

**White Wolf Subbasin Groundwater Sustainability Agency
Regular Board Meeting of the Board of Directors**

**Agenda
June 5, 2018 at 1:00 p.m.**

**Iron Skillet Conference Room
5821 Dennis McCarthy Drive, Lebec, CA 93243**

- 1. Call to order**
 - 2. Recognition of Guests**
 - 3. Approval of Minutes of the Regular Board Meeting of March 20, 2018.**
 - 4. Approval of Minutes of the Special Board Meeting of April 11, 2018.**
 - 5. Discussion of Administrative Matters Related to the GSA (Angelica, Anona)**
 - a. Discuss GSP Development Cost Share between GSA Parties (including reconciling costs to date). (Anona)**
 - b. Review and Approve Minor Modifications of Proposition 1 Grant Materials to Enter into Grant Agreement with DWR (Anona)**
 - c. Establishment of Technical Committee and Meeting Schedule. (Angelica)**
 - 6. Review and Approve Stakeholder Communication and Engagement Plan (SCEP). (Anona/Tori)**
 - 7. Review and Approve Notice of Intent for Groundwater Sustainability Plan (GSP) Submittal.**
 - 8. Discuss Groundwater Modeling Coordination (Anona)**
 - 9. Review of White Wolf Basin Map and Acreage of Un-Districted Areas.**
 - 10. Public Comment**
- At this time, the public may address the Board on any item not appearing on the agenda that is within the subject matter jurisdiction of the Board. Comments will be limited to three minutes.*
- 11. Consider and provide direction on future agenda items**
 - 12. Adjourn**

In compliance with the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services, please call Angelica Martin (661) 663-4262.

White Wolf Subbasin Groundwater Sustainability Agency
Conference Room, Iron Skillet
5821 Dennis McCarthy Dr., Lebec, CA 93243
MINUTES
OF THE REGULAR BOARD OF DIRECTORS MEETING

Date of Meeting: Tuesday, March 20, 2018

Place of Meeting: Conference Room, Iron Skillet, 5821 Dennis McCarthy Drive, Lebec, CA 93243

Meeting Commenced at 1:03 p.m.

DIRECTORS PRESENT: Jeevan Muhar, Allen Lyda, Jeff Mettler, Patty Poire, Jon Reiter

ALTERNATES: Sheridan Nicholas, Angelica Martin.

DIRECTORS ABSENT: Tito Martinez.

PUBLIC AND STAFF: See attendees attached.

On motion by Director Muhar, seconded by Director Mettler, the draft minutes of the Regular Board meeting of September 19, 2017 were approved unanimously, subject to the following corrections; specify who are the alternate Directors, and correct to C2VSim in the 2nd to last paragraph.

Ms. Martin explained that Director Reiter had a conflict with the day the WW GSA meeting was set to take place, this being the third Tuesday of every third month. After a brief discussion, the Board agreed that the 1st Tuesday worked for all Directors. Legal counsel recommended a Resolution reflecting the change in the schedule be brought forward in the next Board meeting for Boards approval. She also reminded the Board that Forms 700 are due in April and asked all Directors, including alternates, to provide original signed document to her attention on a timely manner.

Anona Dutton from EKI Consultants gave a two part presentation. During the first part she provided an update of Prop 1 Grant Application, explaining that DWR had recommended full funding but final awards were not expected until end of March or early April. She also gave an update regarding the Kern County Subbasin GSA SGMA compliance, including their plan to use DWR model (C2VSim). It was discussed by the Directors that a letter from the Board should be sent to the KGA GSA to request access to C2VSim. EKI and Ernest agreed to work on drafting said letter and having the Board review before sending it out.

Ms. Martin explained that during the previous meeting the board had advised that a Technical Committee be formed to “flush-out” details of the GSP on an as needed basis. After a brief discussion the Board recommended that each District could assign two people to form part of this committee. They were not required to be in the WW GSA Board, and there could not be more than three directors in the committee. Ms. Martin agreed to send out an email to the Districts to request the names of their proposed representatives for the Technical Committee.

Mrs. Dutton continued with the second part of her presentation and talked about the development of the GSP. There was a brief discussion by the Board about making a chapter per District or a single plan with no chapters and it was agreed that this should be something to be considered by the Board in the near future. The Board also discussed the time frame for the development of the GSP and agreed that coordinating with the neighboring basin was important and does not imply the White Wolf GSP would be submitted before 2022. Anona explained the proposal submitted by EKI consultants for the Development of a GSP. The Board determined that it would be best of the proposal was taken to each Districts Board for review and that a special meeting be set for further discussion. Ms. Martin agreed to schedule the special Board meeting.

There was one public comment from a representative of The Windlands Conservancy. Mr. Landon Peppel mentioned the valley oak trees on the south side of the White Wolf Subbasin. However, it appears that the basin boundary skirts the lower elevations, and valley floor. He was not sure if the GSPs are only considered within the subbasin, but these are directly adjacent, and without well data, it was hard to tell what was driving their mortality. Big trees died in the drought, and continue to die.

Vice Chairman Lyda adjourned the meeting at 2:03 p.m.

Angelica Martin, Secretary, White Wolf Subbasin GSA

Approved by: White Wolf Subbasin GSA Board of Directors

Dated: June 5, 2018

White Wolf Subbasin Groundwater Sustainability Agency
Conference Room, Iron Skillet
5821 Dennis McCarthy Dr., Lebec, CA 93243
MINUTES
OF THE SPECIAL BOARD OF DIRECTORS MEETING

Date of Meeting: Wednesday, April 11, 2018

Place of Meeting: Conference Room, Iron Skillet, 5821 Dennis McCarthy Drive, Lebec, CA 93243

Meeting Commenced at 1:09 p.m.

DIRECTORS PRESENT: Jeevan Muhar, Tito Martinez, Jeff Mettler, Patty Poire, Jon Reiter

ALTERNATES: Angelica Martin.

DIRECTORS ABSENT: Allen Lyda

PUBLIC AND STAFF: See attendees attached.

Ms. Martin explained that during the last regular meeting she had recommended changing the GSA's meeting day since it was conflicting with Director Reiter's current schedule. Legal counsel had advised a Resolution be introduced for the Board's approval. Ms. Martin presented Resolution 2018-01, In The Matter of Adopting a Regular Meeting Schedule. The Resolution changed the regular meeting day from third Tuesday of every third month to first Tuesday of every third month. Director Poire suggested adding to the Resolution that the change would take effect starting June 5. On motion by Director Mettler, seconded by Director Reiter, Resolution 2018-01 was unanimously approved by the Board, pending the change recommended by Director Poire.

