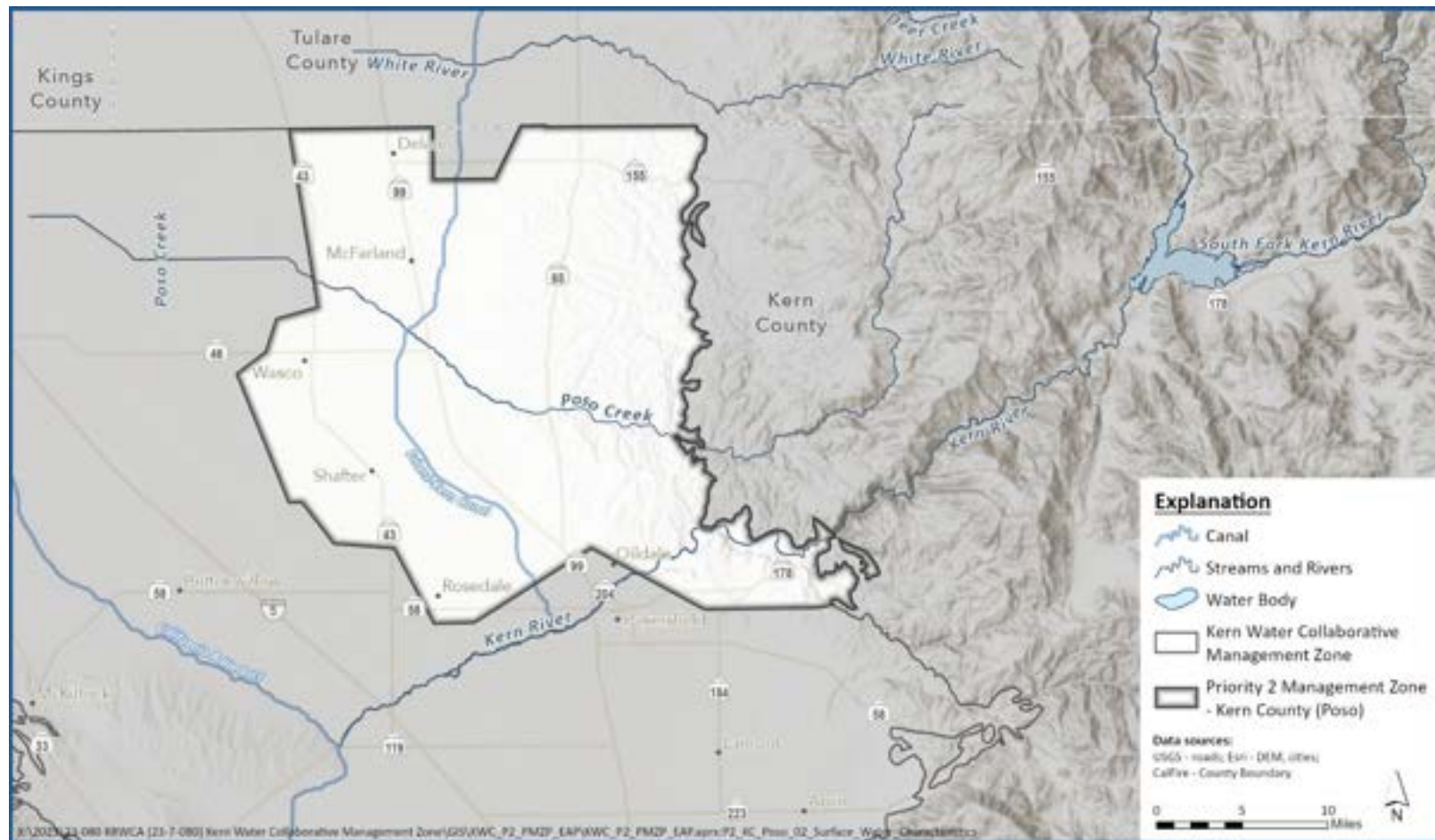


Figure 1-1. Surface Water Characteristics of the
Proposed Kern County (Poso) Area of the KWC Management Zone

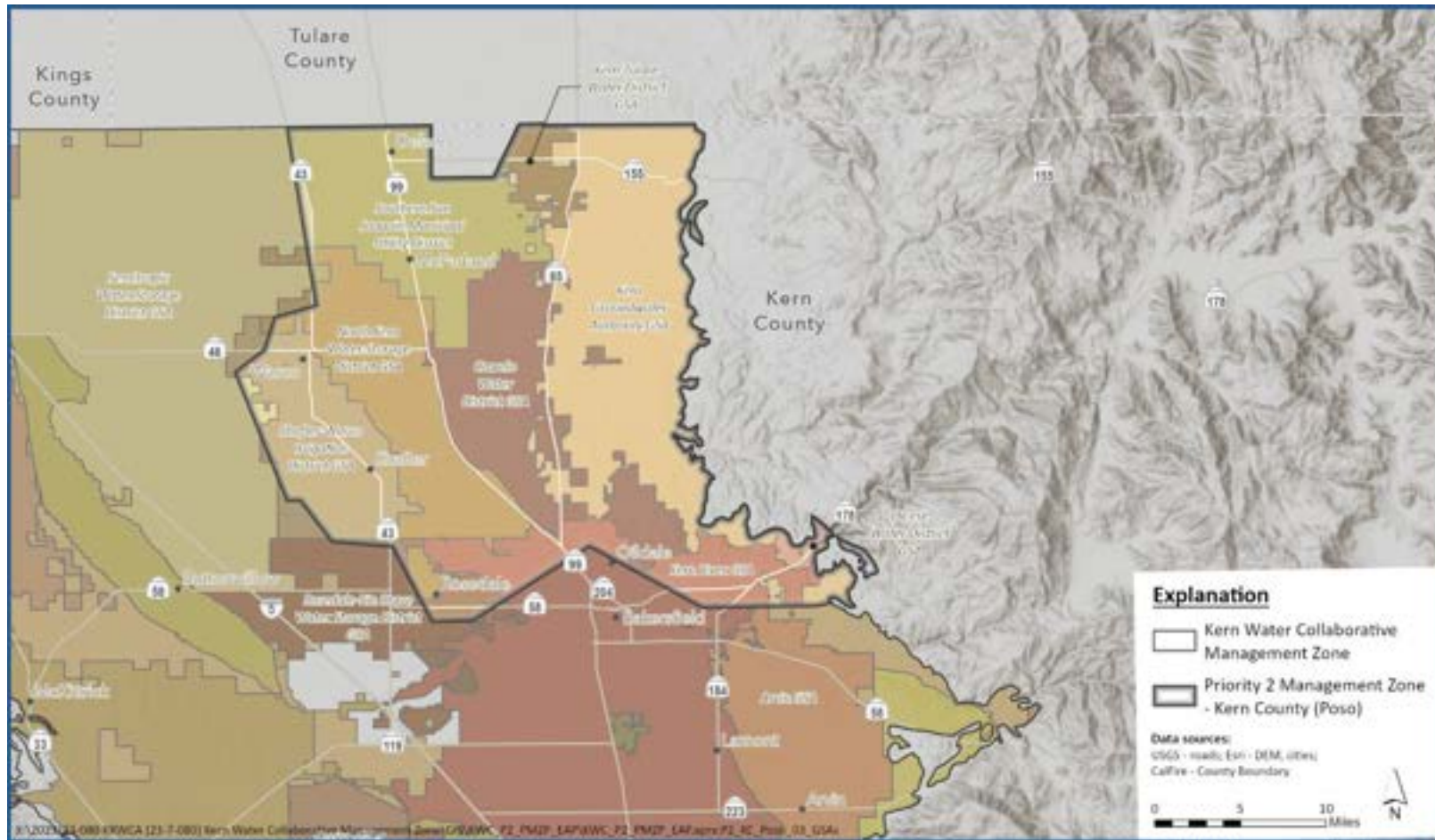


Figure 1-2. Groundwater Sustainability Agencies Established within and Adjacent to the Proposed Kern County (Poso) Area of the KWC Management Zone

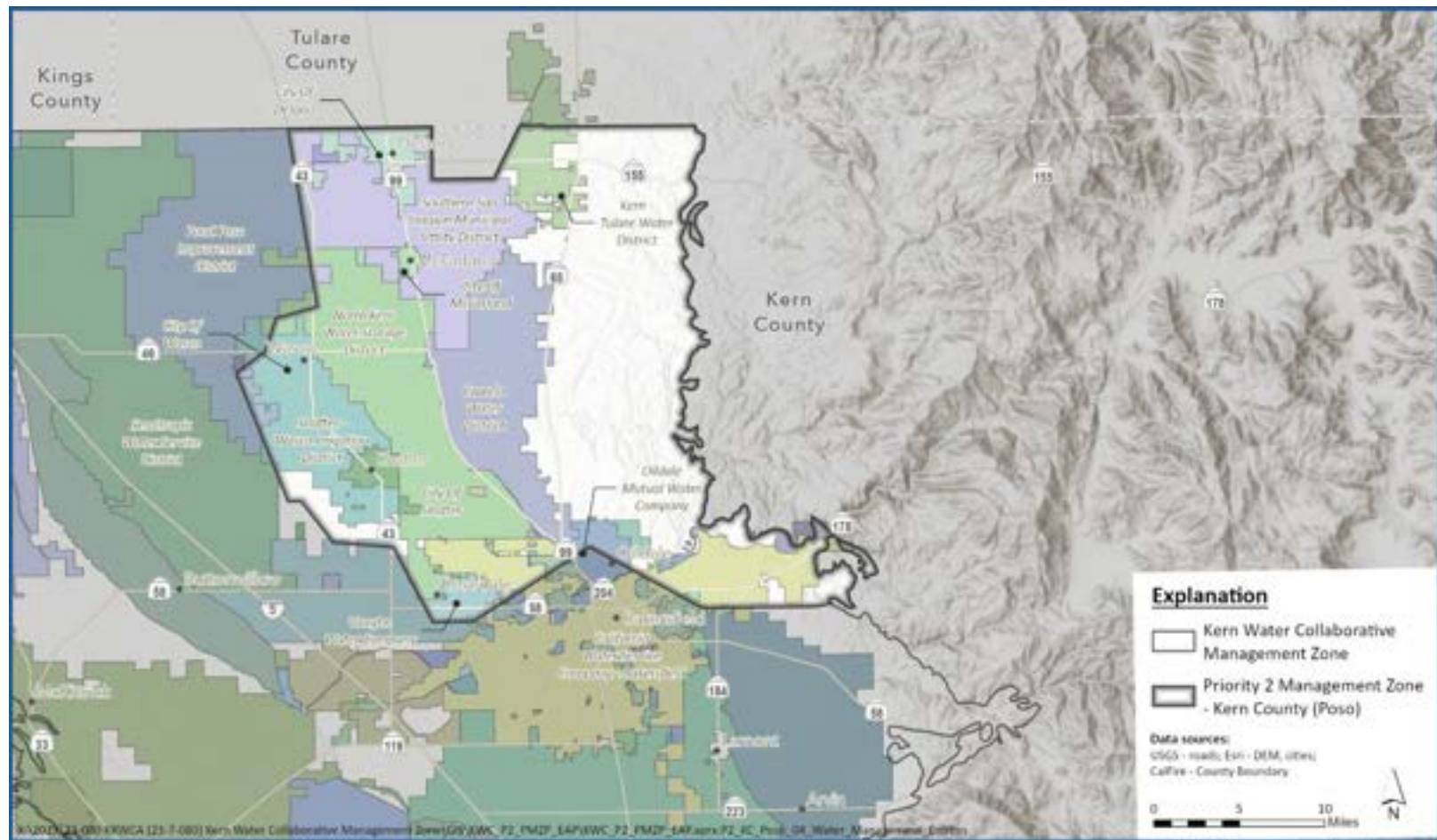


Figure 1-3. Water Management Entities Located within and Adjacent to the Proposed Kern County (Poso) Area of the KWC Management Zone

1.5. Drinking Water Systems

Section 2.2 in the FMZP summarizes how drinking water systems are classified. The information provided in the following section presents the Public Water Systems (PWS) within the proposed Kern County (Poso) Area of the KWC Management Zone.

1.5.1. Public Water Systems

Figure 1-4 provides the locations of PWS boundaries within the proposed Kern County (Poso) Area of the KWC Management Zone. There are 42 Public Water Systems with known GIS boundary data in the proposed Kern County (Poso) Area of the KWC Management Zone. These systems appear to be currently active, according to the State Water Board's Drinking Water Watch (<https://sdwis.waterboards.ca.gov/PDWW/>, accessed in November 2025). For more information about Public Water Systems in the proposed Kern County (Poso) area of the KWC Management Zone, see Appendix D in the Early Action Plan (Attachment H to this FMZP).

1.6. Disadvantaged Communities and Severely Disadvantaged Communities

One Disadvantaged Community (DAC) and eight Severely Disadvantaged Communities (SDACs) occur in the proposed Kern County (Poso) Area of the KWC Management Zone. **Table 1-2** summarizes the population of DACs and SDACs, and **Figure 1-5** shows the locations of DACs and SDACs within and adjacent to the proposed Kern County (Poso) Area of the KWC Management Zone. **Table 1-3** summarizes the characteristics of DACs and SDACs in the proposed Kern County (Poso) Area of the KWC Management Zone. DAC and SDAC status is based on DWR mapping that utilizes 2020 American Community Survey (ACS) population estimates and GIS coverage of DAC and SDAC census places within the proposed Kern County (Poso) Area of the KWC Management Zone.

1.7. Land Use

Table 1-4 and **Figure 1-6** provide the land use characteristics of the proposed Kern County (Poso) Area of the KWC Management Zone associated with agricultural activity (based on provisional 2023 DWR land use designations). Land use is predominantly made up of Deciduous Fruits and Nuts (29%).

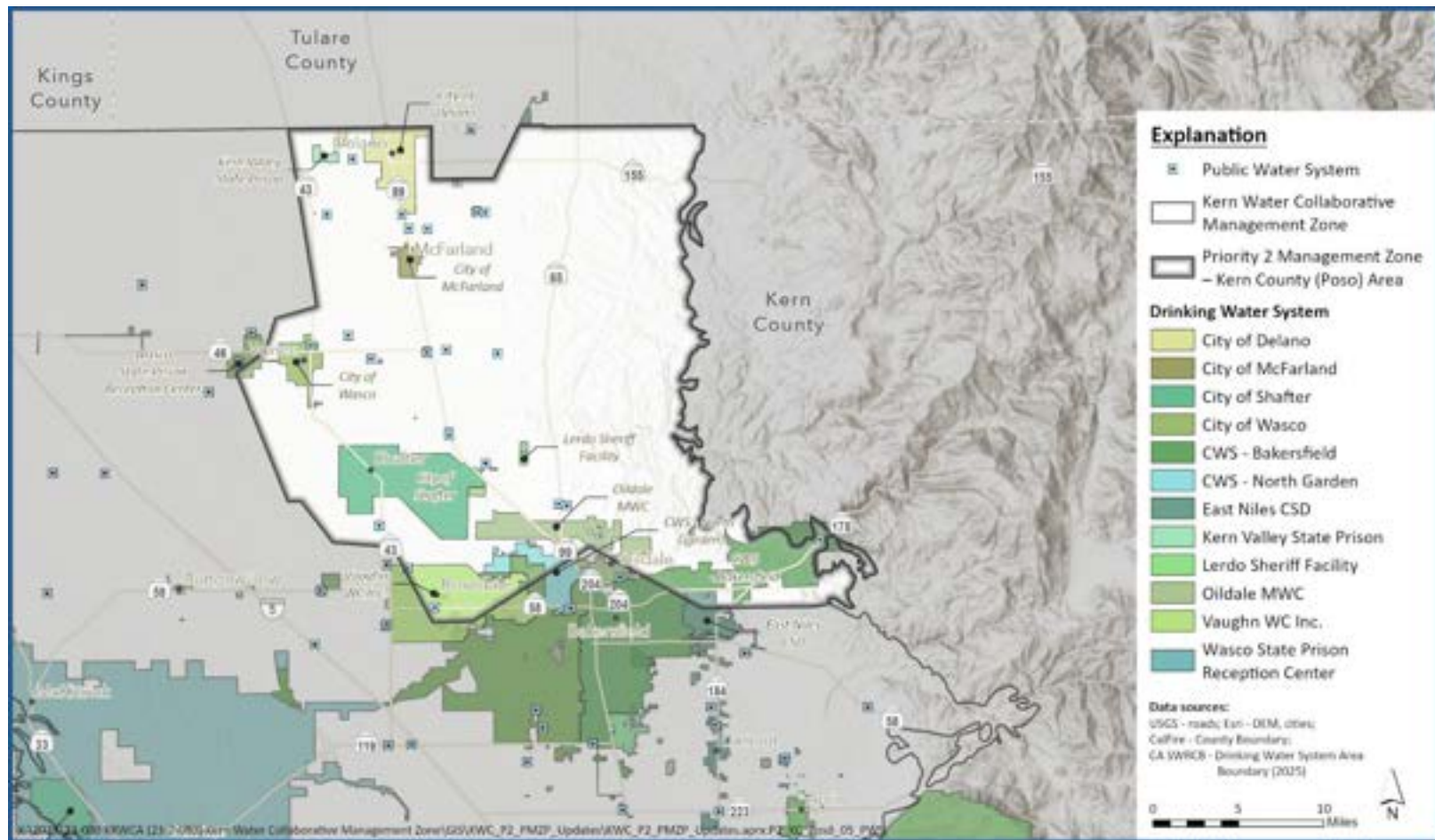


Figure 1-4. Public Water System Boundaries within and Adjacent to the Proposed Kern County (Poso) Area of the KWC Management Zone

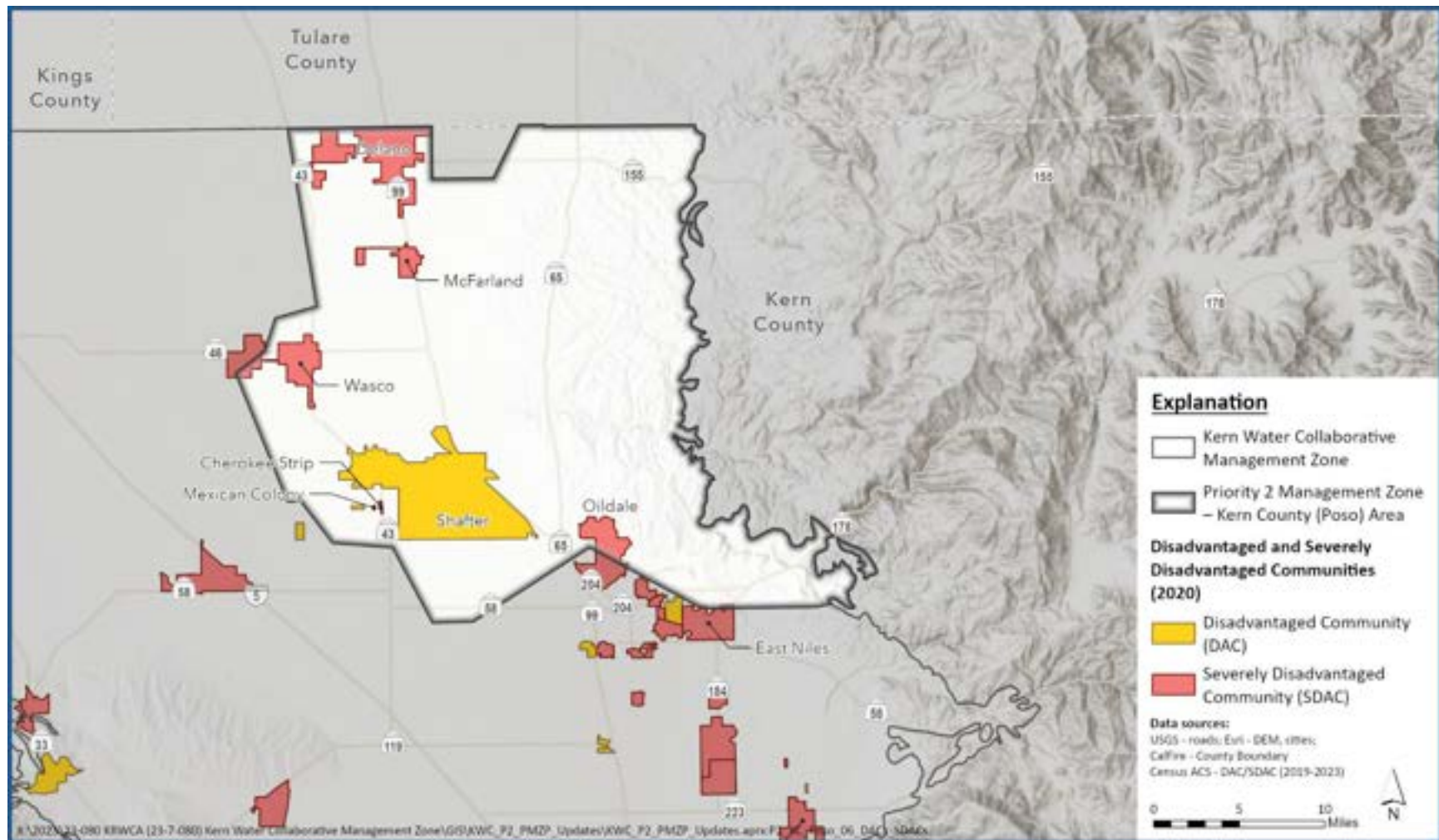


Figure 1-5. Location of DACs and SDACs within and adjacent to the Proposed Kern County (Poso) Area of the KWC Management Zone

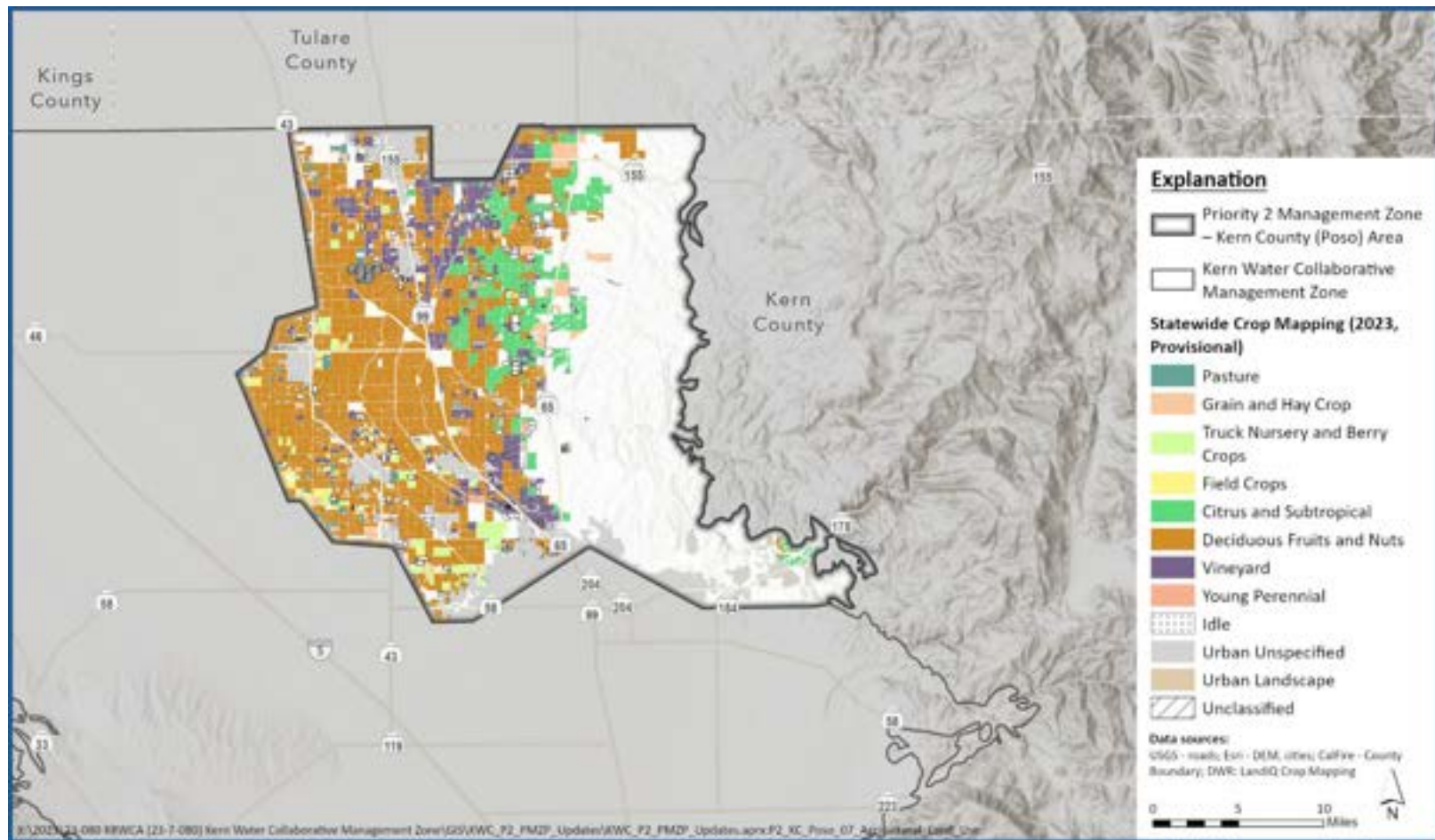


Figure 1-6. Agricultural Land Use in the Proposed Kern County (Poso) Area of the KWC Management Zone

Table 1-2. Population of DACs and SDACs Located in the Proposed Kern County (Poso) Area of the KWC Management Zone			
Approximate Location/Community	Type (DAC or SDAC)	DAC Population (calculated by fraction of DAC area in Management Zone)	DAC Area in Management Zone (Acres)
Cherokee Strip	Severely Disadvantaged Community	206	58
Delano	Severely Disadvantaged Community	51,637	9,452
East Niles	Severely Disadvantaged Community	1,144	154
McFarland	Severely Disadvantaged Community	14,218	1,713
Mexican Colony	Severely Disadvantaged Community	283	20
Oildale	Severely Disadvantaged Community	14,991	2,919
Shafter	Disadvantaged Community	20,022	24,453
Wasco	Severely Disadvantaged Community	22,436	4,206

NOTE: DWR used the 2020 US Census American Community Survey census places data for its Disadvantaged Communities (DAC) data. The estimated population presented here represents a 2024 estimate of population in the DAC/SDAC geographic areas based on county-specific growth rate percentages on 2020 census block data.

Table 1-3. DAC and SDAC Characteristics in the Proposed Kern County (Poso) Area of the KWC Management Zone					
Category	Number of Locales	Acres in Management Zone	Population in Management Zone	Total DAC and SDAC Acres	Total DAC and SDAC Population Estimate
DACs	1	24,453	20,022	42,977	124,937
SDACs	8	18,523	104,915		

Table 1-4. Land Use Summary for the Proposed Kern County (Poso) Area of the KWC Management Zone			
Land Use Designation	Area (sq. mi.)	Area (Acres)	Percent of Total Management Zone Area
C - Citrus and Subtropical	37.2	23,781	5.54%
D - Deciduous Fruits and Nuts	195.8	125,282	29.16%
F - Field Crops	4.6	2,931	0.68%
G - Grain and Hay Crops	11.7	7,475	1.74%
I - Idle	17.5	11,178	2.60%
P - Pasture	4.4	2,840	0.66%
T - Truck Nursery and Berry Crops	10.3	6,582	1.53%
U - Urban	50.8	32,482	7.56%
UL - Urban Landscape	1.2	744	0.17%
V - Vineyard	42.1	26,972	6.28%
X - Unclassified	8.8	5,653	1.32%
YP - Young Perennial	2.2	1,404	0.33%
Total Mapped Land Use Area	386.4	247,325	57.57%
Unmapped	284.8	182,272	42.43%
TOTAL	671.2	429,597	100.00%

ATTACHMENT D-1.3 GROUNDWATER SUSTAINABILITY AGENCIES WITHIN THE PROPOSED KERN COUNTY (POSO) AREA OF THE KERN WATER COLLABORATIVE MANAGEMENT ZONE

There are fifteen GSAs that are located within the Kern County (Poso) Area of the KWC Management Zone

Arvin GSA

Point of Contact: Jeevan Muhar, Engineer-Manager, 20401 Bear Mountain Blvd, PO Box 175
Arvin, CA 93203, 661-854-5573, jmuhar@aewsd.org; www.aewsd.org

Member Agency: Buena Vista Water Storage District GSA Henry Miller Water District GSA
Cawelo Water District GSA Kern Groundwater Authority GSA City of
McFarland GSA Pioneer GSA Semitropic Water Storage District GSA West Kern
Water District GSA Greenfield County Water District GSA Kern River GSA
Olcese Water District GSA Wheeler Ridge Maricopa GSA Tejon-Castac GSA

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public
water systems; Local land use planning agencies; Environmental users of
groundwater; Surface water users; Federal government, including, but not
limited to, the military and managers of Federal lands; California Native
American Tribes; Disadvantaged communities, including, but not limited to
those served by private domestic wells or small community water systems;
Entities listed in Water Code Section 10927 that are monitoring and reporting
groundwater elevations in all or a part of a groundwater Basin managed by
the GSA

Cawelo Water District GSA

Point of Contact: Dave Halopoff, Assistant General Manager, 17207 Industrial Farm Rd,
Bakersfield, CA 93308, 661-393-6072, dhalopoff@cawelowd.org;
www.cawelowd.org

Member Agency: The Kern Ground Water Authority GSA, Kern River GSA, Buena Vista Water
Storage District, Greenfield County Water District, Henry Miller Water District,
McFarland GSA, Olcese GSA, Pioneer GSA, Semitropic Water Storage District,
and West Kern Water District are managing the groundwater within the Kern
County Subbasin

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public
water systems; Local land use planning agencies; Environmental users of
groundwater; Surface water users; The Federal government, including, but
not limited to, the military and managers of Federal lands; California Native
American Tribes; Disadvantaged communities, including, but not limited to
those served by private domestic wells or small community water systems;
Entities listed in Water Code Section 10927 that are monitoring and reporting

groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Delano-Earlimart Irrigation District GSA

Point of Contact: David Wierenga, District Engineer, Delano-Earlimart Irrigation District GSAPO Box 7869 | Visalia, CA 932905593009221 | dwierenga@deid.org

Member Agency: Delano-Earlimart Irrigation District and Earlimart Public Utilities District

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Eastern Tule GSA

Point of Contact: Rogelio Caudillo, General Manager Eastern Tule GSA 881 W. Morton Avenue, Suite D | Porterville, CA 93257(559) 781-7660 | rcaudillo@easterntulegsa.com <http://easterntulegsa.com/>

Member Agency: County of Tulare, City of Porterville, Saucelito Irrigation District, Tea Pot Dome Water District, Vandalia Water District, Terra Bella Irrigation District, Kern-Tulare Water District, and Porterville Irrigation District.

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Kern Groundwater Authority GSA

Point of Contact: Kristin Pittack, Senior Water Resources Planner, 7080 N Whitney Avenue, Suite 101, California, Fresno, CA 93720, 760-223-5062, kpittack@rinconconsultants.com

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Kern River GSA

Point of Contact: Daniel Maldonado, Assistant Director, 1000 Buena Vista Rd., Bakersfield, CA 93311, 661-326-3715, drmaldonado@bakersfieldcity.us

Member Agency: Kern Delta Water District
East Niles Community Service District
City of Bakersfield
Kern County Water Agency Improvement District 4
Oildale Mutual Water Company

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Kern-Tulare water District GSA – Kern County

Point of Contact: Vanessa Yap, Staff Engineer, 5001 California Ave., Suite 102, Bakersfield, CA 93309, 661-327-3132, vanessa@kern-tulare.com; kern-tulare.com

Member Agency: Kern Groundwater Authority GSA Cawelo Water District GSA Eastside Water Management Area Kern Water Bank Authority Southern San Joaquin Municipal Utility District GSA North Kern Water Storage District GSA Kern County Water Agency - Pioneer GSA Rosedale-Rio Bravo Water Storage District GSA Semitropic Water Storage District GSA Shafter-Wasco Irrigation District GSA City of McFarland GSA West Kern Water District GSA Westside District Water Authority GSA Kern River GSA Arvin-Edison Water Storage District GSA Tejon-Castaic Water District GSA Wheeler Ridge-Maricopa Water Storage District GSA Buena Vista GSA Olcese Water District GSA Henry Miller Water District GSA

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Kern-Tulare Water District GSA – Tule County

Point of Contact: Vanessa Yap, Staff Engineer Kern-Tulare Water District GSA5001 California Ave., Suite 102 | Bakersfield, CA 93309661-327-3132 | vanessa@kern-tulare.com

Member Agency: Kern-Tulare Water District

Other Interested Parties: N/A

North Kern Water Storage District GSA

Point of Contact: David Hampton, General Manager, 33380 Cawelo Ave., Bakersfield, CA 93308, 661-393-2696, dhampton@northkernwsd.com; www.northkernwsd.com/

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Olcese Water District GSA

Point of Contact: Jeff Siemens, 15701 Hwy 178, Bakersfield, CA 93306, 661-872-5050, jsiemens@nflc.net

Member Agency: Greenfield County Water District, Buena Vista Water Storage District, West Kern Water District, Delano-Earlimart Irrigation District, and the County of Kern

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but

not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Rosedale-Rio Bravo Water Storage District GSA

Point of Contact: Dan Bartel, Engineer-Manager, 849 Allen Road, Bakersfield, CA 93314, 661-589-6045, dbartel@rrbwsd.com; www.rrbwsd.com

Member Agency: Agape Mutual Water System, Allen Road Mutual Water System; Brock Mutual Water Company; Enos Lane Public Utility District; Gooselake Water Company; Harvest Moon Mutual Water Company; Heath Brimhall P.O.A.; Kranenburg Water System; Maher Mutual Water Company; Manon Manor Mutual Water Company; Mustang Mutual Water System; Nord Road Water Association; North Kranenburg Water System; Schweikart Water System; Stockdale Ranchos Mutual Water Company; Vaughn Water Company; Wegis Mutual Water Company; Western Acres Mutual Water Company

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Semitropic Water Storage District GSA

Point of Contact: Jason Gianquinto, General Manager, 1101 Central Ave, Wasco, CA 93280, (661) 758-5113, jgianquinto@semitropic.com; www.Semitropic.com

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Shafter-Wasco Irrigation District GSA

Point of Contact: Kris Lawrence, General Manager, 16294 Central Valley Hwy, Wasco, CA 93280, 661-440-8559, klawrence@swid.org; www.swid.org

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Southwest Kings GSA

Point of Contact: Deanna Jackson, Executive Director, 944 Whitley Avenue, Suite E, Corcoran, CA 93212, (559) 762-7240, djackson@tcwater.org; <http://tcwater.org/>

Member Agency: Dudley Ridge Water District, Tulare Lake Reclamation District No. 761, Tulare Lake Basin Water Storage District, Kettleman City Community Services District and the County of Kings

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

Southern San Joaquin Municipal Utility District

Point of Contact: Roland Gross, General Manager/Secretary, 11281 Garzoli Avenue, Delano, CA 93215, 661-725-0610, roland@ssjmud.org

Member Agency: Southern San Joaquin Municipal Utility District (District)

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to

those served by private domestic wells or small community water systems;
Entities listed in Water Code Section 10927 that are monitoring and reporting
groundwater elevations in all or a part of a groundwater Basin managed by
the GSA

Tri-County Water Authority GSA – Tulare Lake

Point of Contact: Deanna Jackson, Executive Director, 944 Whitley Avenue, Suite E, Corcoran, CA 93212, (559) 762-7240, djackson@tcwater.org; <http://tcwater.org/>

Member Agency: N/A

Other Interested Parties: Holders of overlying groundwater rights; Municipal well operators; Public water systems; Local land use planning agencies; Environmental users of groundwater; Surface water users; The Federal government, including, but not limited to, the military and managers of Federal lands; California Native American Tribes; Disadvantaged communities, including, but not limited to those served by private domestic wells or small community water systems; Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater Basin managed by the GSA

KERN WATER COLLABORATIVE PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment D-2

PREPARED FOR



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AB	Public Water Supply Well Status, Abandoned
APN	Assessor Parcel Number
AR	Public Water Supply Well Status, Active Raw
AR Difference or A-R	Difference Between Nitrogen Applied and Nitrogen Removed
AR Ratio or A/R	Ratio of Nitrogen Applied to Nitrogen Removed
AU	Public Water Supply Well Status Active Untreated
Basin Plans	Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin
BOD	Biochemical Oxygen Demand
BPA	Basin Plan Amendment
C	Public Water System Type, Community
CDP	Census Designated Place
Central Valley Water Board	Central Valley Regional Water Quality Control Board
CETHP	California Environmental Health Tracking Program

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Acronym	Meaning
CIWQS	California Integrated Water Quality System
Coalition	Kings River Water Quality Coalition
CVDRMP	Central Valley Dairy Representative Monitoring Program
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CVHM2	Central Valley Hydrologic Model 2.0
CVSC	Central Valley Salinity Coalition
CVWB	Central Valley Water Board
CSD	Community Services District
CWD	Community Water District
CWS	Community Water System
DAC	Disadvantaged Community
DDW	Division of Drinking Water
DS	Public Water Supply Well Status Destroyed
DUC	Disadvantaged Unincorporated Community
DWR	California Department of Water Resources
DWW	Drinking Water Watch
EC	Electrical Conductivity
EAP	Early Action Plan
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
FAQs	Frequently Asked Questions
FMZP	Final Management Zone Proposal
GAMA	Groundwater Ambient Monitoring and Assessment
GAC	Granular Activated Carbon
GAR	Groundwater Quality Assessment Report
GIS	Geographic Information Systems
gpd	gallons per day
GQMP	Groundwater Quality Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrologic Conceptual Model
ILRP	Irrigated Lands Regulatory Program
INMP	Irrigation and Nitrogen Management Plan
INMPSR	Irrigation and Nitrogen Management Plan Summary Report
IRWM	Integrated Regional Water Management
IR	Public Supply Well Status Inactive Raw
IU	Public Supply Well Status Inactive Untreated
IX	Ion Exchange
KWC	Kern Water Collaborative
LPA	Local Primacy Agency
LSWS	Local Small Water System

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Acronym	Meaning
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/L as N	milligrams per liter as nitrogen
MHI	Median Household Income
MPEP	Management Practice Evaluation Program
MZ	Management Zone
MZIP	Management Zone Implementation Plan
N	Nitrogen
NC	Public Water System Type, Non-Community
NGO	Non-Governmental Organizations
NMP	Nutrient Management Plan
NO ₃ -N	Nitrate as Nitrogen
NOA	Notice of Applicability
NRCS	California Natural Resource Conservation Service
NTC	Notice to Comply
NTNC	Public Water System Type, Non-Transient Non-Community
NWIS	National Water Information System
O&M	Operation and Maintenance
OAL	Office of Administrative Law
OWTS	Onsite Waste Treatment System
PMZP	Preliminary Management Zone Proposal
PN	Public Supply Well Status Pending
POU	Point of Use
PWS	Public Water System
RO	Reverse Osmosis
SAFER	Safe and Affordable Funding for Equity and Resilience
SDAC	Severely Disadvantaged Communities
SDWIS	Safe Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nitrate Management Plan
sq. mi	square mile
SWS	Small Water Systems
SSWS	State Small Water System
State Water Board	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
USGS	United States Geological Survey
WIC	Women, Infants, and Children
WDR	Waste Discharge Requirements
WMP	Waste Management Plan
WWTF	Wastewater Treatment Facility

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Acronym	Meaning
WWTP	Wastewater Treatment Plant

1. CHARACTERIZATION OF PROPOSED KWC MANAGEMENT ZONE: KERN COUNTY (POSO) AREA

This subsection includes an overview of the hydrogeology, groundwater elevations and flow directions, a description of the delineation of the Upper Zone of the groundwater system, and the characterization of nitrate in groundwater for the proposed Kern County (Poso) area of the Kern Water Collaborative (KWC) Management Zone.

1.1. Hydrogeology

The hydrogeology of the proposed Kern County (Poso) Area of the KWC Management Zone is described in California's Department of Water Resources (DWR) Bulletin 118 (B118) description of the Kern County Subbasin (DWR, 2006) and the Basin Settings chapter of the Kern County Subbasin Groundwater Sustainability Plan (GSP) (GEI, 2019 and GEI, 2022). B118 describes the Kern County Subbasin as a subbasin of the San Joaquin Valley Groundwater Basin that is bounded in the north by the Kern County line, on the west by the marine sediments of the San Emigdio Mountains and Coast Ranges, and the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi mountains (DWR, 2006).

The GSP's hydrogeological conceptual model provides details about the regional geologic and structural setting in the greater Kern County Subbasin (GEI, 2022). Tectonic activity elevated the Coast Ranges and formed the Sierra Nevada, while deforming the crust along the proto-San Andreas and present-day San Andreas fault which led to the formation of the structural traps for oil and gas accumulation on the west side of the Subbasin. A marine embayment also formed, allowing seas to advance and retreat in the area, which resulted in the deposition of both continental and marine sediments. When the seas retreated, continental sediments from alluvial and fluvial systems were deposited. Brackish and freshwater lakes also formed within the Subbasin, resulting in thick deposits of clay, including the Corcoran Clay, which occurs on the western half of the proposed Kern County (Poso) Area of the KWC Management Zone (generally west of Delano, Wasco, and Shafter). The Corcoran Clay occurs laterally in the north Subbasin (approximately 34 miles wide in extent) from Delano to Lost Hills and narrows to the south where it is not a confining bed in the Kern Fan Area. The Corcoran Clay is a member of the Tulare Formation that divides the upper and lower units of permeable deposits in this Formation, while also providing confining properties to the permeable deposits in the lower Tulare Formation. Groundwater beneath the Corcoran Clay is typically confined to semiconfined. On the east side of the Subbasin (including parts of the Poso area), the Kern River Formation is made up of granitic source rocks from the Sierra Nevada (GEI, 2022).

The Tulare Formation is overlain by the Kern River Formation, which consists of poorly sorted, lenticular deposits of clay, silt, sand, and gravel derived from the Sierra Nevada. The Kern River Formation is thicker on the east side of the Kern County Subbasin, in the Poso area. Alluvial fans have formed on the eastern side of the Kern County Subbasin (Poso Creek Fan, Kern River Fan, and Caliente Creek Fan). On the eastern side of the valley, these stream channels are large, laterally migrating distributary channels which have formed broad sheets of inter-fingering, wedge-shaped lenses of gravel, sand, and finer detritus due to shifting stream channels. These fan deposits and lenses of coarser grained materials make up the shallow continental water-bearing deposits of the regional aquifer system. The eastern side of the valley also shows evidence of deltaic conditions in addition to alluvial fan depositional environments. Coarse-grained

deposits are predominant on the eastern side compared to the central and western areas of the Subbasin (GEI, 2022).

Underlying the Kern River and Tulare Formations is the Pliocene San Joaquin Formation of marine deposits consisting of silt and silty sandstone, with a conglomerate at the base of the formation, which yields fresh water to many wells in the deep subsurface northeast of the Kettleman Hills. Beneath the San Joaquin Formation, lies the Etchegoin Formation, which ranges in thickness from 30 feet to more than 2,000 feet and is found at great depths (more than 3,000 feet beneath most of the valley), limiting its use to deep well production in a few deep wells in the valley and several wells the foothills. The Santa Margarita Sandstone lies below the Etchegoin Formation and is sometimes separated by a silt layer called the Round Mountain Silt, which when present acts as a confining unit and ranges in thickness from 0 to 200 feet. The Santa Margarita Sandstone, which ranges in thickness from 200 to 600 feet, contains coarse-grained sand that is a major aquifer providing water to wells. Beneath the Santa Margarita Sandstone lies the Miocene Olcese Sand unit, which ranges up to 600 feet in thickness, and consists of unconsolidated medium- to coarse-grained sand containing a few pebble and siltstone beds. This formation is utilized by the Olcese Water District in the Kern River Canyon of the Poso Creek area. The Miocene Olcese Sand and Santa Margarita Sandstone provide drinking water sources in the northeastern portion of the Subbasin (the Poso area) under confined conditions (GEI, 2022).