Anona Dutton initiated the conversation regarding the Proposal to Develop a GSP that EKI had submitted to the board in the last regular board meeting. She explained that public outreach is included in all five tasks. After a brief discussion Director Poire motioned to approve tasks 1, 2, and 5, and to leave 3 and 4 for a later date. Director Martin seconded, and the motion was unanimously approved by the board.

Mrs. Dutton pointed out that it could take 9-10 months to receive the Grant Agreement for Prop 1 grant. Once received, it would be brought to the board for review. She went on to explain that some of the costs that had already been incurred would be covered by the grant. A reimbursement would be then made to the Districts. EKI agreed to provide a detail of the budget that had already been spent. The Board also requested information on the white lands within the White Wolf Subbasin. It was also agreed that EKI would provide a draft of a Notice of Intent for GSP submittal during the GSA's next regular board meeting.

There was no public comment.

Chairman Martinez adjourned the meeting at 1:53 p.m.

Angelica Martin, Secretary, White Wolf Subbasin GSA

Approved by: White Wolf Subbasin GSA Board of Directors

Dated: June 5, 2018

Table 1
Accounting of Preliminary GSP Development Efforts in the White Wolf Basin
 Tejon-Castac Water District

Phase 1, Task 4 Conduct Preliminary GSP Development Efforts (a)	Cost Incurred and Paid By	Technical Consultant Cost (b)	Assumed Grant Reimbursable Amount (c)	Grant Cost Share Amount (c)	Travel Expenses (d)	
<i>Preliminary GSP Development Efforts Before 1 July 2017</i>						
Basin Boundary Modification	TCWD	\$74,878	\$0	\$71,615	\$3,263	
GSA Formation, Modeling Efforts Planning	TCWD	\$57,208	\$0	\$56,075	\$1,133	
AEWSD HCM and Water Budget	AEWSD (e)	\$15,167	\$0	\$15,167	\$0	
<i>Preliminary GSP Development Efforts After 1 July 2017 and through 4 May 2018</i>						
WRMWSD HCM and Water Budget	WRMWSD (e)	\$53,055	\$52,703	\$0	\$353	
AEWSD HCM and Water Budget Refinements	AEWSD (e)	\$7,858	\$7,778	\$0	\$80	
Meetings to Support Intrabasin Coordination, Stakeholder Outreach Meetings/Workshops	TCWD	\$15,608	\$15,436	\$0	\$172	
Proposition 1 Grant Prep, SGMA/GSP Website, Initial Assessment of Undesirable Results	TCWD	\$46,394	\$46,152	\$0	\$241	
	Total Technical Consultant Cost	\$270,168	\$122,069	\$142,857	\$5,242	Amount Owed to TCWD (f)
	Amount Incurred and Paid by AEWSD	\$23,025	\$7,778	\$15,167	\$80	\$34,119
	Amount Incurred And Paid by TCWD	\$194,087	\$61,588	\$127,690	\$4,809	--
	Amount Incurred and Paid by WRMWSD	\$53,055	\$52,703	\$0	\$353	\$49,014

Abbreviations:

AEWSD = Arvin-Edison Water Storage District
 GSA = Groundwater Sustainability Agency
 GSP = Groundwater Sustainability Plan
 HCM = hydrogeologic conceptual model

SGMA = Sustainable Groundwater Management Act
 TCWD = Tejon-Castac Water District
 WRMWSD = Wheeler Ridge-Maricopa Water Storage District

Table 1
Accounting of Preliminary GSP Development Efforts in the White Wolf Basin
Tejon-Castac Water District

Notes:

- (a) Effort included in Task 4 as described in the White Wolf GSA's Proposition 1 application materials.
- (b) Billed amount less transportation costs, which are not eligible for grant funding nor cost share.
- (c) Costs incurred after 1 July 2017 are grant reimbursable while cost incurred before 1 July 2017 are eligible for cost share.
- (d) Billed travel expenses are not eligible for grant reimbursement nor cost share.
- (e) Cost incurred by AEWS and WRMS is a portion of their total costs, corresponding to the proportion of their area in the White Wolf Basin.
- (f) Amount owed calculated assuming even division of technical consultant cost less grant reimbursable amount.

BACKGROUND

The White Wolf Groundwater Subbasin (DWR 5-022.18, hereinafter “Basin”) is a high priority basin and as such is required to comply with the Sustainable Groundwater Management Act (SGMA). Specifically, the Basin is required to be managed by one or more Groundwater Sustainability Agency (GSA) and to submit a Groundwater Sustainability Plan (GSP) by January 2022.

The Basin is collectively represented by one exclusive GSA, the White Wolf GSA (hereinafter “the GSA”), composed of Arvin-Edison Water Storage District (AEWSD), Tejon-Castac Water District (TCWD), Wheeler Ridge-Maricopa Water Storage District (WRMWS), and Kern County. The Basin, GSA, and other relevant jurisdictional boundaries are shown in Figure 1. The GSA is governed by a Board of Directors (hereinafter “GSA Board”) with two representatives each from AEWSD, TCWD, and WRMWS, and one representative from Kern County. The GSA Board will select an ad hoc Technical Committee (hereinafter “TC”) to guide and contribute to the efforts outlined in this Work Plan.

This Work Plan assumes that the GSA will do the work described herein directly through in-kind services of the TC or through contracts with a specialized consultant team. Specifically, this Work Plan assumes that the GSA will retain a qualified consultant team to complete the technical and stakeholder engagement work described herein and will be an active participant in the GSP development effort. This effort will include the TC providing data and in-kind support for Plan development, the GSA Board engaging in proactive and informed decision-making during GSA Board meetings, and both the GSA Board and the TC providing constructive feedback and timely reviews of work products produced by the consultant team.

Kern County received funding through the Sustainable Groundwater Planning (SGWP) Proposition 1 *Counties with Stressed Basins* solicitation for GSA formation, stakeholder outreach, water budget refinement, and coordination efforts in the Kern County Groundwater Subbasin (DWR 5-022.14, hereinafter “Kern Subbasin”) and the Indian Wells Valley Groundwater Subbasin (DWR 6-054). The effort included in this Work Plan is being conducted for the White Wolf Subbasin and is not duplicative with efforts in the larger Kern Subbasin. All interbasin coordination efforts outlined herein will complement those being conducted by Kern agencies for the Kern Subbasin.

PROJECT OVERVIEW

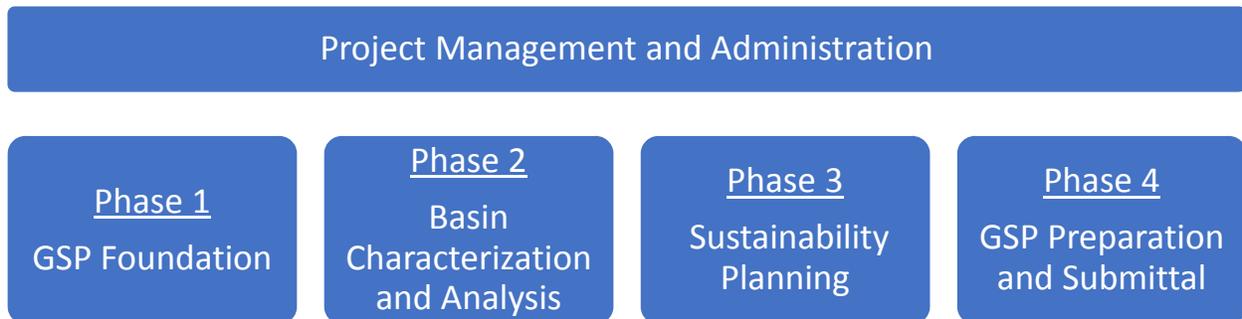
For the purposes of this Proposition 1 Grant Application, the “Project” is the development of a SGMA-compliant GSP for the Basin.

PROJECT OBJECTIVES

The main objective of this Project is to develop a complete GSP for the Basin that will comply with and meet all requirements of the GSP Emergency Regulations (23-CCR §350-358.4) and will provide a reasonable path forward for demonstrating sustainable groundwater management in the Basin by the SGMA implementation deadline of 2042. The Project is designed to meet all requirements for a Category 2, Tier 2 SGWP Proposition 1 grant outlined in the Groundwater Sustainability Plans and Projects Proposal Solicitation Package (PSP).

PROJECT PHASING

The Work Plan (and associated Budget and Schedule) divides the overall effort for GSP Development into four phases with a Project Management and Administration Phase (PM Phase) covering the entire GSP development process. As shown in the graphic below the four phases are: (1) GSP Foundation, (2) Basin Characterization and Analysis, (3) Sustainability Planning, and (4) GSP Preparation and Submittal. Each phase builds off efforts and results of the previous phases.



As shown in the attached Project Schedule, the four phases overlap temporally in cases where activities in a later phase can be initiated while activities in a previous phase are still ongoing. The work efforts of Phases 1 through 3 are accelerated with the objectives of

- **Keeping pace with SGMA efforts in the adjacent Kern Subbasin** (which is in critical overdraft condition and thus subject to an accelerated SGMA compliance schedule); and
- **Supporting effective interbasin coordination**, particularly with respect to critical factors such as the water budget and numerical groundwater model development (Phase 2) and the development and vetting of sustainability criteria (Phase 3).

INTERIM WORK PRODUCTS

The Work Plan will be implemented in a transparent and collaborative fashion to ensure the GSA and other Basin stakeholders, groundwater users, and the general public will be informed about the Project progress and will have ample opportunity to provide timely input. Specifically, the work effort of each major task described herein will be documented as follows:

- **Technical Presentations** that will be made on a regular basis to the GSA and Basin stakeholders to provide for an open and transparent process and significant opportunity for input as key elements of the GSP are being developed. This approach ensures that there is sufficient outreach when the Draft Technical Memoranda (see below) are reviewed and will streamline the review and revision process as major issues will have been vetted during the development stage by all parties; and
- **Draft Technical Memoranda (TM)** and associated tables and figures that will be submitted for review and comment by the GSA and in some cases additional key stakeholders. The TMs will reflect input received during the related technical presentations and will be drafted to support key elements of the GSP. The Draft TMs will not be finalized; rather the suggested revisions to the Draft TMs will be incorporated into chapters of the Draft GSP.

Selected work products, resources and underlying data will be made available for public review on the GSA website (<http://www.whitewolfgsa.org/>).

PROJECT DELIVERABLES

The deliverable for this Project is a complete and fully SGMA-compliant GSP, including all associated data and informational components (i.e., a functional Data Management System containing all preliminary data and a bibliography of sources used to develop the GSP; Numerical Model input/output files and documentation, project feasibility studies, etc.), submitted to the California Department of Water Resources (DWR) by the January 2022 deadline.

Additionally, the Project Applicant will submit all required grant administration-related reports to DWR – including quarterly progress reports and a final report – as established in the Grant Agreement that will be entered into by the Project Applicant and DWR.

SUMMARY WORK PLAN FOR GRANT ADMINISTRATION PURPOSES

Although the Project Work Plan has been developed in significant detail, it is assumed that, for purposes of grant administration, the Project Applicant will work with DWR to manage the grant at the Phase level. As such, a brief summary Work Plan that describes each Phase and the associated tasks and associated work products and deliverables is provided below. This information supports and is consistent with the level of detail presented in the Project Budget and Schedule.

A more detailed description of each Phase and Task follows thereafter in the “Detailed Project Work Plan”.

PM PHASE - PROJECT MANAGEMENT AND ADMINISTRATION (0% COMPLETE)

The Project Management and Administration Phase (PM Phase) includes tasks related to general management of the entire GSP development process (i.e., through the January 2022 submission deadline). The PM Phase efforts will be carried out concurrently with the execution of Phases 1 through 4, and includes the following Tasks consistent, where applicable, with the grant administration requirements outlined in the PSP Grant Agreement Template and the technical and reporting standards outlined in the GSP Regulations (23-CCR §352-352.6):



- Task 1. Proposition 1 Grant (Grant) Management, Administration, and Reporting
- Task 2. Project Management (for GSP Development)
- Task 3. Quality Assurance/Quality Control

Anticipated work products under the PM Phase will include:

- Project Meeting agendas, minutes and presentations, as applicable;
- Project schedule, budget tracking and other management tools; and
- Draft and Final QA/QC Plan.

Deliverables to DWR under the PM Phase will include all submittals required by Proposition 1 grant requirements and agreed to in the Grant Agreement, including:

- Quarterly progress and accountability reports;
- A final Project Completion Report;
- A Grant Completion Report; and
- A Coordination Agreement (*as necessary*).