One major geologic feature that significantly affects groundwater flow is the presence of the Bakersfield Arch, which is a broad southwest-plunging arch of basement rock that separates the small Maricopa-Tejon sedimentary basin at the south end with the remainder of the sedimentary basin to the north and west. Groundwater recharging from the Kern River will flow north and south along the flanks of the arch away from the center of the Subbasin. The northeastern third of the Subbasin (the Poso area) includes the north half of the Bakersfield Arch (GEI, 2022). **Figure 1-1a** and **Figure 1-1b** illustrates the a) surficial geology and cross section location, and b) the conceptual cross section and principal aquifer units in the Kern County Subbasin, including the Poso area.

The hydrogeology of the Kern County Subbasin plays a role in the vulnerability of the basin to nitrate contamination. The high vulnerability area mapping on behalf of the Kern River Watershed Coalition Authority and Cawelo Coalition (or “Coalitions”) was updated in 2021 as part of the Central Valley Groundwater Monitoring Collaborative (CVGMC) Five-Year Assessment Report (CVGMC, 2021). This assessment included the refinement of the high vulnerability areas based on additional groundwater quality data, particularly exceedances of the maximum contaminant level (MCL) for nitrate of 10 mg/L as nitrogen (N). The physical intrinsic vulnerability depends on the presence of physical hydrogeologic characteristics and land use and water management practices that may contribute to constituents migrating to groundwater. The presence of hydrogeologic characteristics that enable potential contaminants to reach groundwater more readily make a location more vulnerable to groundwater contamination compared to locations with hydrogeologic characteristics that impede the ability of contaminants to reach groundwater or attenuate the contamination. The high vulnerability areas (HVAs) that cover the proposed Kern County (Poso) Area of the KWC Management Zone are presented in **Figure 1-2**.

1.2. Groundwater Elevations and Flow

Groundwater flow is described from two main sources for the Kern County (Poso) Area of the KWC Management Zone: DWR's Spring 2025 groundwater elevation contour mapping; and the Kern Subbasin's draft 2024 GSP documentation of generalized groundwater flow in the Kern County Subbasin (GEI, 2024). Groundwater elevation contour data and corresponding groundwater elevation point data were downloaded from the DWR SGMA Data Viewer (DWR, 2024). The data summarized correspond to groundwater elevation contours of the unconfined and semi-confined part of the aquifer system and point data from Spring 2025 (**Figure 1-3a**). Groundwater in the unconfined portion of the groundwater system tends to flow from the east and southeast to the west. A groundwater mound exists in the north of the proposed Kern County (Poso) area of the KWC Management Zone in the unconfined portion of groundwater with water table elevations of 150 feet. In the unconfined aquifer, groundwater levels are highest in the southeast, with elevations as high as 320 feet. According to the Spring 2025 contour lines, groundwater in the unconfined aquifer flows to the west and northwest, toward a groundwater depression on the eastern side of the Kern County (Westside South) Area, where groundwater elevations are lower than -100 feet. DWR did not have any control points to map or assess the unconfined groundwater flow directions on the eastern foothills of the Kern County (Poso) area of the KWC Management Zone.

The generalized groundwater flow directions, as developed for the Kern County Subbasin GSP (GEI, 2024), indicate that groundwater flows mostly to the northwest following the Poso Creek, with some groundwater flowing along the same direction as the Bakersfield Arch and the Kern River (southwest) in the southeastern portion of the Kern County (Poso) Area of the KWC Management Zone (**Figure 1-3b**).

The focus of the Nitrate Control Program is on the Upper Zone as described in Section 1.3 below. The description of groundwater movement in this document focuses primarily on the Upper Zone of the groundwater aquifer, which may not represent the movement of all groundwater present in deeper zones within the proposed Management Zone.

1.2.1. Areas of Potential Contribution

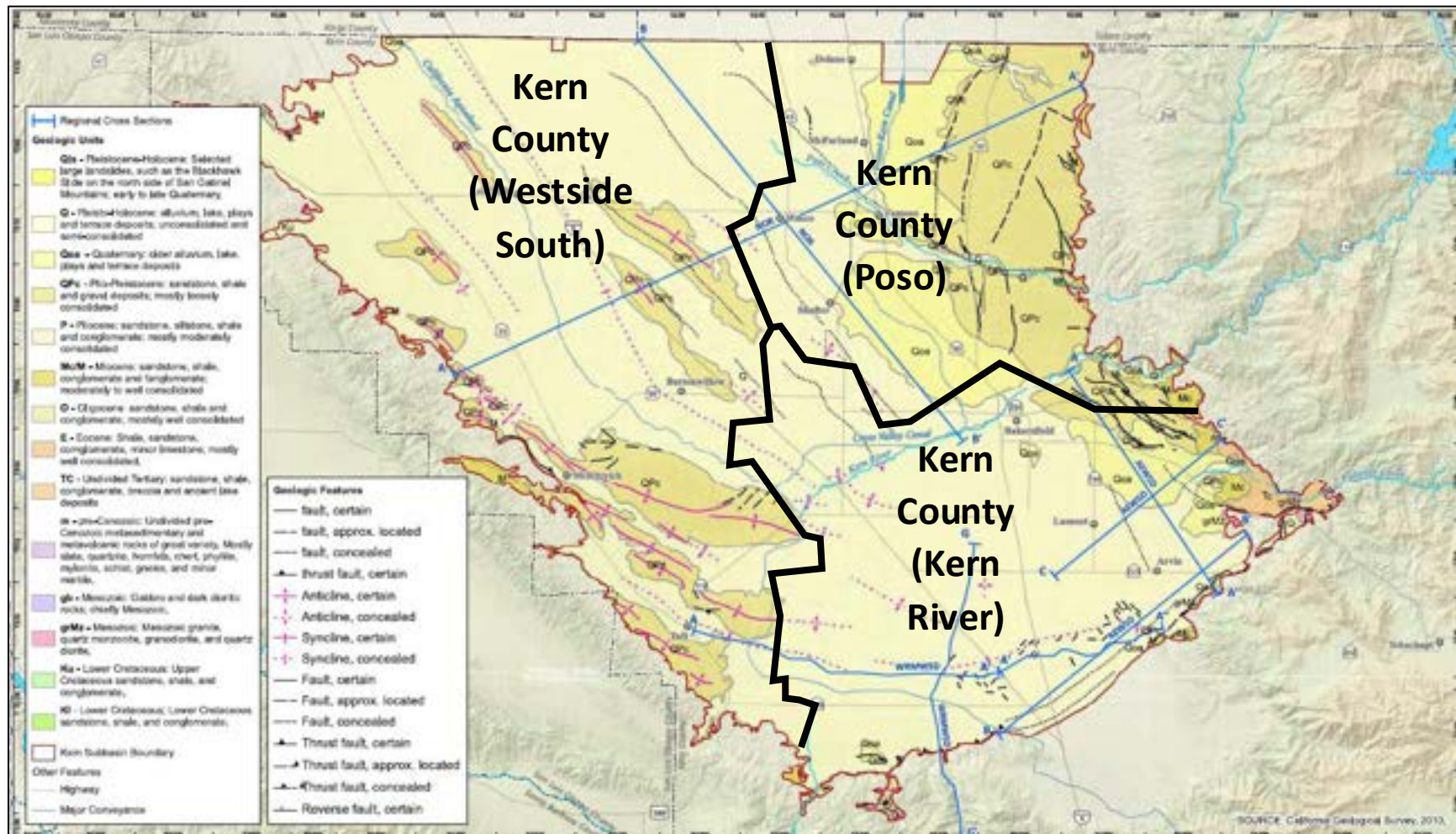
This section evaluates potential impacts to groundwater associated with downgradient migration of nitrate in the Upper Zone of the groundwater system from the proposed Kern County (Poso) Area of the KWC Management Zone. Using the Spring 2025 groundwater elevation contours from DWR, hydraulic gradients and flow directions can be quantified along the boundaries of the proposed Management Zone. No gradients are calculated along the edge of alluvial materials and the terminus of the Upper Zone. No gradients are calculated along proposed Management Zone boundaries that border Priority 1 (P1) or Priority 2 (P2) areas. Most of the boundaries of the P2 proposed Management Zone areas of KWC (Tulare Lake Subbasin portion, Kern County (Westside South), and Kern County (Poso)) border other P2 Proposed Management Zones or P1 Management Zones, with the exception of the southeastern border of the Kern County (Westside South) Area and the southern boundary of the Kern County (Poso) area, which border the non-prioritized Kern County (Kern River) Area.

The gradients developed from the unconfined/semi-confined aquifer contour map listed in the table below (**Table 2-1**) follow a west-to-east pattern from the southern proposed Kern County (Poso)

Management Zone boundary for the portion that borders the non-prioritized Kern County (Kern River) Area of the KWC Management Zone. This section of the P2 boundary is discretized into major segments of distinct groundwater flow direction characteristics. No gradients were calculated along the eastern border of the proposed Kern County (Poso) Area of the KWC Management Zone, as this represents the edge of alluvial materials and the terminus of the Upper Zone. Gradients are not calculated along the northern proposed border, as this corresponds to the P1 Tule Subbasin (covered by the Tule Subbasin Management Zone). Hydraulic gradients and directions are provided in **Table 2-1** to quantify potential areas of contribution associated with possible downgradient migration of nitrate from within the proposed Kern County (Poso) Area of the KWC Management Zone. Groundwater flows in and out of the proposed P2 areas of the KWC Management Zone along its border with adjacent subbasin areas. The adjacent subbasin area and their Nitrate Control Program's basin priority are also listed in the table.

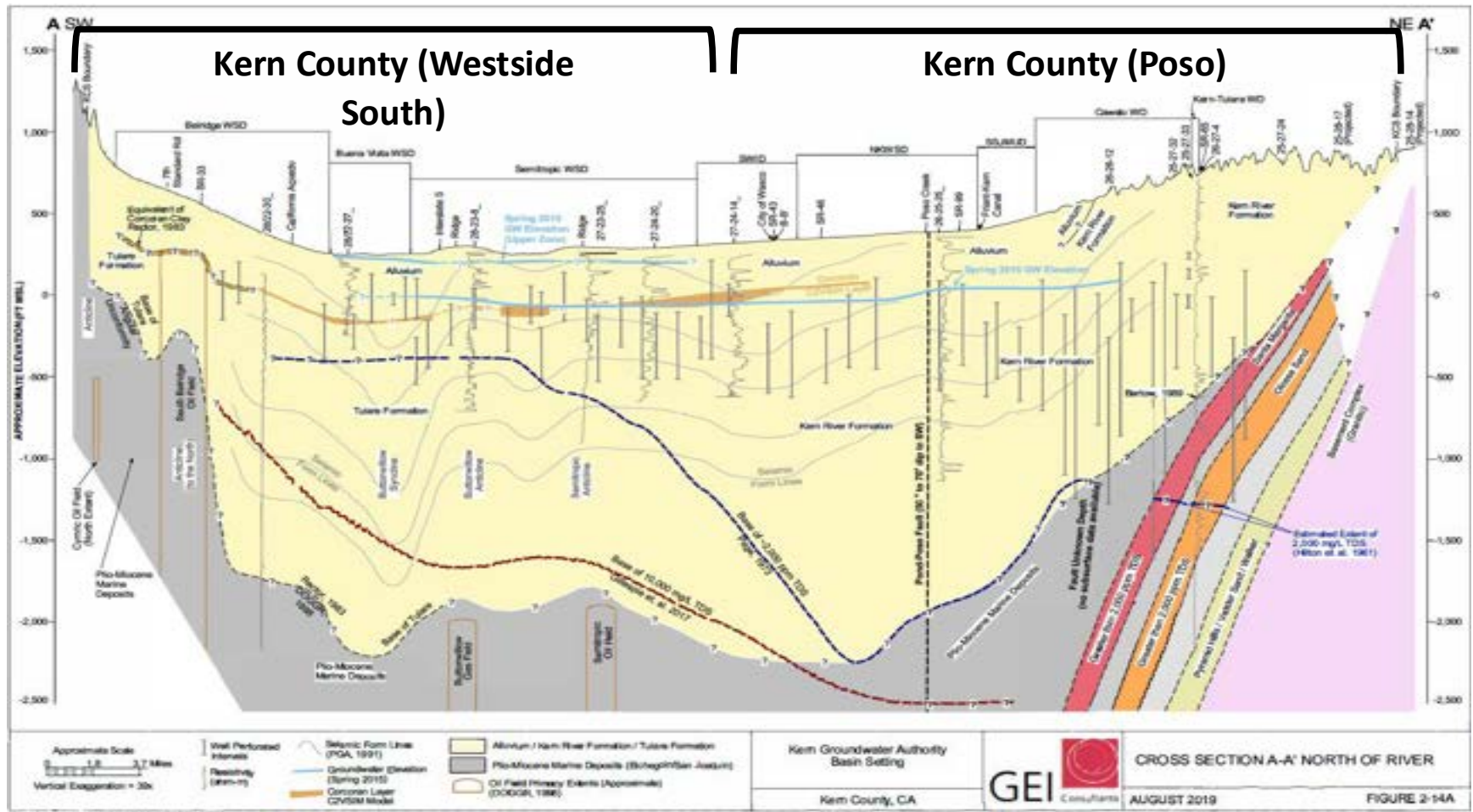
The table lists the direction of groundwater flow and indicates whether the flow is entering (in) or exiting (out) of the proposed Management Zone (or flowing parallel to the boundary line). The area of potential contribution associated with nitrate originating from the proposed Management Zone corresponds with spatial areas along the proposed Management Zone border where groundwater elevation contours indicate that groundwater flows out of the proposed Management Zone and into the adjacent subbasin area. The southern border of the proposed Kern County (Poso) Area of the KWC Management Zone is divided into two main segments based on similar characteristics of the direction and magnitude of the hydraulic gradient. Both of these sections indicate that groundwater is flowing along the Management Zone boundary (parallel).

The KWC recognizes that there is uncertainty with the quantification of the areas of potential contribution described above, due to hydraulic gradients calculated from specific seasons and years, the portion of the groundwater system represented by the groundwater elevation contours, and the existing data available to prepare the ambient nitrate map. The KWC also recognizes that this analysis represents a snapshot in time, as represented by DWR's Spring 2025 groundwater elevation contour and the currently available nitrate concentration data. As additional information is developed, including groundwater flow assessments performed for GSP implementation purposes, the areas of potential nitrate contribution will be revisited for future work for the Nitrate Control Program, especially the Management Zone Implementation Plan. Coordination efforts between the P2 proposed Management Zone areas and the groundwater sustainability agencies in their areas are underway.



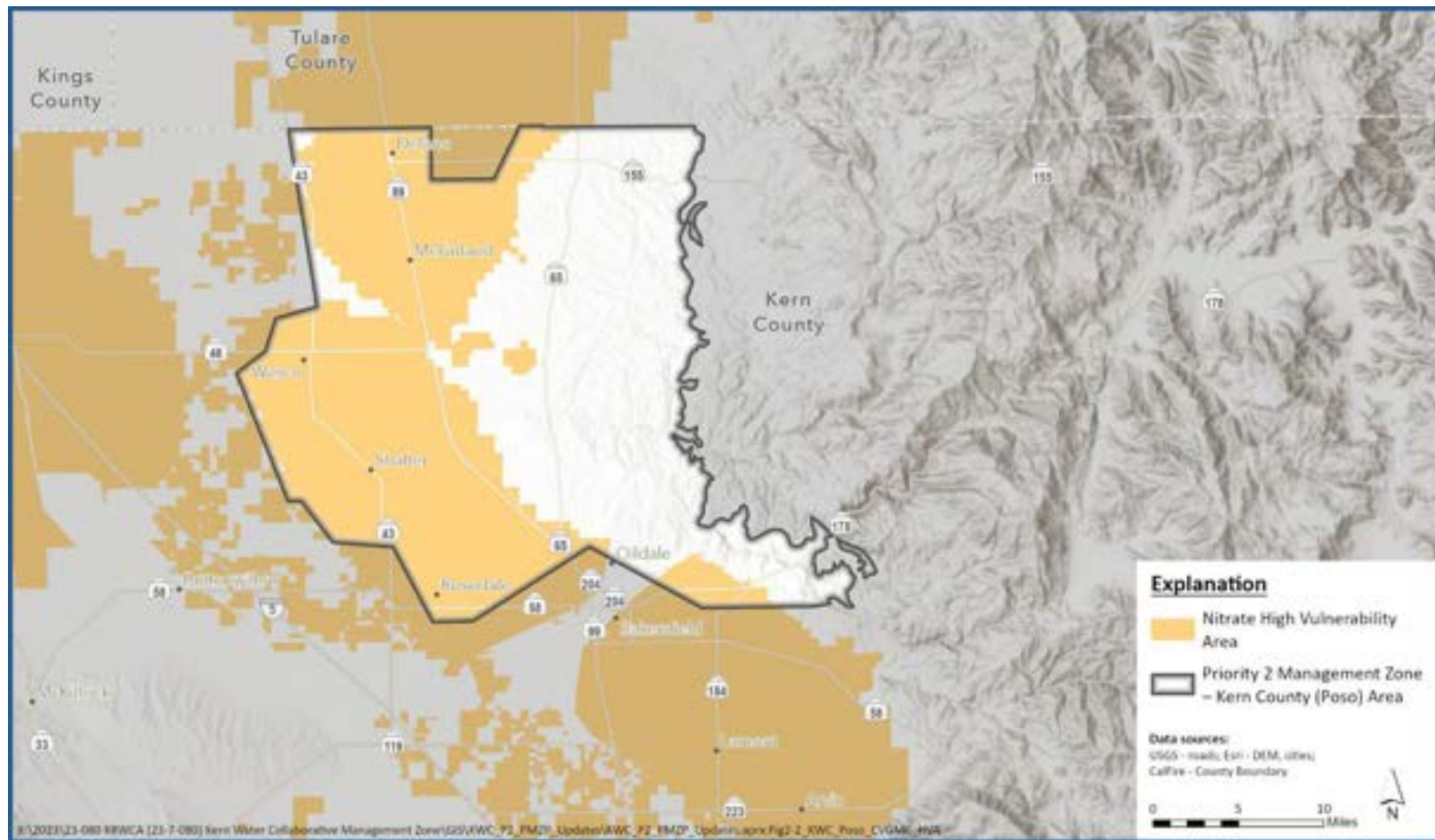
Source: Adapted from Kern Groundwater Authority Amended GSP, GEI Consultants 2019

Figure 1-1a. Conceptual Cross-Section Map for the Kern County Groundwater Subbasin



Source: Adapted from Kern Groundwater Authority Amended GSP, GEI Consultants 2019

Figure 1-1b. Conceptual Cross Section A-A' for the Kern County Groundwater Subbasin (Southwest to Northeast)



Source: CVGMC, 2021

Figure 2-2. High Vulnerability Areas in and Around the Proposed Kern County (Poso) Area of the KWC Management Zone

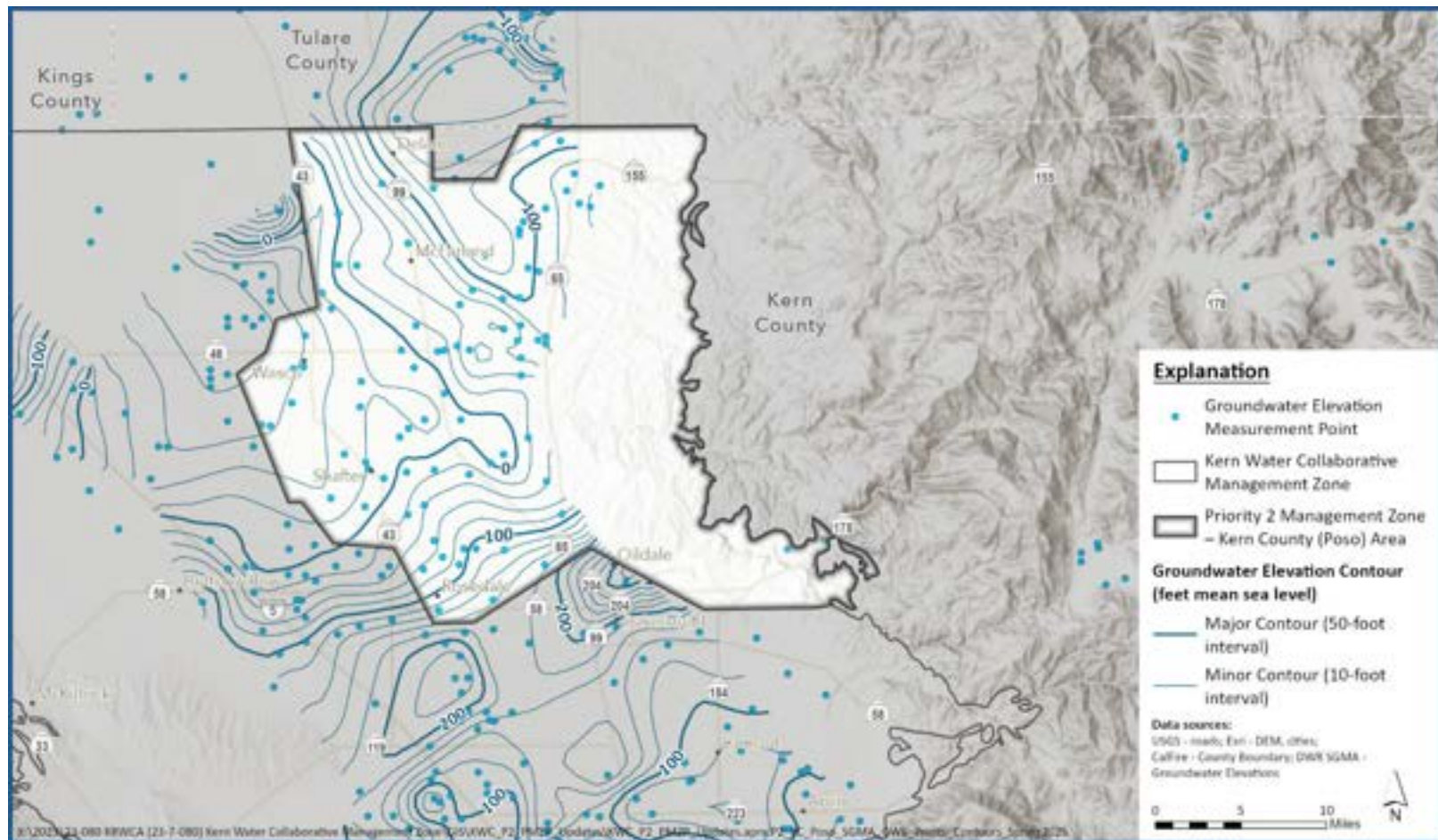


Figure 2-3a. Contours of Equal Groundwater Elevation in the Proposed Kern County (Poso) Area of the KWC Management Zone, Spring 2025

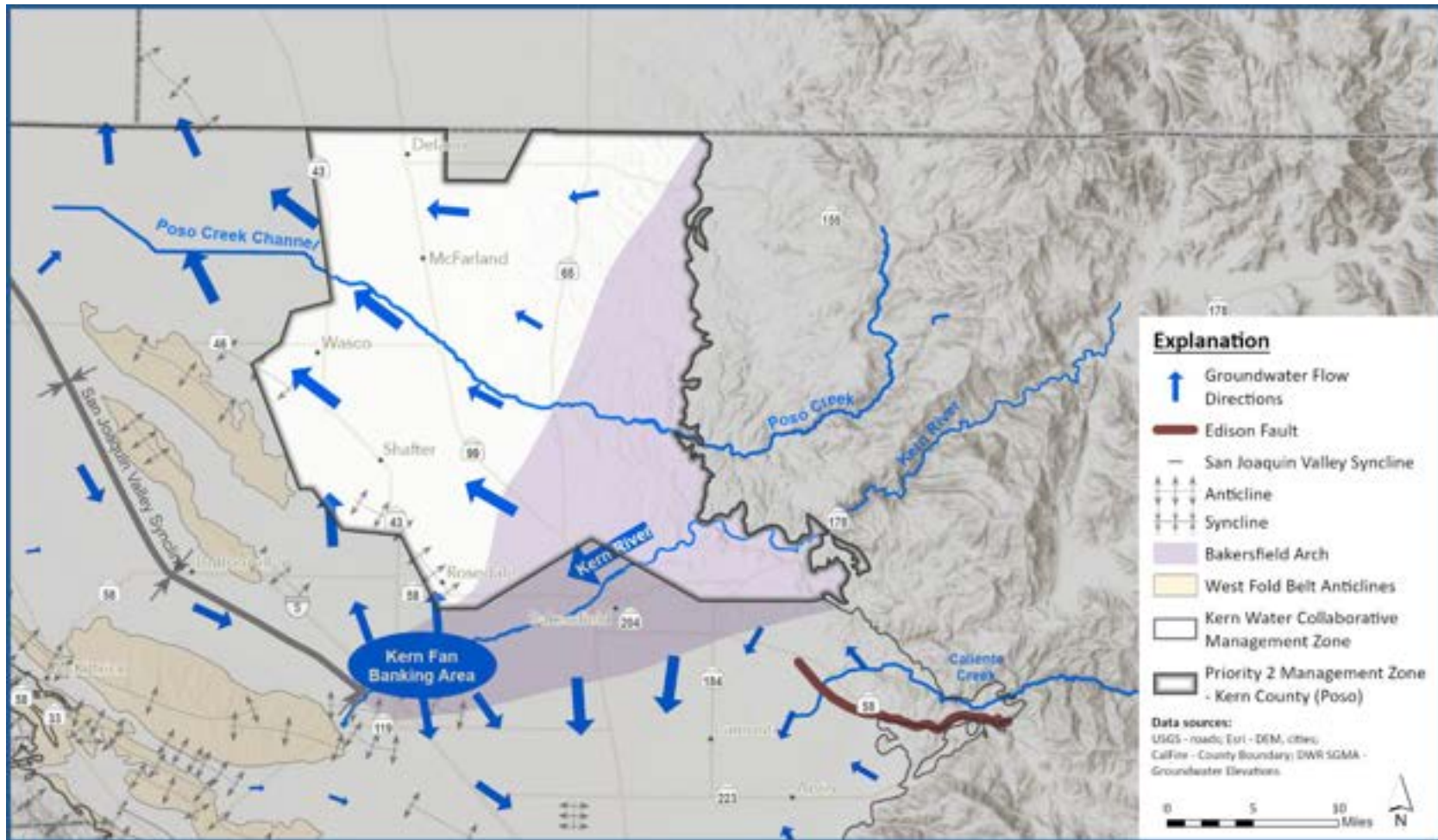


Figure 2-3b. Generalized Groundwater Flow Directions in the Proposed Kern County (Poso) Area of the KWC Management Zone, (Kern County Subbasin GSP, 2024)

Table 2-1. Quantification of Areas of Potential Nitrate Contribution (Proposed Kern County (Poso) Area of the KWC Management Zone)					
Description of Area Along Proposed MZ Border	Approximate Hydraulic Gradient (ft/ft)	GWE Contour Data Source	GW Flow Direction (In/Out of Proposed Management Zone)	Ambient Post-2010 Nitrate Level (mg/L as N)	Adjacent Subbasin and Priority
Southwestern southern border from the intersection of the Kern County (Westside South), Kern County (Poso), and Kern County (Kern River) areas east to Meadows Field in western Oildale	0.0038	Spring 2025 (DWR)	Northwest and west (Parallel)	<2.5 to >10 mg/L as N	Kern County (Kern River) (Not Prioritized)
Southeastern southern border from Rosedale east to Oildale	0.0034	Spring 2025 (DWR)	West-southwest (Parallel)	<2.5 – 7.5 mg/L as N	Kern County (Kern River) (Not Prioritized)

1.3. Upper Zone Delineation

The delineation of the Upper Zone is described in detail in Final Management Zone Proposal (FMZP) Section 2.3. **Figure 2-4a** shows the depth to the bottom of the Upper Zone in the proposed Kern County (Poso) Area of the KWC Management Zone, as previously delineated to support CV-SALTS analyses (e.g., LSCE et al., 2016). The depth of the bottom of the Upper Zone is shallowest in the northwest, where depths are as shallow as about 200 feet. The deepest depths to the bottom of the Upper Zone occur in a north-northeast trending portion of the north-central and central area of the proposed Kern County (Poso) Area of the KWC Management Zone where the depths are as deep as 680 feet.

Figure 2-4b provides the depth to the bottom of the Lower Zone in the proposed Kern County (Poso) Area of the KWC Management Zone, as previously delineated to support CV-SALTS. The depth to the bottom of the Lower Zone ranges from as shallow as about 235 feet along the western side (west of Delano and West and south of Wasco), to as deep as over 1,200 feet below ground surface in the central portion of the area.

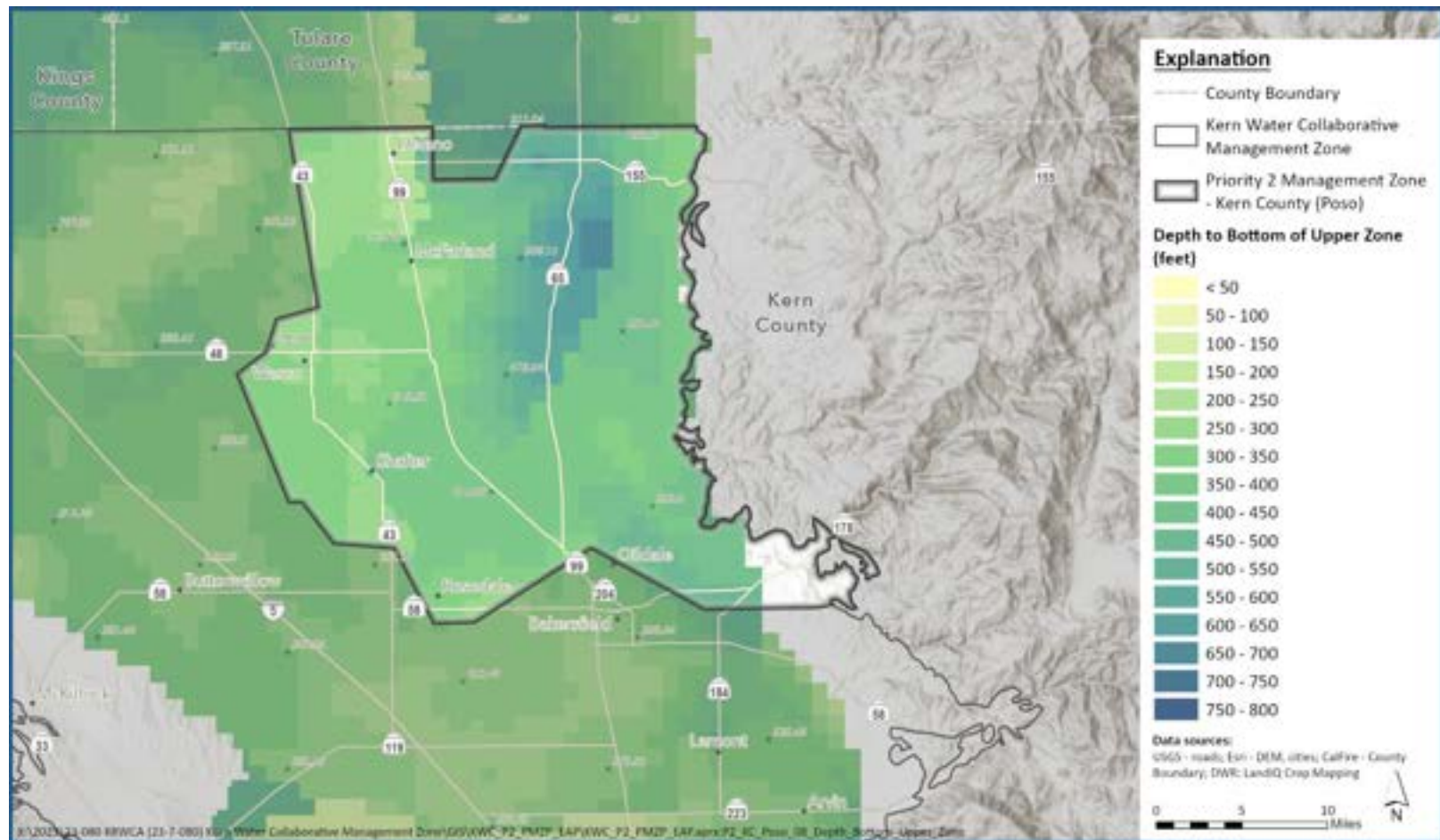
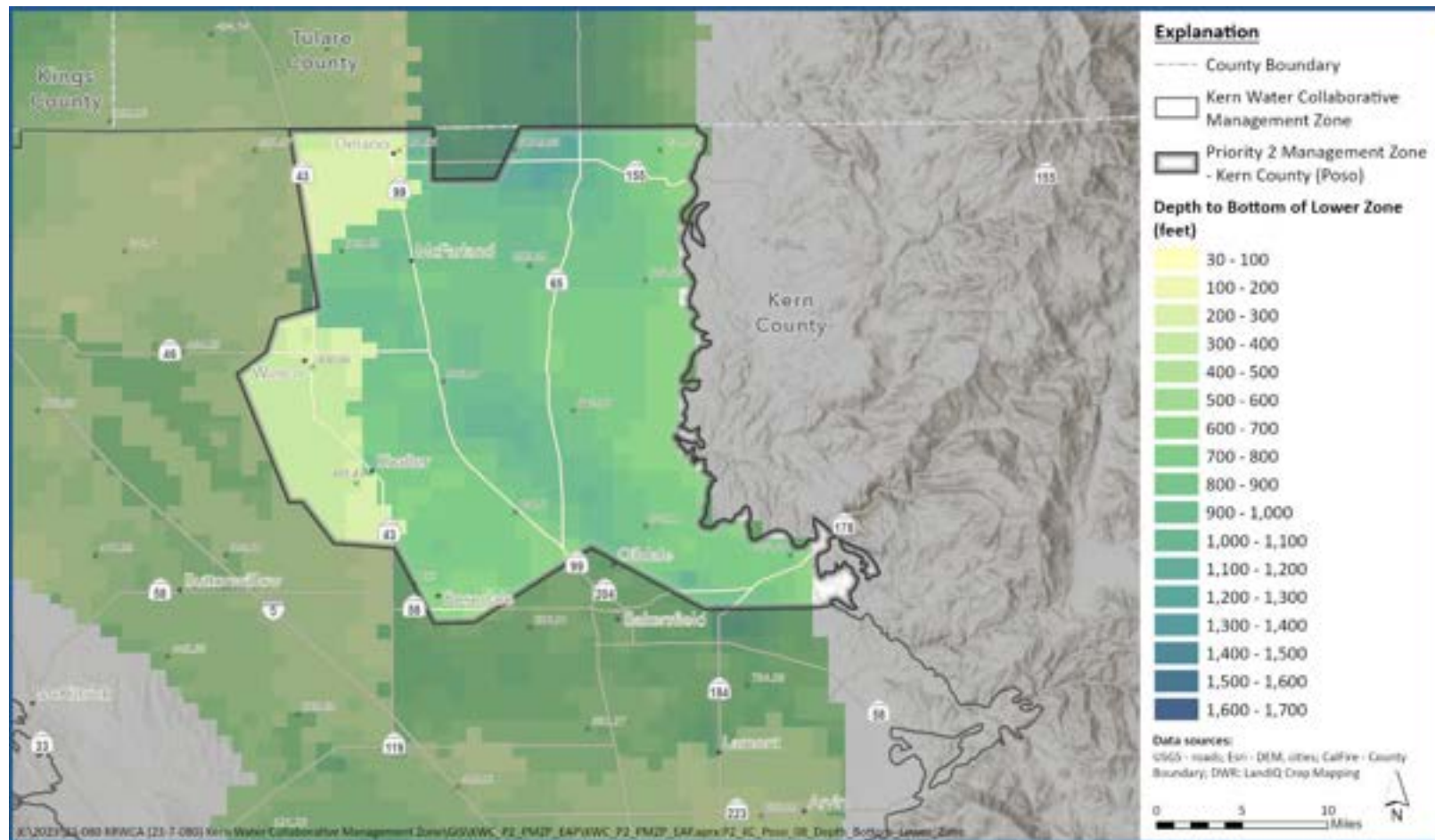


Figure 2-4a. Depth to the Bottom of the Upper Zone, Proposed Kern County (Poso) Area of the KWC Management Zone



1.4. Nitrate Water Quality

To characterize nitrate concentrations in groundwater beneath and adjacent to the proposed Kern County (Poso) Area of the KWC Management Zone, available groundwater quality data were compiled, organized, and used to determine ambient conditions and trends that indicate where nitrate conditions are improving, degrading, or where there is no significant trend. This section describes groundwater nitrate data sources (**Table 2-2**), existing ambient nitrate conditions, nitrate trends analyses, and an evaluation of inactive drinking water wells.

Table 2-2. Summary of Wells with Nitrate Data Located in the Proposed Kern County (Poso) Area of the KWC Management Zone by Source (All Well Types & Depths)			
Source ¹	All Well Depth Categories		
	Wells with Nitrate Data	Wells with Post-2010 Nitrate Data	Wells with Post-2010 Nitrate MCL Exceedance
Division of Drinking Water ²	197	144	42
DWR ³	673	0	0
GAMA ⁴	0	0	0
Irrigated Lands ⁵	135	135	57
Regulated Facilities ⁶	103	94	37
USGS ⁷	56	24	6
Management Zone ⁸	5	5	3
County ⁹	0	0	0
Total	1,169	402	145

¹ Data sources originated from the GAMA website (<https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/>, accessed October 2025).

² These wells are from Public Water Systems with data from GAMA.

³ DWR conducts groundwater sampling and is provided by GAMA.

⁴ GAMA data originates from the GAMA Program, which sampled private domestic wells, as well as other supply wells and monitoring wells.

⁵ These are drinking water wells tested as required by the Irrigated Lands Regulatory Program (ILRP), with data made available through GAMA.

⁶ These are mostly monitoring wells from Water Board regulated facility cleanup and permitted sites with data made available through GAMA.

⁷ These data come from the USGS National Water Information System (NWIS), as made available through GAMA.

⁸ These are domestic wells sampled by the Management Zone since implementation of the Early Action Plan.

⁹ Nitrate data were requested from county entities in the Management Zone and represent nitrate data from well permit samples or State Small Water System samples, when available.

1.4.1. Existing Ambient Conditions

Nitrate measurements and well data were compiled for the proposed Kern County (Poso) Area of the KWC Management Zone from publicly available data sources and complemented by data requests to counties and local groundwater sustainability agencies. Nitrate data were summarized by data source, depth, and recent nitrate exceedances in **Table 2-3**. There are 402 wells with recent nitrate measurements (since January 2010) in the proposed Management Zone, and 36 percent of them have had a nitrate measurement that exceeds the drinking water MCL.

Figure 2-5 shows the spatial distribution of wells with nitrate measurements by depth category. Wells were categorized into an appropriate depth category (Upper Zone, Lower Zone, Below Lower Zone, and Unknown) to produce GIS coverages of the wells with nitrate data. There are many more Upper Zone wells compared to Lower and Below Lower Zone wells with nitrate data. Upper Zone wells occur in the central and western portion of the proposed Kern County (Poso) Area of the KWC Management Zone. Deeper wells completed in the Lower or Below Lower Zones are sparsely located across the central and western portion of the proposed Kern County (Poso) Area of the KWC Management Zone. The map in **Figure 2-6** shows the locations of all Upper Zone wells with nitrate measurements since 2010. This figure also illustrates the locations of Upper Zone wells that have had at least one nitrate sample that exceeded the MCL. Upper Zone wells with data since 2010 show many nitrate exceedances located in the central and western portions of the proposed Kern County (Poso) Area of the KWC Management Zone, with more wells exceeding the nitrate MCL concentrated in the north and west compared to the south.

High resolution spatial analyses of nitrate in the Upper Zone, Lower Zone, and Below Lower Zone were performed using the nitrate dataset described above. The Upper Zone remains the focus of the Nitrate Control Program Management Zone work, but analyses of deeper aquifer zones were completed to provide insight into conditions throughout the entire groundwater aquifer system as data are available. This includes the following steps:

- Annual average nitrate concentrations were calculated for each well for the years 2010-2025 to yield one average nitrate concentration representing recent conditions.
- Wells with nitrate data outside the proposed P2 areas of the Management Zone and within a buffer zone of three miles around the P2 areas of the Management Zone boundaries were compiled and used in the high resolution analysis because nitrate occurrence does not cease at the border of the Management Zone.
- Geospatial interpolation (kriging) of the well point data from each individual well depth category (Upper, Lower, and Below Lower Zones) was performed using a search radius of 1.5 miles.

- Gap areas were shown to exist where post-2010 nitrate well data in a specific depth zone (Upper, Lower, and Below Lower Zones) were insufficient to produce the spatial interpolation using the 1.5 mile search criterion¹⁰.

Figure 2-7a illustrates the average post-2010 nitrate concentrations for all Upper Zone wells in the proposed Kern County (Poso) Area of the KWC Management Zone. This figure also shows the interpolated ambient Upper Zone post-2010 nitrate as well as the gap areas where insufficient Upper Zone nitrate data exist. High nitrate concentrations exist in several spatial areas throughout the proposed Kern County (Poso) Area of the KWC Management Zone, including areas in the center, northwest, west, and south-central near Delano, McFarland, south of Wasco and northwest of Shafter, and northeast of Rosedale in the south. Insufficient recent Upper Zone nitrate data are available throughout the majority of the eastern area. **Figures 2-7b** and **2-7c** provide the average post-2010 nitrate concentrations for the Lower and Below Lower Zones, respectively. There are fewer recent nitrate groundwater data available for the Lower Zone compared to the Below Lower Zone, but there are some areas of elevated nitrate seen in the Lower and Below Lower Zones (near McFarland).

To test if the ambient average post-2010 nitrate presented in **Figure 2-7a** is potentially underestimating conditions in the Upper Zone, the maximum post-2010 nitrate concentration from each well (point data) is overlain atop the interpolated ambient Upper Zone nitrate in **Figure 2-8**. This map provides a comparison between the shaded colors representing the average annual post-2010 nitrate and the colored dots that represent the maximum measured nitrate in individual wells since 2010. The maximum post-2010 nitrate concentration is presented for the Upper Zone wells in the Management Zone to verify that the identification of areas with potentially elevated nitrate is not underestimated from wells that may have more recently begun to exceed the nitrate MCL. There is good agreement between the ambient post-2010 average-based interpolated Upper Zone nitrate to the maximum Upper Zone nitrate concentrations in individual wells, with very few exceptions. Several individual wells plot on top of or very close to another well with different maximum concentrations despite both assumed to be completed in the Upper Zone. This demonstrates the heterogeneity and variability inherent to groundwater quality conditions, as well as the availability and quality of the dataset. Nitrate data for Upper Zone wells may have a maximum nitrate concentration exceeding the MCL but are located adjacent to other wells that have no measured nitrate concentrations above the MCL. The KWC recognizes that there is some inherent uncertainty associated with this analysis, and also recognizes that the recent ambient nitrate coverage is subject to refinement as additional Upper Zone groundwater nitrate data become available.

1.4.2. Groundwater Nitrate Trends Analysis

The methodology to perform temporal trends analyses on the groundwater nitrate data in the proposed Management Zone is provided in Section 2.3 of the main KWC FMZP document. The groundwater nitrate trends analysis includes parametric and non-parametric trends analyses for the full record of

¹⁰ The 1.5 mile search radius was selected to refine the local ambient nitrate mapping for the proposed Management Zone and recognize the potential variability inherent in groundwater nitrate concentrations spatially. This search radius reduces the reliance on well data from farther away that may not represent local nitrate conditions.

measurements for a particular well as well as a more recent view, utilizing data records since 2010. Trends analyses are only performed for wells with at least five measurements in the time period of interest. Identified trends are categorized by the magnitude of concentration change annually. The magnitude of change in concentration is equivalent to the best-fitting linear slope for parametric trends and the Theil-Sen slope for non-parametric trends. Slopes are calculated for wells with statistically significant trends. Trends in nitrate that are changing more than 1 mg/L/yr (i.e., 1/10th the MCL for nitrate annually) are considered “increasing” or “decreasing” depending on trend direction. Trends that are changing less than or equal to 1 mg/L/yr but more than 0.1 mg/L/yr are considered “slightly increasing” or “slightly decreasing”. Trends changing less than or equal to 0.1 mg/L/yr are considered “neutral” and represent small but statistically significant upward or downward changes in concentration. Parametric trends are summarized by depth zone, trend period, and trend magnitude in **Table 2-4a**. Non-parametric trends are summarized in **Table 2-4b**.

Wells with trend analysis results are mapped and symbolized with different colors denoting trend results and different shapes denoting well depth. Upper Zone wells are circles, Lower Zone wells are squares, Below Lower Zone wells are triangles, and wells in unknown depth zones are diamonds. Trends increasing at rates exceeding 1 mg/L/yr are red, and slightly increasing trends are orange. Neutral trends with rates less than or equal to 0.1 mg/L/yr are yellow. Decreasing trends are shades of green with darker shades representing rates exceeding 1 mg/L/yr. Trends not meeting the minimum criteria are grey. Trends not meeting minimum criteria are not necessarily stable but do not meet conditions for statistical significance.

Long-term trends are analyzed only in wells with at least one data point prior to 2010. Long-term parametric and non-parametric trends are displayed in **Figures 2-9a** and **2-9b**. The recent trend analysis considers only measurements taken after 2010. Recent parametric and non-parametric trends are displayed in **Figures 2-10a** and **2-10b**. Although most wells with nitrate data do not meet the conditions for estimating parametric (linear) or non-parametric trends, wells that do meet the conditions show more increasing than decreasing trends. Spatially, the wells with increasing trends are mostly located in the central and western part of the proposed Management Zone area in areas with elevated ambient nitrate in the Upper Zone.

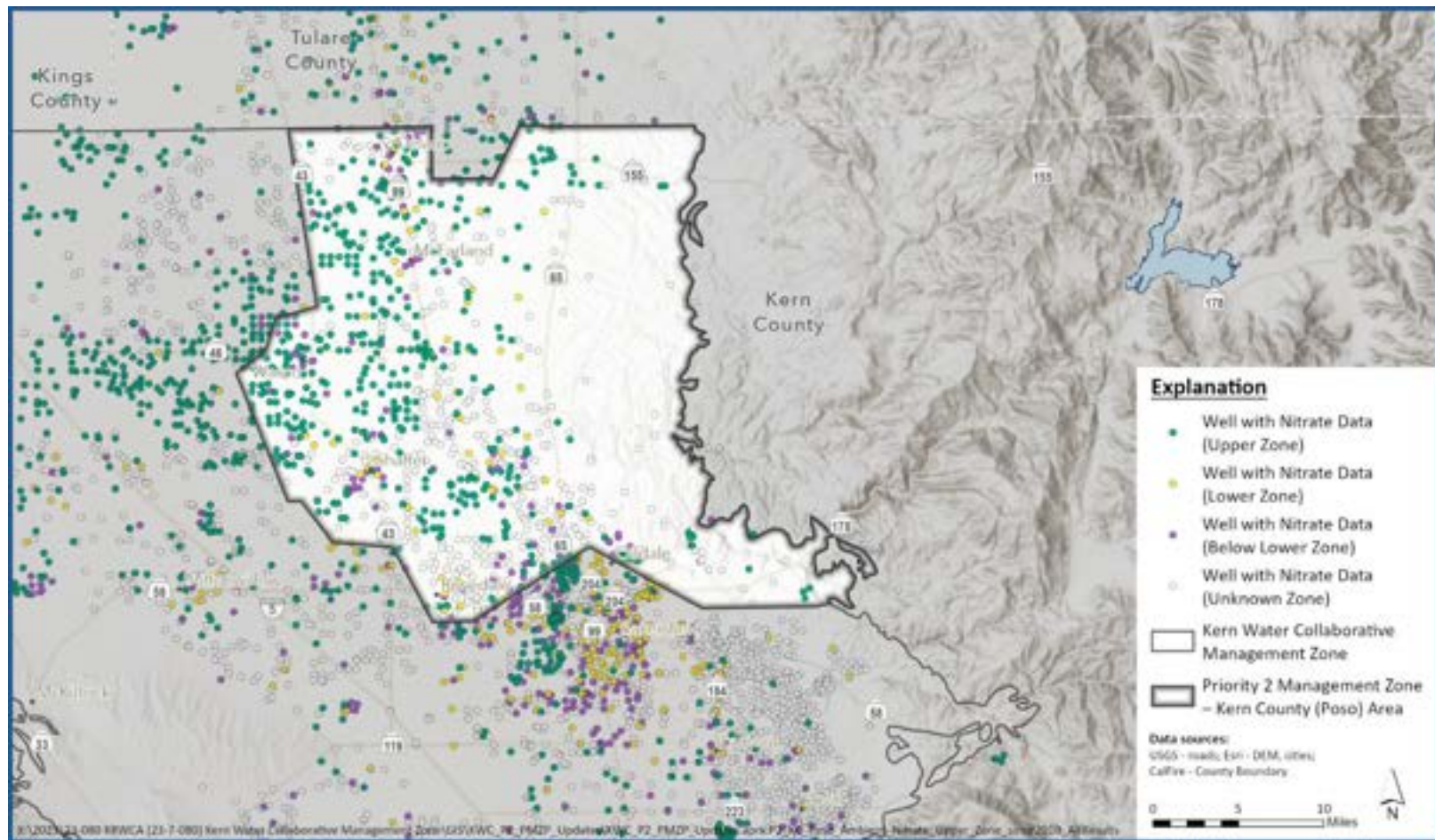


Figure 2-5. Wells with Nitrate Data within the
Proposed Kern County (Poso) Area of the KWC Management Zone by Depth Category

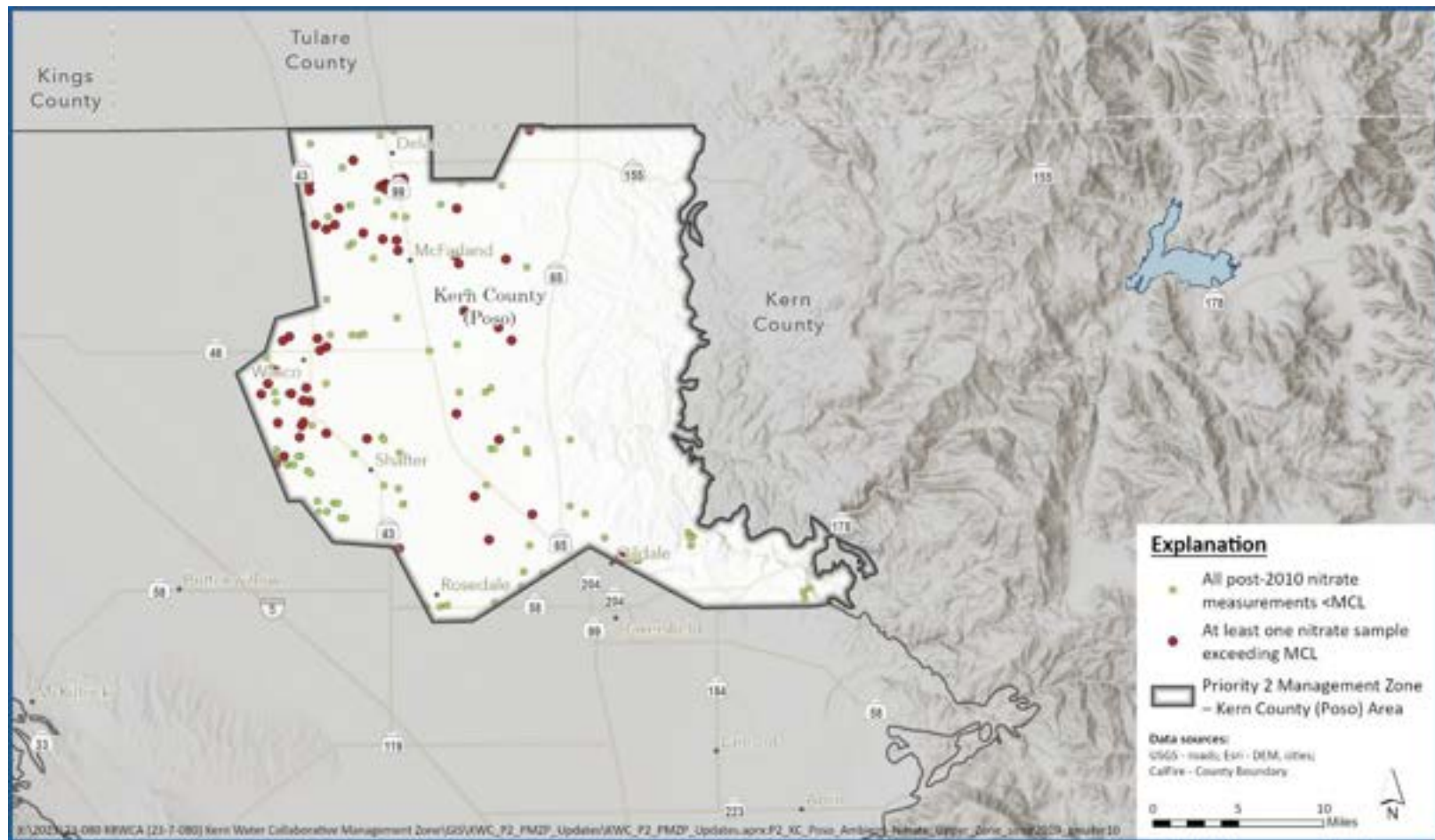
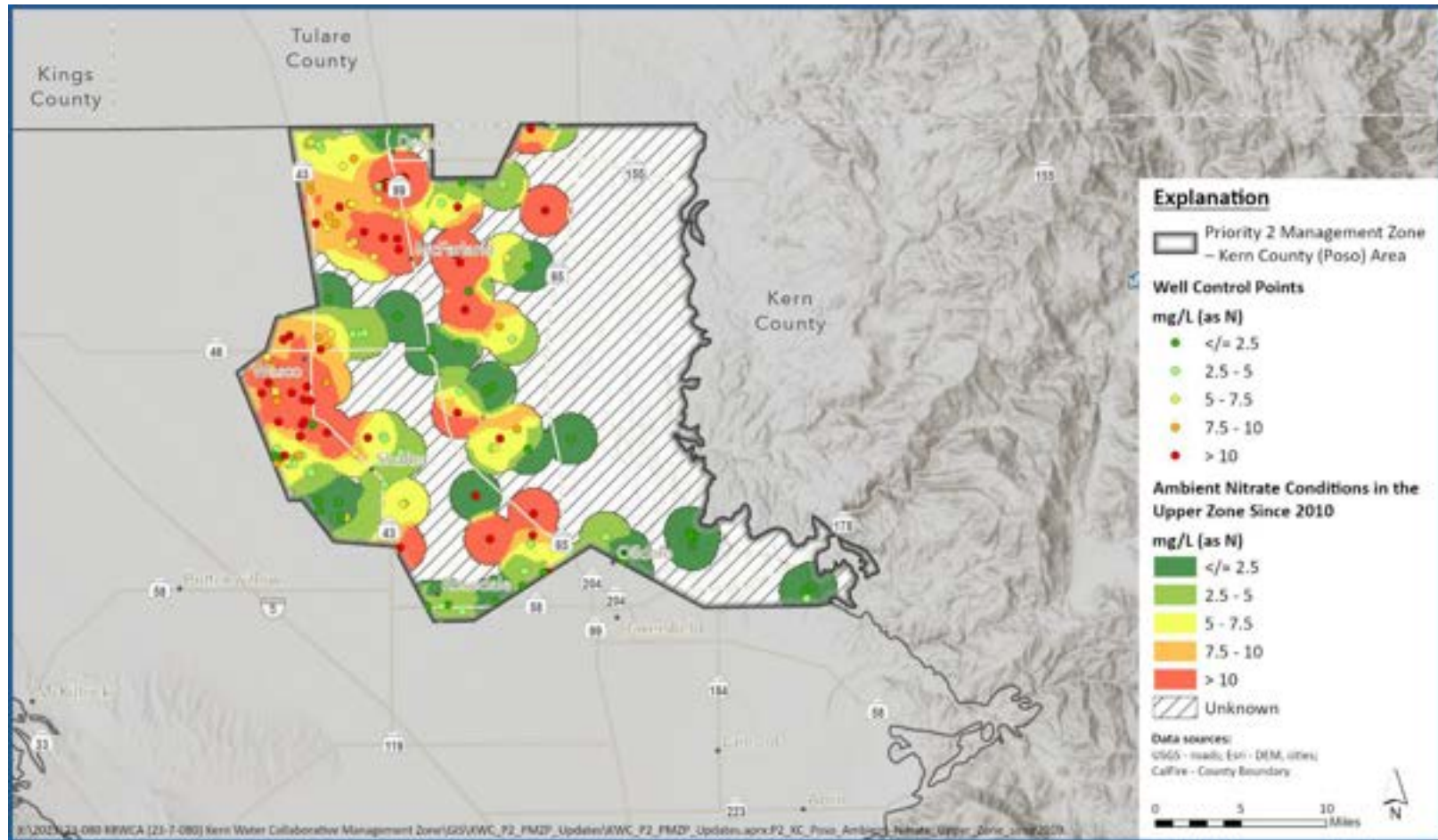
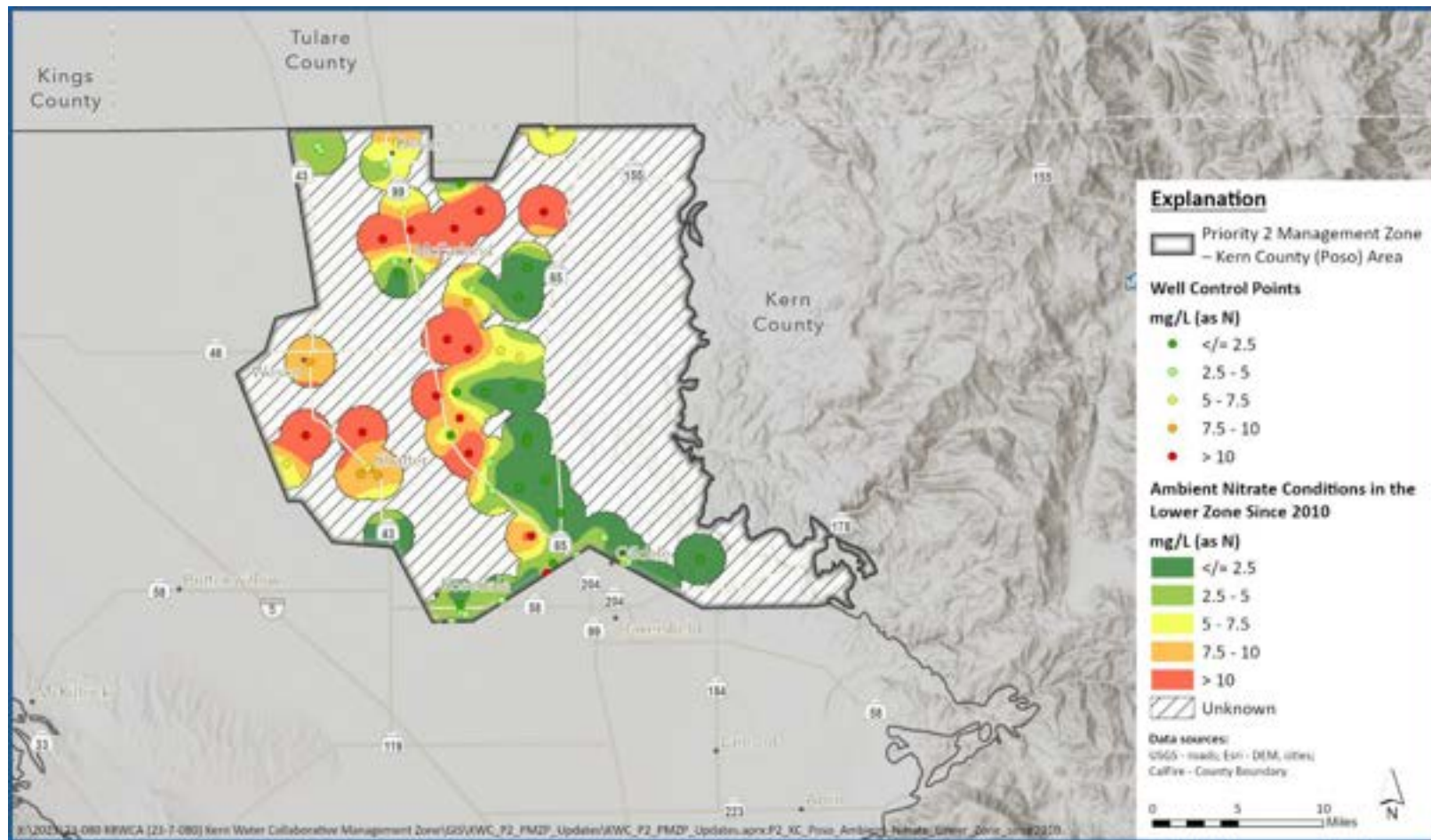


Figure 2-6. Upper Zone Wells with Nitrate Data and Nitrate Concentrations > 10 mg/L-N (Post-2010) in the Proposed Kern County (Poso) Area of the KWC Management Zone



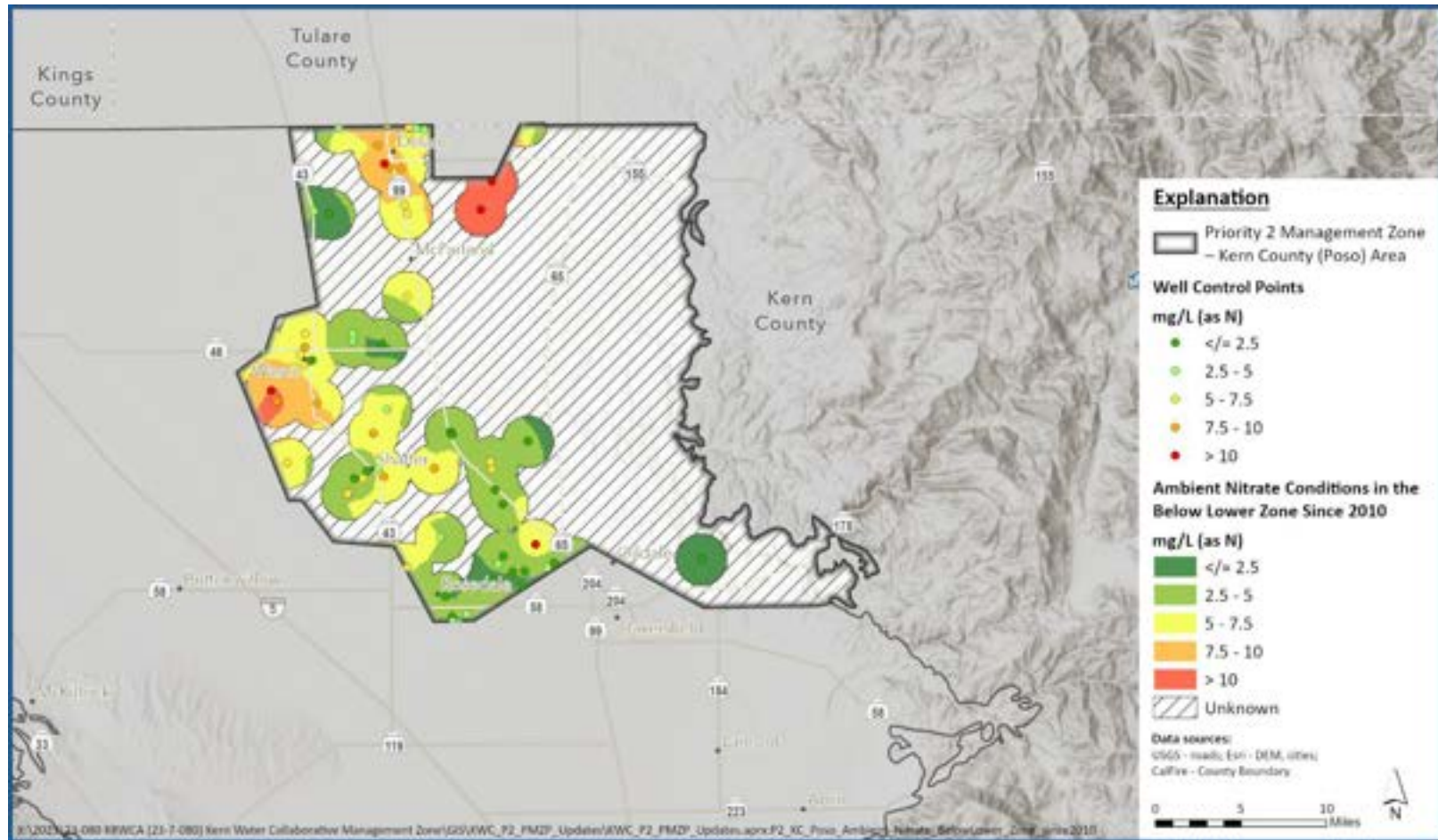
Note: This map was developed using the best available groundwater nitrate data from January 2010 to October 2025 for wells completed in the Upper Zone. This map is subject to refinement as additional data becomes available

Figure 2-7a. Ambient Post-2010 Nitrate Concentrations in the Upper Zone of Groundwater Underlying the Proposed Kern County (Poso) Area of the KWC Management Zone



Note: This map was developed using the best available groundwater nitrate data from January 2010 to October 2025 for wells completed in the Lower Zone. This map is subject to refinement as additional data becomes available

Figure 2-7b. Ambient Post-2010 Nitrate Concentrations in the Lower Zone of Groundwater Underlying the Proposed Kern County (Poso) Area of the KWC Management Zone



Note: This map was developed using the best available groundwater nitrate data from January 2010 to October 2025 for wells completed in the Below Lower Zone. This map is subject to refinement as additional data becomes available)

Figure 2-7c. Ambient Post-2010 Nitrate Concentrations in the Below Lower Zone of Groundwater Underlying the Proposed Kern County (Poso) Area of the KWC Management Zone

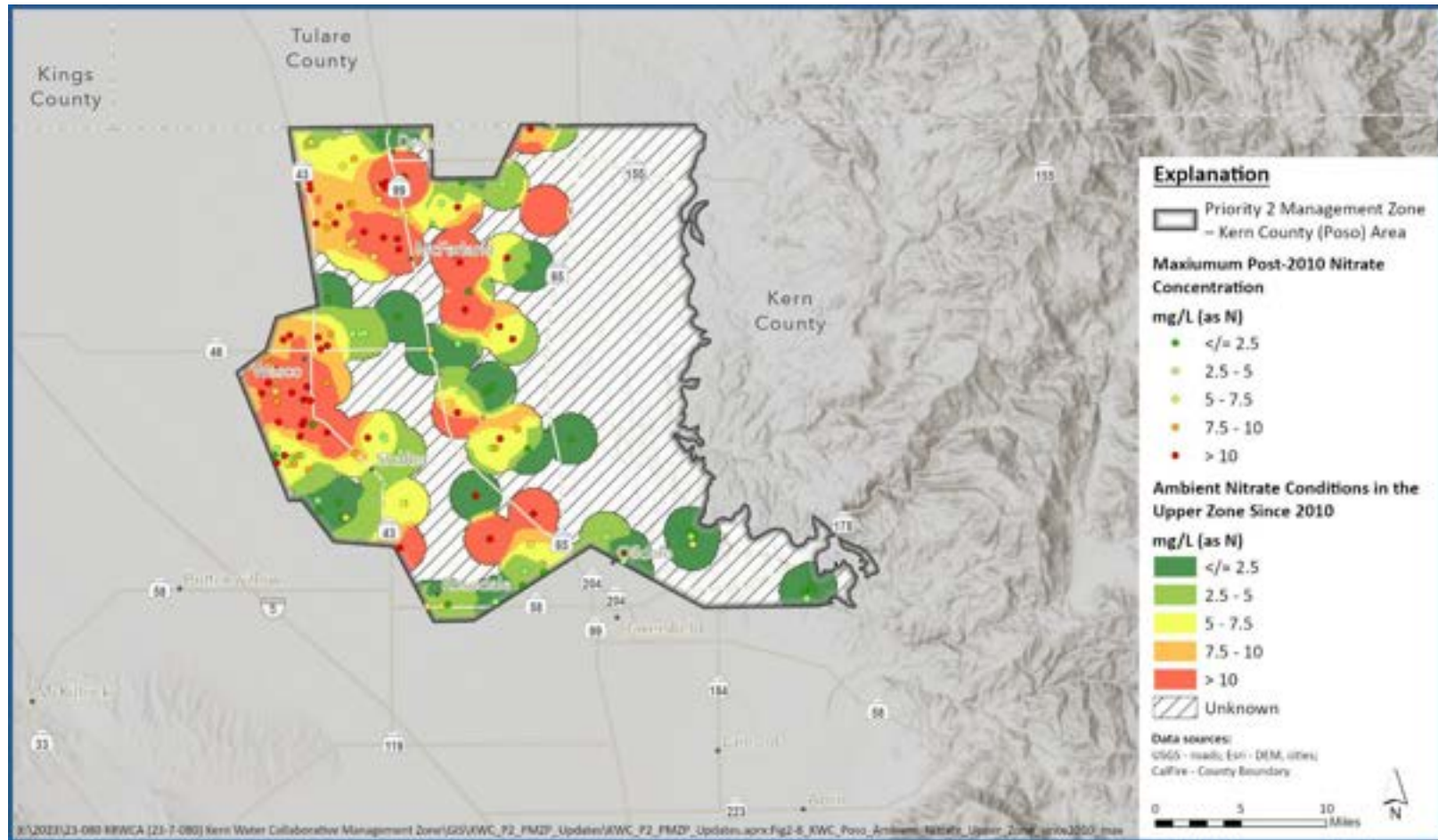
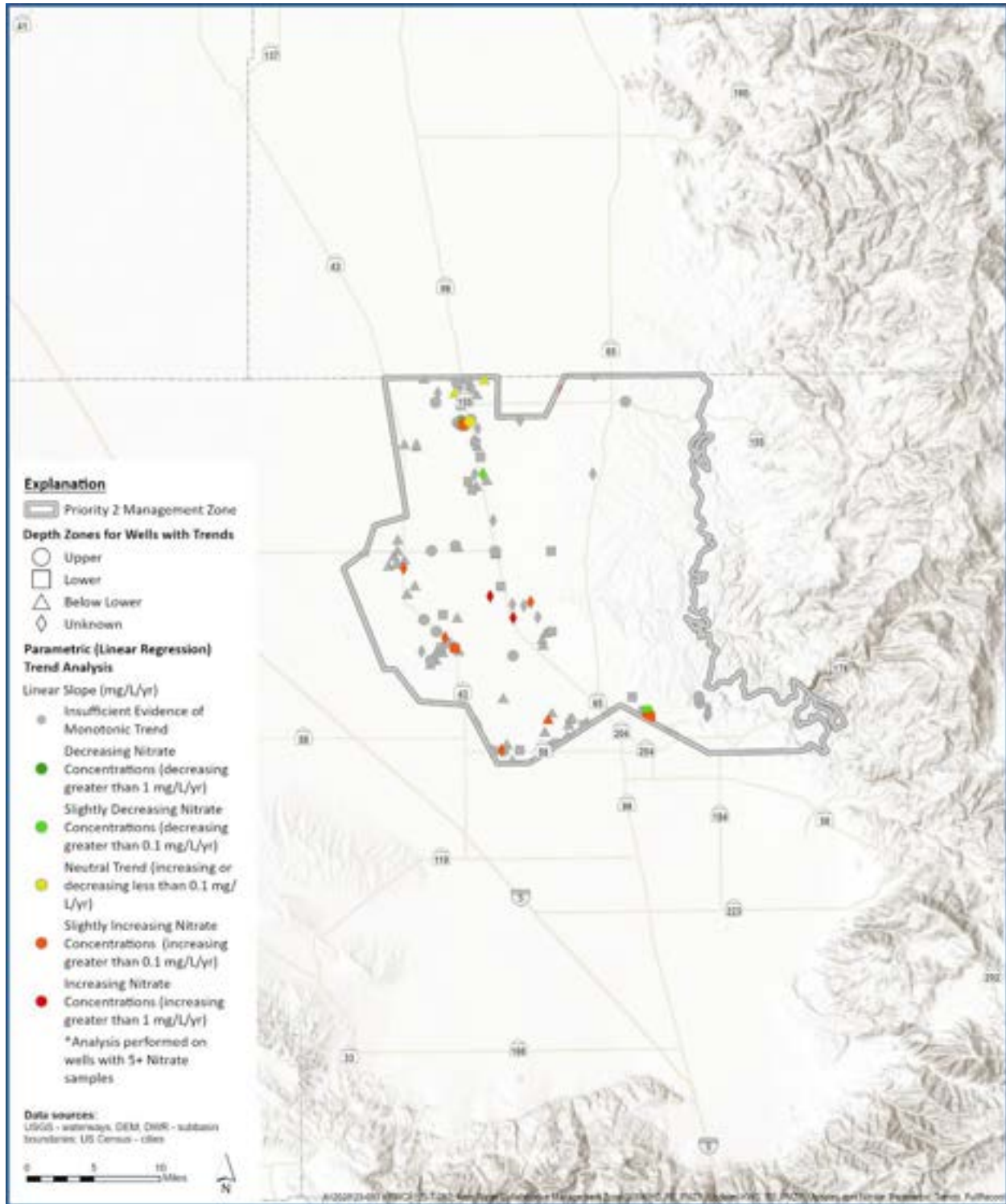
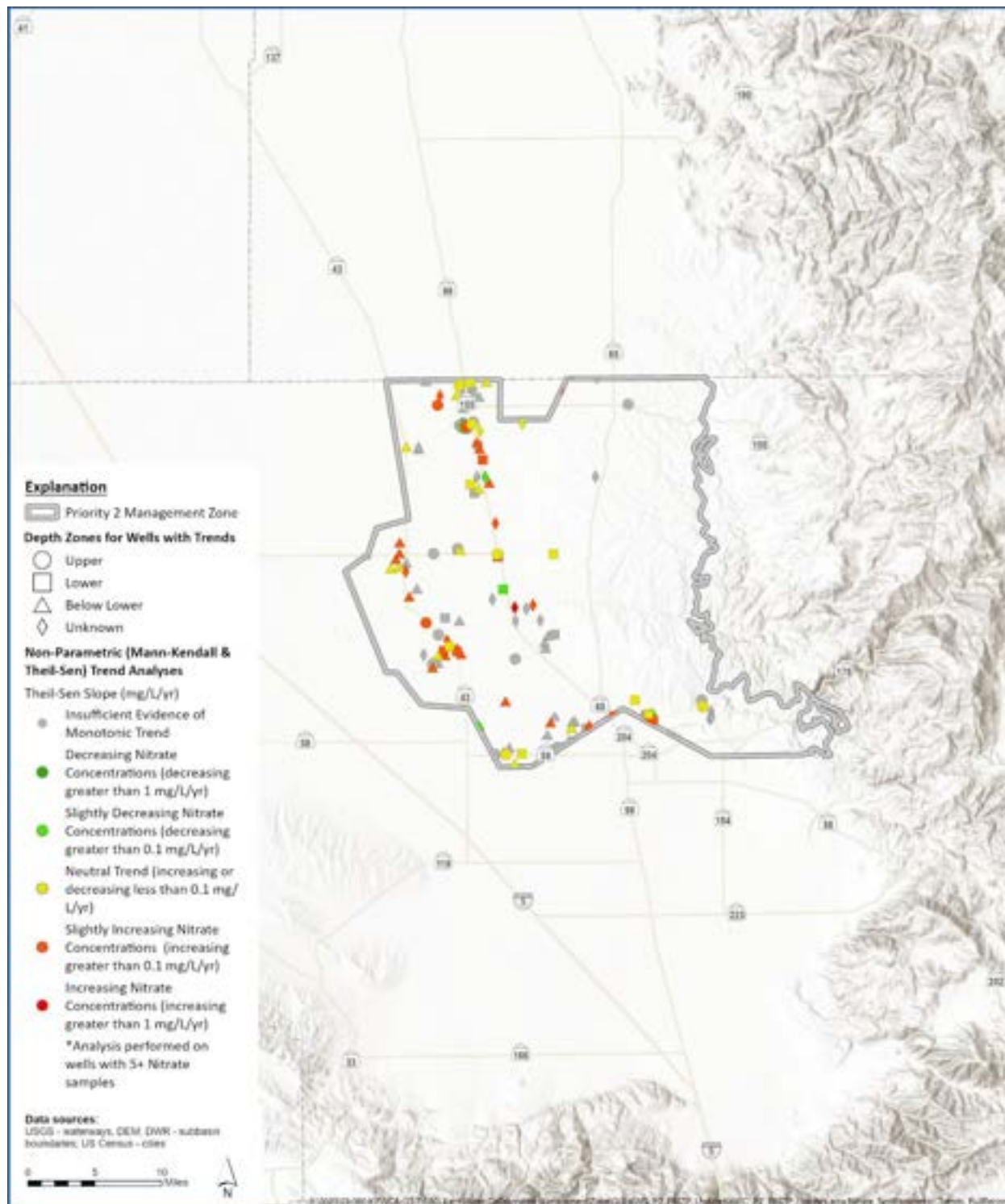
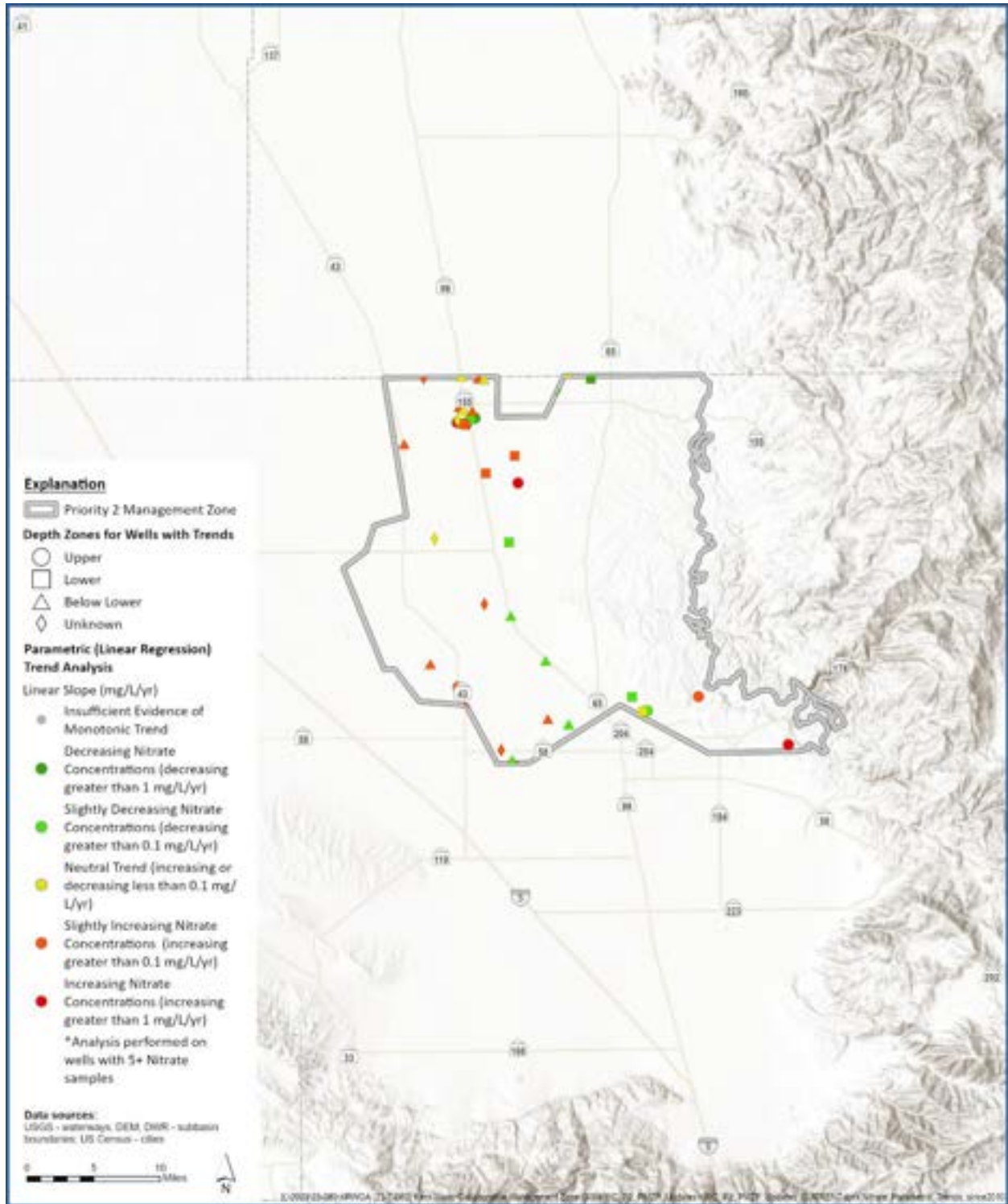


Figure 2-8. Maximum Post-2010 Nitrate in Wells Completed in the Upper Zone with Ambient Groundwater Underlying the Proposed Kern County (Poso) Area of the KWC Management Zone







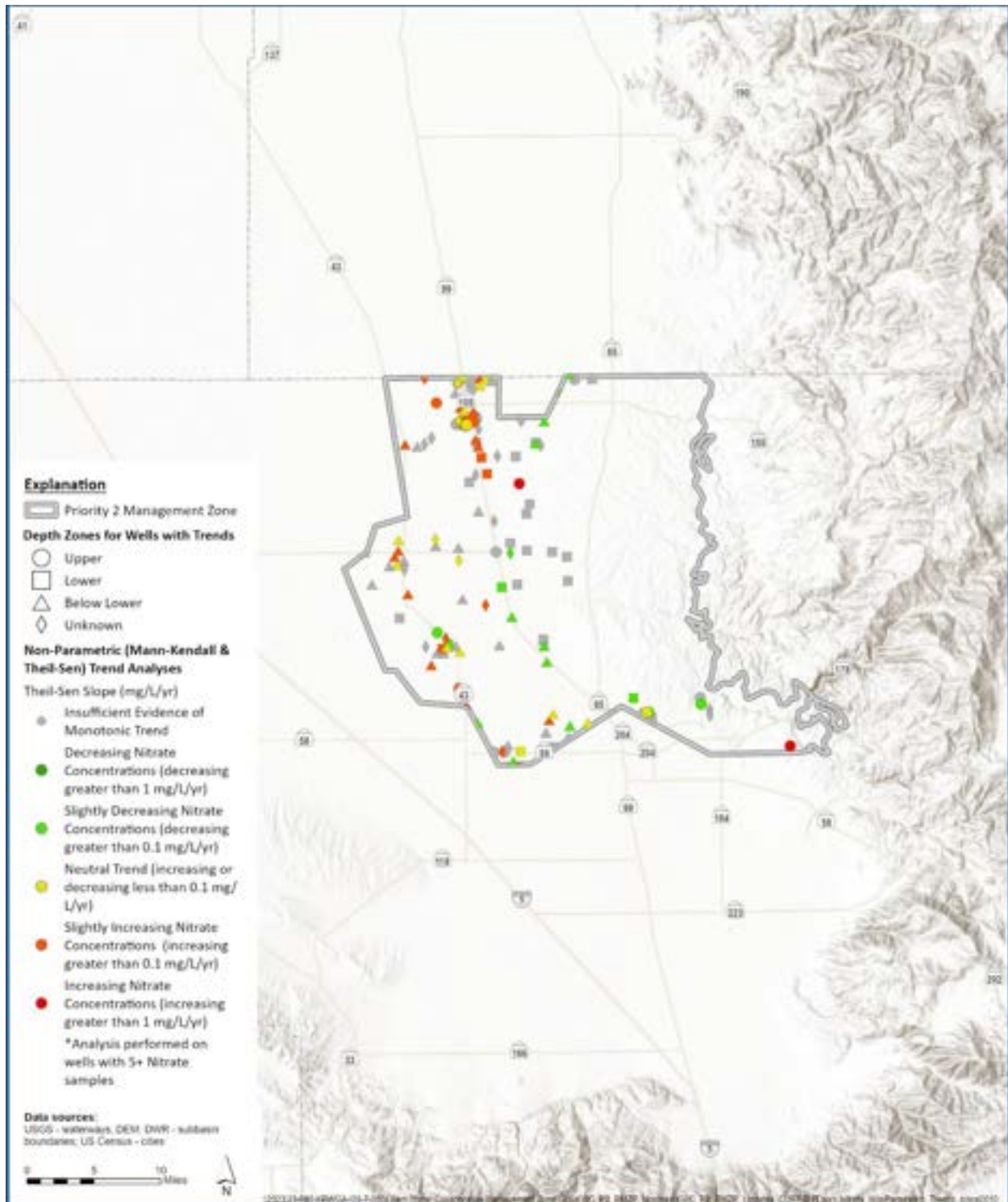


Figure 2-10b. Recent (Post-2010) Non-Parametric Trends in Nitrate

Table 2-3 Wells with Nitrate Measurements in the Proposed Kern County (Poso) Area of the KWC Management Zone by Depth Category				
Depth Category	All Wells with Nitrate Data	Wells with Post-2010 Nitrate Data	Wells with Post-2010 Nitrate > 10 mg/L-N	Percent of Wells with Post-2010 Nitrate Data > 10 mg/L-N
All	8	3	1	33%
Upper	498	203	79	39%
Upper and Lower	19	4	3	75%
Lower	75	55	19	35%
Lower and Below Lower	14	10	3	30%
Below Lower	113	67	17	25%
Unknown	423	46	22	48%
Outside Central Valley Floor	19	14	1	7%
Total	1,169	402	145	36%

Table 2-4a Parametric (Linear) Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Poso) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Linear Trend	Not Meeting Conditions for Linear Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
All	Long Term	4	4	0	0	0	0	0
	Recent	3	3	0	0	0	0	0
Upper	Long Term	39	33	1	2	1	1	1
	Recent	51	38	3	3	0	4	3
Upper and Lower	Long Term	5	3	0	0	0	2	0
	Recent	2	2	0	0	0	0	0
Lower	Long Term	26	23	0	0	0	3	0
	Recent	31	25	1	2	1	2	0

Table 2-4a Parametric (Linear) Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Poso) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Linear Trend	Not Meeting Conditions for Linear Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
Lower and Below Lower	Long Term	6	4	0	0	1	1	0
	Recent	6	6	0	0	0	0	0
Below Lower	Long Term	45	42	0	0	2	1	0
	Recent	47	35	0	4	2	6	0
Unknown	Long Term	23	16	0	1	0	4	2
	Recent	25	18	0	0	2	3	2
Outside Central Valley Floor	Long Term	1	1	0	0	0	0	0
	Recent	3	2	0	0	0	1	0
All Wells with Nitrate Data	Long Term	149	126	1	3	4	12	3
	Recent	168	129	4	9	5	16	5

* This means that the well has sufficient data to be tested for the parametric (linear) analysis, but the nitrate concentration data's trend does not meet the minimum criteria for statistical significance.