PHASE 1 – GSP FOUNDATION (15% COMPLETE)

Phase 1 of the Work Plan involves the following Tasks consistent, where applicable, with portions of Articles 3, 4, 5-1, 5-2, and 8 of the GSP Regulations (23-CCR §352-354.18, §357-357.4):



Task 4. Conduct Preliminary GSP Development Efforts

Task 5. Provide Initial Notification of GSP Development

Task 6. Select or Design a Data Management System (DMS)

Task 7. Gather and Compile Available Data into the DMS

Task 8. Gather and Compile Information on the Plan Area and Basin Management Activities

Task 9. Conduct Data Gaps Assessment

Task 10. Evaluate Numerical Groundwater Model Options

Task 11. Update GSP development Funding Plan

Task 12. Develop Stakeholder Communication and Engagement Plan (SCEP)

Task 13. Conduct Stakeholder Engagement Related to the GSP Foundation Phase

Task 14. Participate in Intrabasin and Interbasin Coordination Efforts

Efforts under Phase 1 will prepare the GSA with the data, information, technical tools (i.e., a selected numerical model), and funding and outreach plans needed to successfully perform the subsequent Basin Characterization and Analysis efforts under Phases 2 and 3. Anticipated work products from Phase 1 efforts include:

- A functional DMS containing all preliminary data and a living bibliography;
- Draft TM #1 – Data Management System Evaluation and Selection;
- Draft TM #2 – Data Compilation and Data Gaps Assessment;
- Draft TM #3 – Numerical Groundwater Model Evaluation and Selection;
- Draft TM #4 – GSP Development Funding Plan; and
- Draft TM #5 – Stakeholder Communication and Engagement Plan

Phase 1 will extend from the grant award date through July 2018¹. Focused technical presentations will be made to the GSA Board and TC to present the data, methodology, and results from each task and to solicit feedback prior to drafting and submitting each Draft TM for review.

¹ Cost-sharing activities associated with Phase 1 efforts will encompass relevant work undertaken by the GSA and the entities comprising the GSA since January 2015 (the effective date of SGMA).

PHASE 2 - BASIN CHARACTERIZATION AND ANALYSIS (0% COMPLETE)

Phase 2 of the Work Plan focuses on technical analysis of Basin conditions, and includes the following Tasks consistent, where applicable, with portions of the Basing Setting and Monitoring Network sections of the GSP Regulations (23-CCR §354.12-18, §354.32-40):



- Task 15. Implement Plan for Filling Data Gaps Needed for GSP Preparation
- Task 16. Assess Groundwater Conditions and Develop Hydrogeologic Conceptual Model
- Task 17. Coordinate Regarding C2VSim Modeling
- Task 18. Develop a Basin-Wide Water Budget
- Task 19. Assess Existing Monitoring Programs and Develop SGMA-Compliant Monitoring Network
- Task 20. Conduct Stakeholder Engagement Related to Basin Characterization and Analysis
- Task 21. (Continue to) Implement GSP Development Funding Plan
- Task 22. (Continue to) Participate in Intrabasin and Interbasin Coordination Efforts

Efforts under Phase 2 will build towards a complete and coherent understanding of the Basin that will serve as the foundation for sustainability planning efforts under Phase 3. Anticipated work products from Phase 2 efforts include:

- Draft TM #6 – Groundwater Conditions and Hydrogeologic Conceptual Model;
- Draft TM #7 – Model Development and Calibration;
- Draft TM #8 – Water Budget and Preliminary Estimate of Sustainable Yield; and
- Draft TM #9 – Summary of Monitoring Network Assessment and Preliminary Monitoring Plan.

Phase 2 will extend from July 2018 to July 2019. Focused technical presentations will be made to the GSA and TC to present the data, methodology, and results from each task and to solicit feedback prior to drafting and submitting each Draft TM for review.

PHASE 3 - SUSTAINABILITY PLANNING (0% COMPLETE)

Phase 3 of the Work Plan focuses on planning for the sustainable management of the Basin, and includes the following Tasks consistent, where applicable, with portions of the Basin Setting, Sustainable Management Criteria, Monitoring Network, and Project and Management Actions sections of the GSP Regulations (23-CCR §354.20-44):



- Task 23. Evaluate Potential Management Areas
- Task 24. Develop Sustainable Management Criteria
- Task 25. Identify Projects and Management Actions
- Task 26. Create GSP Implementation Plan

Attachment 4 – Work Plan

- Task 27. Finalize Monitoring Network and Protocols
- Task 28. Conduct Stakeholder Engagement Related to Sustainability Planning
- Task 29. (Continue to) Implement GSP Development Funding Plan
- Task 30. (Continue to) Participate in Intrabasin and Interbasin Coordination Efforts

Anticipated work products from Phase 3 efforts include:

- Draft TM #10 – Establishment of Sustainability Criteria;
- Draft TM #11 – Proposed Projects and Management Actions;
- Draft TM #12 – GSP Implementation Plan; and
- Draft TM #13 – Proposed Monitoring Network and Protocols.

Phase 3 will extend from July 2019 to July 2020. Focused technical presentations will be made to the GSA and TC to present the data, methodology, and results from each task and to solicit feedback prior to drafting and submitting each Draft TM for review.

PHASE 4 - GSP PREPARATION AND SUBMITTAL (0% COMPLETE)

Phase 4 of the Work Plan involves preparation of the GSP for submittal to DWR, and includes the following Tasks consistent, where applicable, with requirements for GSP submission outlined in the GSP Regulations and in the California Water Code (CWC §10727-10728.6):



- Task 31. Compile Complete Draft GSP
- Task 32. Distribute Draft GSP and Revise (if necessary) per Stakeholder Feedback
- Task 33. Submit Final GSP to DWR
- Task 34. (Continue to) Participate in Intrabasin and Interbasin Coordination Efforts

Anticipated work products from Phase 4 efforts include:

- A Final (written) GSP;
- Coordination Agreements (as applicable);
- A Data Management System, integrated with all existing data; and
- Numerical Model Inputs/Outputs.

It is anticipated that Phase 4 will extend from July 2020 through the GSP submission deadline of January 2022.