Table 2-4b Non-Parametric Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Poso) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Non-Parametric Trend	Not Meeting Conditions for Non-Parametric Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
All	Long Term	4	1	0	0	1	2	0
	Recent	3	2	0	0	0	1	0

Table 2-4b Non-Parametric Trends in Nitrate Concentrations in Wells within the Proposed Kern County (Poso) Area of the KWC Management Zone								
Depth Zone	Trend Period	Number of Wells						
		Tested for Non-Parametric Trend	Not Meeting Conditions for Non-Parametric Trend*	Decreasing Significantly (>1 mg/L/yr)	Decreasing (>0.1 mg/L/yr)	Stable (<0.1 mg/L/yr)	Increasing (>0.1 mg/L/yr)	Increasing Significantly (>1 mg/L/yr)
Upper	Long Term	39	25	1	3	7	3	0
	Recent	51	31	3	5	2	7	3
Upper and Lower	Long Term	5	2	0	0	0	3	0
	Recent	2	1	0	0	0	1	0
Lower	Long Term	26	11	0	1	7	7	0
	Recent	31	23	0	3	2	3	0
Lower and Below Lower	Long Term	6	1	0	2	2	1	0
	Recent	6	4	0	0	0	2	0
Below Lower	Long Term	45	19	0	1	10	15	0
	Recent	47	19	0	8	9	11	0
Unknown	Long Term	23	13	0	1	2	6	1
	Recent	25	13	0	2	4	4	2
Outside Central Valley Floor	Long Term	1	0	0	0	0	1	0
	Recent	3	2	0	0	0	1	0
All Wells with Nitrate Data	Long Term	149	72	1	8	29	38	1
	Recent	168	95	3	18	17	30	5

* This means that the well has sufficient data to be tested for the non-parametric analysis, but the nitrate concentration data's trend does not meet the minimum criteria for statistical significance.

1.4.3. Evaluation of Inactive Drinking Water Wells

The locations of inactive supply wells that have had nitrate exceedances were compared to the ambient nitrate map of recent conditions to help determine if there is any bias in the Upper Zone nitrate analysis.

The DDW's online public water system database website was used in conjunction with the GAMA database to identify supply wells within the proposed Kern County (Poso) Area of the KWC Management Zone with an inactive status. The DDW website provides database files that include a file containing public water system well identification numbers and well status codes. The wells from the DDW website are not accompanied by location coordinates, but these wells can be linked (using their primary station code ID) to nitrate groundwater quality data from the GAMA dataset, which does provide well location coordinates. A map showing the location and status of public water supply wells that have exceeded the nitrate MCL is provided in **Attachment H Early Action Plan Appendix B-3**. Public supply wells with past nitrate exceedances that have been abandoned, inactive, or destroyed can be seen in this map plotted with the ambient nitrate conditions in the Upper Zone since 2010. There are several public supply wells in the Kern County (Poso) Area that are listed as inactive wells (considered to be no longer actively used for drinking water) that have exceeded the nitrate MCL in the past. These inactive wells are located in and near areas that have elevated ambient nitrate levels in the Upper Zone (above the MCL). This indicates that the nitrate analysis performed for this document is not biased due to inactive public drinking water supply wells.

2. REFERENCES

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Department of Water Resources (DWR). 2024. SGMA Data Viewer. Available at:
<https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#currentconditions>.

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ATTACHMENT D-3 PROPOSED KERN COUNTY (POSO) AREA NON-DISCHARGER STAKEHOLDERS CONTACT LIST

Outreach to Other Stakeholders in Proposed Kern County (Poso) Area

Category	Entity	Contact(s)
Water Providers	City of Bakersfield	<ul style="list-style-type: none"> Tamara Johnson, District Manager, 3725 South H Street, Bakersfield CA 93304, (661) 837-7200, Email via website Art Chianello, Water Resources Manager
	City of Shafter	Michael James, Public Works Director, 336 Pacific Avenue, Shafter CA 93263, (661) 746-5002, mjames@shafter.com
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	City of Delano	Roman Dowling, Public Works Director, 725 S. Lexington, Delano, CA 93215, (661) 720-2219, rdowling@cityofdelano.org
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	California Water Service Company - North Garden	Tamara Johnson, District Manager, 3725 South H Street, Bakersfield CA 93304, (661) 837-7200, Email via website
	Vaughn Water Company	Van Grayer, Manager, 10014 Glenn Street, Bakersfield, CA 93312, (661) 589-2931, van@vaughnwater.org
	Oildale Mutual Water Company	Ryan Nunneley, General Manager, 2836 McCray St, Oildale CA 93388, (661) 399-5516, runneley@oildalewater.com
GSAs within Management Zone	Semitropic Water Storage District GSA	Jason Gianquinto, Semitropic Water Storage District General Manager, 1101 Central Avenue, Wasco, CA 93280-0877, (661) 758-5113, jgianquinto@semitropic.com
	North Kern Water Storage District GSA	David Hampton, General Manager, 33380 Cawelo Ave, Bakersfield, CA 93308, (661) 393-2696, dhampton@northkernnwsd.com
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	Rosedale-Rio Bravo Water Storage District GSA	Dan Bartel, Engineer-Manager, 849 Allen Road, Bakersfield CA, 93314, (661) 589-6045, dbartel@rrbwsd.com
	Kern Groundwater Authority GSA	Valerie Kincaid, Manager, 1800 30th Street, Suite 280, Bakersfield, CA 93301, (916) 264-2046, vkincaid@pariskincad.com
	Southern San Joaquin Municipal Utility District GSA	Roland Gross, General Manager, 11281 Garzoli Ave, Delano, CA 93215, (661) 725-0610, roland@ssjmud.org
	Kern-Tulare Water District GSA	Vanessa Yap, Staff Engineer, 5001 California Avenue, Suite 102, Bakersfield, CA 93309, (661) 327-3132, vanessa@kern-tulare.com
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Outreach to Other Stakeholders in Proposed Kern County (Poso) Area

Category	Entity	Contact(s)
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GSAs Adjacent to Management Zone	Eastern Tule GSA	Rogelio Caudillo, General Manager, 881 W. Morton Avenue, Suite D, Porterville, CA 93257, (559) 781-7660, rcaudillo@easterntulegsa.com
	Southwest Kings GSA, Tri-County Water Authority GSA – Tulare Lake, Tule	Deanna Jackson, Executive Director, 944 Whitley Ave, Corcoran, CA 93212 (559) 762-7240, djackson@tcwater.org
	Buena Vista Water Storage District GSA	Tim Ashlock, Engineer-Manager, 525 North Main Street, Buttonwillow, CA 93206, (661) 764-2901, tim@bvh2o.com
	Kern Water Bank GSA	Jonathan Parker, Geologist, 1620 Mill Rock Way, Suite 500 Bakersfield, CA 93311, (661) 303-7069, jparker@kwb.org
	Arvin GSA	Jeevan Muhar, Engineer-Manager, 20401 East Bear Mountain Boulevard, Arvin, California 93203-0175, (661) 854-5573, jmuhar@aewsd.org
Industry, Trade and NGOs	Kern County 4-H	Laurie Sue McKinney, lsinckinney@ucanr.edu , (661) 868-6235
	ACWA Ag Committee	Anjanette Shadley, Ag Committee Chair
	Almond Board of California	Lynn Jordan, ljordan@almondboard.com , (209) 343-3237
	Blue Diamond Growers	Anthony Scudder, ascudder@bdgrowers.com (559) 470-9731
	California League of Food Producers	Trudi Hughes, trudi@clfp.com , (916) 640-8150
	California Poultry Federation	Bill Mattos, bill_mattos@yahoo.com
	California Rural Legal Assistance – Delano Office	Nick Jensen, njensen@crla.org , (209) 577-3811 ext. 2912; Delano: (661) 725-4350
	California Women of Agriculture – Kern County Chapter	kerncountycwa@gmail.com
	Central Valley Clean Water Association	Debbie Mackey, Executive Officer, 700 R. Street, Suite 200, Sacramento, CA 95811 (916) 330-2705, eoofficer@cvcwa.org
	Central Valley Dairy Representative Monitoring Program	J.P. Cativiela, 915 L Street, Suite C-431, Sacramento, CA 95814 (916) 261-6556, jcativiela@cogentcc.com
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	Community Water Center	Kjia Rivers, kjia.rivers@communitywatercenter.org ; (916) 706-3346
	Dairy Cares	J.P. Cativiela, Regulatory Director, 915 L Street Suite C-438, Sacramento, CA 95814 (916) 441-3318, jcativiela@cogentcc.com
	Leadership Council for Justice and Accountability	Michael Claiborne, mclaiborne@leadershipcounsel.org
	Manufacturers Council of the Central Valley	Maryn Pitt, Executive Director, maryn@mccv.org ; (209) 523-0886
	Milk Producers Council	Geoff Vanden Heuvel, Director of Regulatory and Economic Affairs, 222 S. Thor Street, #20, Turlock, CA 95380, (209) 250-1801, geoff@milkproducers.org

Outreach to Other Stakeholders in Proposed Kern County (Poso) Area

Category	Entity	Contact(s)
	Self-Help Enterprises	Eddie Ocampo, eddieo@selfhelpenterprises.org 8445 W. Elowin Ct., Visalia, CA 93291, (559) 651-1000
	Kern County Farm Bureau	Jenny Holtermann, 1800 30 th Street, Suite 390, Bakersfield, CA 93301, kcfb@kerncfb.com , (661) 397-9635
	Sustainable Conservation	Charles Delgado, Policy Director, suscon@suscon.org
	Water Association of Kern County	Jenny Holtermann, Executive Director, info@wakc.com , (661) 746-3300
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	Valley Water Management Company	Jason Meadors, General Manager, 7500 Meany Avenue, Bakersfield, CA 93308, (661) 410-7500
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	Pond Union Elementary School District	Alex Lopez, alopez@pond.k12.ca.us , (661) 792-2545
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	Delano Union School District	Yvonne Munoz, ymunoz@duesd.org , (661) 721-5000 x 00102

Outreach to Other Stakeholders in Proposed Kern County (Poso) Area

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	Rosedale Union School District	Merril Clanton, (661) 588-6000
	Norris School District	Cy Silver, Email via school website, (661) 387-7000
	Beardsley School District	info@beardsley.k12.ca.us , (661) 393-8550
Education/ School Districts (cont.)	Richland Union School District	Rosa Romero, rromero@rsdshafter.org , (661) 746-8600
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	Bakersfield City School District	Cindy Elmore, elmorc@bcsd.com , (661) 631-4600
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	Fruitvale Elementary School District	Rhonda Nelson, Email via school website, (661) 589-3830 x 1206
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	Shafter Family Resource Center	Golden Oak Elementary 195 S.Wall St. Room #143 Enter through the S. Valley & Rosalee Ave gate behind the school, Shafter , CA 93263, (661) 746-8690
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	Greater Bakersfield Chamber	info@bakochamber.com , (661) 327-4421
	Delano Chamber of Commerce	delanochamber@outlook.com , (661) 725-2518

Outreach to Other Stakeholders in Proposed Kern County (Poso) Area

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Outreach to Other Stakeholders in Proposed Kern County (Poso) Area

Category	Entity	Contact(s)
		<ul style="list-style-type: none"> Veronica Vasquez, Council Member, (661) 721-3303 ext. 2445, vvasquez@cityofdelano.org Salvador Solorio-Ruiz, Vice Mayor, (661) 721-3303 ext. 2455, ssolorio-ruiz@cityofdelano.org Mario Nunez, Council Member, (661) 721-3303 ext. 2443, mnunez@cityofdelano.org Maribel Reyna, City Manager, (661) 721-3303, mreyna@cityofdelano.org Nancy Garcia, City Clerk, (661) 721-3300, ngarcia@cityofdelano.org Roman Dowling, Public Works Director\City Engineer, (661) 721-3350, rdowling@cityofdelano.org <p>1015 11th Avenue, Delano, CA, United States, California</p>
Kern County Communities (cont.)	McFarland (Incorporated)	<ul style="list-style-type: none"> Saul Ayon, Mayor, (661) 543-4397, sayon@mcfarlandcity.org Ricardo Cano, Vice Mayor, (661) 543-9268, rcano@mcfarlandcity.org Amador Ayon, Council Member, (661) 543-9264, aayon@mcfarlandcity.org Anita Gonzalez, Council Member, (661) 543-9216, agonzalez@mcfarlandcity.org María Pérez, Council Member, (661) 543-9296, mperez@mcfarlandcity.org Diego Viramontes, City Manager, (661) 792-3091, dviramontes@mcfarlandcity.org Francisca Alvarado, (661) 792-3091, falvarado@mcfarlandcity.org Yerlys Hernandez, Public Works Director, (661) 792-3091 ext. 2127, yhernandez@mcfarlandcity.org Adam Cabrera, Assistant Public Works Director, (661) 792-3091 ext. 2126, acabrera@mcfarlandcity.org Michael Hightower, Water Supervisor, mhightower@mcfarlandcity.org Robert Cisneros, Wastewater Treatment Plant Operator/Supervisor, rcisneros@mcfarlandcity.org <p>401 W. Kern Avenue, McFarland, CA 93250</p>
	Shafter (Incorporated)	<ul style="list-style-type: none"> Chad Givens, Mayor, cgivens@shafter.com Cathy L. Prout, Mayor Pro Tem, cprout@shafter.com Gilbert T. Alvarado, Council Member, galvarado@shafter.com Pete Espinoza, Council Member, pespinoza@shafter.com Gustavo Olvera Jr, Council Member, golvera@shafter.com Gabriel Gonzalez, City Manager, (661) 746-5000 Michael James, Public Works Director, (661) 746-5004
	Greenacres (Unincorporated)	
	Oildale (Unincorporated)	
	Rosedale (Unincorporated)	

ATTACHMENT D-4 PERMITTED MILK COW DAIRIES, CONFINED BOVINE FEEDING OPERATIONS, AND POULTRY OPERATIONS IN THE PROPOSED KERN COUNTY (POSO) AREA

Table 1. Milk Cow Dairies and Confined Bovine Feeding Operations in the Proposed Kern County (Poso) Area Management Zone that are Management Zone Participants through CVDRMP Membership			
CV-SALTS ID	WDID No.	Facility Name	Address
Enrolled Under General Order R5-2013-0122 – Milk Cow Dairies			
538	5D155065001	Oasis Holsteins Dairy	18041 Palm Avenue, Shafter, CA 93263
735	5C15NC00083	Affentranger & Sons Dairy	18107 Kratzmeyer Avenue, Bakersfield, CA 93314
Enrolled Under General Order R5-2017-0058 – Confined Bovine Feeding Operations			
1488	5D155071N01	3 Brands Cattle Company	34377 Lerdo Highway, Bakersfield, CA 93308
1553	5C15NC00255	Sherwood Ranch	31740 Taylor Avenue, McFarland, CA 93250
1691	5C15NC00245	Sill Feedlot	18811 Scaroni Avenue, Shafter, CA 93263
1723	5C15NC00253	Western Stockman's Market	31911 Highway 46, McFarland, CA 93250
Permitted Under Unknown WDR Order No.¹			
35	5C15NC00108	Sky View Dairy	28989 Riverside Street, Shafter, CA 93263

¹ Order number was not included in Central Valley Water Board's February 2024 list of facilities in Priority 2 areas that received a Notice to Comply with the Nitrate Control Program

Table 2. Milk Cow Dairies and Confined Bovine Feeding Operations in the Proposed Kern County (Poso) Area Management Zone That Are Not Currently Members of the CVDRMP and Status of Management Zone Participation is Unknown at Time of FMZP Submittal			
CV-SALTS ID	WDID No.	Facility Name	Address
Enrolled Under General Order R5-2013-0122 – Milk Cow Dairies			
497	5D155078N01	McFarland Dairy	31348 Hanawalt Avenue, McFarland, CA 93250
506	5D155086N01	Peterson Dairy	30999 Peterson Road, McFarland, CA 93250
Enrolled Under General Order R5-2017-0058 – Confined Bovine Feeding Operations			

Table 3. Poultry Operations in the Proposed Kern County (Poso) Area Management Zone that are Management Zone Participants through a Poultry General Order (Enrolled as Full Coverage Operations)

CV-SALTS ID	WDID No.	Facility Name	Address
1228	5D155068N01	Demler Enterprises Egg Laying Facility - Delano	Delano, CA 93287
1233	5C15NC00231	Demler Enterprises Egg Laying Facility - Wasco	Wasco, CA 93280

ATTACHMENT D-5 CURRENT NITRATE TREATMENT AND CONTROL EFFORTS OR MANAGEMENT PRACTICES FOR INDIVIDUAL PERMITTED DISCHARGERS IN PROPOSED KERN COUNTY (POSO) AREA

ASV Wines McFarland Winery

Facility Description (CV-SALTS ID: 2846)

Pending Waste Discharge Requirements (WDR) permit from the Central Valley Regional Water Quality Control Board. Facility description and Nitrate Management Requirements will be updated when a permit is assigned.

Bidart Bros. Bakersfield Potato Shed

Facility Description (CV-SALTS ID: 2394)

Bidart Bros., Bakersfield Potato Shed is authorized to discharge wastewater under WDR Order R5-2014-0082. The facility is located at 34702 7th Standard Road in Bakersfield, CA. The underlying groundwater beneficial uses are MUN, AGR, IND and PRO.

Prior to initiation of potato processing, water is pumped from the Beardsley Canal, to a 30,000-gallon storage tank. Water then flows by gravity to fill two unlined ponds connected in series. The first pond, or west pond, has an estimated capacity of 400,000 gallons and the second pond, or east pond, has an estimated capacity of 200,000 gallons. Water is pumped from the second pond to the wash flume where potatoes are dumped and simultaneously washed from the side dump trucks. From the flume, the potatoes are floated on conveyors to the interior of the packaging shed where they are graded and packaged into 50-pound cartons or bags. Water from the Oildale Mutual Water District is used for the final rinse of potatoes prior to packaging.

All of the wash water is contained in the flume system and recirculated back to the first pond. While in the ponds, chlorine is injected into the process water to reduce odors and control bacteria. The recirculated water also passes through a buffer tank with calcium carbonate rock to maintain a neutral pH. Process wash water also passes through a filter, which is cleaned daily, to remove larger plant debris such as potato vines, nut grass, and cotton stocks. To control the concentration of salts accumulating in the process wash water, the discharger routinely removes process wash water from recirculation and replaces it with water from the Beardsley Canal and/or the Oildale Mutual Water District. Water from the second pond is pumped, at a rate of 400 gallons per minute for approximately seven hours per day (total of 168,000 gallons per day [gpd]), to a nearby irrigation reservoir, Etchart Reservoir.

Process wash water and irrigation water are mixed in the Etchart Reservoir and pumped through a sand filter and drip irrigation system and land applied to 40 acres of table grapes and 232 acres of almonds located approximately one mile south of the facility.

Nitrate Management Requirements

Table 1 summarizes the nitrate management-related requirements in this facility's WDR.

Table 1. Summary of Bidart Bros., Bakersfield Potato Shed WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of wastes to surface waters or surface water drainage courses is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of the WDR Order. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. Discharge shall remain within the permitted waste containment structures and Land Application Area (LAA) at all times. Discharge shall be distributed uniformly on adequate acreage within the LAA.
Land Application	<ul style="list-style-type: none"> Crops shall be grown in the LAA. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake of water and nutrients. Application of waste constituents to the LAA shall be at reasonable agronomic rates to preclude creation of a nuisance or unreasonable degradation of groundwater. The annual nutritive loading of the LAA, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand. Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents associated with the discharge shall not cause or contribute to groundwater containing nitrate as nitrogen (as N) concentrations above 10 milligrams per liter (mg/L) or in excess of background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – grab sample for total nitrogen at the start and end of the potato processing season.

Table 1. Summary of Bidart Bros., Bakersfield Potato Shed WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> • LAA Monitoring – annual cumulative nitrogen loading calculations and monthly nitrate loading calculations from wastewater and fertilizers. • Unlined Pond Monitoring - total nitrogen grab sample from PND-002 and composite sample of dried residual solids remaining in the ponds for nitrate as N and Total Kjeldahl Nitrogen (TKN) at the end of the season. A total nitrogen calculation is also required at the end of the season.

Califia Farms, LLC

Facility Description (CV-SALTS ID: 2884)

Nitrate Management Requirements

Califia Farms, LLC (Califia), North Kern Water Storage District (District), and Paramount Ranch L.P. (jointly referred to as Discharger) are authorized to discharge wastewater under WDR Order R5-2022-0053. Califia Farms Bakersfield Facility (Facility) is located at 33502 Lerdo Highway, approximately 10 miles north-northwest of Bakersfield in Kern County. The underlying groundwater beneficial uses are MUN, AGR, IND, and PRO.

Process wastewater at the Facility is generated during the manufacturing and processing of its plant-based products and is comprised of primarily (93 percent) wash water used to sanitize and sterilize the processing equipment. The remaining seven percent is generated from the Facility's water treatment system used to treat the incoming source water. Process wastewater is discharged to a lined oxidation ditch with an operational capacity of 600,000 gallons and then to the Lerdo Canal via pipeline.

During the irrigation season, approximately March through November, most of the water in the Lerdo Canal is used for irrigation of crops grown in the District. During the non-irrigation season (typically December through February) and during an annual maintenance shutdown typically conducted in January, the various waters including the Facility's discharge are sent to the Rosedale Spreading Basin for groundwater recharge.

Table 2 summarizes the nitrate management-related requirements in this facility's WDR.

Table 2. Summary of Califia Farms, LLC WDR
Nitrate Management-Related Requirements

Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Waste classified as “hazardous” shall not be discharged at the Facility under any circumstance. • Waste constituents shall not be discharged or otherwise released from the Facility (including during treatment and storage activities) in a manner that results in violations of the Groundwater Limitation of this Order or creates conditions of “nuisance” or “pollution”. • Discharge of wastes other than the treated process wastewater at the location and in the manner described in the Findings and authorized herein is prohibited. • Bypass or overflow of wastes to surface waters is prohibited. • Untreated wastes and partially treated wastes shall not bypass the treatment system (including treatment ponds). • Discharge of water from canals used to transport Facility effluent (e.g., Lerdo Canal) to canals used to transport municipal and domestic water sources (e.g., Friant Kern Canal and/or others) is prohibited. • Discharge of toxic substances into any wastewater treatment system, the Lerdo Canal, or the Rosedale Spreading Bains such that biological treatment mechanisms are disrupted is prohibited. • Discharge of industrial wastewater to the septic systems is prohibited.
Flow Limitations	<ul style="list-style-type: none"> • Effluent flows from the Facility to the Lerdo Canal and/or the Rosedale Spreading Basin shall not exceed a maximum daily limit of 0.5 million gallons per day (mgd).
Discharge Specifications	<ul style="list-style-type: none"> • Waste discharges shall remain within authorized Lerdo Canal, Rosedale Spreading Basin, and/or the District’s agricultural land application areas and authorized waste treatment and/or containment structures. • Objectionable odors shall not be perceivable beyond the limits of the Facility property at an intensity that creates or threatens to create nuisance conditions. • The Facility’s discharge to Lerdo Canal shall not impact the Lerdo Canal’s agricultural supply beneficial use.
Groundwater Limitations	<ul style="list-style-type: none"> • Release of waste constituents from any treatment component or use as irrigation water shall not cause or contribute to groundwater containing nitrate as N in excess of 10 mg/L or

Table 2. Summary of Califia Farms, LLC WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	constituents identified in Title 22 in excess of the MCLs quantified therein; or in excess of natural background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> • Effluent Monitoring – monthly grab sample for total nitrogen and monthly 24-hour composite sample for nitrate as N, TKN, and general minerals. • Lerdo Canal Monitoring – quarterly grab sample for TKN, total nitrogen, and general minerals.

Delano Growers Grape Products

Facility Description (CV-SALTS ID: 1954)

The Delano Growers Grape Products, Grape Juice Processing Plant (Plant) is authorized to discharge wastewater under WDR Order R5-2014-0064. The Plant is located at 32351 Bassett Avenue in Delano, CA. The underlying groundwater beneficial uses are MUN, AGR, IND and PRO.

The Plant processes fresh grapes during harvest (July through December) and produces grape juice concentrate year-round. During harvest, up to 2,400 tons of fresh grapes are trucked to the Plant daily. The Plant is permitted a maximum annual discharge of 174 million gallons.

Wastewater at the Plant consists of two waste streams, identified as Waste Stream 01 and Waste Stream 02. Waste Stream 01 consists of the condensed water from the evaporative process separated from the rough grape juice concentrate and retentate from a reverse osmosis unit that treats the Plant's source water that is supplied by the onsite water supply well (DW-01). The treated source water provides mineral free water to the boiler. Waste Stream 01 is discharged into two unlined, aerated storage ponds (Pond 1 and Pond 2).

Waste Stream 02 consists of all other wastewaters from the processes associated with processing rough grape juice into the final product and includes: ultrafiltration retentate, boiler blowdown, cooling tower blowdown, process equipment cleaning water, regenerate from electro-dialysis and ion exchange units, and vacuum pump seal water. Waste Stream 02 is treated by an onsite wastewater treatment plant (WWTP) that consists of screening, coagulation, pH adjustment, dissolved air flotation (DAF), anaerobic and aerobic digestion, and clarification prior to being discharged into a high-density polyethylene (HDPE) lined, aerated storage pond (Pond 3).

Waste Streams 01 and 02 are comingled in Ponds 3 and then discharged to LAA of 176 acres of double-cropped wheat and sudan grass. The Plant contracts with a local farmer to manage the

crops. Wastewater is mixed with canal water from the nearby Friant-Kern Canal and applied to the LAA via flood irrigation.

Nitrate Management Requirements

Table 3 summarizes the nitrate management-related requirements in this facility's WDR.

Table 3. Summary of Delano Growers Grape Products WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of wastes to surface waters or surface water drainage courses is prohibited. Discharge of waste including domestic wastewater to areas other than the designated LAA or to a municipal wastewater treatment system, is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of the WDR Order. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. The discharge shall remain within the permitted waste containment structures and LAA at all times. Discharge shall be distributed uniformly on adequate acreage within the LAA.
Land Application	<ul style="list-style-type: none"> Crops shall be grown in the LAA. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake of water and nutrients. Application of waste constituents to the LAA shall be at reasonable agronomic rates to preclude creation of a nuisance or unreasonable degradation of groundwater. The annual nutritive loading of the LAA, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand. Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents associated with the discharge shall not cause or contribute to groundwater containing nitrate as N concentrations above 10 mg/L or in excess of background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – monthly grab sample for nitrate as N and TKN and calculated total nitrogen.

Table 3. Summary of Delano Growers Grape Products WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> • LAA Monitoring – annual cumulative nitrogen loading calculations and monthly nitrogen loading calculations from wastewater and fertilizers. • Soil Monitoring – annual nitrate as N, TKN, and total nitrogen soil grab samples at depths of 2, 4, and 6 feet within the LAA. • Groundwater Monitoring RGW-001 through RWG-006 – quarterly nitrate as N, TKN, ammonia as N, and total nitrogen grab samples from all wells part of the Groundwater Monitoring Well Network. • Source Water Monitoring – for each source (either well or surface water supply), discharger shall calculate the flow-weighted average concentrations for nitrate as N utilizing the monthly flow data and the most recent chemical analysis.

Delano Wastewater Treatment Facility

Facility Description (CV-SALTS ID: 2659)

The City of Delano (City) owns and operates the Delano Wastewater Treatment Facility (WWTF) which is authorized to discharge wastewater under WDR Order R5-2017-0052. The facility is located at 1107 Lytle Avenue, Delano, CA. The underlying groundwater beneficial uses are MUN, AGR, IND and PRO.

The Delano WWTF accepts wastewater from North Kern State Prison, Delano Modified Correctional Facility, Paramount Citrus, and septage haulers and is permitted to discharge 7.2 mgd of undisinfected wastewater to a total of 932 acres of City-owned farmland Use Areas. The original WWTF consisted of headworks, screening, grit removal, an aerated grit chamber, three primary clarifiers, two biofilters, three secondary clarifiers, two sludge digesters, a sludge thickener, and 1.6 acres of sludge drying beds, and six effluent storage ponds. In June 2011, the City completed expansion of the WWTF which now consists of a septage receiving station, two influent flow meters: one measuring flow from the North Kern State Prison, and the second measuring the comingled wastewater coming into the WWTF, a total of three primary clarifiers, two oxidation ditches, a total of five secondary clarifiers, effluent pump station, sludge thickener, two anaerobic digesters, three aerobic sludge holding tanks, centrifuge facilities, eight soil cement lined sludge drying beds, two asphalt lined sludge drying bends, four unlined storage ponds (Ponds 1 through 4), and two lined storage ponds (Ponds 5 and 6). The City maintains lease agreements with a California corporation to manage the disposal of all the wastewater on the 932 acres of farmland.

Nitrate Management Requirements

Table 4 summarizes the nitrate management-related requirements in this facility's WDR.

Table 4. Summary of Delano Wastewater Treatment Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of wastes to surface waters or surface water drainage courses is prohibited. Discharge of wastewater in a manner or location other than described in the WDR order is prohibited.
Flow Limitations	<ul style="list-style-type: none"> Wastewater effluent monthly average dry weather flow shall not exceed 7.20 mgd.
Effluent Limitations	<ul style="list-style-type: none"> The wastewater effluent shall not exceed a monthly average total nitrogen concentration of 10 mg/L.
Discharge Specifications	<ul style="list-style-type: none"> No waste constituent shall be released, discharged, or placed where it will cause violation of the Groundwater Limitations of the WDR Order. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. Discharge shall remain within the permitted waste containment structures, storage ponds, and Use Areas at all times. Discharger shall operate all systems and equipment to optimize the quality of the discharge.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment, reclamation or storage component associated with the discharge shall not cause or contribute to groundwater containing nitrate as N concentrations above 10 mg/L or in excess of background quality, whichever is greater.
Water Recycling Specifications	<ul style="list-style-type: none"> Tailwater runoff and spray of recycled water shall not be discharged outside of the Use Areas. Application of recycled water and use of fertilizers shall be at a rate that takes into consideration nutrient levels in recycled water and nutrient demand by plants. <ul style="list-style-type: none"> Crops or landscape vegetation shall be grown on the Use Areas, and cropping activities shall be sufficient to take up the nitrogen applied, including any fertilizers and manure. Hydraulic loading of recycled water and supplemental irrigation water (if any) shall be managed to 1) Provide water only when water is needed and in amounts consistent with that need; 2) Maximize crop nutrient uptake; 3) Maximize

Table 4. Summary of Delano Wastewater Treatment Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	breakdown of organic waste constituents in the root zone; and 4) Minimize the percolation. <ul style="list-style-type: none"> Grazing of milking animals within the use areas is prohibited.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – monthly grab sample for TKN, nitrate as N, nitrite as N, and total nitrogen. Groundwater Monitoring – quarterly grad sample for TKN, nitrate as N, nitrite as N, ammonia as N, and total nitrogen. Use Area Monitoring – monthly calculated nitrogen loading rates from wastewater and fertilizer.

Garlic Processing Plant Shafter

Facility Description (CV-SALTS ID: 2200)

The Garlic Company, Incorporated owns and operates the Shafter Garlic Processing Facility which is authorized to discharge process wastewater under WDR Order R5-2020-0025. The facility is located at 18602 Zerker Road, Shafter, CA. The underlying groundwater beneficial uses are MUN, AGR, IND, PRO, REC-1, and WILD.

The facility processes and packages fresh garlic, peeled garlic, garlic puree, garlic juice, and pickled garlic. Other vegetables are also processed on an as-needed basis. The facility consists of a whole garlic processing facility, a garlic puree facility, cold storage unit, storm water pond, and a process wastewater treatment system which consists of screens, a 1-million-gallon aerated lined reservoir, and a 50,000-gallon mixing tank. Wastewater is generated from three non-contact and seven-contact sources. Non-contact process wastewater sources include cold storage, boiler blowdown, and boiler regenerate. The seven contact sources include whole bulb packing, seed cracking, peel plant cracking, peel plant packing, diced/puree plant, pepper process, and cold storage.

Process wastewater is sent from the wastewater pump pit through primary filtration (0.015" screen) then to either the mud separation pit or the trash press. From the trash press, wastewater is conveyed to the cull truck fill station then to the cull/filtration area spillage collection pit, where it is pumped back through the primary filtration screen. From the mud separation pit, wastewater flows to either the aerated lined reservoir for irrigation use or received secondary filtration (0.0059" screen) for use in the Point "A" cyclone cleaning system to remove/control papery garlic skins. Wastewater in the reservoir is directed to the mixing tank prior to being irrigated via sprinkler irrigation onto the 99-acre LAA.

Nitrate Management Requirements

Table 5 summarizes the nitrate management-related requirements in this facility's WDR.

Table 5. Summary of Shafter Garlic Processing Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of wastes to surface waters or surface water drainage courses is prohibited. Discharge of wastewater in a location or manner different from that described in the WDR order is prohibited. Discharge of domestic wastewater to the process wastewater treatment system, lined reservoir, and/or the LAA is prohibited.
Flow Limitations	<ul style="list-style-type: none"> Wastewater discharge to the LAA shall not exceed the following (monitored at EFF-001): <ul style="list-style-type: none"> A monthly average daily flow of 218,000 gpd, and An annual flow of 46.96 million gallons.
Discharge Specifications	<ul style="list-style-type: none"> No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of the WDR Order. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. Discharge shall remain within the permitted wastewater pond, conveyance structures, and the LAA at all times. Discharge of process wastewater shall be distributed uniformly on the LAA in compliance with the Discharger Specifications.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment unit, storage unit, delivery system or disposal location associated with the facility shall not cause or contribute to groundwater containing nitrate as N concentrations above 10 mg/L or in excess of background quality, whichever is greater.
Land Application	<ul style="list-style-type: none"> Crops shall be grown in the LAA and shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize uptake of nutrients. Application of waste constituents to the LAA shall be at reasonable agronomic rate to preclude creation of a nuisance or unreasonable degradation to groundwater, considering crop, soil, climate and irrigation management system. The annual nutritive loading of the LAA, including nutritive value of organic and chemical fertilizers, and the wastewater, shall not exceed the annual crop demand. Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the

Table 5. Summary of Shafter Garlic Processing Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	percolation of wastewater and irrigation water below the root zone.
Monitoring & Reporting	<ul style="list-style-type: none"> • Effluent Monitoring – weekly grab sample for nitrate as N, TKN, and total nitrogen. • LAA Monitoring – annual calculated nitrogen loading rates from wastewater, fertilizers and residual solids, and from supplemental irrigation water.

Kern Front Oil Field, Rosedale Spreading Basin (Discharge 003)

Facility Description (CV-SALTS ID: 3048)

The California Resources Production Corporation (CRC) and the North Kern Water Storage District (District) are authorized to discharge wastewater under WDR Order R5-2015-0127. CRC owns and operates the CRC Section 23 Treatment Facility (Facility) in the Kern Front Oil Field at 9522 Oilfield Road, Bakersfield, CA. The underlying groundwater beneficial uses are MUN, AGR, IND, and PRO.

CRC generates oil field produced water (produced water) from about 850 oil production wells in the Kern Front Oil Field. The produced water is treated to reduce the oil and grease content at the Facility. The District and CRC are proposing to use produced water from CRC's Kern Front Oil Field leases for crop irrigation and groundwater recharge purposes within the District. CRC and the District submitted a Report of Waste Discharge (RWD) in support of the proposed project in March 2015.

The District uses imported surface water and pumped groundwater for irrigation. The District currently provides irrigation water to about 55,000 acres during the summer months and to over 1,500 acres of spreading Basin during the winter or during wet years. During months when irrigation requirements are low, excess surface water is discharged to approximately 1,500 acres of spreading Basin but will primarily be discharged to the 608-acre Rosedale Spreading Basin (Rosedale Basin).

Nitrate Management Requirements

Table 6 summarizes the nitrate management-related requirements in this facility's WDR.

Table 6. Summary of Kern Front Oil Field, Rosedale Spreading Basin (Discharge 003) WDR Nitrate Management-related Requirements

Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of wastes other than treated produced water at the location and in the manner described in the Findings and authorized herein is prohibited. • Bypass or overflow of wastes to surface waters is prohibited. • Discharge of water from canals used to transport industrial wastewater to canals used to transport municipal and domestic water sources is prohibited. • Neither the discharge nor its treatment shall create a nuisance or pollution as defined in Water Code section 13050. • Discharge of waste classified as 'hazardous' is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> • Wastewater treatment and use of blended, reclaimed, produced water for groundwater recharge shall not cause pollution or a nuisance as defined by Water Code section 13050. • Discharger shall operate all systems and equipment to optimize treatment of wastewater and the quality of the discharge. • No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations. • Produced water shall not be discharged to a canal used to transport municipal and domestic water sources. • Discharge of the produced water shall not create objectionable odors perceivable beyond the limits of the Rosedale Basin property at an intensity that creates or threatens to create nuisance conditions.
Groundwater Limitations	<ul style="list-style-type: none"> • Discharge of produced water, in combination with other sources, shall not cause groundwater underlying the District to contain waste constituents in concentrations that adversely affect beneficial uses. In no case shall the discharge, in combination with other sources, cause average electrical conductivity in groundwater on a basin-wide basis to increase by more than six $\mu\text{mhos/cm}$ per year. The average annual increase in electrical conductivity will be determined from monitoring data by calculation of a cumulative average and annual increase over a 5-year period.
Monitoring & Reporting	<ul style="list-style-type: none"> • Effluent monitoring – monthly grab sample for nitrate as N from Discharge 001 and Discharge 002. • Groundwater monitoring – quarterly grab sample for nitrate as N from all extraction wells that are active during a quarter, despite the number of days the extraction well is active. Extraction wells that are inactive for two or more quarters shall be sampled

Table 6. Summary of Kern Front Oil Field, Rosedale Spreading Basin (Discharge 003) WDR Nitrate Management-related Requirements	
Category	Summary of Requirements
	every other quarter, starting with the second quarter it is inactive, until active.

North of the River Sanitary District Biosolids Land Application Area

Facility Description (CV-SALTS ID: 2916)

North of the River Sanitary District No. 1 and Sill Properties, Inc. are authorized to discharge biosolids to land under State Water Board General WDR for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (Order R5-2004-0012-DWQ). Per the Notice of Applicability (NOA) this facility is assigned Order 2004-0012-DWQ-0011. The District's facility and biosolid LAA are located in Section 36, Township 28 South, Range 24 East, MDB&M in Kern County. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

The District applies biosolids produced from its WWTF as soil amendment to 425 acres of District-owned LAAs. Biosolids generated at the WWTF are dewatered by a mechanical screw press prior to being transferred to a concrete lined holding area for temporary holding. Biosolids are then transferred with a front-end loader to the lined sludge drying beds. Transfer vehicles are used to move the biosolids from the lined sludge drying beds to the biosolids LAAs.

The permitted biosolids LAAs are planted with wheat silage, corn silage, and alfalfa on fields 52W (40 acres), 52E (40 acres), 51W (18 acres), 51E (27 acres), 63 (75 acres), 64 (75 acres), 65 (75 acres), and 66 (75 acres). Sill Properties, Inc. operates and is responsible for applying biosolids to the biosolids LAAs.

Nitrate Management Requirements

Table 7 summarizes the nitrate management-related requirements in this facility's WDR.

Table 7. Summary of North of the River Sanitary District Biosolids Land Application Area WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Applications of biosolids shall be confined to the designated LAAs as shown in the NOA. Discharge shall not cause or threaten to cause pollution, as defined in Water Code section 13050.

Table 7. Summary of North of the River Sanitary District Biosolids Land Application Area WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	<ul style="list-style-type: none"> • Application of any material that results in a violation of the Safe Drinking Water and Toxic Enforcement Act (Health and Safety Code section 25249.5) is prohibited. • There shall be no discharge of biosolids from the storage or LAAs to adjacent lands not regulated by the General Order. • Irrigation water runoff is prohibited for 30 days after the application of biosolids if vegetation in the LAA and along the path of runoff does not provide 33 feet of unmowed grass or similar vegetation to prevent the movement of biosolids from the application site. • Application of biosolids at rates in excess of the nitrogen requirements of the vegetation or at rates that would degrade the groundwater is prohibited, except as allowed by Prohibition A.9: <ul style="list-style-type: none"> ○ Soil reclamation projects as part of an overall plan for reclamation of sites, provided the discharger can demonstrate that the application of excess nitrogen will not result in unacceptable degradation of underlying groundwaters.
Discharge Specifications	<ul style="list-style-type: none"> • Biosolids application rates shall not exceed the agronomic rate for nitrogen for the crop being planted except as allowed by Prohibition No. 9 or for biosolids research projects.
Monitoring & Reporting	<ul style="list-style-type: none"> • Biosolids Source Monitoring – grab sample for total nitrogen to be collected from each source of biosolids. • LAA Monitoring – monitoring the proposed nitrogen loading, residual nitrogen from previous fertilizer/biosolids applications, and crop nitrogen usage. • Groundwater Monitoring – annual grab sample for nitrate as N and total nitrogen from monitoring well network.

North of the River Sanitary District Sills Reclamation Project

Facility Description (CV-SALTS ID: 2414)

North of the River Sanitary District No. 1 owns the WWTF and Sill Properties Inc. owns the water reclamation area which are authorized to discharge undisinfected secondary treated wastewater under WDR Order R5-2009-0088. The District is the primary entity responsible for maintenance and operation of the WWTF. Sills Inc. is the primary entity responsible for the application of recycled wastewater and compliance with the water recycling requirements of

this order. This facility is located at 28970 7th Standard Road, Shafter, CA, 93263 while the Reclamation Area is located among various assessor parcels in northwest quarter of Section 36, Township 28S, Range 24E and Range 25E MDB&M. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

The District serves the North of the River Sanitary District Service Area, the City of Shafter, and certain portions of the County of Kern Service Area 71. The WWTF consist of headworks with two mechanical bar screens, a lift station, a vortex grit removal system, coagulant (Ferric Chloride) and Polymer, a primary clarifier, a plastic media trickling filter, a secondary clarifier, primary and secondary sludge digesters which operate in series, fourteen unlined sludge drying beds, mechanical dewatering, and four unlined storage ponds with a total storage capacity of approximately 1,488 acre-feet. Once the sludge is dry, it is applied as a soil amendment to the 80 acres owned by the discharger.

The treated effluent is used to irrigate the reclamation area or is sent to the storage ponds When irrigation demand is low. The reclamation area consists of approximately 2,500 acres of available farmland, which are utilized to grow alfalfa, wheat, and corn. These crops are used as fodder, fiber, and seed crops for nonhuman consumption.

Nitrate Management Requirements

Table 8 summarizes the nitrate management-related requirements in this facility's WDR.

Table 8. Summary of North of the River Sanitary District Sills Reclamation Project WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> Discharge of waste to surface waters or surface water drainage is prohibited. Bypass or overflow of untreated wastes, except as allowed by the WDR Order is prohibited.
Effluent Limitations	<ul style="list-style-type: none"> Total nitrogen of the discharge shall not exceed the monthly average of 10 mg/L unless WDR Provision H.26 is satisfied.
Discharge Specifications	<ul style="list-style-type: none"> Monthly average discharge flow shall not exceed 7.5 mgd. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.
Recycling Specifications	<ul style="list-style-type: none"> Recycling of WWTF effluent shall be at reasonable agronomic rates considering the crop, soil, climate, and irrigation management plan. Annual nutrient loading to the Reclamation

Table 8. Summary of North of the River Sanitary District Sills Reclamation Project WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	Area, including the nutritive value of organic and chemical fertilizers and recycled water, shall not exceed crop demand.
Sludge Specifications	<ul style="list-style-type: none"> Any handling and storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitation of the WDR Order.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment or storage component associated with the discharge shall not cause or contribute to groundwater containing nitrate as N concentrations above 10 mg/L or in excess of natural background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – monthly grab sample for nitrate as N, TKN, ammonia, and total nitrogen. Groundwater Monitoring – quarterly grab sample for nitrate as N and total nitrogen from the groundwater monitoring network. Reclamation Area Monitoring – monthly applied nitrogen from wastewater calculations and monthly applied nitrogen from fertilizer estimations.

North of the River Sanitary District Sills Reclamation Project No. 2

Facility Description (CV-SALTS ID: 2497)

The North of the River Sanitary District Sills Reclamation Project No. 2 is authorized to discharge wastewater under the State Water Board General WDR for Water Reclamation Requirements for Recycled Water Use (WQ 2016-0068-DDW). Per the WQ 2016-0068-DDW NOA, this facility is assigned Order WQ 2016-0068-DDW-R5010. This facility is located at 1508 18th Street, #320, Bakersfield, CA, 93301 while the Reclamation Area is located among various assessor parcels in Section 36, Township 28S, Range 24E and Range 25E MDB&M. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

The North of the River Sanitary District Sills Reclamation Project No. 2 is a 990-acre Use Area expansion to North of the River Sanitary District's WWTF (refer to North of the River Sanitary District Sills Reclamation Project discharge summary). The additional land brings the total Use Area to about 3,490 acres. The previously permitted 2,500 acres of Use Areas continues to be regulated under the recycling specification in WDRs Order R5-2009-0088 while the additional

990 acres is regulated under reclamation requirements in General Order WQ 2016-0068-DDW. The expansion of the reclamation project does not result in changes to the WWTF configuration, character of the wastewater, and/or flow increase mentioned in the discharger North of the River Sanitary District Sills Reclamation Project discharge summary.

Nitrate Management Requirements

Table 9 summarizes the nitrate management-related requirements in this facility's WDR.

Table 9. Summary of North of the River Sanitary District Sills Reclamation Project No. 2 WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> The treatment, storage, distribution, or use of recycled water shall not cause or contribute to a condition of pollution as defined in Water Code Section 13050(l) or nuisance as defined in Water Code Section 13050(m). The use of recycled water in violation of the applicable Regional Water Board's Basin Plan is prohibited.
Specifications	<ul style="list-style-type: none"> Recycled water distribution and use permitted under this General Order shall be in compliance with all of the following requirements: <ul style="list-style-type: none"> The NOA issued by the Regional Water Board or State Water Board. Applicable Salt and Nutrient Management Plan adopted by the Regional Water Board as a Basin Plan Amendment. Uses of recycled water with frequent or routine application shall be at agronomic rates and shall consider soil, climate, and plant demand. In addition, application of recycled water and use of fertilizers shall be at a rate that takes into consideration nutrient levels in recycled water and nutrient demand by plants.
Monitoring & Reporting	<ul style="list-style-type: none"> Use Area Monitoring – monthly applied nitrogen from wastewater and fertilizer calculations.

Shafter Carrot Packing Plant

Facility Description (CV-SALTS ID: 2395)

Grimmway Enterprises, Inc. (Grimmway) owns and operates the Shafter Carrot Packing Plant which is authorized to discharge process wastewater under WDR Order R5-2021-0029 to the Shafter Airport WWTF ponds and LAAs, which are located at 201 Aviation Street in Shafter and owned by the Minter Field Airport District (Airport District) but operated by Grimmway. The

facility is located at 6301 Zerker Road, Shafter, CA. The underlying groundwater beneficial uses are MUN, AGR, IND, and WILD.

Grimmway processes and packs fresh whole carrots at the facility. The existing facility includes carrot washing facilities, carrot packing facilities, a stormwater basin, and a system of unlined process wastewater ponds. Carrots are delivered in trailers, which are parked in soaker shed. The soaker sheds are equipped with spray nozzles and the carrots are rinsed with fresh well water while waiting to be processed. After the soaker sheds, carrots are flushed from the trailers using recycled process at the truck washout area. Carrots pass through a cleaning station consisting of brushes and fresh chlorinated water before moving through a hydro-cooling process where they are rinsed with chlorinated water before being moved indoors for sorting and packaging. Process wastewater is either recirculated to the truck unloading area or discharged to settling ponds. All process wastewater first flows into the pre-recycle settling ponds (Pond-001, Pond-002, or Pond-003) then to the recycle pond where the process wastewater is either reused or flows through the remaining settling ponds (Pond-005, Pond-006, or Pond-007) before discharging to the Shafter Airport WWTF ponds.

Nitrate Management Requirements

Table 10 summarizes the nitrate management-related requirements in this facility's WDR.

Table 10. Summary of Shafter Carrot Packing Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of wastes to surface waters or surface water drainage courses is prohibited. • Treatment system bypass of untreated or partially treated waste is prohibited. • Discharge of waste at a location or in a manner different from that described in the WDR Findings herein is prohibited.
Flow Limitations	<ul style="list-style-type: none"> • Wastewater discharge to the LAA shall not exceed a monthly average daily flow of 0.7 mgd and an annual flow of 182 million gallons.
Discharge Specifications	<ul style="list-style-type: none"> • No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of the WDR Order. • Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050. • Discharger shall operate all systems and equipment to optimize the quality of the discharge.

Table 10. Summary of Shafter Carrot Packing Plant WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment unit, storage unit, delivery system or disposal location associated with the facility shall not cause or contribute to groundwater containing nitrate concentrations in excess of 10 mg/L.
Land Application	<ul style="list-style-type: none"> Crops shall be grown in the LAA. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize uptake of nutrients. Application of waste constituents to the LAA shall be at reasonable agronomic rates to preclude creation of a nuisance or unreasonable degradation of groundwater, considering crop, soil, climate and irrigation management system. The annual nutritive loading of the LAA, including nutritive value of organic and chemical fertilizers, and the wastewater, shall not exceed the annual crop demand. Hydraulic loading of wastewater an irrigation water shall be at reasonable agronomic rates designed to minimize the percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
Monitoring & Reporting	<ul style="list-style-type: none"> Effluent Monitoring – weekly grab sample for nitrate as N, TKN, and total nitrogen. Supplemental Irrigation Water Monitoring – quarterly grab sample for nitrate as N. LAA Monitoring – annual nitrogen calculations from wastewater, fertilizers, and supplemental irrigation water.

Sun Pacific Bakersfield Packinghouse

Facility Description (CV-SALTS ID: 2355)

Nitrate Management Requirements

Sun Pacific Shippers, LP (Sun Pacific) and Seventh Standard Ranch Company (jointly referred to as Discharger) are authorized to discharge wastewater under WDR Order R5-2017-0126. Sun Pacific owns and operates a fruit packinghouse and cold storage facility (Facility) located at 33374 Lerdo Highway, Bakersfield, CA in Kern County. The underlying groundwater beneficial uses are MUN, AGR, IND, and PRO.

The Facility consists of a citrus packing house, cold storage facility, storage pond, and Use Area. The citrus packing house generates an average of 20,000 gallons per day of wastewater during the packing season, typically November to June. The citrus packing wastewater contains small

amounts of detergents and food grade wax. The Cold Storage Buildings generate an average of 56,000 gallons per day of coil defrost/cooling water year-round. The waste streams from the citrus processing and cold storage operations are comingled in the storage pond, pumped to irrigation ponds, blended with irrigation water and used to irrigate 1,158 acres of grape vineyards that makeup the Use Area. Domestic waste is discharged to a septic tank leach field system which is regulated by Kern County.

Table 11 summarizes the nitrate management-related requirements in this facility's WDR.

Table 11. Summary of Sun Pacific Bakersfield Packinghouse WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of wastes to surface waters or surface water drainage courses is prohibited. • Bypass or overflow of untreated wastes is prohibited. • Discharge of waste classified as 'hazardous' is prohibited. • Discharge of wastewater in a manner or location other than that described herein is prohibited.
Effluent Limitations	<ul style="list-style-type: none"> • The monthly average discharge flow rates shall not exceed 36,000 gpd of process wastewater during the season (EFF-001) and 130,000 gpd of cooling/coil defrost wastewater year-round (EFF-002).
Discharge Specifications	<ul style="list-style-type: none"> • No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of Groundwater Limitations of this Order. • Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance. • Discharge shall remain within the permitted waste treatment/containment structures and Use Areas at all times. • Objectionable odors shall not be perceivable beyond the limits of the storage or irrigation ponds or the Use Area at an intensity that creates or threatens to create nuisance conditions.
Use Area Specifications	<ul style="list-style-type: none"> • Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the percolation of wastewater and irrigation water below the root zone. • Application of waste constituents shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management. The annual nutritive loading to the Use Area, including the nutritive value of organic and chemical

Table 11. Summary of Sun Pacific Bakersfield Packinghouse WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
	fertilizers and of the wastewater, shall not exceed the annual crop demand.
Groundwater Limitations	<ul style="list-style-type: none"> Release of waste constituents from any treatment component or use as irrigation water shall not cause or contribute to groundwater containing nitrate as N in excess of 10 mg/L or constituents identified in Title 22 in excess of the MCLs quantified therein; or in excess of natural background quality, whichever is greater.
Monitoring & Reporting	<ul style="list-style-type: none"> Discharge Monitoring – quarterly grab sample for nitrate as N, TKN, and ammonia and a quarterly computation of total nitrogen. Use Area Monitoring – annual nitrogen loading calculation from each of the following wastewater, fertilizers, and supplemental irrigation water.

Sunview Cold Storage Facility

Facility Description (CV-SALTS ID: 2762)

Pending Waste Discharge Requirements (WDR) permit from the Central Valley Regional Water Quality Control Board. Facility description and Nitrate Management Requirements will be updated when a permit is assigned.

Wasco Wastewater Treatment Facility

Facility Description (CV-SALTS ID: 2735)

The City of Wasco (Discharger) is authorized to discharge wastewater under WDR Order No. 91-230. The Discharger owns and operates a Wastewater Treatment Facility (WWTF) located at 5410 7th Street, about 1.5 miles west of the City of Wasco, in Sections 9, 16, and 17, Township 27S, Range 24E, Mount Diablo Base Meridian (MDB&M). The underlying groundwater beneficial uses are MUN, AGR, IND, and PRO.

The WWTF provides sewerage service for industry and about 19,000 residents and currently has a design treatment capacity of 3.0 mgd and a disposal capacity of about 2.9 mgd. In 1991, the WWTF consisted of two comminutors, a grit chamber, two primary clarifiers, two trickling filters, two secondary clarifier ponds, a 30-acre effluent storage reservoir, 160 acres of shallow disposal ponds used for contingency storage, and about 450 acres of farmland on which effluent is recycled.

Nitrate Management Requirements

Table 12 summarizes the nitrate management-related requirements in this facility's WDR.

Table 12. Summary of Wasco Wastewater Treatment Facility WDR Nitrate Management-Related Requirements	
Category	Summary of Requirements
Discharge Prohibitions	<ul style="list-style-type: none"> • Discharge of wastes to surface water or surface water drainage courses is prohibited. • Discharge of waste classified as hazardous is prohibited. • Discharge of waste classifiable as designated in a manner that causes violation of groundwater limitations, is prohibited. • Bypass or overflow of untreated or partially-treated waste is prohibited. • Recycling of effluent to areas without Regional Board-adopted water recycling requirements or waiver of said requirements is prohibited.
Discharge Specifications	<ul style="list-style-type: none"> • Until Provision G.9 is satisfied, the monthly average daily dry weather discharge flow shall not exceed 1.95 mgd. • After Provision G.9 is satisfied, the monthly average daily dry weather discharge flow shall not exceed 3.0 mgd. • Objectionable odors originating at the WWTF shall not be perceivable beyond the limits of the WWTF and the effluent storage and disposal ponds at an intensity that creates or threatens to create nuisance conditions. • No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the groundwater limitations.
Recycling Specifications	<ul style="list-style-type: none"> • Use of recycled water as permitted by this Order shall comply with all the terms and conditions of the most current Title 22 provisions. • Use of recycled water shall be limited to flood irrigation of fodder and fiber crops. • Application of wastewater, biosolids, and commercial fertilizer to use areas shall be at reasonable agronomic rates considering the crop, soil, climate, and irrigation management system in accordance with the use area management plan required under Provision G.10 of this Order, subject to Executive Officer approval. • The annual nutrient loading of use areas, including the nutritive value of organic and chemical fertilizers and of the recycled water shall not exceed the crop demand.

**Table 12. Summary of Wasco Wastewater Treatment Facility WDR
Nitrate Management-Related Requirements**

Category	Summary of Requirements
Groundwater Limitations	<ul style="list-style-type: none"> • The WWTF shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the WWTF and discharge area(s) to contain waste constituents in concentrations in excess of any of the limits listed below, unless natural background is greater, in which case the natural background level shall be the limit: <ul style="list-style-type: none"> ○ Nitrate – 10 mg/L. ○ Constituents identified in Title 22 except chloride, electrical conductivity, and total dissolved solids that are present in the discharge, the concentrations in the discharge or the Title 22 MCLs, whichever is more stringent. • Release of waste constituents from any storage, treatment, or disposal component associated with the WWTF shall not cause groundwater to contain taste or odor producing substances in concentrations that cause a nuisance or adversely affect beneficial uses, including but not limited to, ammonium (ammonia and ammonium ions as NH_4) in excess of 0.5 mg/L.
Monitoring & Reporting	<ul style="list-style-type: none"> • Effluent Monitoring – a quarterly 24-hour composite sample during the first month of the quarter for ammonia and ammonium ion (as NH_4), nitrate (as N), TKN, and total nitrogen coincidental with electrical conductivity sampling. • Groundwater Monitoring – a quarterly grab sample during the first month of the quarter for ammonia and ammonium ions (as NH_4), nitrate (as $\text{NO}_3\text{-N}$), and TKN and a quarterly calculation of total nitrogen (as N). Ammonium (ammonia and ammonium ions (as NH_4), nitrate as N, TKN, and total nitrogen shall be evaluated using the proposed Data Analysis Method.

ATTACHMENT E DOCUMENTATION OF OUTREACH CONDUCTED DURING DEVELOPMENT OF PRELIMINARY MANAGEMENT ZONE PROPOSAL

Attachment E-1: Outreach Meeting Notices

Attachment E-2: Outreach Meeting Presentations

Attachment E-3: Responses to Public Comments on Public Draft PMZP and EAP & Public Draft
FMZP and EAP

ATTACHMENT E-1: OUTREACH MEETING NOTICES

Besides the outreach meeting notice in this attachment, additional notices such as flyers and emails distributed during development of the PMZP and FMZP are available in Appendix E of the EAP. Dischargers who signed up on KWC's website to stay updated on the latest news and events happening for stakeholders and the community received copies of these notices.

ATTACHMENT E-2: OUTREACH MEETING PRESENTATIONS

Besides the outreach meeting presentation provided in this attachment, additional presentations held during development of the PMZP and FMZP are available in Appendix E of the EAP. Dischargers who signed up on KWC's website to stay updated on the latest news and events happening for stakeholders and the community received notices to access all KWC presentations on KWC's website (<https://kwcmz.org/>) and YouTube channel (<https://www.youtube.com/@kernwatercollaborative/videos>).

ATTACHMENT E-3: RESPONSES TO PUBLIC COMMENTS ON PUBLIC DRAFT PMZP AND EAP AND FMZP AND EAP

This attachment will be updated once the public comment period closes.

ATTACHMENT E-1: OUTREACH MEETING NOTICES

Besides the outreach meeting notice in this attachment, additional notices such as flyers and emails distributed during development of the PMZP are available in Appendix E of the EAP. Dischargers who signed up on KWC's website to stay updated on the latest news and events happening for stakeholders and the community received copies of these notices.



May 20, 2024

**Kern Water Collaborative Webinar
Nitrate Control Program - Pathway B Participation**

Dear Permitted Discharger,

The Nitrate Control Program (NCP) Notice to Comply (NTC) that you received in late December 2023, requires that you choose one of two nitrate compliance options or “pathways”, established by new regulations. Regardless of which compliance option you choose, permit requirements will change.

Background

In May of 2018, the Central Valley Regional Water Quality Control Board (Board) approved new Salt and Nitrate Control Programs. The Nitrate Control Program was developed to address widespread nitrate pollution in the Central Valley. Nitrate is a risk when it is above 10 parts per million (ppm) of nitrate nitrogen, which is the Primary Maximum Contaminant Level (MCL), also known as the nitrate drinking water standard.

The Board identified areas, referred to as Priority 1 and Priority 2 basins, where nitrates in groundwater are more prevalent and therefore pose a higher risk to persons who rely on groundwater as a source of drinking water. Priority 1 and Priority 2 basins have timelines under which permittees are required to implement Nitrate Control Program requirements.

The Nitrate Control Program requires that you choose between two compliance pathways:

Pathway A: New individual Permitting option. The Board will set more stringent nitrate requirements in your permit to ensure that nitrate impacts will not cause a problem for drinking water users. Please refer to your NTC for detailed guidelines on what is needed to determine if you can qualify for Pathway A.

Pathway B: Join a Local Management Zone (MZ), the Kern Water Collaborative. A Management Zone is a collaboration among interested parties that work together to reduce nitrate loading and provide replacement drinking water to communities and individuals whose wells are impacted by nitrates. Pathway B provides a collaborative, locally managed, cost-effective and flexible approach to meet program requirements and community needs.

Kern Water Collaborative The Kern Water Collaborative is a 501 c3 nonprofit public benefit corporation formed, June 2022, by a subset of interested stakeholders in Kern County to develop the Management Zone for Kern County (Poso), Kern County (Westside-South), Kern County (Kern River) Groundwater Subbasins and a small portion of the Tulare Lake Groundwater Subbasin that is located within a portion of the Dudley Ridge Water Storage District Boundary. The KWC Board is made up of eleven individuals from Irrigated Ag, Dairy and Bovine, Oil & Gas, Waste Water Treatment Facilities (WWTF)/Publicly Owned Treatment Works (POTW) and Food Processors.

Webinar

To make an informed decision and meet critical deadlines that are rapidly approaching, it is important that you take action now. The Kern Water Collaborative will host a webinar on the nitrate control program requirements and how to participate in the Kern Water Collaborative, on June 11, 2024, from 2:00 PM to 4:30 PM. **Please visit our website at [KWCMZ.org](https://www.kwcmz.org) to register for the webinar and learn more about the Kern Water Collaborative.**

Participation

Already decided on Pathway B? Contact KWC at (661) 888-4108 or Nicole@kwcmz.org to obtain your Voluntary Participation/Contribution Agreement and 2024 Contribution Statement.

Sincerely,

Nicole Bell
Executive Director
Kern Water Collaborative



From:

Sent:

To:

Subject:

Kern Water Collaborative <kernwatercollaborative@214884626.mailchimpapp.com>

Tuesday, December 3, 2024 11:00 AM

[EXT] Your Voice Matters!



Your engagement is incredibly important to us, and we want to hear from you!

Your voice matters! **Public comments on the Preliminary Management Zone Proposal (PMZP) with the Early Action Plan (EAP) are open until December 5th, 2024.** This is a unique opportunity to ensure your voice is heard and to help shape the future of this initiative.

Download the PMZP with the EAP - English

Descargar el resumen ejecutivo de PMZP/EAP - Español

How to Submit Comments:
Please review the draft proposal and submit your comments by December 5, 2024. All feedback should be sent to Nicole Bell, Executive Director of Kern Water Collaborative, at nicole@kwcmz.org.

Stay Connected and Informed!

Remember to follow us on social media for updates on future events and more. You'll be the first to know about initiatives and opportunities to get involved with the Kern Water Collaborative. We look forward to seeing you at our upcoming events!



Website: kwcmz.org




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ATTACHMENT E-2: OUTREACH MEETING PRESENTATIONS

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**CENTRAL VALLEY
SALINITY
COALITION**



CV SALTS
Central Valley Salinity Alternatives for Long-term Sustainability

**Nitrate Control Program
Priority 2
Groundwater Basins in Kern County**


2024 Prepared by the Central Valley Salinity Coalition

1

Webinar Purpose and Goals

2

- Overview of the Nitrate Control Program for the Central Valley
- Orientation for nitrate permittees in Priority 2 Kern Subbasins
 - Describe requirements and timelines
 - Answer questions



11/19/2024

2

Workshop Agenda

3

Agenda

- Program Overview
- Nitrate Control
Program Requirements
- Discussion
 - Management Zone
Formation & Compliance

Presenters & Panelists

- David Halopoff
- Nicole Bell
- Tess Dunham



11/19/2024

3



The Challenge

Salts and Nitrate threaten the long-term health of the people and economy in the Central Valley



4

There is a Nitrate Problem in the Central Valley

5

Nitrate Contamination in Groundwater

- ❖ Many small communities rely on groundwater for drinking water.
- ❖ Some communities and private well owners can't safely use groundwater for drinking water as nitrate levels present a potential for human health impacts.



5

New Regulations for Nitrate Address Challenges

6

- ❖ Central Valley Water Board regulates Nitrate and Salt discharges
- ❖ Compliance with previous regulations was difficult and, in some areas, even impossible
- ❖ Past policies didn't address immediate need for safe drinking water
- ❖ New, updated, flexible regulations are now in place



11/19/2024

6

Nitrate Control Program Timeline

7



11/19/2024

7

What is CV-SALTS?

8

Central Valley Salinity Alternatives for Long-Term Sustainability

Collective effort to address water quality



Central Valley Salinity Coalition formed to fund studies



11/19/2024

8

CV-SALTS Goals

9

1. Provide Safe Drinking Water Supplies
 - Short-term and long-term solutions
2. Reduce Nitrate Impacts to Water Supplies
 - Short-term and long-term solutions
3. Restore Groundwater Quality
 - Where reasonable and feasible



11/19/2024

9



Nitrate Control Program

New approaches to provide safe drinking water and manage nitrate



10

Nitrate in the Groundwater

11

- ❖ 150 years of prosperous human activity in the Central Valley
 - **Agriculture** – irrigation, fertilizer use, manure
 - **Industry** – manufacturing and processing facility wastewater, oil and gas extraction
 - **Municipalities** – wastewater treatment effluent, biosolids, fertilizer use
 - **Rural Residents** – septic tanks, fertilizer use, and landfills



11

Nitrate Control Implementation

12

- ❖ **Priority 1 Area (Red)**
 - Notice to Comply
May 29, 2020
- ❖ **Priority 2 Area (Orange)**
 - Notice to Comply
December 29, 2023
- ❖ **Remaining Areas (Green)**
 - Implementation to be phased in if needed at a later date



12

Priority 1 and 2 Subbasins

13

Priority 1	Priority 2
Modesto	Yolo
Turlock	Eastern San Joaquin
Chowchilla	Delta-Mendota
Kings	Merced
Kaweah	Madera
Tule	Tulare Lake
	Kern County (West-side South)
	Kern County (Poso)



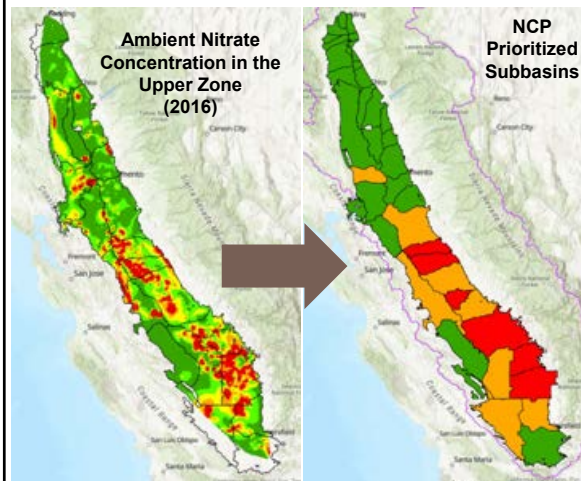
[Find Your Management Zone Here](#)

11/19/2024

13

Nitrate Prioritization of Groundwater Subbasins

14



Red Subbasins:

high nitrate in groundwater

Orange Subbasins:

fewer areas of high nitrate in groundwater



11/19/2024

14

Nitrate Control Program

15

- ❖ Flexible & locally focused goals
 - Provide safe drinking water
 - Reduce nitrate impacts to groundwater
 - Restore groundwater quality
- ❖ Two options for compliance – ensuring safe drinking water is 1st priority
 - Pathway A – Individual permit action
 - Pathway B – Form a Management Zone with other dischargers

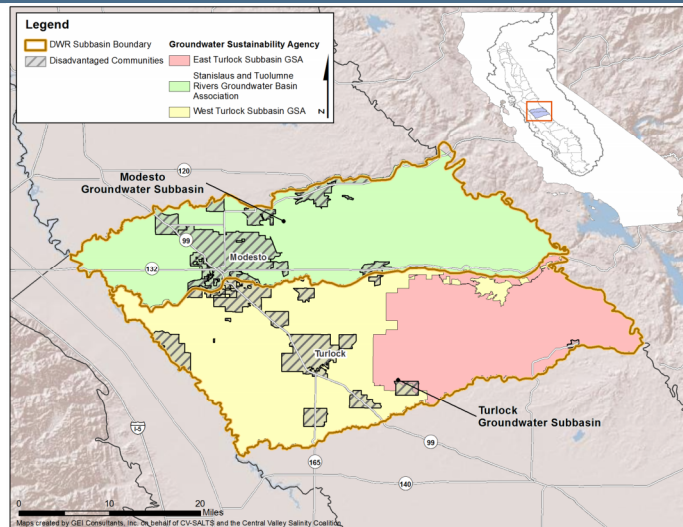


15

Providing Safe Drinking Water

16

Need is often in rural areas and small, disadvantaged communities



11/19/2024

16

Pathway A: Individual Nitrate Permitting Requirements

17

- ❖ Compliance options may be difficult and expensive
 - If there are drinking water wells near your facility that are high in nitrate
 - If your discharge is high in nitrate
 - If local shallow groundwater exceeds 75% of the nitrate drinking water standard
- ❖ If any of these conditions are true, some or all of the following may be required:
 - Significant upgrades to facilities
 - Extensive monitoring of discharge and local groundwater
 - Provision of replacement drinking water to local residents
 - Rigorous technical hydrogeologic justification of what groundwater will look like in your area in 20 years



11/19/2024

17

Pathway A: Individual Nitrate Permitting Requirements

18

- ❖ By February 26, 2025, submit a Notice of Intent with:
 - Initial nitrate assessment of ability to meet the nitrate water quality objective over 20-year horizon
 - Early Action Plan to provide safe drinking water
 - If your discharge is causing any well used for drinking water in your area to exceed the nitrate water quality objective
 - Alternative Compliance Project
 - If required for your nitrate discharge category
- ❖ OR, switch to Pathway B and join Management Zone in your area



11/19/2024

18

Pathway B: Management Zone Approach For Nitrates

19

- ❖ Exception from nitrate standard
- ❖ Must assure safe drinking water first
- ❖ Shared responsibility for implementation



11/19/2024

19

Management Zone Overview

20

- ❖ Locally led, Regional Water Board approved
 - Cooperative effort among dischargers, local government, and communities
 - Regional Water Board review at each deliverable
 - Enforced through discharge permit provisions
- ❖ Timeline/Deliverables following Notice to Comply
 - Preliminary Management Zone Proposal and Early Action Plan (December 28, 2024)
 - Final Management Zone Proposal (6 months)
 - Management Zone Implementation Plan (6 months)



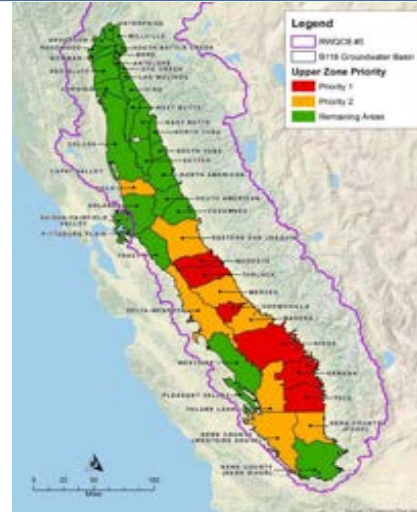
11/19/2024

20

Priority 2 Management Zone Formation Under Way

21

- Meetings underway
- Identify/engage all dischargers
- Review materials developed by Priority 1 MZs (available at cvsalinity.org)
- Reach out to local government and disadvantaged community support organizations



11/19/2024

21

Choosing a Nitrate Pathway

22

Permittees must choose a pathway and submit a Notice of Intent no later than February 26, 2025.

Pathway A

- Effort/cost required to
 - Characterize groundwater conditions and drinking water sources
 - Upgrade facilities
 - Monitor groundwater and drinking water
 - Provide replacement drinking water supplies

Pathway B

- Identifying MZ participants
- MZ support needs and costs



11/19/2024

22

Why Join a Management Zone?

23

- ❖ **Less cost.** Meeting regulatory objectives through shared resources and economies of scale reduces costs for individual permittees.
- ❖ **More time.** Participating in a Management Zone earns permit holders more time to meet Nitrate Control Program objectives.
- ❖ **Fewer headaches.** Being part of a Management Zone lightens the burden for individual permit holders by transferring much of the required technical work to experts working for the Management Zone.
- ❖ **More flexibility.** Through Management Zones, permittees can tailor solutions for safe drinking water and nitrate management to local conditions.



11/19/2024

23



Management Zones

Collaborative Approach for Nitrate Compliance



11/19/2024

24

What is a Management Zone?

25

- ❖ **Defined area** – for nitrate compliance
- ❖ **Collective implementation** – for safe drinking water
- ❖ **Discharger cooperative** – to control nitrates

- Near-term: Provide replacement drinking water
- Mid-term: Best practicable treatment or control to achieve balance
- Long-term: restore groundwater, where feasible



25

Management Zone Purpose

26

- ❖ Regulatory alternative for dischargers that choose this option
- ❖ Alternative compliance for nitrate water quality objective
- ❖ Contractual agreement among dischargers
 - May be a local agency, but not necessary
- ❖ Regional Board ensures implementation through waste discharge requirements (WDRs)



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Management Zone Formation

27

Locally Led – Regional Water Board Approved

- ❖ Permitted dischargers work cooperatively to prepare proposal for a Management Zone
- ❖ Submit preliminary and final proposals to Regional Water Board for approval



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Kern Management Zone Contact

28

Kern Water Collaborative
Kern County Basins

Nicole Bell
nicole@kwcmz.org



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Kern Water Collaborative Formation

29

- ❖ Formed June 2022
- ❖ Groundwater Subbasin Coverage: Kern County, (Poso), (Westside-South), (Kern River), and a small portion of Tulare Lake within Dudley Ridge WSD
- ❖ 11 Board Members from Irrigated Ag, Dairy & Bovine, Oil & Gas, WWTF/POTW, and Food Processors



11/19/2024

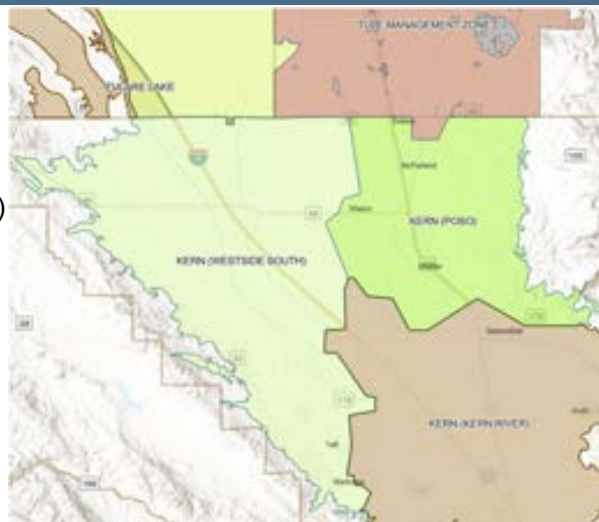
29

Kern

Nicole Bell
nicole@kwcmz.org

30

Kern
(Westside South)
(P2)



Kern
(Poso)
(P2)



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30

Kern Water Collaborative Participation

31

- ✿ Contact Nicole Bell at nicole@kwcmz.org
- ✿ Complete the *Voluntary Contributors Participation Agreement* and *Contact Information Sheet*
- ✿ Obtain *2024 Contribution Statement* and issue payment



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Who Should Join a Management Zone?

32

- ✿ Farmers in Irrigated Lands Coalitions and dairies/feedlots in Dairy Representative Monitoring Program are participating through their coalitions
- ✿ Permitted dischargers that cannot comply with current nitrate limitations to protect groundwater
- ✿ Permitted dischargers that value collaborating for prioritizing nitrate control strategies and costs
- ✿ Local city and county governments representing communities with drinking water needs due to nitrate
- ✿ Local water agencies and other agencies managing groundwater such as IRWM regions and GSAs



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Benefits & Results of Joining Management Zone

33



Ensures safe drinking water supplies to your community, where needed



Shares costs of nitrate management



Locally manages nitrate problems



Applies local knowledge to implement nitrate reduction actions



Supports a vision that manages nitrate for a viable local economy and community



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Management Zone Support Needs

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Technical Services

- Hydrogeology and groundwater quality characterization
- Drinking water program development and management
- Nitrate source identification and management
- Compliance mapping, data management, and reporting

[Example Management Zone Documents and Reports](#)



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Management Zone Support Needs

35

- Management, Communications, and Administration
 - Management Zone planning, proposal development, and documentation
 - Outreach, facilitation, and collaboration with permit holders
 - Governance agreements and contracts
 - Administration, fund management, and program management
 - Outreach and engagement with stakeholders and communities
 - Cost estimating, cost allocation, and funding

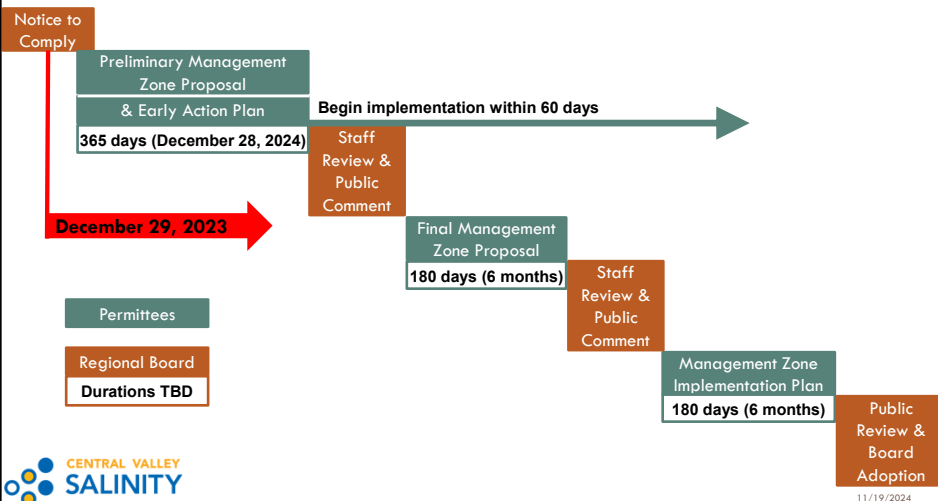


11/19/2024

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Management Zone Regulatory Timeline Priority 2 Areas

36



36

Early Action Plan (EAP) Requirements



Identify affected residents & conduct outreach



Process to coordinate with other interested parties that are not dischargers to address drinking water issues



Specific actions and timeline to provide immediate drinking water



Funding mechanism for implementing the Early Action Plan



39

39

Example EAP Water Supply Actions

Public Access Water Facilities or Alternative Water Supply

Testing



Bottled Water Delivery



Fill Stations



40

EAP Statistics as of Early 2024 for Priority 1 Management Zones

41

	All Management Zones
Applications Submitted	4,610
Eligible Wells Tested	2,138
Tested or Known above 10 mg/l	54%
Gallons of water distributed via bottled	1,334,457



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Community Engagement

42

- Meetings\Events
- Resource Fairs
- Back to School Demos
- Science Fair
- Food Banks
- Health Fairs\Events
- Sporting Events
- Swap Meets



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Mailings\Promotions

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- Direct Mail
- Flyers
- School Flyers (Digital)
- Emails
- Press
- Social Media
- Targeted Ads
- Promotion Items



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Final Management Zone Proposal

44

- Address Central Valley Water Board comments on PMZP and update to include:
 - Timeline for development of the Management Zone Implementation Plan
 - Updated list of Management Zone participants
 - Governance structure
 - Additional evaluation of groundwater conditions (as needed)
 - Proposed approach for regulatory compliance, e.g., request for an exception
 - Information on how the Management Zone will coordinate with similar water resource management efforts, e.g., SGMA implementation
 - Documentation of actions taken to implement the Early Action Plan



11/19/2024

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Management Zone Implementation Plan

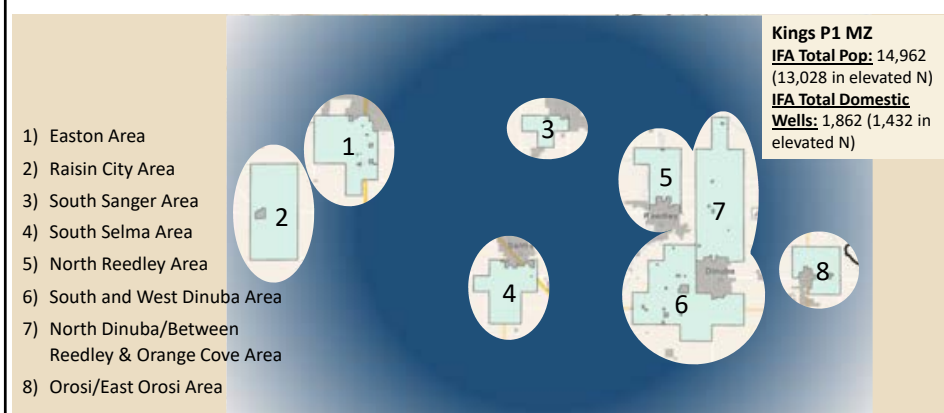


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5



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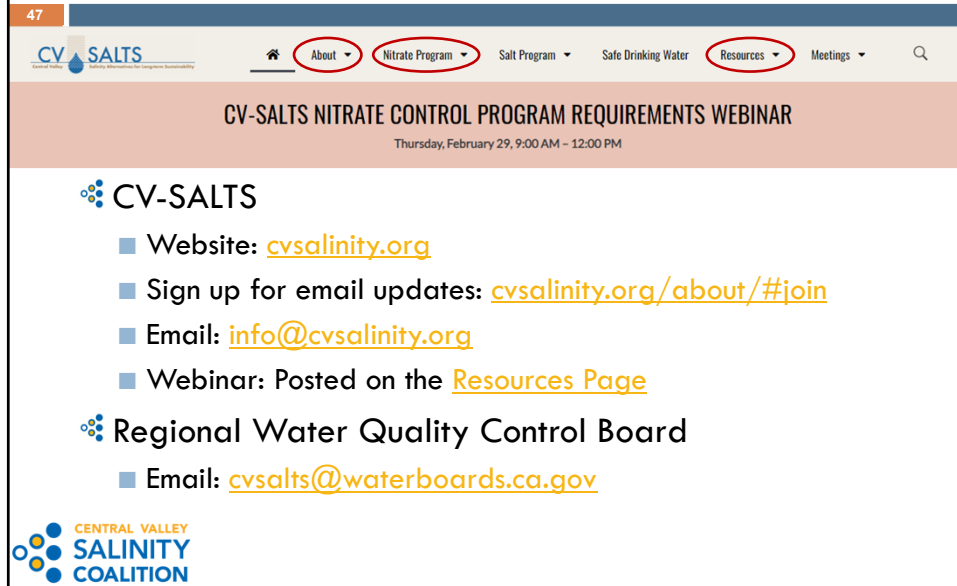
Example Approach for Long-term Solutions Kings Priority 1 Management Zone



46

For More Information

47



The screenshot shows the CV-SALTS website. The header includes a navigation bar with links: Home, About, Nitrate Program, Salt Program, Safe Drinking Water, Resources, and Meetings. The main content area features the title "CV-SALTS NITRATE CONTROL PROGRAM REQUIREMENTS WEBINAR" and the date "Thursday, February 29, 9:00 AM - 12:00 PM". Below this, there are two sections: "CV-SALTS" and "Regional Water Quality Control Board".

CV-SALTS

- Website: cvsalinity.org
- Sign up for email updates: cvsalinity.org/about/#join
- Email: info@cvsalinity.org
- Webinar: Posted on the [Resources Page](#)

Regional Water Quality Control Board

- Email: cvsalts@waterboards.ca.gov

CENTRAL VALLEY SALINITY COALITION

47



The slide features the Central Valley Salinity Coalition logo on the left, which consists of a cluster of blue and yellow circles. To the right of the logo, the text "CENTRAL VALLEY SALINITY COALITION" is displayed. Below the logo and text, there is a dark blue rectangular box with the text "Thank You for Participating" in white.

CENTRAL VALLEY SALINITY COALITION

Thank You for Participating

48

ATTACHMENT E-3: RESPONSES TO PUBLIC COMMENTS ON PUBLIC DRAFT PMZP AND EAP

This attachment will be updated once the public comment period closes.

ATTACHMENT F EARLY ACTION PLAN

The Early Action Plan is a stand-alone document that accompanies this main FMZP document. Please refer to the Early Action Plan document for this Attachment.



COMMUNICATIONS & MARKETING REPORT

JANUARY - MARCH 2025

DATE

APRIL 7, 2025



PROVIDENCE STRATEGIC CONSULTING, INC

EXECUTIVE SUMMARY

In the first quarter of 2025, the Kern Water Collaborative (KWC) actively engaged with the community through multiple outreach efforts. We successfully hosted four informational booths and one flyer distribution event, sharing event highlights on KWC's social media accounts. Additionally, KWC participated in three outreach meetings in partnership with Priority 1 Management Zone teams.

To enhance public awareness, we distributed three e-newsletters and gathered valuable polling data. To ensure accessibility, we provided essential information in both English and Spanish on key topics, including KWC's regulatory documents (PZMP and EAP), well-testing applications, and the Household Qualification Survey.

Our outreach efforts in the first quarter primarily took place in person, reaching communities in Buttonwillow, Lost Hills, and Wasco.

STRATEGY

During this period, the Kern Water Collaborative (KWC) prioritized strategic initiatives to strengthen community engagement. Our primary focus was on distributing resources and building trust while providing essential support in both English and Spanish. This bilingual approach has made our resources more accessible, promoting inclusivity and a better understanding of our programs.

Looking ahead to the next quarter, KWC remains committed to expanding outreach efforts, increasing community awareness, and continuing our vital work to ensure all residents have access to safe, clean drinking water.


EMAIL CAMPAIGNS

JANUARY EMAIL CAMPAIGN

Beginning on January 23, 2025, Kern Water Collaborative (KWC) launched an email campaign to promote the website's availability of the PMZP and EAP Action Plan Cover Letter and Executive Summaries in English and Spanish.

The email reached 137 recipients with a **44% open rate** and a **98.6% delivery rate***. It received **70 total opens** and **59 clicks**, showing strong interest, particularly in the Early Action Plan, PMZP Executive Summary, KWC Facebook page, and website.

The engagement metrics show increasing interest in KWC's initiatives, highlighting the impact of our outreach in education the community on critical water concerns.



We are proud to announce the successful development and submission of the Kern Water Collaborative Preliminary Management Zone Proposal (PMZP) and Early Action Plan (EAP) before the December 30, 2024, deadline!

These essential documents highlight our ongoing efforts to enhance groundwater quality and ensure safe drinking water for our community.