DETAILED PROJECT WORK PLAN

PM PHASE - PROJECT MANAGEMENT AND ADMINISTRATION (0% COMPLETE)

The Project Management and Administration Phase (PM Phase) includes tasks related to general management of the entire GSP development process (i.e., through the January 2022 submission deadline). The PM Phase efforts will be carried out concurrently with the execution of Phases 1 through 4.



Task 1: Proposition 1 Grant Management, Administration, and Reporting (0% complete)

This task includes all work efforts needed to comply with the Grant reporting and administration requirements, including accounting of expenditures of allocated grant monies, preparation of progress reports, invoices, and associated documentation, and as-needed communications with DWR Sustainable Groundwater Planning (SGWP) grant administration staff.

As specified in the PSP Grant Agreement Template, deliverables to DWR will include:

- Quarterly progress and accountability reports;
- A final Project Completion Report;
- A Grant Completion Report; and
- A Coordination Agreement (*as necessary*).

The requirements for this reporting shall be established in the grant agreement that will be entered into by the GSA and DWR.

Task 2: Project Management (0% complete)

This task includes overall project management activities, including management of project budgets, schedule, staff assignments, subconsultant/subcontractor management, records management, contract compliance, etc. This task will also cover routine communication between the consultant team and the TC and GSA, including the preparation of Project meeting agendas, presentations, minutes, etc.

Task 3: Quality Assurance/Quality Control (0% complete)

Under this task, the GSA will develop and implement a QA/QC Plan to ensure that all work projects, deliverables, are developed using standardized methodologies appropriate to each individual work product, and undergo review for conformance with applicable standards. The methodologies covered under the QA/QC Plan will include those related to:

- Data collection and compilation;
- Maintenance of a project bibliography (i.e., document repository);
- Technical analyses including water budgets and numerical modeling;
- Preparation of graphics including map-based figures and others;
- Preparation of written work products (i.e., technical memoranda and reports); and
- Performance of project management activities.

PHASE 1 - GSP FOUNDATION (15% COMPLETE)

Efforts under Phase 1 will prepare the GSA with the data, information, technical tools (i.e., a selected numerical model), and funding and outreach plans needed to successfully perform the subsequent Basin Characterization and Analysis efforts under Phases 2 and 3. Phase 1 will extend through July 2018.



Task 4: Conduct Preliminary GSP Development Efforts (100% complete)

After SGMA was adopted on January 1, 2015, entities in the Basin initiated efforts to comply with SGMA. The following are specific efforts that have already been carried out [as of beginning of May 2018](#):

- GSA formation;
- Basin Boundary Modification, which included the assessment and compilation of basin-wide data on geology, groundwater levels, aquifer properties, and boundary flows, and other information relevant to GSP preparation and basin characterization analyses;
- Efforts by the agencies that comprise the GSA to characterize the portions of the Basin that underlie their service area, including the development of preliminary Hydrogeologic Conceptual Models (HCMs), water budgets, and groundwater conditions assessments by AEWSD (completed) and WRMWSD (~~upcoming~~completed);
- Development and initiation a CASGEM monitoring program for the entire White Wolf Subbasin, an effort which involved assessing available groundwater level data and wells suitable for monitoring data collection;
- Initial assessment of potential undesirable results and data gaps based off publicly available data sources (see Figure 2 through Figure 5);
- Modeling efforts planning;
- Stakeholder workshops;
- Development of SGMA/GSP Website (<http://www.whitewolfgsa.org/>); and
- Preparation of a grant application.

These efforts are included in the budget for this project, as they constitute foundational technical efforts that have contributed to GSP development for the White Wolf Subbasin. For example, for the HCM developed for AEWSD, the portion of the total cost of this effort that can be attributed to GSP

development for the White Wolf Subbasin is estimated using a proportion of the total AEWS service area that overlies the White Wolf Subbasin.

Task 5: Provide Initial Notification of GSP Development (0% complete)

The GSP Regulations (23-CCR §353.6) require that each GSA shall notify DWR of their process for developing the GSP, including how interested parties can contact the GSA and participate in the development and implementation of the GSP. The GSA will prepare the required initial notification documentation and submit it to DWR via the online SGMA portal to commence GSP development. Additionally, the GSA will post all initial notification documentation on the GSA website (<http://www.whitewolfgsa.org/>).

Task 6: Select or Design Data Management System (0% complete)

The GSP Regulations (23-CCR §352.6) require that each GSA develop a DMS to enable the storage and reporting of information relevant to GSP implementation and monitoring of basin conditions. DWR's *BMP 2 Monitoring Networks and Identification of Data Gaps* briefly discusses DMS requirements, and indicates that DWR intends to update BMP 2 with a suggested DMS data structure to facilitate data consistency, transparency, and sharing amongst basins and with DWR. Data to be included in the DMS must conform to the Data and Reporting Standards described in §352.4 of the GSP Regulations and must be consistent with the requirements of any inter- or intra-basin coordination agreements that address data consistency.

Evaluate Data Management Systems

The GSA will select or develop a DMS in accordance with the forthcoming update to the DWR's BMP guidance. The various options for the DMS will be evaluated and summarized for review and consideration by the GSA. The review will include potential "off-the-shelf" data management tools, or the development of a customized DMS. It is anticipated that the DMS will include both spatial and temporal data, and that the two data types will be linked through use of a Geographic Information System (GIS) geodatabase. Specifically, it is anticipated that:

- **Spatial data** will generally be stored as shapefiles or other graphical formats, as appropriate, and will include but not be limited to surficial soils and geology; topography; natural and artificial surface water features (i.e., rivers and streams, lakes, reservoirs, springs, wetlands, canals, recharge basins, etc.); wells, stream gauges, subsidence monitoring stations, and other monitoring sites, as applicable; various boundaries (i.e., basin, agency, GSA, Disadvantaged Community [DAC], and parcel boundaries); and
- **Temporal data** will be stored in a set of cross-referenced tables, and will include, but not be limited to climate and meteorological data; hydrology/streamflow; well-specific data on groundwater levels and quality; land use/cropping data; water use information (including groundwater pumping, imports and deliveries by water suppliers); and demographic/population data.

The DMS will be constructed to include QA/QC checks, in accordance with the QA/QC Plan developed under Task 3, so that all data entered into the DMS are valid and compatible for subsequent analyses necessary for GSP preparation and implementation. The DMS will be designed to allow for the accurate

and efficient export of information for GSP analysis as well as on-going reporting purposes. Also, the DMS shall readily provide for future addition of new data and GSA staff will be trained on use of the DMS as a part of Task 26.