You can now access and review the following documents on our website:

- Preliminary Management Zone Proposal (PMZP) and Early Action Plan (EAP) – Cover Letter (English)
- Preliminary Management Zone Proposal (PMZP) and Early Action Plan (EAP) – Cover Letter (Spanish)
- Preliminary Management Zone Proposal (PMZP)
 - PMZP Executive Summary (English)
 - PMZP Executive Summary (Spanish)
- Early Action Plan (EAP) – Attachment F
 - EAP Executive Summary (English)
 - EAP Executive Summary (Spanish)

Visit kwcmz.org to explore these documents and learn more about the Kern Water Collaborative's mission.



Stay Connected and Informed!



Website: kwcmz.org

*The MailChimp average open rate is 21.3%, average deliverable rate is 95.5%.

EMAIL CAMPAIGNS

FEBRUARY EMAIL CAMPAIGN

On February 26, 2025, Kern Water Collaborative (KWC) launched two email campaigns, one in English and one in Spanish, to promote the availability of the Well Testing Application and Household Qualification Survey.

The English email reached 139 recipients and **achieved an open rate of 98.6%, with 85 total opens and 54 total clicks**. The most popular openings were to the Household Qualification Survey (**44.5%**) and the KWC website (**37.0%**).



Is your well water safe to drink?

Many residents in the Central Valley rely on wells as their primary source of water. Some residents cannot safely use this water due to unsafe contamination levels. If your drinking water has unsafe nitrate levels, Kern Water Collaborative will provide you with safe drinking water solutions.



Household Qualification Survey



EMAIL CAMPAIGNS

FEBRUARY EMAIL CAMPAIGN (CONT.)

The Spanish email reached 139 recipients and **achieved an open rate of 99.3%, with 72 total opens and 46 total clicks**. The most popular openings were to the KWC website (36.9%) and the Household Qualification Survey (32.6%).



¿Es seguro beber el agua de su pozo?

Muchos residentes del Valle Central dependen de los pozos como su fuente principal de agua. Algunos residentes no pueden usar esta agua de manera segura debido a niveles de contaminación peligrosos. Si su agua potable tiene niveles de nitrato peligrosos, la Colaborativa de Agua de Kern le brindará soluciones de agua potable segura.

PRUEBAS DE POZO GRATIS

WellTest.KWCMZ.org

Estos vasos están llenos de agua de diferente pozos.
¿Puedes distinguir cuál está contaminado?



La **única** forma de saber si su pozo tiene agua potable es realizar una prueba.



Kern Water Collaborative es una organización no gubernamental y sin fines de lucro creada con el propósito de realizar pruebas de nitrato en pozos residenciales para garantizar agua potable segura. Si tu pozo está contaminado, llámanos derecho a recibir agua gratis.

661-888-4106

✉ Nicole@KWCMZ.org



KERN WATER COLLABORATIVE
Providing Access to Safe and Clean Drinking Water

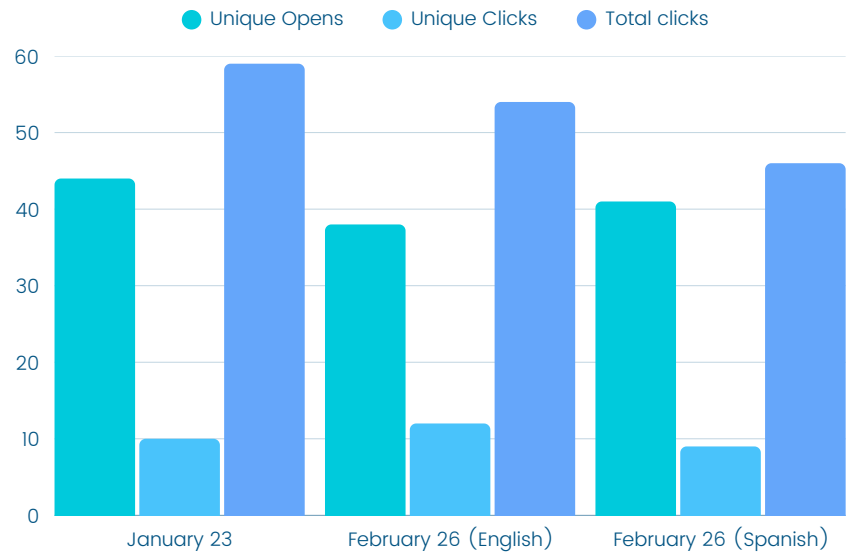
Encuesta de Calificación de Hogares



OUTREACH

OUTREACH ENGAGEMENT - EMAIL CAMPAIGNS

For this quarter's marketing campaigns, we collaborated with Break9 to obtain new email sign-ups. A total of three emails were sent to an average of 138 recipients, resulting in an average open rate of 48.2%. This is 26.9% higher than the average open rate across all industries (21.3%).



Monitor performance

Jan 1, 2025 - Mar 31, 2025 • Compared to last 90 days • Includes Apple MPP

 Total sends
420

 Open rate
48.2%

 Click rate
7.5%

 Unsubscribe rate
0%

Performance over time

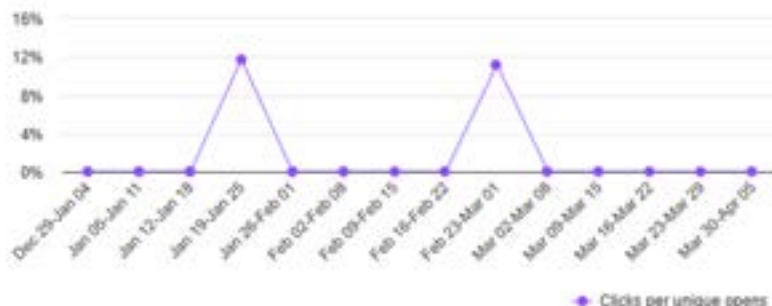
Includes Apple MPP

Clicks per unique opens

15.5%  Compared to last 90 days

Metric:  Clicks per unique opens 

Day Week Month



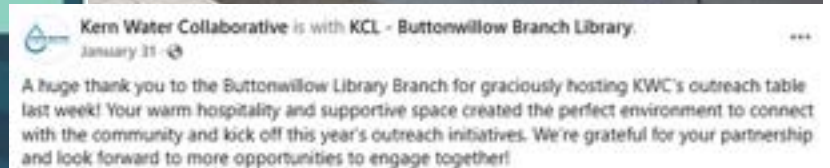
Total message count 3

Total messages sent 420

OUTREACH

JANUARY OUTREACH

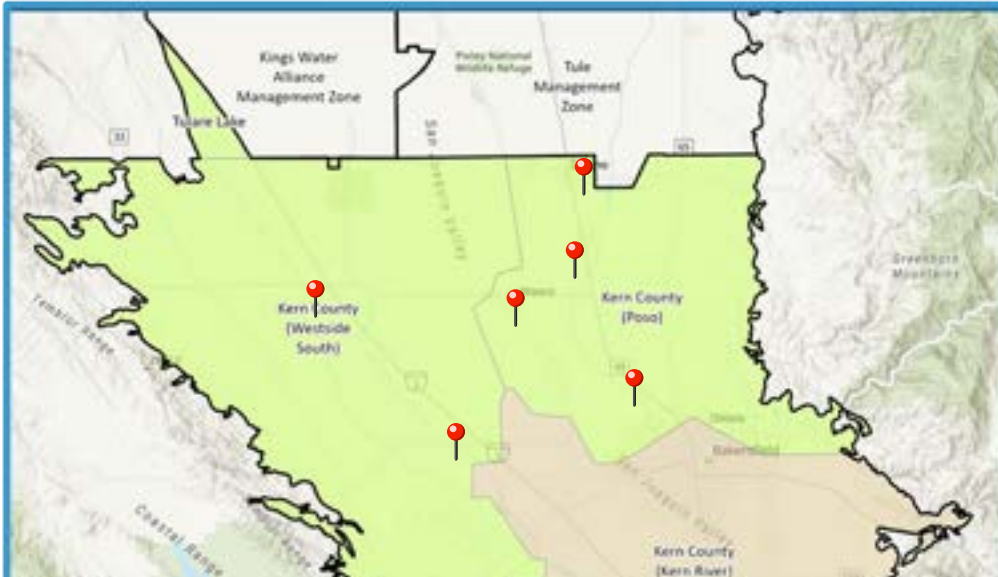
On January 23, 2025, Kern Water Collaborative (KWC) attended the Buttonwillow Library Branch Storytelling Event with seven attendee engagements, including a member of the Taft Library Branch Team. **27 resource flyers, 27 stickers, and seven labeled water bottles were distributed. One manual sign-up to the newsletter was collected.** Overall, the event was a solid step in building connections and laying the groundwork for future engagement opportunities.



OUTREACH

FEBRUARY OUTREACH

On February 6, 2025, Kern Water Collaborative (KWC) distributed flyers across **12 locations** in Kern County's Poso and Westside South subbasins. A total of **240 flyers and stickers were distributed** to community centers, educational institutions, churches, and resource centers in Delano, Wasco, McFarland, Lost Hills, Shafter, and Buttonwillow.



At least seven out of 12 distribution sites have food pantries/food distribution centers, and there were 19 total interactions.



OUTREACH

FEBRUARY OUTREACH CONT.

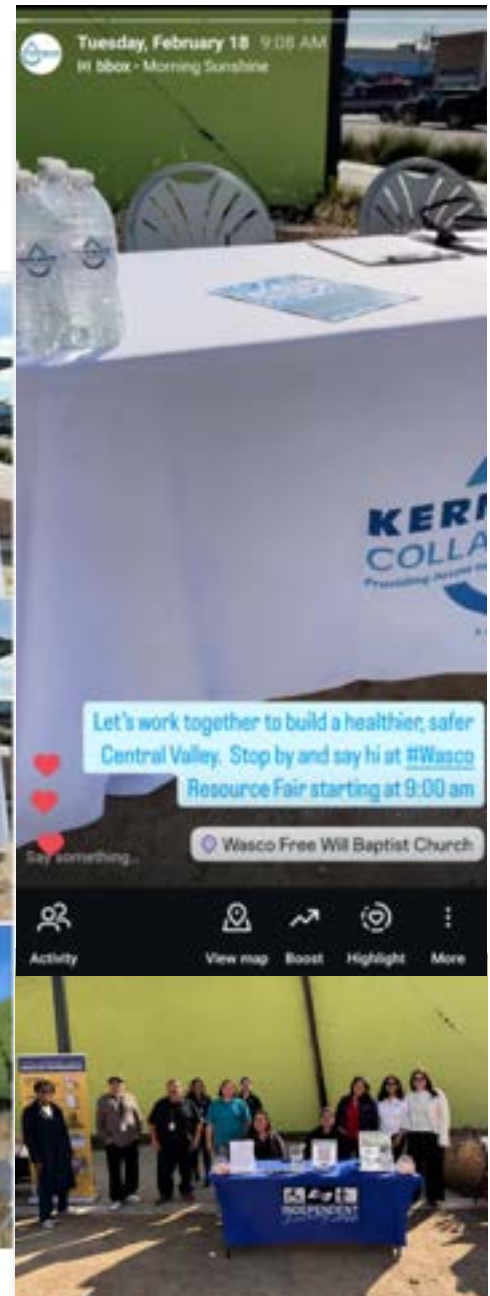
On February 18, 2025, Kern Water Collaborative (KWC) attended the Wasco Resource Fair hosted by the Wasco Community Baptist Church. Our presence resulted in **24 interactions, with 24 flyers, 24 stickers, and 20 labeled water bottle distributions.**

Kern Water Collaborative
February 27 at 7:56 PM · 🌐

We extend our heartfelt thanks to the [Wasco Free Will Baptist Church](#) for hosting the Wasco Community Resource Fair on 2.18.25! KWC was grateful for the opportunity to engage with the community, share resources, and discuss the importance of access to safe and clean drinking water. Events like these make a real difference, and we appreciate the chance to connect with the wonderful people of Wasco! 🍷🍷🍷



👍👍 You, Wasco Free Will Baptist Church, Kern Water Collaborative and 9 others



OUTREACH

MARCH OUTREACH

On March 1, 2025, Kern Water Collaborative (KWC) attended the Lost Hills Color Run hosted by the Lost Hills Union School District. Our presence resulted in **20 interactions, 20 flyers and 20 sticker distributions**, and one manual newsletter signup.



On March 15, 2025, KWC attended the Saturday Wasco Resource Fair hosted by the Wasco Free Will Baptist Church. Our presence resulted in **50 interactions, with 40 flyers and 15 sticker distributions, 40 swag item distributions, and 10 manual newsletter signups.**

45 • View insights

Boost post

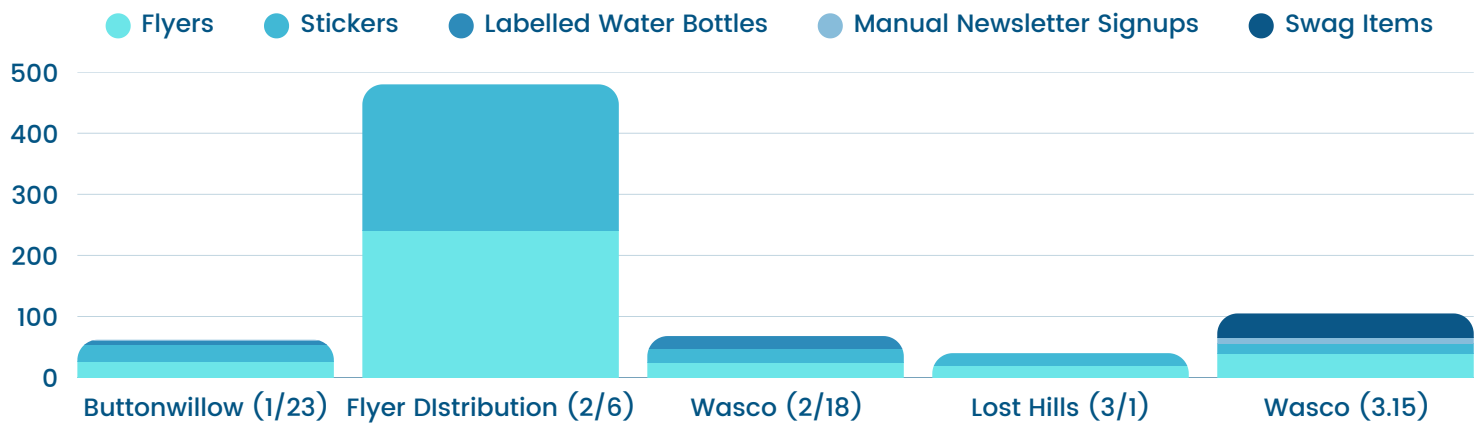


Liked by action_event_rentals and others

kwc.mz Kern Water Collaborative's (KWC) Outreach Team recently attended the Wasco Free Will Baptist Church's Resource Fair! We had the opportunity to connect, share vital domestic well resources, and provide access to safe, clean drinking water. Community members learned about our Household Qualification Survey and well testing application. They also won prizes like tote bags, water bottles, and pens along the way! We're proud to support Kern County's health and well-being!

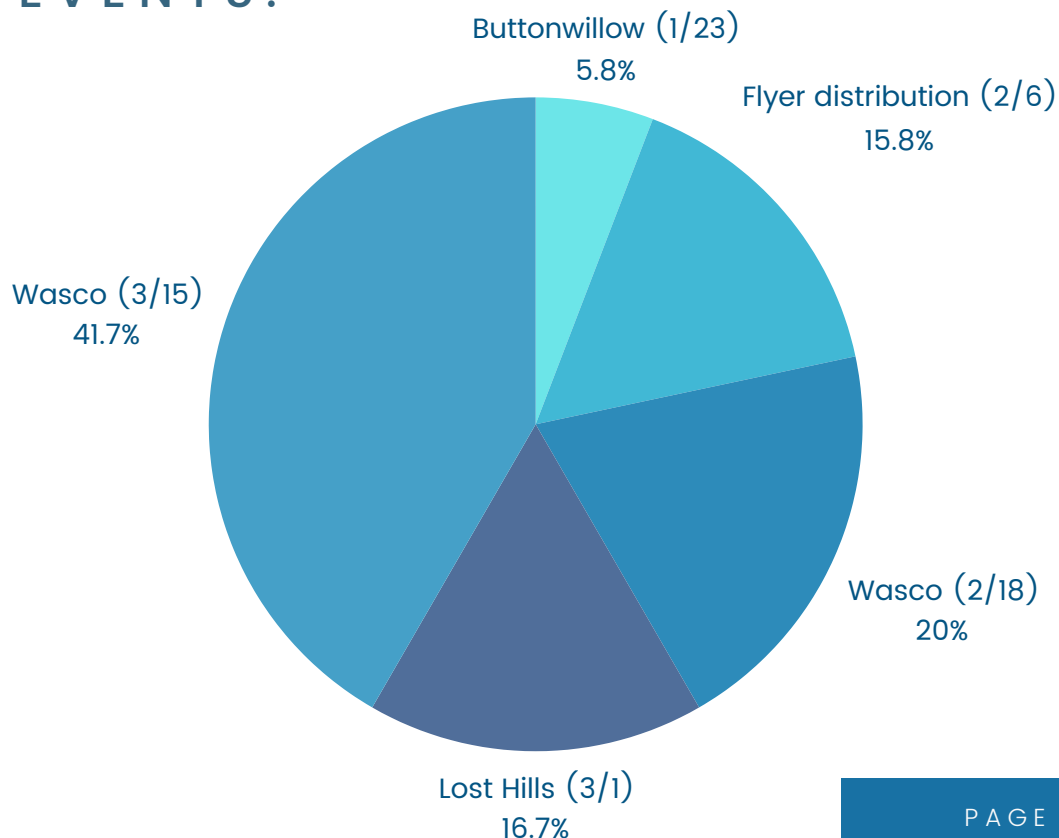
OUTREACH MATERIAL DISTRIBUTIONS

KWC'S OUTREACH TEAM DISTRIBUTED A TOTAL OF 351 FLYERS, 326 STICKERS, AND 40 SWAG ITEMS.



TOTAL OUTREACH ENGAGEMENT

KWC'S OUTREACH TEAM ENGAGED WITH A TOTAL OF 120 PEOPLE AT ALL FIVE EVENTS.

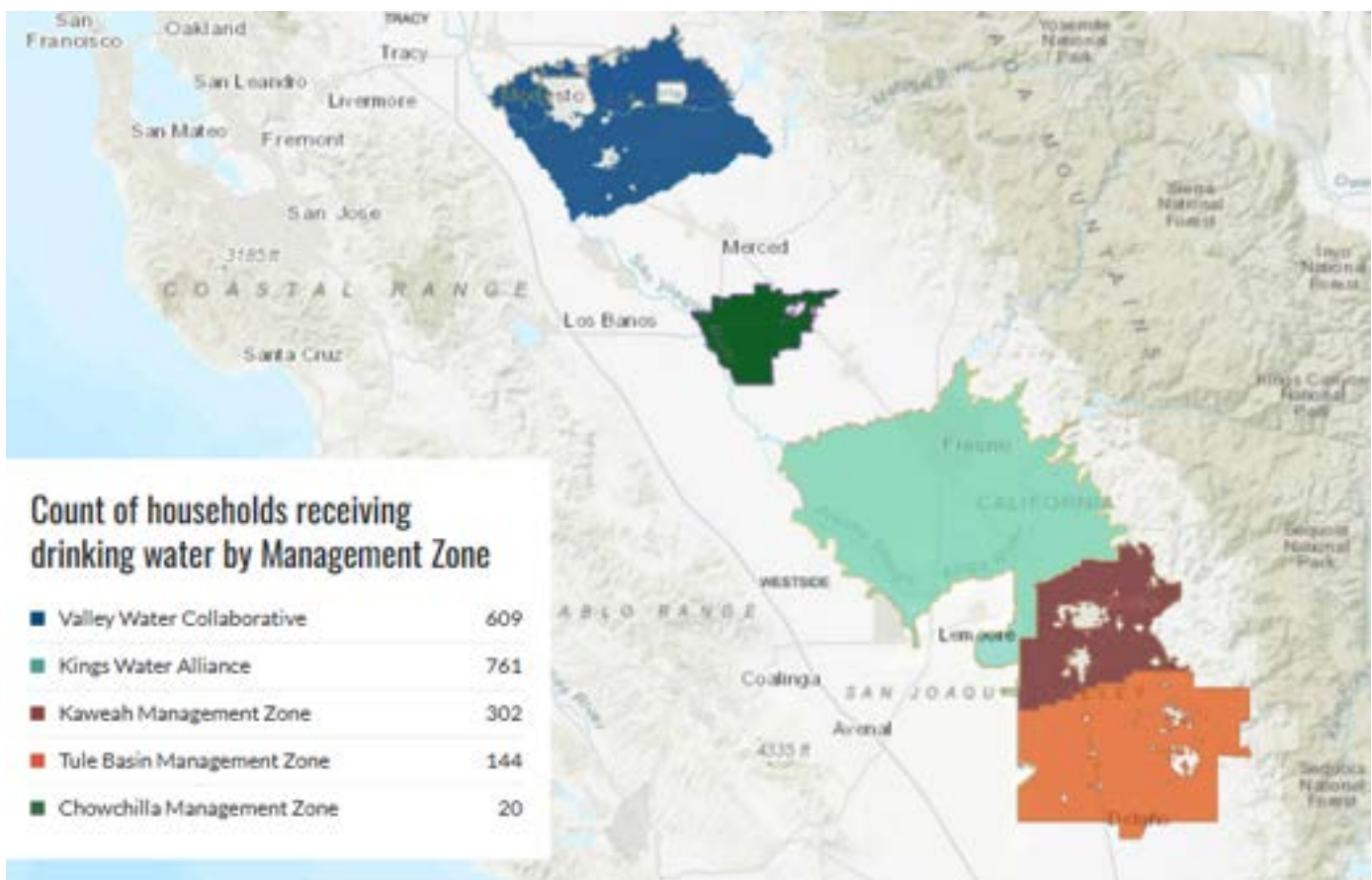


MANAGEMENT ZONE COLLABORATION

The Kern Water Collaborative (KWC) participated in three Management Zone meetings with Priority 1 Management Zones.

On January 22, 2025, KWC met with leaders from Kaweah Water Foundation, Kings Water Alliance, Tule Basin Water Foundation, and Valley Water Collaborative. KWC also collaborated with their outreach teams, sharing materials like distribution templates, stock photos, and presentations.

To streamline efforts, the basins created a shared folder for outreach coordination, focusing on engagement strategies and best practices



LOOKING AHEAD

In Q2 2025, the Kern Water Collaborative (KWC) will engage in at least two outreach events per month, focusing on key areas like Delano, Shafter, and Lost Hills. We will partner with Community Collaboratives to expand access to essential resources and continue hosting informational booths and distributing materials. Highlights from these events will be shared across KWC's social media platforms. Additionally, KWC will work closely with Priority 1 Management Zone outreach leaders to fine-tune our strategies and ensure maximum impact. Monthly newsletters will launch in April, and we will actively pursue earned media opportunities through press releases alongside the ongoing distribution of e-newsletters throughout the quarter.





OUTREACH AND ACTIVITIES REPORT

APRIL - JUNE 2025

DATE

JULY 15, 2025



PROVIDENCE STRATEGIC CONSULTING, INC

EXECUTIVE SUMMARY

In the second quarter of 2025, the Kern Water Collaborative (KWC) actively engaged with the community through multiple outreach efforts. We successfully attended **five community events, hosting an information booth** and **six public education gatherings**, three of which KWC presented our mission to provide nitrate testing and safe, clean drinking for families reliant on private domestic wells in Kern's Poso and Westside South subbasins. Community Outreach highlights were shared via KWC's social media accounts. Additionally, KWC participated in **three outreach meetings** in partnership with Priority 1 Management Zone teams.

To enhance public awareness, we distributed **nine e-newsletters** and gathered valuable audience insights through MailChimp. To ensure accessibility, we shared key information in both English and Spanish on KWC's website.

Our outreach efforts in the second quarter consisted of a combination of hybrid presentations at educational gatherings as well as in-person outreach, reaching communities in Delano, Wasco, Shafter, Elk Hills, and Lost Hills.

STRATEGY

During this period, the Kern Water Collaborative (KWC) prioritized strategic initiatives to strengthen community engagement. We distributed resources and built trust while providing essential support in both English and Spanish. This bilingual approach has made our materials more accessible, promoting inclusivity and deepening community understanding of our program.

Throughout the second quarter, KWC strengthened its outreach and awareness efforts to help ensure that families using domestic wells have reliable access to safe, clean drinking water.

EMAIL CAMPAIGNS

APRIL EMAIL CAMPAIGNS

In April, KWC launched five email campaigns. The first, sent on April 9, 2025, promoted the English and Spanish postcard deliveries.

It was sent to 367 recipients and achieved a **24.2% open rate**, a **95.6% delivery rate***, and **168 total clicks**—indicating strong interest in the website, postcard, Instagram, and YouTube links. A follow-up resend on April 19 with a **95.7% delivery rate**, bringing the total number of opens for this campaign to **146**.



Is your well water safe to drink?

Many residents in the Central Valley rely on wells as their primary source of water. Some residents cannot safely use this water due to unsafe contamination levels. If your drinking water has unsafe nitrate levels, Kern Water Collaborative will provide you with safe drinking water solutions.



Household Qualification Survey

¿Es seguro beber el agua de su pozo?

Muchos residentes del Valle Central dependen de los pozos como su fuente principal de agua. Algunos residentes no pueden usar esta agua de manera segura debido a niveles de contaminación peligrosos. Si su agua potable tiene niveles de nitrato peligrosos, la Colaborativa de Agua de Kern le brindará soluciones de agua potable segura.



Encuesta de Calificación de Hogares



*The MailChimp average open rate is 21.3%, average deliverable rate is 95.5%.

EMAIL CAMPAIGNS

APRIL EMAIL CAMPAIGNS

Beginning on April 16, 2025, Kern Water Collaborative (KWC) launched an email campaign to promote the KWC English and Spanish postcard promotion and the Well Testing Flyer.

The first email was sent to 383 recipients with a **29.8% open rate**, a **97.1% delivery rate***, and **353 total clicks**, showing strong interest, particularly in the website, flyer, and postcard pages. It was resent on April 20, 2025, with a **95.3% delivery rate**, resulting in **206 total opens** for this email campaign.

This level of engagement highlights growing community awareness of domestic well resources and affirms the value of KWC's outreach efforts in promoting water quality education through e-blasts.

KERN WATER COLLABORATIVE

Website: www.kwccmz.org
Email: info@kwccmz.org
Phone: (805) 888-4306

Is your well water safe to drink?

Many residents in the Central Valley rely on wells as their primary source of water. Some residents cannot safely use this water due to unsafe contamination levels. If your drinking water has unsafe nitrate levels, Kern Water Collaborative will provide you with safe drinking water solutions.

ABOUT KERN WATER COLLABORATIVE

The Kern Water Collaborative (KWC) is a nonprofit public benefit corporation dedicated to monitoring and improving the quality of life within Kern County's three groundwater basins/subbasins (Westside South, Pave, and Kern River) and a portion of Kings County's Tulare Lake groundwater basin/subbasin. KWC implements programs to provide access to safe drinking water for residents and engages in activities aimed at investigating, protecting, or enhancing the quality of groundwater supplies in the region. We also offer free domestic well testing and free bottled water to qualified applicants.

TO SEE IF YOU ARE ELIGIBLE FOR FREE DRINKING WATER, WE HAVE 3 EASY STEPS!

- 1. APPLY TODAY**
Application available 2 ways:
• Online form: WellTest.KWCCMz.org
• Paper form: nwcc@kwccmz.org
- 2. WE PERFORM WELL WATER TEST**
Our experienced staff performs a simple and quick well test to see if there is an unsafe level of nitrates in your drinking water.
- 3. YOU RECEIVE BOTTLED WATER**
We deliver FREE bottled water to you. Bottled water is provided in 5-gallon containers.

Follow us on social media: [Facebook](#) Kern Water Collaborative [Twitter](#) Kern Water Collaborative [Instagram](#) @kwccmz

[Haz clic aquí para ver el volante informativo](#)

*The MailChimp average open rate is 21.3%, average deliverable rate is 95.5%.

EMAIL CAMPAIGNS

APRIL EMAIL CAMPAIGNS

Beginning on April 28, 2025, Kern Water Collaborative (KWC) launched an email campaign to promote the Well Testing application.

The email was sent to 400 recipients with a **26.7% open rate**, a **96.5% delivery rate***, and **293 total clicks**, showing strong interest, particularly in the website, flyer, and Facebook pages.

These results demonstrate rising community interest and highlight the effectiveness of KWC's efforts to inform residents about critical drinking water issues.



*The MailChimp average open rate is 21.3%, average deliverable rate is 95.5%.

EMAIL CAMPAIGNS

MAY EMAIL CAMPAIGNS

In May, Kern Water Collaborative (KWC) launched four email campaigns, including the first quarterly outreach newsletter on May 8. The newsletter highlighted 2025 initiatives, application guidance, and upcoming events, while providing easy access to the Household Qualification Survey, social media content, and key resources.

The first email was sent to 397 recipients and **achieved an open rate of 33.4% and a delivery rate of 97.2%***. The most popular clicks led to the **KWC Website (26.9%), YouTube channel (22.8%), and the Upcoming Events Survey (22.1%)**.

The newsletter resend on May 10 resulted in an open rate of 13% with a 99% delivery rate. Overall, the newsletter garnered **266 total opens and 297 total clicks**, with an average open rate of 23% and average delivery rate of 98%*.



*The MailChimp average open rate is 21.3%, average deliverable rate is 95.5%.

EMAIL CAMPAIGNS

MAY EMAIL CAMPAIGNS

On May 20, 2025, Kern Water Collaborative (KWC) launched an e-blast campaign to encourage attendance among our contacts at outreach events where we would be providing resources.

The first email was sent to 386 recipients, **achieving an open rate of 35.2% and a delivery rate of 99.2%***. The **most popular clicks** were to our Facebook, Instagram, YouTube channel, and the KWC website at **23.0%**. Upon a resend on May 21, this email campaign garnered **284 total opens and 149 total clicks**.



KERN WATER COLLABORATIVE
Providing Access to Safe and Clean Drinking Water
kwcollab.org

VISIT US AT LOCAL COMMUNITY EVENTS!

KWC will be at several upcoming community events, sharing information about free domestic well testing and providing access to safe, clean drinking water in Kern County's Poso and Westside South Groundwater Subbasins.

TO SEE IF YOU ARE ELIGIBLE FOR FREE DRINKING WATER, WE HAVE 3 EASY STEPS!

- 1 APPLY TODAY!**
Application available 2 ways:
 - Online form: WellTest.KWCOLL.org
 - Paper form: ncdellwells.org
- 2 WE PERFORM WELL WATER TEST**
Our experienced staff performs a simple and quick well test to see if there is an unsafe level of nitrates in your drinking water.
- 3 YOU RECEIVE BOTTLED WATER**
We deliver FREE bottled water to you. Bottled water is provided in 5-gallon containers.

UPCOMING EVENTS

ELK HILLS SPRING FESTIVAL

Thursday, May 22 | 5:00 PM - 7:00 PM
501 Kern St. Tupman, CA 93276
Kern Westside South Groundwater Subbasin
Organizer Contact: Cassandra McGowan | 661-765-7431 x111
camcgowan@elkhills.org

ELK HILLS SCHOOL DISTRICT'S ANNUAL SPRING FESTIVAL & Classroom Showcase

THURSDAY, MAY 22, 2025 FROM 5PM-7PM
FREE ENTRY! FREE BOUNCE HOUSES!
Learn about all the services we have to offer!
Sign up for Summer Camp!

- Delaney's Book Fair
- Open House
- 5K
- Community Shopping
- Food
- Game Courts
- Crafts
- Resource Fair
- Kern County Library
- Kern County Fairgrounds
- West Kern Adult Education Network
- 2025 Model Agriculture
- High College
- Auto World Model

For more information contact our Community Engagement Coordinator
Cassandra McGowan at 661-765-7431

LAVENDER FESTIVAL AT THE LAVENDER GARDEN

Saturday, June 7 | 9:00 AM - 7:00 PM
The Lavender Garden, 14014 CA-46, Lost Hills, CA 93249
Kern Westside South Groundwater Subbasin
Organizer Contact: Celeste Sandoval | celeste@thelavendergarden.com

5TH ANNUAL LAVENDER FESTIVAL

JUNE 7, 2025

- FOOD VENDORS
- CRAFT VENDORS
- MUSIC & PERFORMERS
- LAVENDER POLSKA & MORE!
- 95 RECOGNIZATIONS
- FREE - \$10 - \$20 - \$40
- SPONSOR YOUR SPONSOR

PROCEEDS GO TO THE LAVENDER GARDEN

*The MailChimp average open rate is 21.3%, average deliverable rate is 95.5%.

OUTREACH

QUARTERLY EMAIL CAMPAIGN ENGAGEMENT

This quarter, we sent nine email campaigns, reaching a total of **2,843 inboxes—a 577% increase** in total sends compared to the previous quarter. Of those, **2,762 were successfully delivered, reflecting a strong delivery rate of over 97%**, which speaks to the health and quality of our email list.

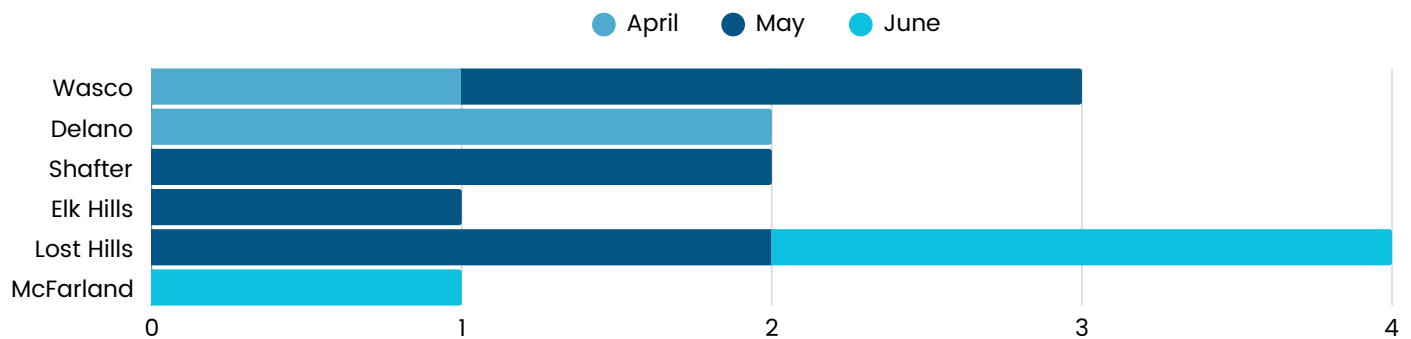
The campaigns achieved an average click rate of 8.4%, up 12% from the previous period. Our unsubscribe rate remained low at just 0.25%, indicating strong content relevance and high audience satisfaction.

Overall, these metrics suggest our messaging is resonating and continuing to drive meaningful engagement across a growing audience.

OUTREACH

The Kern Water Collaborative (KWC) is committed to reaching every household in Kern's Poso and Westside South groundwater subbasin outside of public water system service areas that depend on private domestic wells for drinking water.

Through community outreach, KWC attended **11 successful events** in the second quarter of 2025. KWC's outreach team directly connected with over **340 community members** across in-person and virtual events in Wasco, Delano, Shafter, Elk Hills, Lost Hills, and McFarland.



OUTREACH

APRIL OUTREACH

On April 1, 2025, Kern Water Collaborative (KWC) attended the Delano Collaborative meeting and shared its mission with 28 attendees. The event resulted in 119 new newsletter sign-ups and strong community engagement. KWC distributed **42 resource flyers, 105 stickers, and 21 swag bags**, each containing a pen and water bottle. Overall, the event was a meaningful step toward building local relationships and laying the foundation for future engagement in the Kern Poso groundwater subbasin.

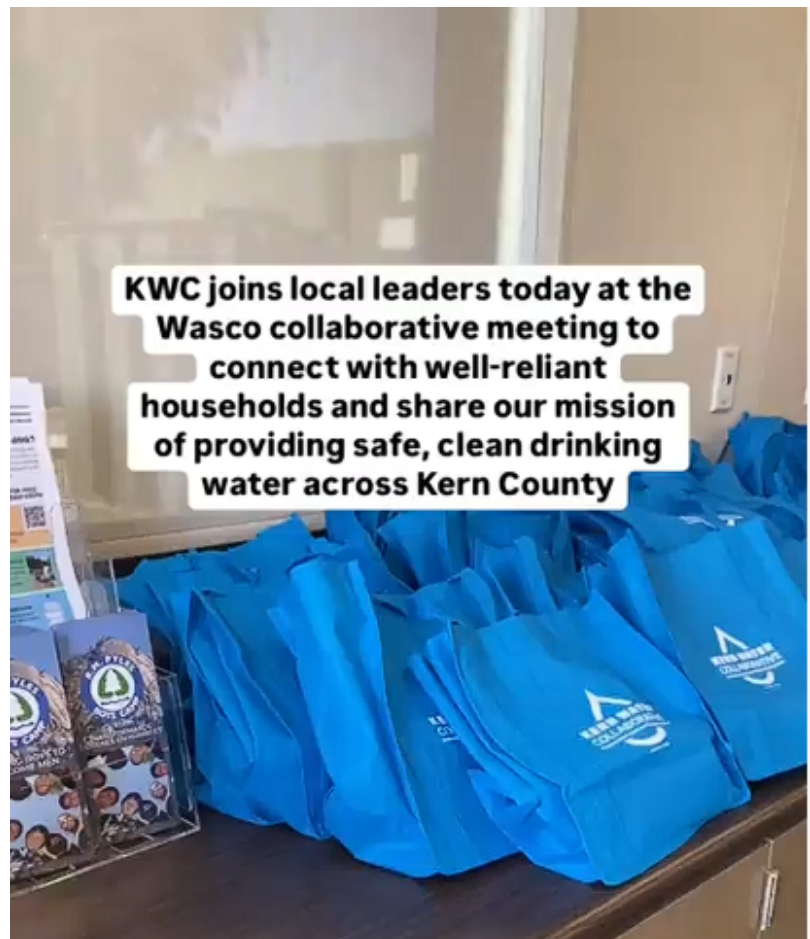


Posted on KWC Instagram Stories

OUTREACH

APRIL OUTREACH

On April 23, Kern Water Collaborative (KWC) participated in the Wasco Collaborative Meeting, hosted by the Wasco Union Elementary School District. KWC introduced its mission to attendees, resulting in **36 meaningful interactions. A total of 70 flyers, 125 stickers, and 60 swag items** were distributed, and 11 new contacts signed up for the newsletter. Overall, the event helped strengthen local connections and laid the groundwork for future engagement in the Kern Poso groundwater subbasin.



Posted on KWC Instagram Stories

OUTREACH

APRIL OUTREACH

On April 26, 2025, Kern Water Collaborative (KWC) attended the **NKSTHD Community Health Fair in Kern's County's Poso subbasin**. KWC connected with the Delano community, engaging a total of **70 community members**. KWC also distributed **70 flyers, 50 stickers, 48 bottled waters, 30 tote bags, 28 pens, and 11 water bottles**. A total of **eight newsletter sign ups** were collected. This resource fair also served as a food distribution site, providing essential resources to the community.



OUTREACH

MAY OUTREACH - LOST HILLS

On May 8, 2025, Kern Water Collaborative (KWC) virtually attended the **Lost Hills Collaborative Meeting**, where we introduced our mission to local leaders focused on improving the lives of children and families. Our virtual presence resulted in **19 interactions with trusted community members, and virtually distributed 19 flyers.**



Posted on KWC Instagram Stories

OUTREACH

MAY OUTREACH - LOST HILLS

On May 13, KWC's Executive Director, Nicole Bell, attended the monthly meeting for the **Lost Hills Community Advisory Board**. Nicole briefly introduced KWC's mission to provide safe and clean drinking water to households with private domestic wells, outside of public water system service boundaries, in Kern County's prioritized groundwater subbasins, ensuring everyone was provided the most current information.

FREE WELL TESTING & BOTTLED WATER PROGRAM



OUTREACH

MAY OUTREACH - SHAFTER

On May 16, 2025, Kern Water Collaborative (KWC) hosted an info booth at the Shafter Family Resource Fair, where we interacted with **65 community members and distributed 50 flyers, 20 stickers, and 80 swag items**. Held by the Richland School District, this community event provided a space for KWC to engage with locals looking for resources in the Kern Poso groundwater subbasin.



Posted on KWC Instagram Stories

OUTREACH

MAY OUTREACH - SHAFTER

On May 21, KWC virtually attended the Shafter Collaborative's May Meeting. Nicole Bell, our Executive Director, presented KWC's mission to provide safe and clean drinking water to our community members living outside of public water system service areas in the Kern County Poso and Kern County Westside South Subbasins. A total of **48 interactions occurred, with 48 flyers virtually distributed** and submitted to the Shafter Collaborative publicly shared community resource Google Drive Folder.



SHAFTER COLLABORATIVE MEETING

KWC is going virtual with the Shafter Collaborative! 🇺🇸🌟 We're bringing safe, clean drinking water to households in Kern's Poso and Westside South Groundwater subbasins with nitrate-impacted domestic wells. 💧🌱

JOIN US TOMORROW!

@FACEBOOK.COM

Posted on KWC Instagram Stories

OUTREACH

MAY OUTREACH

On May 22, Kern Water Collaborative (KWC) attended the Elk Hills School District's Spring Festival and Classroom Showcase, ensuring engagement with residents on the cusp of the Kern River and Kern Westside South groundwater subbasins. A total of **21 community members' interactions were conducted, distributing 65 flyers, 45 stickers, 40 bottles of water**, eight pens, and six tote bags. In conjunction with the newsletter signup collection and 23 coloring sheet sets, this is our newest addition to KWC giveaways. KWC began incentivizing social media following for prize giveaways during outreach, starting with this event. **Two newsletter signups, four Facebook follows, and three Instagram follows** were collected.



We're headed to Tupman! 🌊 Join us at the Elk Hills Spring Festival & Classroom Showcase today from 5-7 PM at Elk Hills School.

We'll be hosting an outreach booth to share how families who rely on private domestic wells can access free well testing and bottled water delivery in Kern's Poso and Westside South groundwater subbasins.

Let's protect our community's health together—stop by to connect, grab some swag, and learn more!



OUTREACH

JUNE OUTREACH

On June 7, KWC attended the Lavender Festival at the Lost Hills Lavender Garden. KWC connected with **13 residents in the Kern's Westside South groundwater subbasin** about essential water resources, leading to the distribution of **15 flyers, 13 bottled waters**, three tote bags, and one water bottle. During this event, one manual newsletter signup and one Instagram follow was collected.




OUTREACH

JUNE OUTREACH

On June 10, KWC attended the monthly meeting with the **Lost Hills Community Advisory Board**. KWC's Executive Director, Nicole Bell, **presented KWC's mission** to provide safe and clean drinking water to households with private domestic wells, outside of public water system service areas, in Kern County's Westside South groundwater subbasins, **ensuring everyone was provided the most current information**.

Attendance resulted in at least **18 interactions**.

PROVIDING ACCESS TO SAFE AND CLEAN DRINKING WATER




WEBSITE: www.kwcmz.org
EMAIL: nicole@kwcmz.org
PHONE: 661-888-4108
To Apply: Welltest.kwcmz.org

KERN WATER COLLABORATIVE
ABOUT KWC

KWC is a non-profit public benefit corporation...

- Formed to address nitrate in drinking water supplies in Kern County priority subbasins.
- Dedicated to providing access to safe and clean drinking water for domestic well users in our coverage area.
- Provide **FREE Domestic Well Tests and FREE Bottled Water** delivery to qualified applicants.