Prepare Technical Presentation(s) and Draft Technical Memorandum

The options for DMS selection and/or development will be summarized in technical presentation(s) made to the GSA Board and TC and summarized in *Draft TM #1 – Data Management System Evaluation and Selection* for consideration by the GSA, which will then decide on what approach to utilize.

Task 7: Gather Available Data and Compile into DMS (40% complete)

Under Task 7, the GSA will gather and compile available existing data in support of subsequent GSP analyses (e.g., groundwater conditions assessment, hydrogeologic conceptual model [HCM], water budget analysis) into the Basin DMS.

The districts comprising the GSA have already compiled data from many of the above sources identified below as a part of the Basin Boundary Modification effort. These already compiled data will form the foundation of the data to be compiled into the DMS and will be updated and augmented with more recent data as available.

Compile Publicly Available Data

DWR has compiled many useful data sources and tools on its website, including the “*Sustainable Groundwater Management - Data, Tools, and Reports*” webpage. The GSA intends to frequently revisit DWR webpages and data repositories to ensure compilation of all applicable, publicly available data. Statewide or federal (i.e., non-local) public data sources that will also be mined for the purposes of populating the DMS for subsequent GSP analysis include the following:

- Groundwater Level Data:
 - DWR California Statewide Groundwater Elevation Monitoring Program (CASGEM);
 - DWR Groundwater Information Center (GIC); and
 - DWR Water Data Library (WDL).
- Surface Water Flow Data:
 - DWR California Data Exchange Center (CDEC);
 - DWR WDL;
 - United States Geological Survey (USGS) National Water Information System (NWIS); and
 - United States Bureau of Reclamation (USBR).
- Surface Water Diversion and Permitting Data:
 - State Water Resources Control Board (SWRCB) Electronic Water Rights Information Management System (eWRIMS) data
- Climatological / Meteorological Data:
 - DWR CDEC;
 - DWR California Irrigation Management Information System (CIMIS);
 - National Oceanic and Atmospheric Administration (NOAA) data; and
 - PRISM climate data.
- Groundwater Quality Data:

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- SWRCB Groundwater Ambient Monitoring and Assessment (GAMA) program;
- SWRCB GeoTracker program;
- SWRCB Division of Drinking Water (DDW); and
- USGS NWIS.
- Topography: USGS
- Surficial Soils: United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS)
- Surficial Geology:
 - USGS reports; and
 - California Division of Mines and Geology (CDMG) reports.
- Land Use:
 - GSA districts Land Use Surveys
 - DWR Land Use Surveys;
 - USGS National Land Cover Database (NLCD);
 - USDA; and
 - Any publicly available city- and/or county- wide land use surveys.
- Population:
 - DWR;
 - State Department of Finance; and
 - United States Census Bureau
- Water Use:
 - DWR Agricultural Land and Water Use Estimates; and
 - ITRC Evapotranspiration (ET) Data.
- Well Construction information
 - DWR Well Completion Report Map (*forthcoming*); and
 - California Department of Oil, Gas, and Geothermal Resources (DOGGR) logs.

Compile Local and Basin-Specific Data

To supplement the above public data sources, additional information from local sources (i.e., agencies within the Basin) will be gathered and compiled under Task 7. It is anticipated that this local information may include more detailed information on land use, water use, groundwater levels, and water quality in the Basin. Information will be entered into the Basin DMS and/or a document repository established in support of GSP development using the QA protocols established during DMS construction under Task 6. These local data sources include, but are not limited to, the following:

- Groundwater Management Plans (GWMPs) prepared by WRMWSD (2007) and AEWS (2003) and accompanying annual updates;
- CASGEM Monitoring Network Plans prepared by AEWS (2010) and the White Wolf GSA (2017);
- The Basin Boundary Modification Request submitted by AEWS, TCWD, and WRMWSD and approved by DWR in 2016, and the associated White Wolf Subbasin Technical Study (EKI, 2016);
- AEWS's recently developed HCM, water budget, and definition of groundwater conditions for its service area;
- WRMWSD's upcoming HCM, water budget, and definition of groundwater conditions for its service area;

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- Agricultural Water Management Plans (AWMPs) prepared by WRMWSD (2015) and AEWS (2015) and submitted to DWR;
- General Plans (discussed further under Task 8 below);
- Databases of well records, water level data, water quality data, operational data (e.g., deliveries of water to customers of each water supplier);
- Relevant data and information being developed in the adjacent Kern Subbasin as part of SGMA efforts (e.g., numerical flow model data inputs, etc.);
- Results of studies and investigations by individual entities within the Subbasin; and
- Any other available and relevant data and/or information.

Additionally, outreach to agencies and other stakeholders in the Basin will be conducted to collect additional relevant local data sources not yet identified by the GSA.

Prepare Technical Presentations(s) and Draft Technical Memorandum

Results of Task 7 will be presented pursuant to Task 9.

Task 8: Compile Information on the Plan Area and Basin Management Activities (0% complete)

The GSP Regulations (23-CCR §354.8) require that each GSP contain information on the Plan Area, including the following:

- Maps depicting the area covered by GSP, adjudicated areas, other agencies within the basin, and areas covered by an Alternative, jurisdictional boundaries of federal, state, tribal, city, county, and agencies with water management responsibilities, areas covered by relevant General Plans, existing land use designations, the density of wells per square mile, and locations of communities dependent on groundwater;
- A written description of the Plan area describing the features depicted on the above maps;
- Identification and description of water resource monitoring and management programs, how those programs may be incorporated into the Plan, and how they may limit operational flexibility in the basin;
- A description of conjunctive use programs, if any;
- A description of land use elements or topic categories of applicable General Plans, including a summary of those plans, how implementation of the GSP may change water demands or affect achievement of sustainability and how the GSP addresses those effects, how implementation of the GSP may affect the water supply assumptions of relevant land use plans and how land use plans outside the basin could affect the ability to achieve sustainable groundwater management within the basin;
- A summary of the permitting process for new or replacement wells in the basin; and
- Any additional elements determined to be relevant and appropriate.

Review Information on the Plan Area and Basin Management Activities

Under Task 8, the above information will be compiled, reviewed and summarized to the extent applicable. In addition, the required set of maps will be prepared. An extensive bibliography will be developed and maintained of relevant reports, documents, and web-based resources. The review will be necessary at

this stage to inform the subsequent basin analyses and sustainability planning to be performed under Phases 2 and 3 (i.e., the water budget, development of management actions and criteria, etc.).

Prepare Technical Presentations(s) and Draft Technical Memorandum

Results of Task 8 will be presented pursuant to Task 9.

Task 9: Conduct Data Gaps Assessment (0% complete)

The GSA has performed an initial compilation of existing, publicly available data on groundwater conditions in the Basin.² The results of this preliminary assessment are shown in Figure 2 through Figure 5 and are summarized as follows:

- **Groundwater Elevations / Storage Change.** CASGEM Spring 2013 data included approximately 18 water level records within the Basin; water level data were noticeably absent along in the southern, western, and eastern portions of the Basin (see Figure 2); additionally, no aquifer-specific groundwater level information was readily available.
- **Seawater Intrusion.** No publicly available data exist regarding seawater intrusion conditions in the Basin; this is likely due to the Basin's location on the southern edge of the Central Valley, where seawater intrusion is not anticipated to occur at any significant rate.
- **Water Quality.** Water quality data from AEWS for calendar year 2016 are shown on Figures 3a through 3g, but are isolated to the AEWS service area within the Basin. GAMA water quality data are minimal (only five wells for which there are few samples) and thus not included. For these 2016 data, Figure 3a shows that several wells near I-5 exceeded the Secondary Maximum Contaminant Level (MCL) for Total Dissolved Solids (TDS); Figure 3b shows that over half of the wells tested exceeded the Primary MCL for nitrate; Figure 3c shows that five of the wells tested exceeded the Primary MCL for arsenic; Figure 3d shows that several wells near I-5 had high boron levels that may reduce agricultural productivity; Figure 3e shows that several wells close to the boundary with the Kern Subbasin exceeded the Secondary MCL for iron; and Figure 3f shows that one well exceeded the Secondary MCL for manganese. GeoTracker records indicated the presence of two open contamination sites and another eight closed sites within the Basin (see Figure 3g). These limited data indicate that collection of additional water quality data will be necessary to characterize groundwater quality throughout the Basin.
- **Land Subsidence.** DWR's May 2015-May 2016 survey of *Land Subsidence in the San Joaquin Valley*³ covers only a small portion of the Basin along the northern border. Two University Navigation Satellite Timing & Ranging Consortium (UNAVCO) continuous GPS stations are located in the Basin – one in the northwest and one along the southern border of the Basin (see Figure 4). These UNAVCO stations indicate that there has been little to no subsidence in the Basin since the stations were installed in 1999 and 2000.

² These data relate to potential Undesirable Results, which are defined and discussed in Task 24.

- **Streamflow Depletion.** One USGS streamflow gauge is installed along the section of Tejon Creek in the eastern portion of the Basin (see Figure 5).

While some data exist near the boundary of the Basin with the Kern Subbasin, data are sparse further south, west, and east of the boundary for most sustainability indicators. These data gaps will need to be addressed to monitor for all sustainability indicators throughout the Basin; near-term efforts to address these data gaps are included in Task 15.

Refine Preliminary Data Gaps Assessment

Upon completion of data and information compilation tasks described above (Task 7 and Task 8), the GSA will conduct a more complete assessment of data gaps under Task 9. The purpose of this data gaps assessment will be to identify high priority data gaps that will need to be filled in the near term in order to prepare the GSP. The assessment will therefore focus on information pertinent to requirements under the GSP Regulations for the Plan area description, the HCM, the groundwater conditions, and the water budget. The assessment will generally be performed in accordance with GSP Regulations (23-CCR §354.38) and the flow chart included as Figure 4 of BMP 2.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from this task (and prior Task 7 and Task 8) will be summarized in technical presentation(s) made to the GSA and TC and summarized in *Draft TM #2 – Data Compilation and Data Gaps Assessment* that includes a description of the data gaps analysis effort, a table summarizing and prioritizing the identified data gaps, and a description of potential activities that may be undertaken to address the data gaps. The potential plans to fill data gaps will describe the intended benefits/rationale, data collection methods, estimated costs, permitting and regulatory requirements, and other relevant considerations for each potential data gap filling activity. Costs to fill data gaps that have already been identified by the GSA are provided under Task 15 of the Project Budget, but are not included in the actual grant request as these may potentially warrant solicitation of DWR’s Technical Support Services. Data gaps that the GSA has yet to identify may also warrant solicitation of DWR’s Technical Support Services and/or any other applicable future funding sources that may become available throughout the course of GSP development and implementation.

Task 10: Evaluate Numerical Groundwater Model Options (0% complete)

The GSP Regulations require that the “best available science” be used to quantify the water budget for the Basin (23-CCR §354.18) and to support the definition of management actions (23-CCR §354.44). DWR’s review of GSPs will include consideration of whether the “best available science” supports the assumptions, criteria, findings, and objectives of the Plan. While the use of a numerical groundwater and surface water model is not *required* under the GSP Regulations, the 23-CCR §354.18 states that “If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify an equally effective method, tool, or analytical model to evaluate projected water budget conditions.”

Conduct Groundwater Model Evaluation

It is likely that a numerical groundwater/surface water model will be required in order to develop future water budgets and to more fully represent and understand complexities inherent to certain conditions and fluxes within the Basin. These complexities include subsurface flows across the boundary with the Kern Subbasin along the White Wolf Fault.

Known numerical groundwater and surface water model options for GSP development for the White Wolf Subbasin include, but are not limited to:

- DWR’s California Central Valley Groundwater and Surface Water Simulation Model (C2VSim);
- USGS’s Central Valley Hydrologic Model (CVHM);
- WRMWSD’s Bookman-Edmonston Model (specific to the White Wolf Subbasin); and
- A custom model developed for the White Wolf Subbasin for SGMA purposes.

The White Wolf GSA understands that GSAs in the adjacent Kern Subbasin are planning to use DWR’s C2VSim Fine Grid Model. The White Wolf GSA intends to participate in the Kern Subbasin shared modeling effort to assist with water budget analysis for the Basin, assuming that the C2VSim model results are reasonably reflective of conditions within the Basin.

Since the new C2VSim Fine Grid Model has not yet been released, it is currently unknown how well it represents conditions in the Basin. Upon release of the model by DWR, the GSA will review the C2VSim Fine Grid Model with respect to the assumptions and parameterization in the White Wolf Subbasin, as well as review the other model options identified above, and make a final recommendation as to how to proceed with respect to modeling.