OUTREACH

JUNE OUTREACH

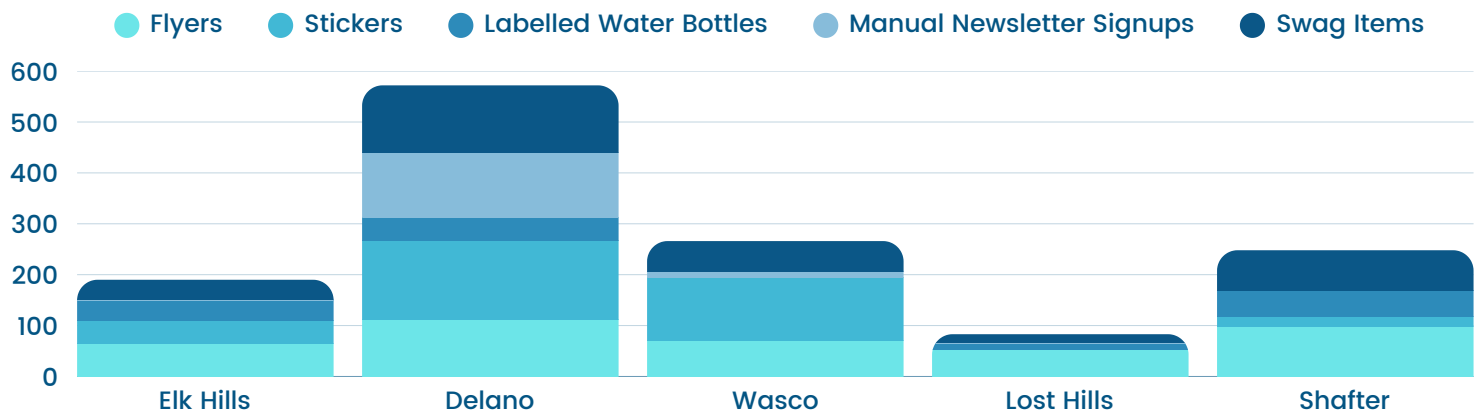
June 17, KWC attended the McFarland Library Branch Petting Zoo, connected with families in the Kern Poso groundwater subbasin, provided resources, and informed community members of our mission. A total of **50 community interactions occurred**. KWC also **distributed 30 flyers, 20 stickers, 15 pens, 14 bottles of water, five tote bags, and five water bottles**. A total of **two newsletter signups, two Instagram follows, and two Facebook follows** were collected.



Posted on KWC Instagram Stories

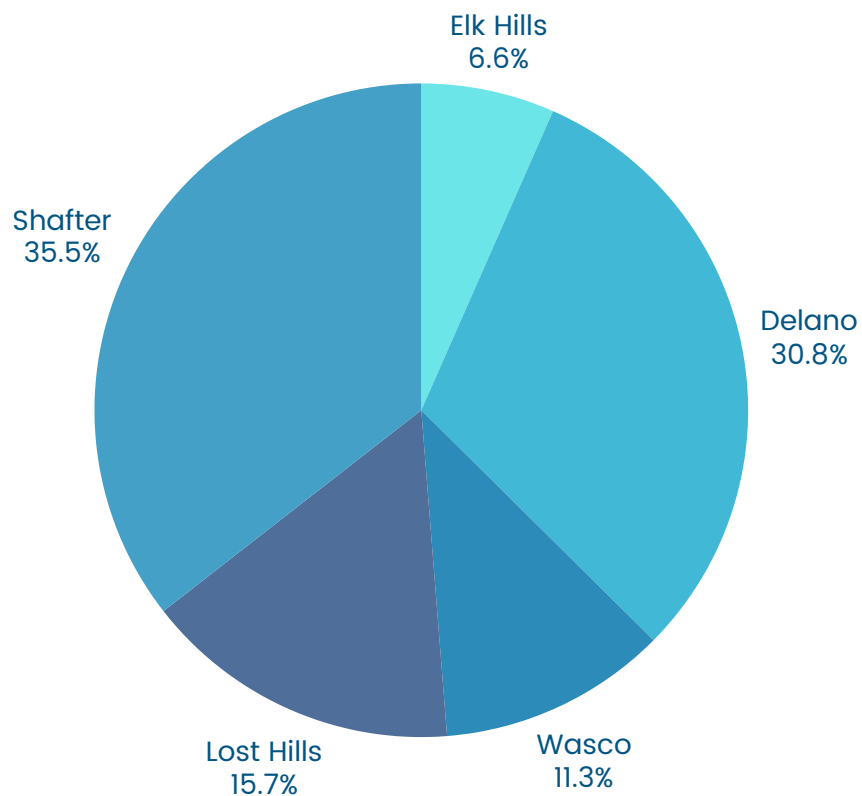
OUTREACH MATERIAL DISTRIBUTIONS

KWC's outreach team distributed a total of **397 flyers**, **345 stickers**, and **327 swag items**.



TOTAL OUTREACH ENGAGEMENT

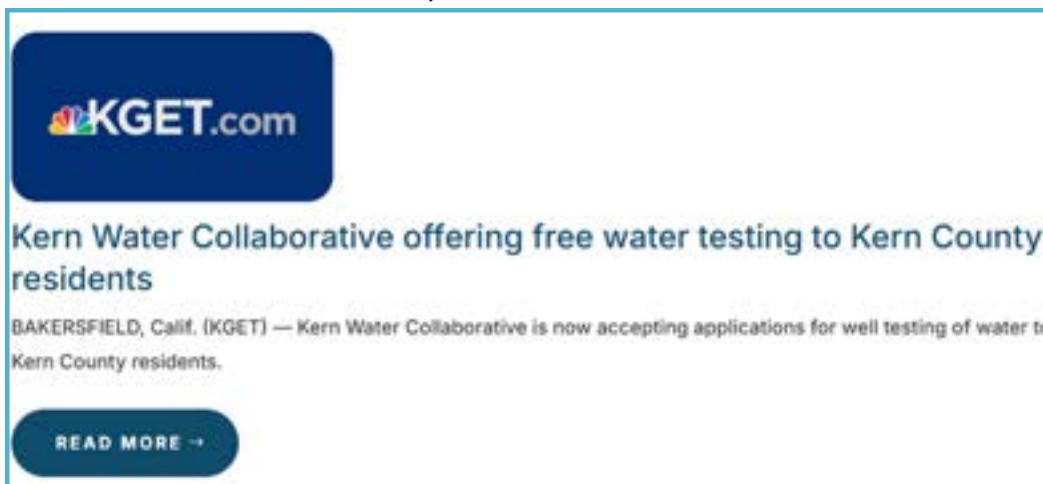
KWC's outreach team engaged with **120 people** at all five events.



KWC EARNED MEDIA: PRESS RELEASE

On June 12, KWC was featured in KGET's local news coverage, highlighting the availability of clean drinking water for Kern County residents who rely on domestic wells.

This coverage is especially important for households with nitrate levels exceeding the drinking water standard, helping ensure that rural communities are aware of the resources available to access safe, clean water.



SHARE    

BAKERSFIELD, Calif. (KGET) — Kern Water Collaborative is now accepting applications for well testing of water to Kern County residents.

Communities eligible for the testing are Buttonwillow, Wasco, Lost Hills, Delano, McFarland, Shafter, Rosedale and more.

To see if your area's water well is eligible to test, applications are available [here](#). If eligible, you will be sent a well test access agreement via email or text message. Once completed, it must be signed and returned to Kern Water Collaborative.

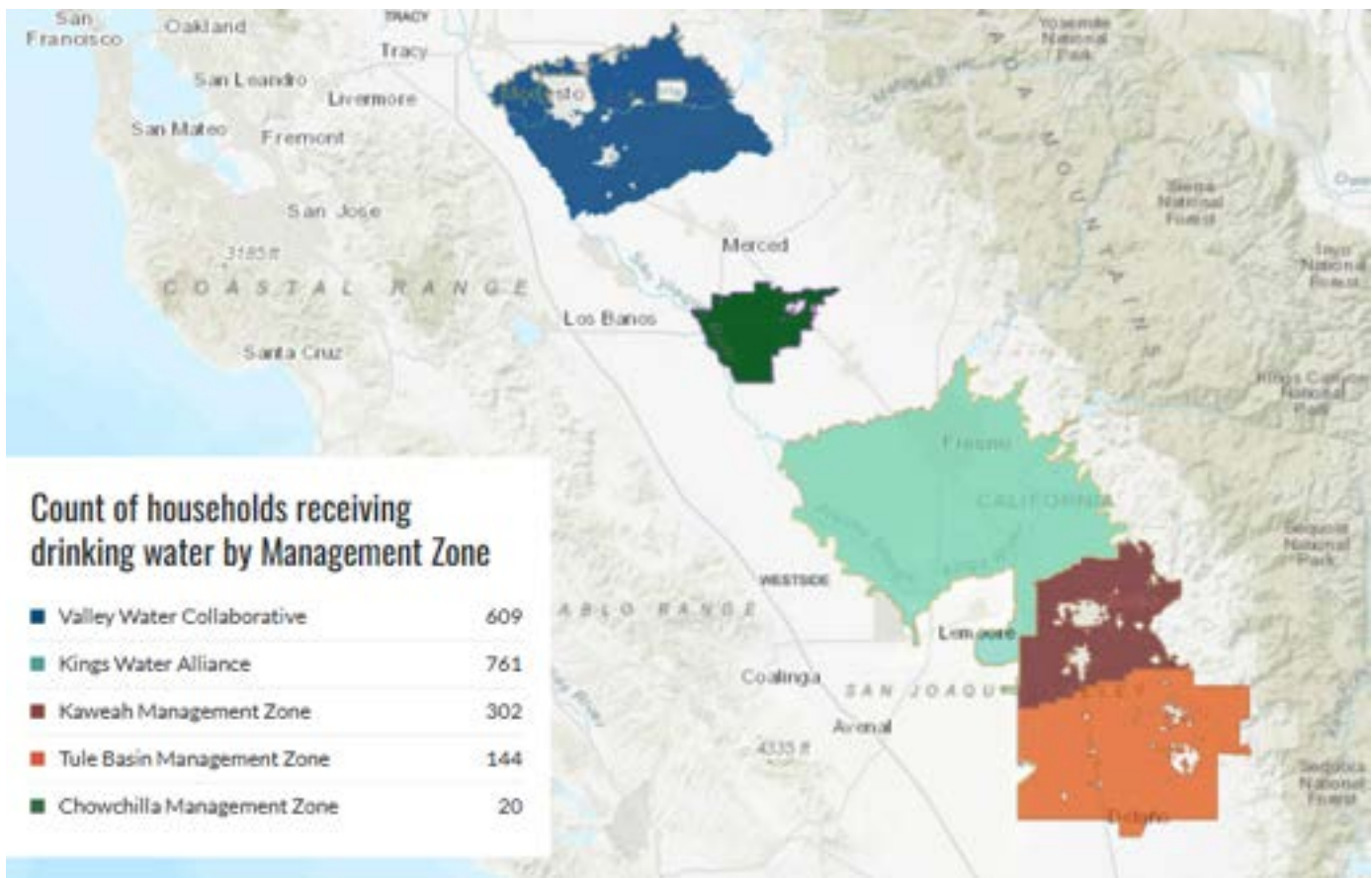
Free bottled water will be provided to you once the water has been tested for high nitrate levels.

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MANAGEMENT ZONE COLLABORATION

The Kern Water Collaborative (KWC) participated in three Management Zone meetings with Priority 1 Management Zones.

KWC met with leaders from the Kaweah Water Foundation, Kings Water Alliance, Tule Basin Water Foundation, and Valley Water Collaborative to discuss outreach strategy improvements and share relevant Management Zone updates. From these discussions, Management Zones are working toward consistent, unified messaging about long-term solutions, sharing effective outreach tactics such as interactive booths, and providing feedback on targeted social media campaigns and newsletters.



LOOKING AHEAD

In Q3 2025, the Kern Water Collaborative (KWC) will participate in at least three monthly outreach events, focusing on key areas like Delano, Shafter, McFarland, and Buttonwillow. We will coordinate with Community Collaboratives and food distribution centers to expand access to essential resources, host informational booths, and distribute educational materials. Highlights from these events will be shared across KWC's social media platforms.

Additionally, KWC will work closely with Priority 1 Management Zone outreach leaders to refine our strategies and maximize impact. We will also launch our first-ever social media strategy to grow our digital presence and reach more residents online. A quarterly newsletter will be distributed in mid-July, and we will continue pursuing earned media opportunities and ongoing e-newsletter distribution throughout the quarter.



KERN WATER **COLLABORATIVE**

Providing Access to Safe and Clean Drinking Water



kwcmz.org



OUTREACH AND ACTIVITIES REPORT

JULY – SEPTEMBER 2025

DATE

OCTOBER 10, 2025



PROVIDENCE STRATEGIC CONSULTING, INC

EXECUTIVE SUMMARY

In the third quarter of 2025, the Kern Water Collaborative (KWC) expanded community engagement across Kern's Poso and Westside South Subbasins. We hosted **10 outreach events** and joined **three meetings** with Priority 1 Management Zone teams, promoting nitrate testing and safe, clean drinking water for families on private domestic wells.

To boost visibility and accessibility, we shared bilingual (English and Spanish) updates through social media, three e-newsletters, and the KWC website. Our outreach combined in-person and hybrid presentations in communities including Buttonwillow, McFarland, Delano, Shafter, and Wasco.

These combined efforts strengthened trust, broadened access to resources, and positioned KWC for continued growth in community engagement. Looking ahead, KWC will build on these strategies to further expand reach and deepen partnerships.

STRATEGY

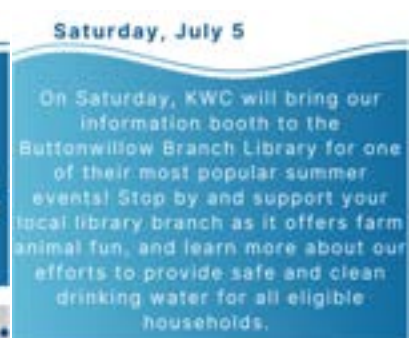
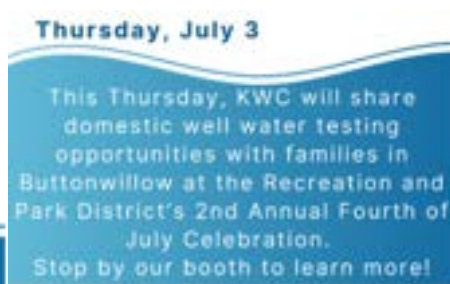
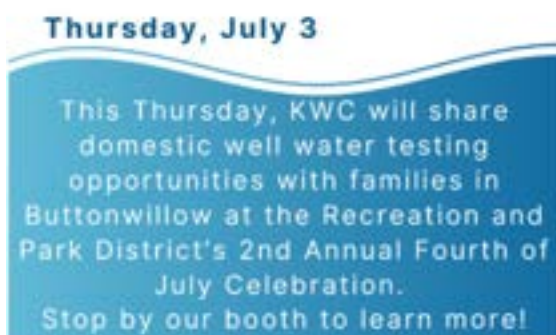
During this period, the Kern Water Collaborative (KWC) prioritized strategic initiatives to strengthen community engagement. We distributed resources and built trust while providing essential support in both English and Spanish. This bilingual approach has made our materials more accessible, promoting inclusivity and deepening community understanding of our program.

Throughout the third quarter, KWC strengthened its outreach and awareness efforts to help ensure that families using private domestic wells are aware of KWC's resources. In addition to these efforts, we also launched a digital strategy with paid media ads on Facebook and Instagram, further expanding our reach and connecting with community members through multiple channels.

EMAIL CAMPAIGNS

In July 2025, KWC launched an email campaign promoting participation in Buttonwillow community summer events.

The campaign was sent to **427 recipients**, achieving a **98.1% delivery rate**, a **31% open rate**, and **169 total clicks**. Click engagement showed strong interest in the Firework Show flyer (27.2%), KWC's Facebook page (21.4%), the Buttonwillow Library event flyer (20.1%), and KWC's Instagram page (20.1%).*



*The MailChimp non-profit average open rate is 40.04%, average deliverable rate is 99.09%.

EMAIL CAMPAIGNS

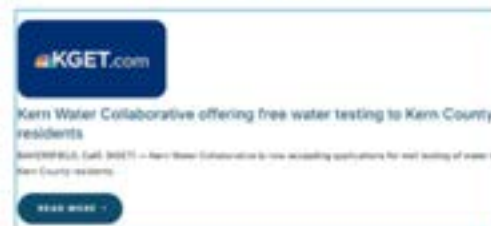
Beginning August 7, 2025, Kern Water Collaborative (KWC) launched an email campaign highlighting outreach efforts from late spring through summer. The first email, **sent to 830 recipients, achieved a 92.7% delivery rate, a 21.5% open rate, and 256 total clicks**—showing strong interest in the Household Qualification Survey button, the Delano Back-to-School Outreach Event, and the KWC website. The campaign was resent on August 26, achieving a 92.4% delivery rate and resulting in 384 total opens overall.*

This engagement demonstrates growing awareness among rural Kern communities about nitrate testing for private domestic wells and access to bottled water delivery when needed.

On July 27, KWC connected with the community at Delano's Back-to-School Open House! We shared coloring sheet sets and helped families learn about available community resources and services. KWC offers free nitrate testing and, if needed, safe drinking water to Kern County households with domestic wells outside city water systems.



KWC IN THE NEWS



On June 12, KWC was featured in KGET's Local News Coverage, highlighting the availability of clean drinking water for Kern County residents who rely on domestic wells. This coverage is especially important for those with nitrate levels exceeding the drinking water standard, ensuring that rural communities know they have access to safe drinking water.

KWC INITIATIVES AND UPDATES: LATEST DEVELOPMENTS

KWC is excited to attend upcoming summer community events across Kern County! From local community celebrations to health resource fairs, our outreach team engages the community and ensures access to vital resources for domestic well users outside of public water system boundaries in Kern County.



Wasco Tribune

THE SHAFTER PRESS

On July 12, KWC was featured in the Wasco Tribune and Shafter Press for offering clean drinking water solutions to local communities.

Sol KERN SOL NEWS
Building healthier communities, one story at a time.

*The MailChimp non-profit average open rate is 40.04%, average deliverable rate is 99.09%.

OUTREACH

QUARTERLY EMAIL CAMPAIGN ENGAGEMENT

This quarter, we sent three email campaigns, reaching a total of 2,007 inboxes. Of those, **1,881 were successfully delivered**, reflecting a **strong delivery rate of over 93.7%** and highlighting the health and quality of our email list.

The campaigns achieved an average click rate of 5.8%, with audience engagement focused on surveys, events, and program resources. Our unsubscribe rate remained low at just 1.7%, underscoring the relevance of our content and the high satisfaction of our audience.

Overall, these metrics confirm that our messaging continues to resonate and drive meaningful engagement across Kern communities.

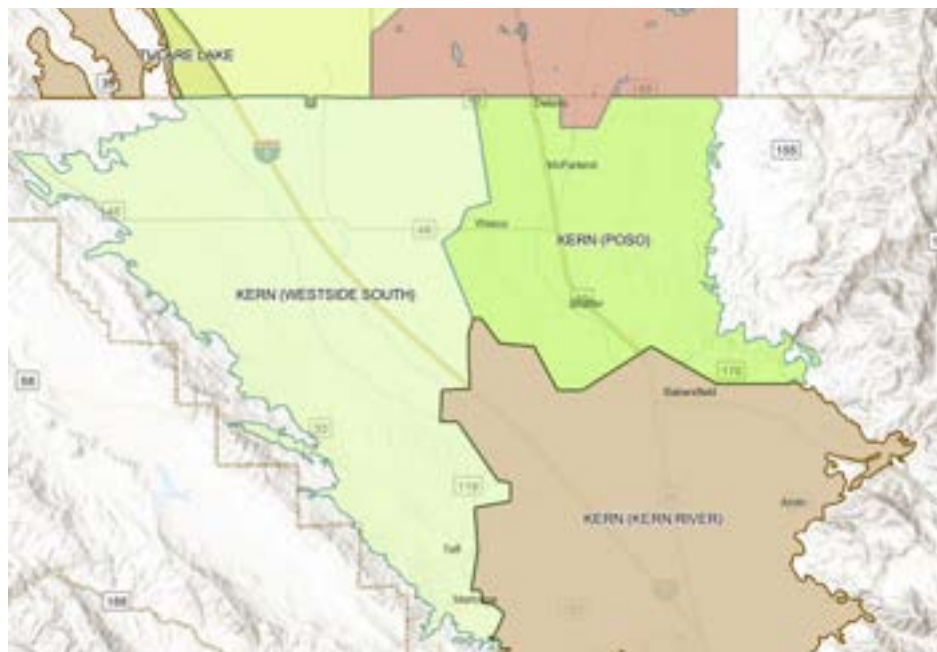
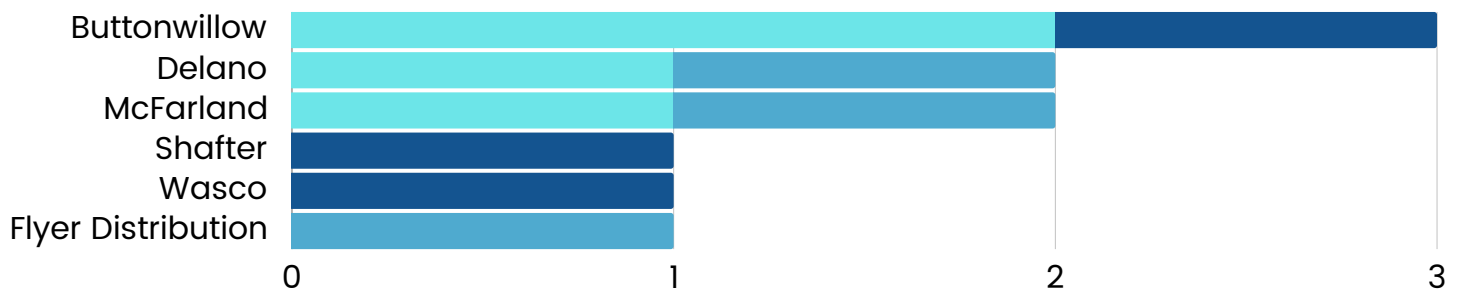
OUTREACH

The Kern Water Collaborative (KWC) is committed to reaching every household in Kern's Poso and Westside South groundwater subbasin outside of public water system service areas that depend on private domestic wells for drinking water.

Through community outreach, KWC attended **10 successful events** in the third quarter of 2025. KWC's outreach team directly connected with an **estimated 500 community members** across in-person and virtual events in Buttonwillow, Delano, McFarland, Shafter, Wasco, and across the Kern Valley Floor through Flyer Distribution.

Specifically, KWC attended **six community events**, hosting an information booth, **three public education gatherings**, presenting our mission, and **one flyer distribution event**, establishing meaningful connections across Kern County.

● July ● August ● September

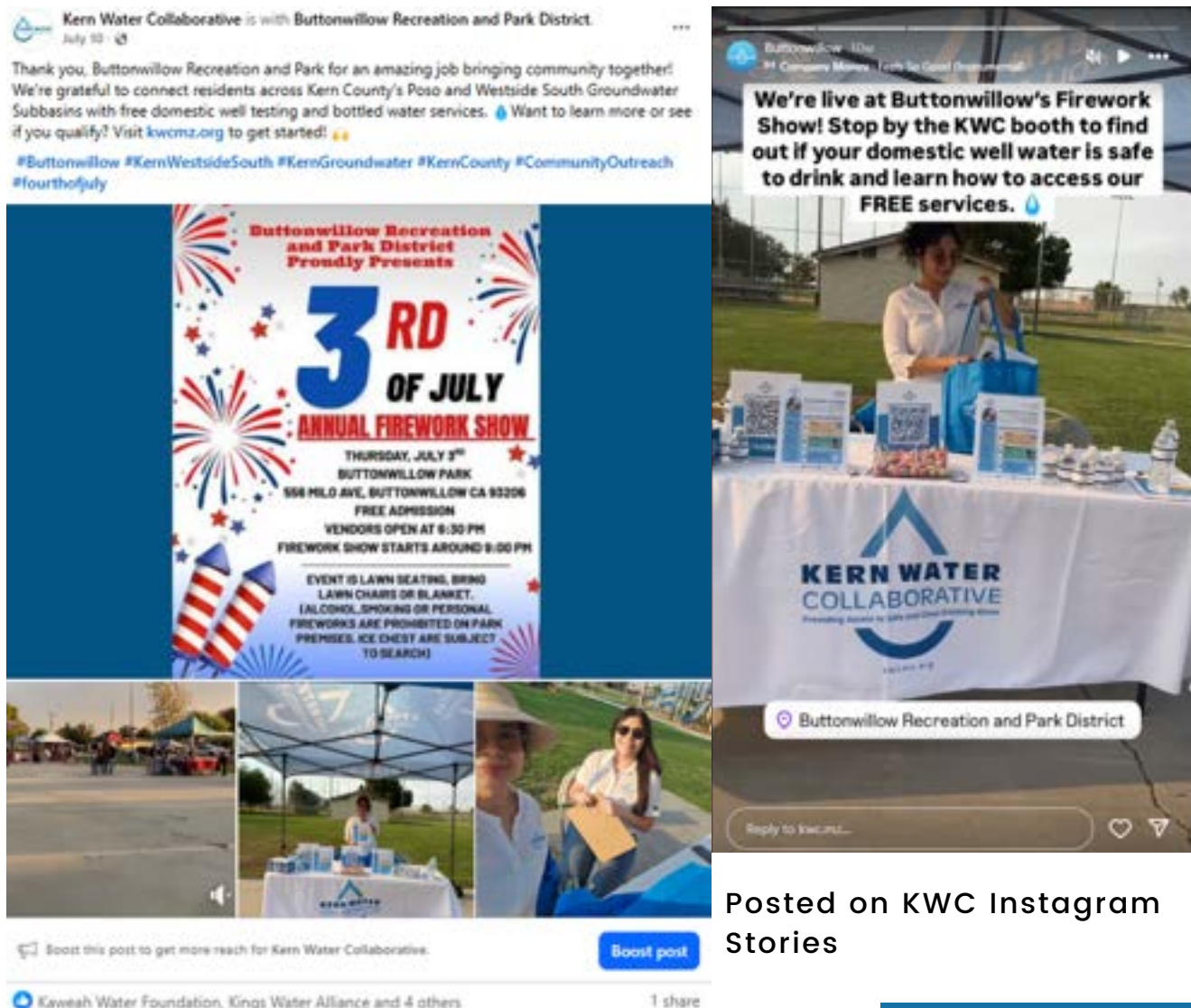


OUTREACH

KERN WESTSIDE SOUTH

On July 3, 2025, Kern Water Collaborative (KWC) participated in the Buttonwillow Recreation and Parks District's 3rd Annual Firework Show, connecting directly with **40 attendees and engaging hundreds more**. The event generated **eight new social media follows, one newsletter subscriber, and the distribution of 17 resource flyers, 10 stickers, five tote bags, two reusable water bottles, and 20 labeled bottled waters**.

KWC also built relationships with Assemblywoman Jasmeet Bains' office, Buttonwillow Recreation and Park leaders, and local well-reliant residents—strengthening community ties in the Kern Westside South groundwater subbasin.



Posted on KWC Instagram Stories

OUTREACH

KERN WESTSIDE SOUTH

On July 5, Kern Water Collaborative (KWC) attended Buttonwillow Branch Library's "Golden Meadow Goats" event. KWC engaged with 20 attendees. **Two flyers, four labelled bottled waters, and 35 swag items** were distributed. Virtual connections increased through eight new social media follows and one new email subscriber. Overall, the event helped strengthen local connections and the KWC-Buttonwillow Library partnership.



Posted on KWC Instagram Stories



OUTREACH

KERN POSO

On July 24, 2025, Kern Water Collaborative (KWC) attended the McFarland Library Branch's magician performance. KWC **meaningfully engaged with 15+ community members**, distributing **five flyers, eight labelled bottled waters, and 31 swag items**. A total of four newsletter signs ups were collected. This community event provided opportunities to connect with families in the McFarland community.

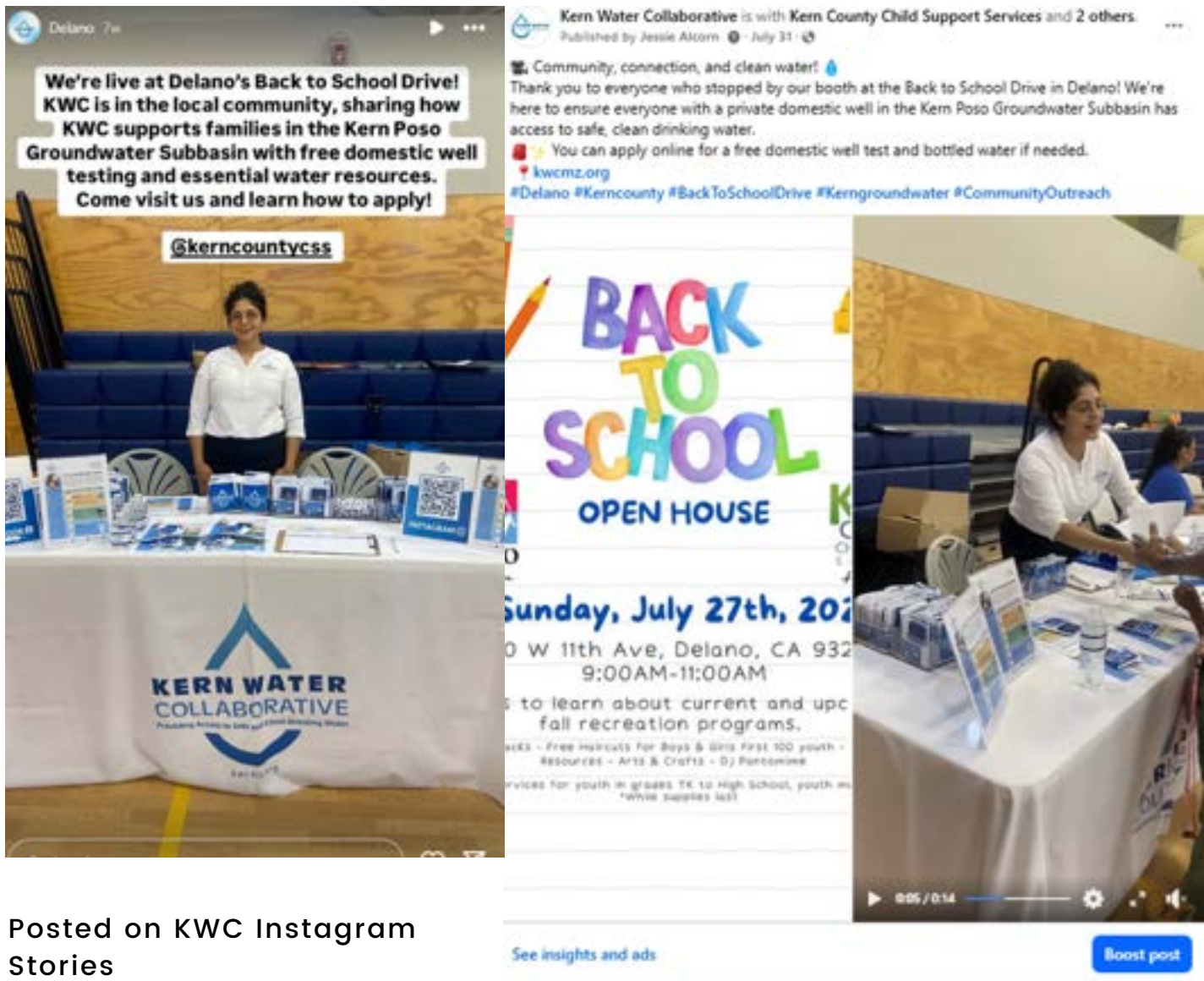


Posted on KWC Instagram Stories

OUTREACH

KERN POSO

On July 27, 2025, Kern Water Collaborative (KWC) tabeled at Delano's Backpack Giveaway, organized by the City of Delano Recreation team and Kern County Child Support Services. Approximately **266 interactions were recorded, with 266 flyers, 366 swag items, and 50 labelled bottled waters distributed.** KWC strengthened connections with key local partners and stakeholders while expanding visibility within the community.



Posted on KWC Instagram Stories

OUTREACH

KERN POSO

On August 5, 2025, KWC attended the Delano Alliance Meeting, where **46 community leaders, nonprofit representatives, educators, civic officials, and environmental advocates** were provided a formal introduction to KWC's mission and our work in the community.

KWC gained nine new newsletter signups and distributed **46 flyers** at this high-profile meeting, which strengthened community partnerships and introduced KWC's free nitrate testing and bottled water program to key stakeholders in the Kern Poso groundwater subbasin.



OUTREACH

KERN POSO

On August 12, 2025, Kern Water Collaborative (KWC) virtually presented at the McFarland Collaborative Meeting, organized by the McFarland Unified School District's Collaborative. KWC directly connected with **13 community members**. Balancing in-person and digital engagement, virtual meeting participation allows KWC to make our mission accessible to virtual-only educational gatherings.



Posted on KWC Instagram Stories

OUTREACH

FLYER DISTRIBUTION

On August 21, 2025, KWC held a regional outreach event across Kern County, distributing **360 bilingual flyers** at schools, churches, libraries, and resource centers. Outreach included Wasco, Shafter, Delano, Buttonwillow, and Bakersfield, with direct interaction with **18 community members**. KWC engaged residents, food pantry staff, school personnel, and community partners while promoting services and generating interest in hosting KWC info booths at upcoming school and community fairs.



Posted on KWC Instagram Stories



OUTREACH

KERN POSO

On Friday, September 5, 2025, Kern Water Collaborative (KWC) tabled at Shafter's First Fridays & Market Community Event, a collaboration between the City of Shafter and the Hen's Roost. A total of **63 meaningful interactions were recorded, distributing 51 flyers, 21 swag items, and 43 labelled water bottles.** We collected eight Instagram follows, one newsletter signup, and connected with at least six residents reliant on private domestic wells in Kern County.

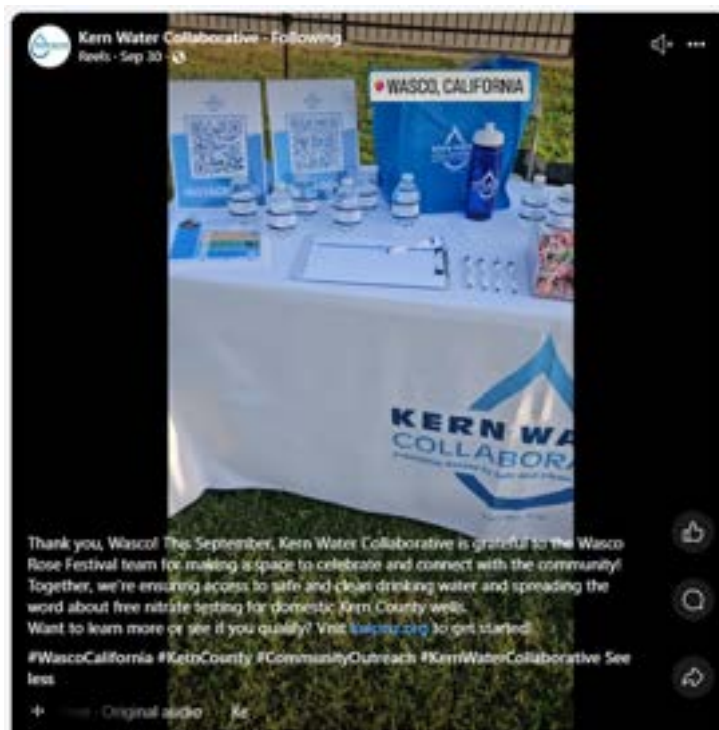


Posted on KWC Instagram Stories

OUTREACH

SEPTEMBER OUTREACH (CONT.)


On September 6, 2025, KWC attended the Wasco Rose Festival in the Kern Poso groundwater subbasin. KWC connected with an estimated **50 attendees**, distributing **26 flyers**, **38 bottled waters**, and **55 total swag items**. During this event, one Instagram follower and 16 newsletter signups were collected.



OUTREACH

SEPTEMBER OUTREACH (CONT.)


On September 22, KWC attended the **Buttonwillow Collaborative's quarterly meeting, hosted by the Buttonwillow Union School District**. KWC presented virtually, showcasing resources for households with private domestic wells, outside of public water system service areas, in Kern County's Westside South groundwater subbasins. Attendance resulted in at least **six interactions**.



PROVIDING ACCESS TO SAFE AND CLEAN DRINKING WATER


KERN WATER COLLABORATIVE

WEBSITE: www.kwcmz.org
 EMAIL: nicole@kwcmz.org
 PHONE: 661-888-4108
 To Apply: Welltest.kwcmz.org



Kern Water Collaborative is at Buttonwillow Union School.

Thank you, Buttonwillow Collaborative, for hosting virtual meetings that connect our community organizers and provide an opportunity to learn about free, accessible resources. Kern Water Collaborative is grateful to share free domestic well testing and bottled water services with families across Kern County's Valley Floor. 🌊
 Want to learn more or see if you qualify? Visit kwcmz.org to get started! 🙌

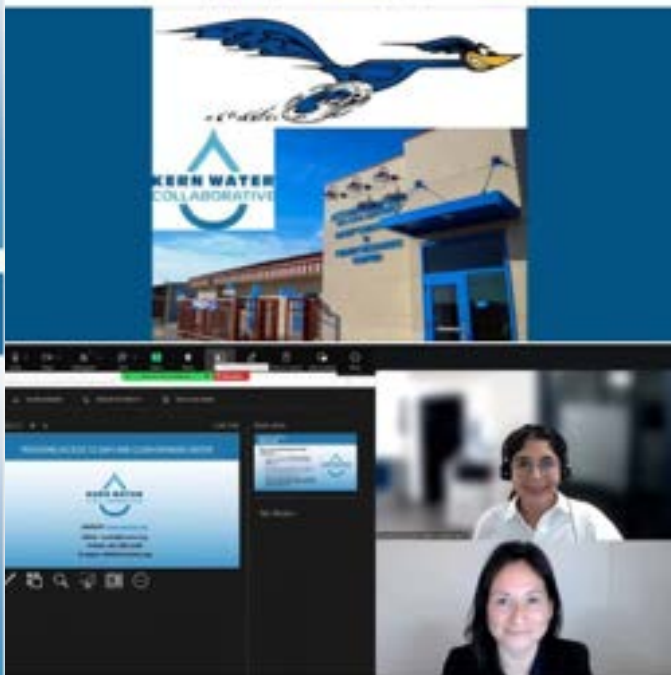


KERN WATER COLLABORATIVE ABOUT KWC

KWC is a non-profit public benefit corporation...

- Formed to address nitrate in drinking water supplies in Kern County priority subbasins.
- Dedicated to providing access to safe and clean drinking water for domestic well users in our coverage area.
- Provide **FREE Domestic Well Tests** and **FREE Bottled Water** delivery to qualified applicants.

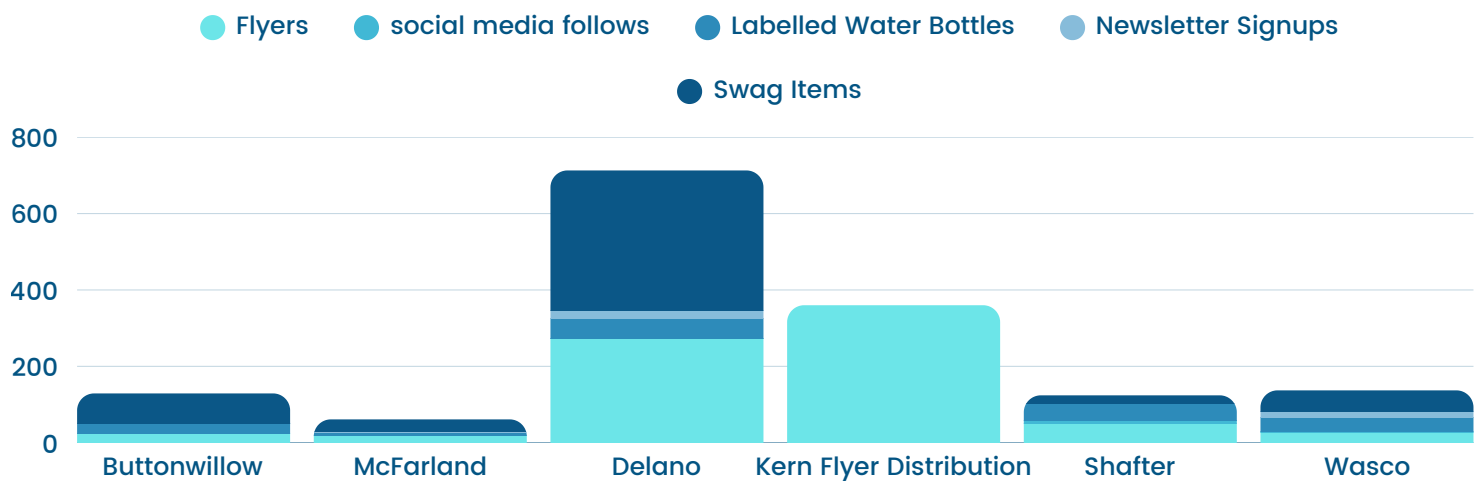
KERN WATER COLLABORATIVE



The screenshot shows a virtual meeting interface. On the left is a presentation slide with the Kern Water Collaborative logo and contact information. On the right are two video feeds of participants: a man in a white shirt and a woman in a dark top.

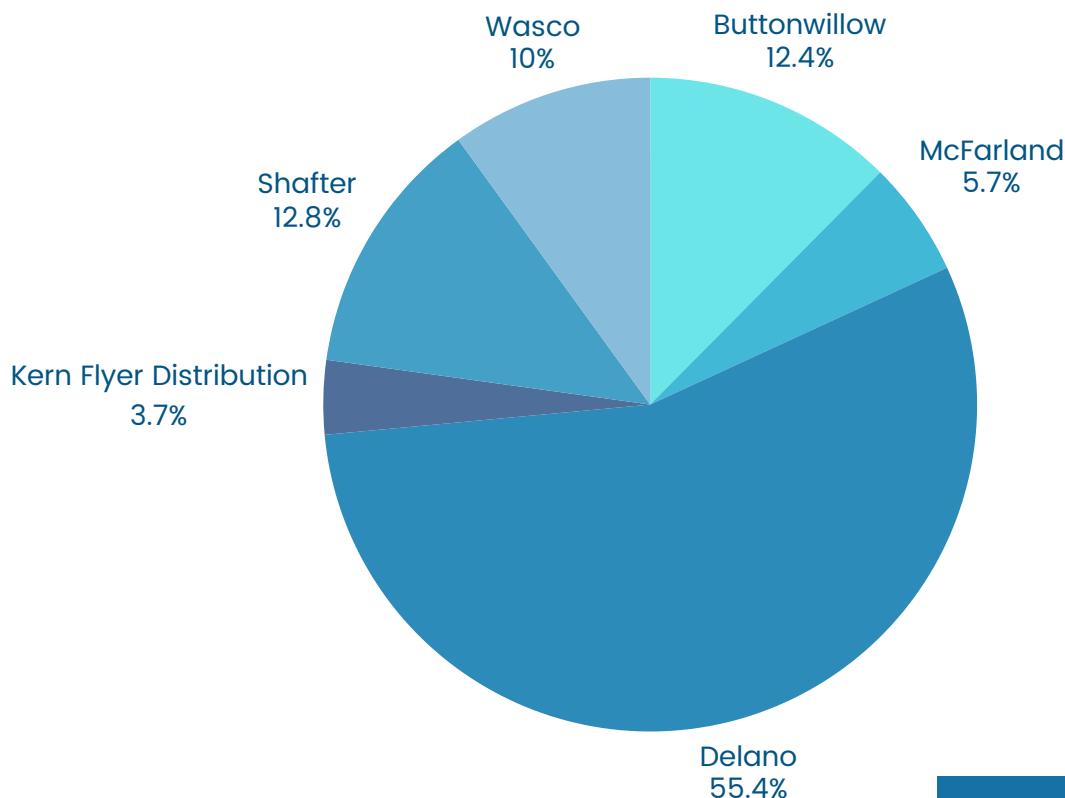
OUTREACH MATERIAL DISTRIBUTIONS

KWC's outreach team distributed a total of **752 flyers**, **163 labelled water bottles**, and **552 swag items***.



*swag items include stickers, tote bags, reusable water bottles, pens, and coloring sheet sets.

KWC's outreach team engaged with **491 people** at all ten events.



EARNED MEDIA: PRESS RELEASE

In the third quarter, KWC was featured in **four news stories, in both English and Spanish**, highlighting the availability of safe, clean drinking water for Kern County residents relying on private domestic wells.



July 16, 2025

Free well testing and bottled water program launches for Kern County residents

Rural residents in parts of Kern County who rely on domestic wells for their water can now access a new program offering free well testing and bottled water delivery, thanks to the Kern Water Collaborative (KWC).

[READ MORE](#)



July 10, 2025

Clean drinking water solutions available

Kern Water Collaborative has launched a free well-testing program for domestic well users in the Kern County Poso and Kern County Westside South Groundwater Subbasins.

[READ MORE](#)



July 16, 2025

Lanzan programa de pruebas gratuitas de pozos y agua embotellada para residentes del condado de Kern

Los residentes rurales en partes del condado de Kern que dependen de pozos domésticos para obtener agua ahora tendrán acceso a un nuevo programa. Gracias a Kern Water Collaborative (KWC) el programa ofrecerá pruebas gratis de pozos y entrega gratuita.



July 10, 2025

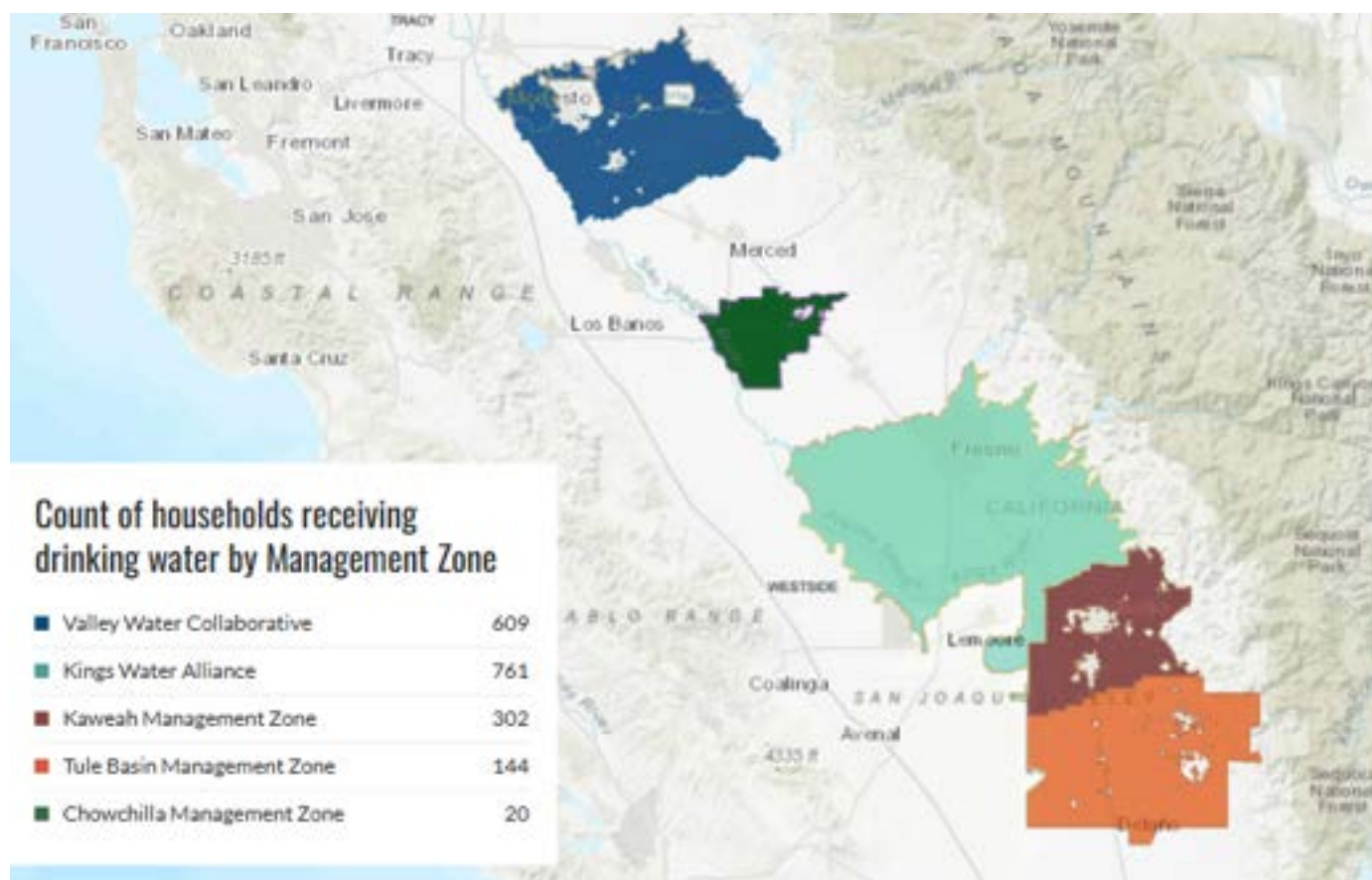
Clean drinking water solutions available

Kern Water Collaborative has launched a free well-testing program for domestic well users in the Kern County Poso and Kern County Westside South Groundwater Subbasins.

MANAGEMENT ZONE COLLABORATION

The Kern Water Collaborative (KWC) participated in **three Management Zone** meetings with Priority 1 Management Zones.

KWC met with leaders from the Kaweah Water Foundation, Kings Water Alliance, Tule Basin Water Foundation, and Valley Water Collaborative to discuss outreach strategy improvements and share relevant Management Zone updates. From these discussions, Management Zones are working toward consistent, unified messaging about long-term solutions, sharing effective outreach tactics, and delivering drinking water to targeted communities.



DIGITAL ADS

In August, KWC highlighted two ads focused on safe, clean drinking water and private well outreach, offering free nitrate testing and clean water solutions for families in the Kern Subbasin outside of public water system boundaries.

FACEBOOK AND INSTAGRAM TRAFFIC



Traffic A Ad results:

- Impressions: **35,259**
- Reach: **7,779**
- Link click: **245**



Traffic B Ad results:

- Impressions: **87,243**
- Reach: **22,222**
- Lead: **586**

DIGITAL ADS

In August, KWC also ran an awareness ad introducing the Collaborative as a nonprofit public benefit corporation providing Kern Subbasin residents with access to safe and clean drinking water.

FACEBOOK AND INSTAGRAM AWARENESS



Awareness Ad results:

- Impressions: **73,404**
- Reach: **35,831**

DIGITAL ADS

In September, KWC continued running two ads focused on safe, clean drinking water and private well outreach, offering free nitrate testing and clean water solutions for families in the Kern Subbasin outside of public water system boundaries.

FACEBOOK AND INSTAGRAM TRAFFIC



Traffic A Ad results:

- Impressions: 16,007
- Reach: 7,908
- Link click: 119



Traffic B Ad results:

- Impressions: 32,190
- Reach: 16,398
- Lead: 241

DIGITAL ADS

In September, KWC continued running an awareness ad introducing the Collaborative as a nonprofit public benefit corporation providing Kern Subbasin residents with access to safe and clean drinking water.

FACEBOOK AND INSTAGRAM AWARENESS



Awareness Ad results:

- Impressions: **46,928**
- Reach: **30,095**

LOOKING AHEAD

In Q4 2025, the Kern Water Collaborative (KWC) will participate in at least three monthly outreach events across the Kern Poso and Westside South groundwater subbasins. Partnering with school districts and organizations such as the Kern County Network for Children Community Collaboratives, KWC will expand access to resources through informational booths and the distribution of educational materials. Event highlights will be shared on KWC's social media channels and Community Outreach webpage to further extend reach.

KWC will also collaborate with Priority 1 Management Zone outreach leaders to refine strategies and maximize impact. To strengthen digital engagement, we will continue our social media ad strategy, distribute a quarterly newsletter in mid-October, and continue regular e-newsletter circulation. Earned media opportunities will also be pursued to broaden community awareness.



KERN WATER **COLLABORATIVE**

Providing Access to Safe and Clean Drinking Water



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2025 OUTREACH PROGRESS REPORT

JANUARY - AUGUST 2025

DATE

SEPTEMBER 29, 2025



PROVIDENCE STRATEGIC CONSULTING, INC

OVERVIEW

From January through August 2025, Kern Water Collaborative (KWC) advanced an outreach strategy that combined in-person events, digital engagement, and media outreach. These efforts strengthened KWC's presence in the Priority 2 Management Zone and broadened visibility across Kern County communities.

The foundation of the outreach is KWC's mission of providing access to safe and clean drinking water. Through free nitrate well testing and bottled water delivery programs, KWC ensures that qualified households can safeguard their water quality. Alongside community events, newsletters, social media storytelling, and press coverage, these services continue to build trust and create meaningful connections with residents.

EXECUTIVE SUMMARY

KWC delivered **nine educational gatherings** and participated in **17 community events**, distributing more than **1,500 swag items** and **1,400 flyers** with nearly **900 direct interactions**. Media goals were achieved with **four published articles**, and newsletter outreach exceeded expectations with **14 e-blasts**.

KWC focused on strengthening in-person connections while continuing virtual participation through collaborative meetings with stakeholders.

COMMUNITY OUTREACH HIGHLIGHTS

From January to August 2025, KWC significantly expanded its in-person presence while maintaining a balanced digital strategy.

Total Events: 24 (19 in-person, 5 virtual, plus 2 flyer distribution drives)

- Live Stories Shared: 45
- Swag Distributed: 1,543 items
- Flyers Distributed: 1,447
- Direct Interactions: 861

CITY-LEVEL BREAKDOWN

- **Delano:** Highest engagement with four events, nine live stories, 416 swag items, 384 flyers, and 370 interactions.
- **Lost Hills & McFarland:** Strong combination of virtual and in-person events, yielding over 200 combined interactions.
- **Shafter & Wasco:** High efficiency in swag and flyer distribution with strong engagement.
- **Tupman:** Smaller reach but impactful presence with three live stories and 123 swag items.
- **Buttonwillow:** Modest footprint with three events, yet notable for community stories and interactions.

DIGITAL CAMPAIGN ACHIEVEMENTS

KWC's email marketing campaign continues to perform above industry benchmarks.

- **14 e-blasts delivered to 4,520 recipients**
- **Average Delivery Rate: 96.6%**
- **Average Open Rate: 36.3% (vs. 35.6% industry average)**
- **Total Opens: 2,666**
- **Total Clicks: 1,860**

Between January and August 2025, KWC organized **24 outreach events** and produced **45 social media stories**, compared to 6 events and 9 stories during the latter half of 2024. This represents a **400% increase in events** and a **500% increase in digital storytelling**, demonstrating significant growth in outreach and engagement efforts.

KEY TAKEAWAYS

- **Expanded Reach:** 24 outreach events in 8 months, reflecting a strong on-the-ground presence.
- **Community Touchpoints:** Over 1,500 swag items and 1,447 flyers distributed, creating tangible connections.
- **Digital Engagement:** Above-average email performance with nearly 2,700 opens and 1,800 clicks.
- **Balanced Strategy:** Strong mix of in-person events, virtual campaigns, and digital storytelling.

IN SUMMARY

Overall, outreach in 2025 marks a significant step forward from the prior year, with a 400% increase in events and a 500% growth in social media storytelling. The focus on in-person events, supported by steady digital outreach, shows KWC's growth and ability to connect with the community. These combined efforts have strengthened community connections and advanced KWC's mission of ensuring access to safe, clean drinking water.



KERN WATER **COLLABORATIVE**

Providing Access to Safe and Clean Drinking Water



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OUTREACH AND ACTIVITIES REPORT

OCTOBER - DECEMBER 2025

DATE

JANUARY 7, 2025



PROVIDENCE STRATEGIC CONSULTING, INC

EXECUTIVE SUMMARY

In the fourth quarter of 2025, the Kern Water Collaborative (KWC) expanded community engagement across Kern's Poso and Westside South groundwater subbasins. KWC conducted **10 outreach events** and participated in five meetings with P1 and P2 Management Zone Outreach teams, promoting nitrate testing and the importance of safe, clean drinking water for families using private domestic wells.

To increase visibility and accessibility, KWC shared bilingual (English and Spanish) information through social media, e-newsletters, and the KWC website. Outreach activities included tabling at open public events, educational gatherings, and staffing volunteer events in communities such as Buttonwillow, Delano, Shafter, and Wasco.

Together, these efforts strengthened community trust, expanded access to program resources, and positioned KWC for continued growth in community engagement.

STRATEGY

During this period, KWC prioritized strategic initiatives to strengthen community engagement through direct outreach and targeted communications. Resources were distributed and support was provided in both English and Spanish to improve accessibility and promote inclusive participation.

Throughout the fourth quarter, KWC implemented a multi-channel outreach approach to ensure families using private domestic wells were aware of available resources. This included paid digital advertising on Facebook and Instagram, as well as the exploration of radio public service announcements and the launch of an iHeartMedia campaign extending into 2026.

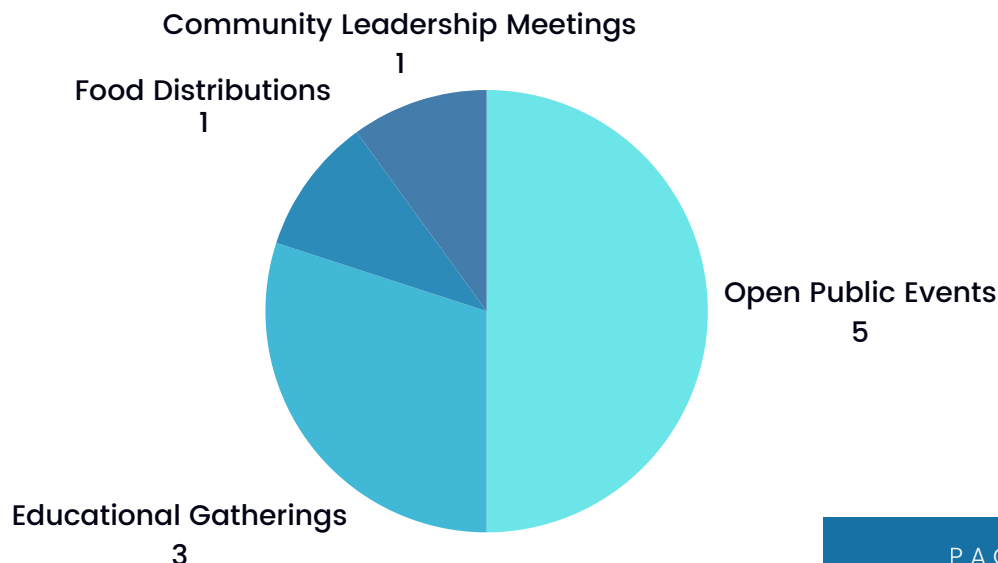
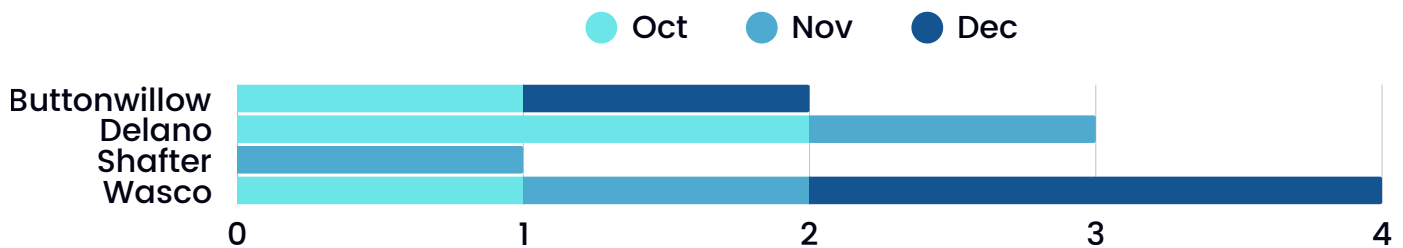
OUTREACH

Kern Water Collaborative (KWC) is committed to reaching every household in Kern's Poso and Westside South groundwater subbasin outside of the public water system service areas that depend on private domestic wells for drinking water.

Through community outreach, KWC attended **10 successful events** in the fourth quarter of 2025. KWC's outreach team **achieved over 1,600 in-person impressions**, providing opportunities to connect through tabling at open public events and educational gatherings. KWC directly connected with **370 community members**, engaging residents across in-person and virtual events in Buttonwillow, Delano, Shafter, and Wasco.

This quarter, all attended events were **in-person community events**, establishing meaningful connections across Kern County. Specifically, KWC hosted **six information booths at open public events**, presented at **one educational gathering**, distributed flyers at **one community leadership meeting**, and volunteered with **one school district** and **one food distribution** event.

Community Outreach Events



OUTREACH

BUTTONWILLOW

This quarter, Kern Water Collaborative (KWC) participated in two open public events in the Buttonwillow community, reaching about **325 people** at Buttonwillow's Recreation and Parks District and JG Boswell's Annual Health Fair. KWC directly connected with **115 attendees**, **generating 27 in-person newsletter subscribers**, and **distributed over 115 resource flyers and 219 swag items***.

Through these open public events, KWC maintained relationships with leaders across local churches, school districts, non-profit food distributors, and domestic well-reliant residents—strengthening community ties in Kern's Westside South groundwater subbasin.



*Giveaways can include coloring sheet sets, reusable water bottles, tote bags, pens, and bottled waters.

OUTREACH

DELANO

Kern Water Collaborative (KWC) conducted outreach at three Delano community events, strengthening its presence in the Kern Poso Subbasin. KWC participated in events hosted by North Kern Community School, Community Alliance Meetings, and Kiwanis International of Delano.

Across these events, the outreach team achieved over **350 in-person impressions** and engaged in approximately **60 direct interactions** with community members and educational leaders.

KWC distributed around 100 informational flyers and provided about **30 swag giveaways** to increase visibility and engagement. Virtual outreach also grew, with a few new social media followers and **six new in-person newsletter signups**. These efforts contributed to stronger local connections and increased awareness of KWC's free nitrate testing and bottled water services for eligible households.



*Giveaways can include coloring sheet sets, reusable water bottles, tote bags, pens, and bottled waters.

OUTREACH

SHAFTER

On November 7, 2025, Kern Water Collaborative (KWC) attended Shafter's First Friday and Market. KWC achieved **over 300 in-person impressions** through attendance and **directly engaged with over 60 community members**, distributing **30 flyers** and **over 90 swag giveaways**. A total of **three newsletter sign-ups** and a couple of social media follows were collected. This community event provided opportunities to connect with families in the Shafter community.



*Giveaways can include coloring sheet sets, reusable water bottles, tote bags, pens, and bottled waters.

OUTREACH

WASCO

KWC staffed or participated in **four events** in the Wasco community, at various community locations, including educational gatherings, food distributions, and open public events. In collaboration with local school districts, churches, and community leadership organizers, KWC achieved **over 700 impressions, over 134 direct interactions or conversations, 315 flyers distributed, and 122 swag giveaways***.

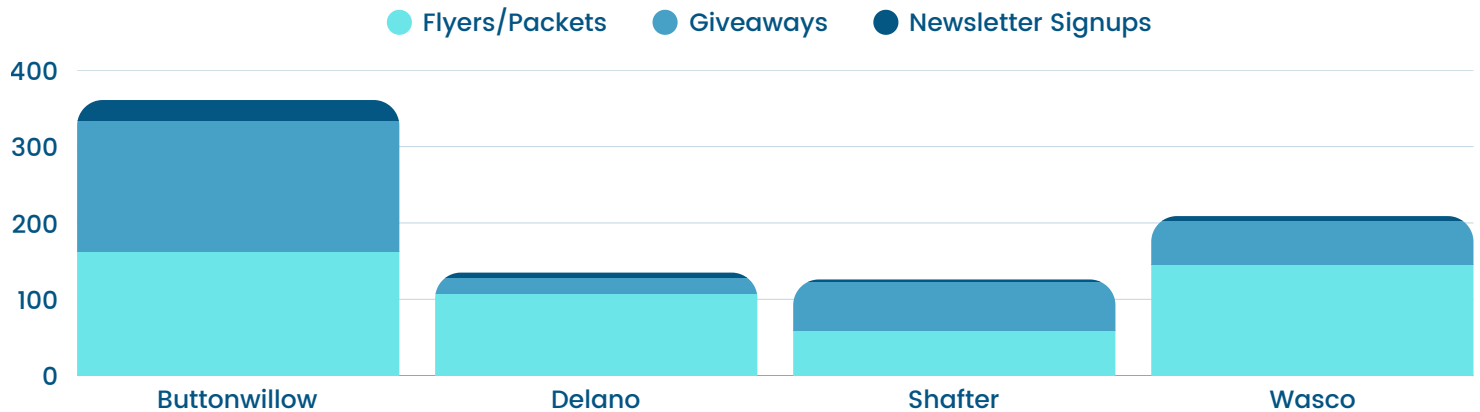
KWC strengthened connections with community stakeholders while expanding opportunities to connect directly with the Wasco community.



*Giveaways can include coloring sheet sets, reusable water bottles, tote bags, pens, and bottled waters.

OUTREACH MATERIAL DISTRIBUTIONS

This quarter, KWC's outreach team distributed a total of **476 flyers and packets***, **313 swag giveaways****, and **manual newsletters sign-ups**.

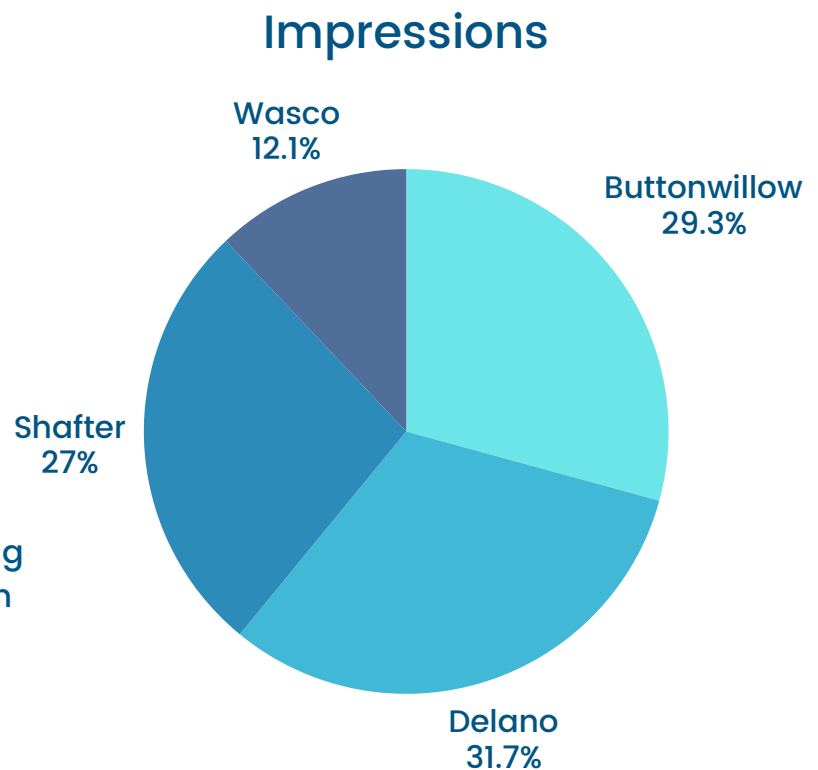


*swag items include stickers, tote bags, reusable water bottles, pens, and coloring sheet sets.

KWC's outreach team achieved a total of **1,111 in-person impressions** and directly engaged with **369 people** at all ten events.

*Flyers and packets include coloring sheet sets and flyers, which contain KWC's mission statement and contact information.

**Giveaways can include reusable water bottles, bottled waters, tote bags, and pens.



EMAIL CAMPAIGNS

In October 2025, KWC launched an email campaign promoting participation in October outreach events at selective locations, such as North Kern Community School District and a Buttonwillow Health Fair.

The campaign was sent to **1,292 recipients**, achieving a **94.2% delivery rate**, a **25% open rate**, and **208 total clicks**. Click engagement showed strong interest in the Wasco Union Elementary School District recap post (18%), the Shafter First Fridays & Market recap post (15.8%), and the “Apply For A Free Well Test” button (15.8%).



***The MailChimp non-profit average open rate is 40.04%, average deliverable rate is 99.09%.**

EMAIL CAMPAIGNS

Beginning October 22, 2025, we launched an email campaign highlighting the flyer material and Household Qualification Survey.

- The first email, **sent to 1,274 recipients, achieved a 95% delivery rate, a 16% open rate*, and 430 total clicks**—showing strong interest in the Household Qualification Survey button (19.3%), the KWC website (19.3%), (19.3%), and the KWC Facebook page (16.0%).
- The campaign was resent on October 24, achieving a 94.3% delivery rate and resulting in 222 total opens overall.

This engagement demonstrates growing awareness among rural Kern communities about nitrate testing for private domestic wells and access to bottled water delivery when needed.



*The MailChimp non-profit average open rate is 40.04%, average deliverable rate is 99.09%.

EMAIL CAMPAIGNS

On November 20, 2025, Kern Water Collaborative (KWC) launched an email campaign highlighting Fall outreach achievements and the flyer material and Household Qualification Survey.

- The first email, **sent to 1,265 recipients, achieved a 95.3% delivery rate, a 15.3% open rate*, and 266 total clicks**—showing strong interest in the KWC Facebook page (18.0%), KWC Instagram (15.8%), and the Household Qualification Survey button (15.8%),

This engagement demonstrates growing awareness among rural Kern communities about nitrate testing for private domestic wells and access to bottled water delivery when needed.

KERN WATER COLLABORATIVE

Sitio de Internet: www.kwcmz.org
Correo Electrónico: ekwater@kwcmz.org
Teléfono: (805) 888-4108

¿Es seguro el beber el agua de su pozo?
Muchos residentes dependen de pozos domésticos privados como su fuente principal de agua potable. Algunos desconocen que sus pozos podrían tener niveles elevados de nitratos. Este programa ofrece prueba de calidad del agua de pozos domésticos y soluciones de agua potable segura para quienes más lo necesitan.

PARA VER SI ES ELEGIBLE PARA RECIBIR AGUA POTABLE GRATIS, ¡TENEMOS 3 SENCILLOS PASOS!

- 1 APLIQUE HOY**
Aplicación disponible de 2 maneras:
• Formulario en línea: WellTest.KWCMZ.org
• Formulario en papel: noret.kwcmz.org
- 2 NOSOTROS HACEMOS PRUEBAS DE AGUA DE POZO**
Nuestro personal de experiencia lleva a cabo una prueba sencilla y rápida de su pozo doméstico para probar si se muestran altos niveles de nitratos en su agua potable.
- 3 USTED RECIBE AGUA EMBOTELLADA**
Le entregamos agua embotellada GRATUITA. El agua embotellada se proporciona en recipientes de 5 galones.

KERN WATER COLLABORATIVE

*The MailChimp non-profit average open rate is 40.04%, average deliverable rate is 99.09%.

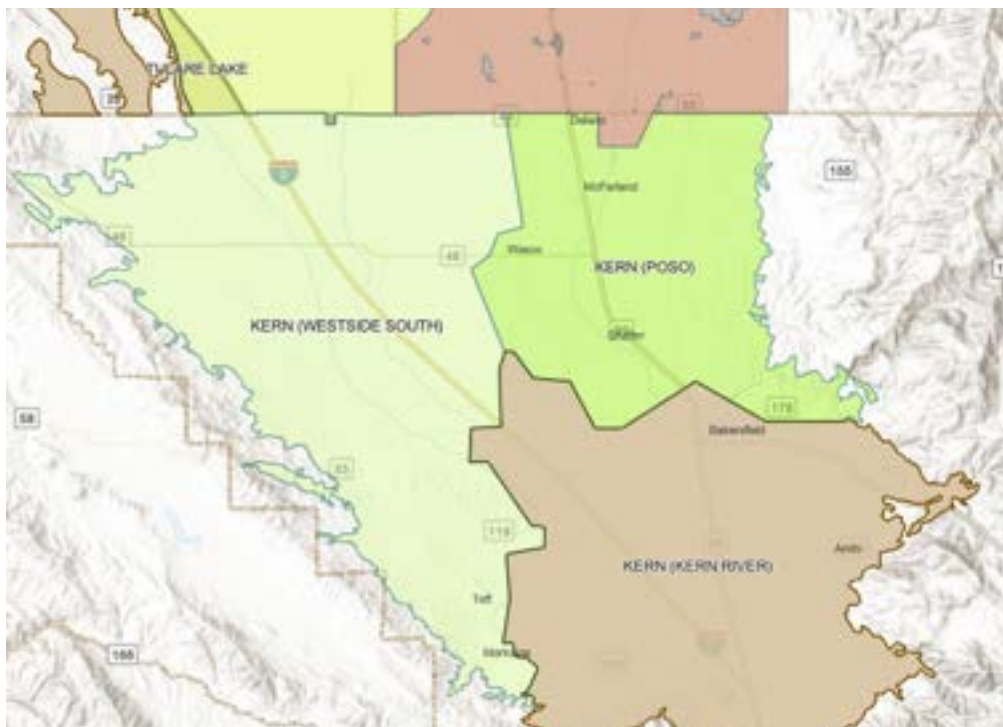
EMAIL CAMPAIGNS

ENGAGEMENT

This quarter, we sent four email campaigns, reaching a total of **4,911 inboxes**. Of those, **4,650** were successfully delivered, reflecting a delivery rate of over **94.7%**.

The campaigns achieved an average click rate of 3.2%, with engagement focused on surveys, events, and program resources. The unsubscribe rate remained low at 1.2%.

Overall, these metrics indicate consistent audience engagement and effective reach across Kern County communities.



RADIO PUBLIC SERVICE ANNOUNCEMENT (PSA)

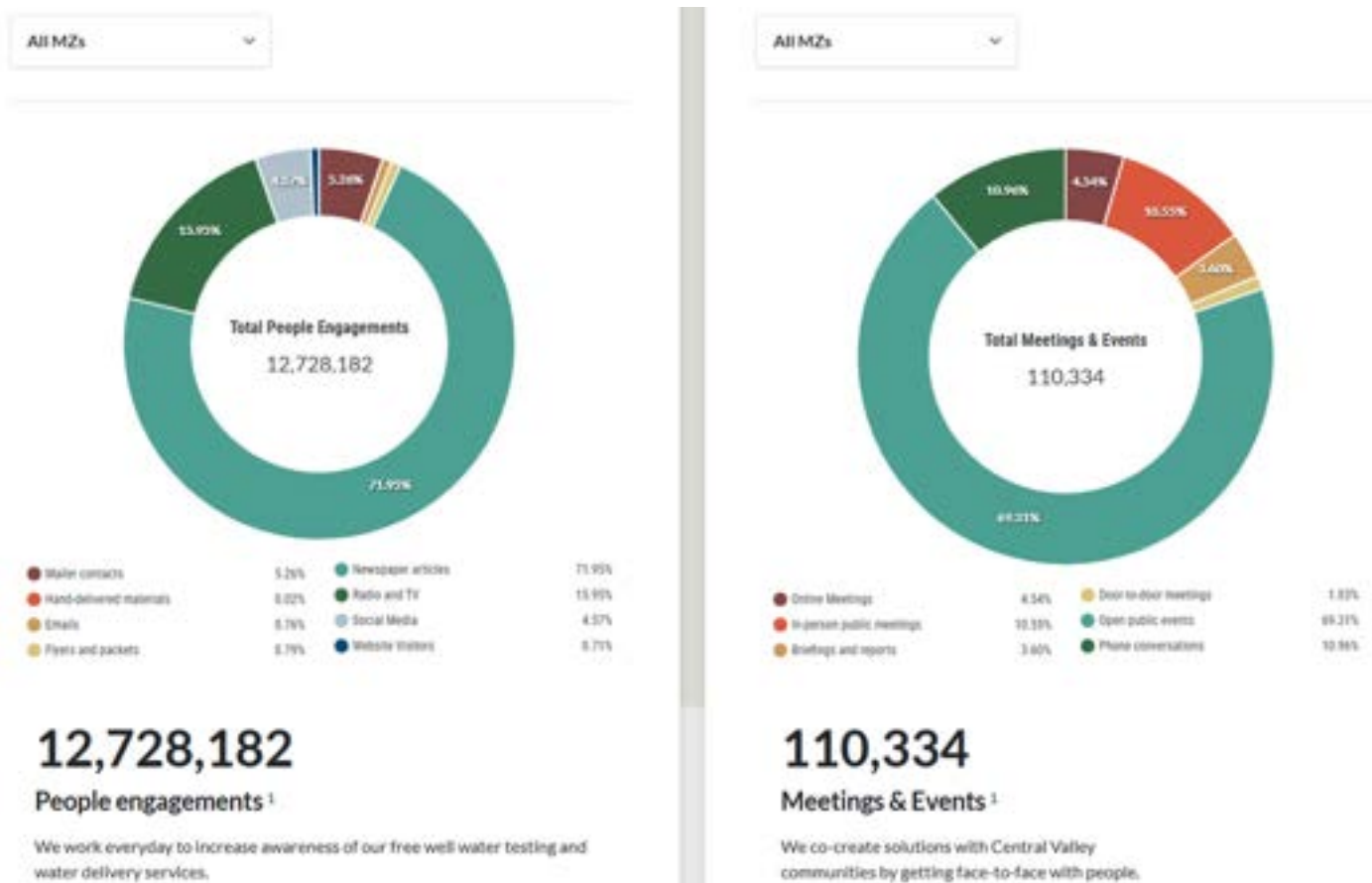
On November 16, 2025, KWC aired a Spanish-language PSA through Radio Bilingüe, a Latino public radio network serving diverse communities. The announcement promoted awareness of free nitrate testing and bottled water support for households using private domestic wells and directed listeners to check eligibility through the KWC website.

MANAGEMENT ZONE COLLABORATION

The Kern Water Collaborative (KWC) participated in **three Management Zone** meetings with Priority 1 Management Zones.

KWC met with leaders from the Kaweah Water Foundation, Kings Water Alliance, Tule Basin Water Foundation, and Valley Water Collaborative to discuss outreach strategy improvements and share relevant Management Zone updates.

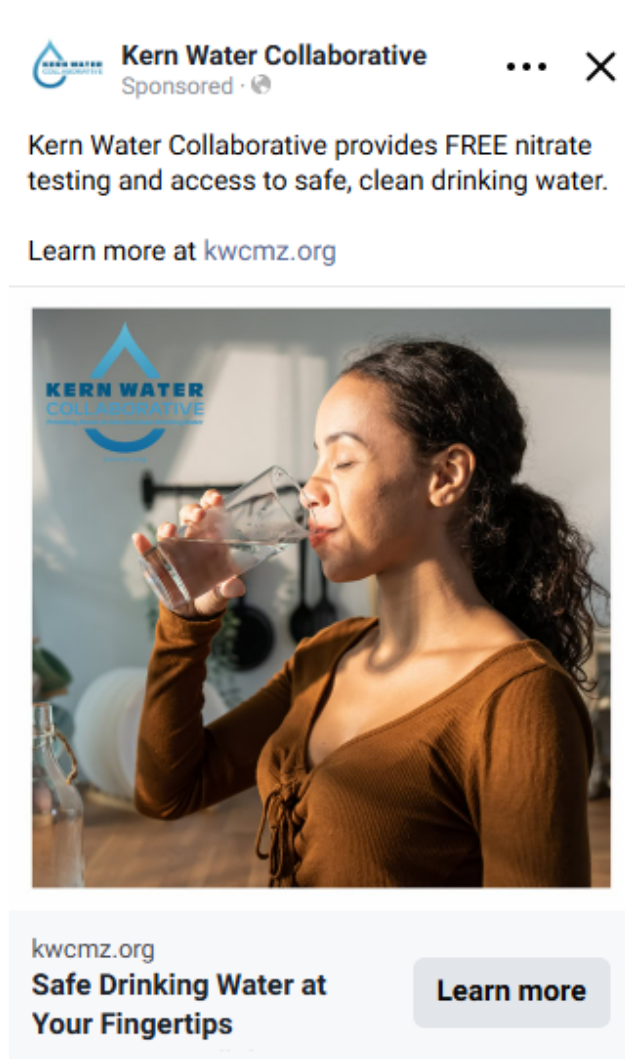
From these discussions, Management Zones are working toward consistent documentation of Community Outreach measurable achievements on the Nitrate Control Program's Public-facing Dashboard.



DIGITAL ADS

In November, KWC ran an awareness ad highlighting Kern Water Collaborative's free nitrate testing program and its commitment to providing community members with access to safe, clean drinking water, while directing viewers to kwcmz.org

FACEBOOK AND INSTAGRAM AWARENESS



Awareness Ad results:

- Impressions: **55,296**
- Reach: **30,322**

DIGITAL ADS

In November, KWC ran English and Spanish ads highlighting how easy it is to apply for free nitrate testing in Kern County through a simple three step process, directing residents to WellTest.kwcmz.org.

FACEBOOK AND INSTAGRAM TRAFFIC



Traffic English Ad results: Traffic Spanish Ad results:

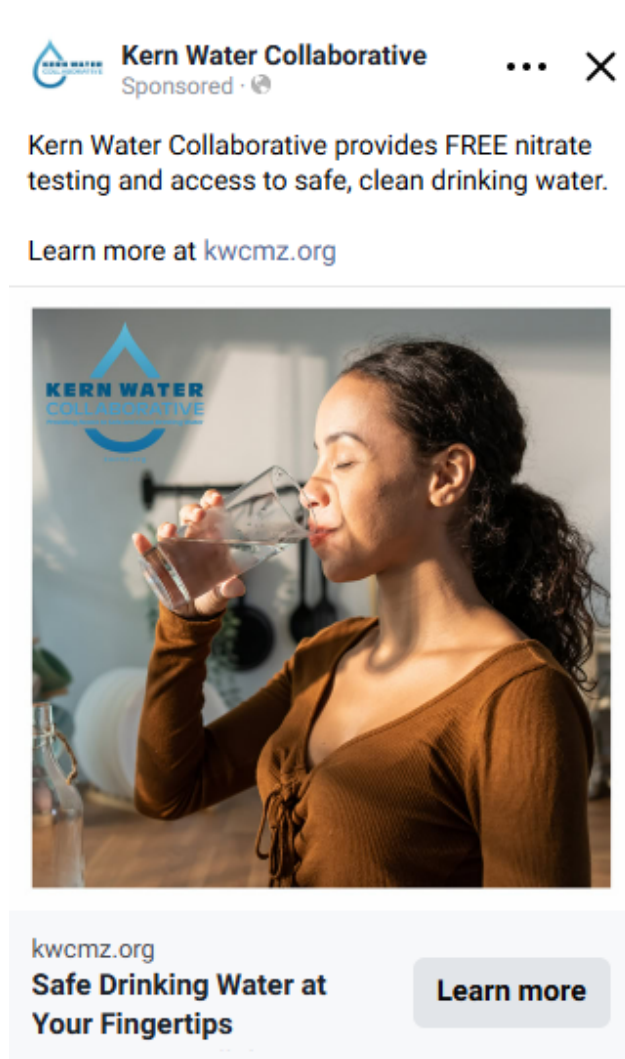
- Impressions: **11,204**
- Reach: **5,359**

- Impressions: **15,290**
- Reach: **6,404**

DIGITAL ADS

In December, KWC continued the awareness ad highlighting Kern Water Collaborative's free nitrate testing program and its commitment to providing community members with access to safe, clean drinking water, directing viewers to kwcmz.org.

FACEBOOK AND INSTAGRAM AWARENESS



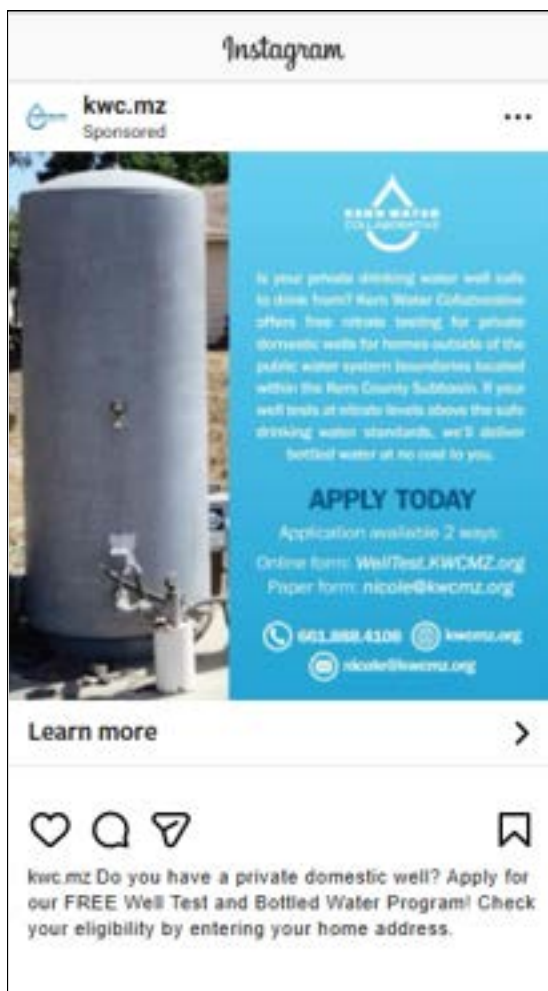
Awareness Ad results:

- Impressions: **63,852**
- Reach: **25,433**

DIGITAL ADS

In December, KWC launched bilingual (English and Spanish) advertisements promoting its free Well Testing and Bottled Water Program for private domestic well owners. The ads encouraged residents to check eligibility by entering their home address. The campaign began on December 22 and will continue through January 19, with performance metrics reflecting activity from launch through January 7.

FACEBOOK AND INSTAGRAM TRAFFIC



Traffic English Ad results:

- Impressions: **11,350**
- Reach: **5,496**



Traffic Spanish Ad results:

- Impressions: **16,317**
- Reach: **7,115**

LOOKING AHEAD

In Q1 2026, the Kern Water Collaborative (KWC) will conduct at least six outreach events across Kern's groundwater subbasins and coordinate an email campaign and Zoom Meeting for the Final Management Zone Proposal Public Comment Outreach Meeting. Partnering with school districts and organizations such as the Kern County Network for Children Community Collaboratives, KWC will expand access to resources through informational booths and the distribution of educational materials. Event highlights will be shared on KWC's social media channels and Community Outreach webpage to further extend reach.

KWC will also collaborate with Priority 1 Management Zone outreach leaders to refine strategies and maximize impact. To strengthen digital engagement, we will continue our social media ad strategy, distribute monthly email blasts and a quarterly newsletter by the end of March, and maximize the impact of regular e-newsletter circulation by uploading it onto the website. Earned media opportunities will also be pursued to broaden community awareness.

Together, these efforts position KWC to deepen community trust, reach new households, and scale outreach efforts in 2026 through more coordinated, data-informed engagement.



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