Prepare Technical Presentation(s) and Draft Technical Memorandum

The results of this numerical model evaluation task will be summarized in technical presentation(s) to the GSA and TC and *Draft TM #3 – Model Evaluation and Selection* for consideration by the GSA, which will then decide on which, if any, numerical modeling approach to use for GSP development.

Task 11: Update GSP Development Funding Plan (0% complete)

As a part of preparing this Work Plan and corresponding budget, the GSA has conducted a funding needs assessment that accounts for the estimated budget to develop the GSP, and the estimated amount of funding allocated from DWR through this SWGP Grant Solicitation, as well as estimates of local funding and in-kind services. If awarded a SGWP Grant, the GSA will update the funding plan as needed to account for the actual grant award amount.

To the extent that local funds are needed to fulfill the cost share requirements for this Project, the GSA will follow the required process for public notice and public hearings as documented in California Water Code 10730 and/or Proposition 218. To the extent that costs (e.g., for filling data gaps) exceed that which

is anticipated at the time of this Proposal, the GSA will investigate other options for financial or in-kind assistance, including DWR’s Technical Assistance Program.

The results of this updated funding plan will be summarized in technical presentation(s) and in a *Draft TM #4 – Updated GSP Development Funding Plan* to document the GSA’s final funding approach for GSP development.

Task 12: Develop Stakeholder Communication and Engagement Plan (0% complete)

The GSP Regulations (23-CCR §354.10) require a summary of the engagement and communication by the GSA leadership with other agencies and interested parties in the Basin. Specifically, the GSP Regulations (23-CCR § 354.10) prescribe “notice and communication” requirements for agencies preparing GSPs which require that a GSP include, among other things, a communication section that explains the GSA’s decision-making process; describes opportunities for public engagement and how public input and response will be used; encourages active involvement of diverse social, cultural, and economic elements of the population within the Basin; and describes the methods for informing the public on GSP implementation progress. The GSA will develop a Stakeholder Communication and Engagement Plan (SCEP) to guide stakeholder engagement throughout the GSP development and implementation process.

The GSA intends to continue to engage with stakeholders in a similar process as demonstrated through the Basin Boundary Modification process carried out by WRMWSD, AEWSD, and TCWD and the GSA formation process carried out by the GSA. During the GSA formation process, beneficial users of groundwater were identified (as summarized below); an approach for engaging these specific stakeholders will be included in the SCEP.

- **Water suppliers** - AEWSD, TCWD, and WRMWSD are the key public agencies with water supply and management authority in the Basin; these agencies are actively involved in GSP development as entities that formed the GSA and through the presence of representatives on the GSA Board. The primary land use in the Basin is irrigated agriculture, comprising 41% of the total land area in the Basin in 2013. Collectively, WRMWSD and AEWSD provide water service to the majority of the agricultural water users in the Basin. Each water district maintains a list of landowners within its service area, and letters have been sent to the landowners with an invite to participate in GSP development for the Basin.
- **Commercial and industrial water users** - The Basin includes the Pastoria Energy Facility, Griffith Company, Tejon Ranch Company (TRC), and the oil and gas industry. A process for engaging with individuals from these entities will be included in the SCEP. Additionally, the TRC holds appropriative water rights to several of the ephemeral tributaries in the Basin. As a landowner, commercial water user, and water rights holder in the Basin, the TRC will be will be engaged during the development and implementation of the GSP.
- **Disadvantaged Communities** - The GSA notes that portions of Census Tracts 33.06 and 62.02, which are recognized as Disadvantaged Community Tracts, overly a portion of the Basin. Also, a portion of a census block group (a statistical division of a census tract) partially overlying the basin is identified as a Severely Disadvantaged Community Census Block Group and another census block group partially overlying the Basin is identified as a Disadvantaged Community Census Block

Group. There are no Disadvantaged Community Places identified within the Basin. Disadvantaged Communities (DACs) are identified based on having an average household income less than 80% of the State median, and Severely Disadvantaged Communities (SDACs) are identified based on having an average household income less than 60% of the State median (US Census American Community Survey, 2014). The White Wolf GSA will ensure within its SCEP that stakeholders in disadvantaged communities are invited and encouraged to participate in the GSP development and implementation process.

- **Federal / Tribal** - There are no identified federal lands or California Native American tribal lands within the Basin.

Develop an SCEP to Encompass GSP Development

Specifically, under Task 12, the GSA will develop its SCEP to include the specific sections required by the GSP regulations and to guide stakeholder engagement throughout the GSP development and implementation process.

In developing its SCEP, the GSA intends to document and frame its approach to engaging relevant stakeholders in the Basin with the goal of developing and implementing a GSP with broad support and improved groundwater-related outcomes for relevant stakeholders. The GSA's approach to stakeholder engagement will focus on open and effective communication, fostering constructive dialogues, and maximizing GSA and stakeholder time and resources through coordinated engagement opportunities and meetings. The SCEP will describe specific activities for informing interested members of the public, including periodic workshops, development of a website (already active) and mailings (email and post). Additionally, the GSA Board meetings are open to the public and include multiple opportunities for public comment and written meetings minutes are posted to the website (<http://www.whitewolfgsa.org/>).

The GSA will use the following as resources in refining its SCEP:

- *DWR's Guidance Document for Groundwater Sustainability Plan: Stakeholder Communication and Engagement;*
- *The Community Water Center's Collaborating for Success: Stakeholder Engagement for Sustainable Groundwater Management Act Implementation;*
- *DWR's Outreach and Engagement: A Resource Management Strategy of the California Water Plan*
- The Institute for Local Government's (ILG) resources on public engagement; and
- Feedback from public workshops designed to generate input on effective outreach strategies and preferences among affected stakeholders.

The SCEP will identify a series of public meetings to be held throughout the GSP development process during which the GSA will present information and provide progress updates. These meetings will be venues for public dialogue and for receiving input on the work efforts and results of each phase. Meetings will also be used to outline and receive initial input on the tasks to be completed in the upcoming phase(s).

Prepare Technical Presentation(s) and Draft Technical Memorandum

The results of this updated SCEP will be summarized in technical presentation(s) and in a *Draft TM #5 – Stakeholder Communication and Engagement Plan* for consideration by the GSA, which will then authorize implementation of the SCEP. The SCEP will be managed adaptively throughout GSP development as the

GSA discern which activities are most effective in engaging interested public and identify gaps in outreach efforts.

Task 13: Conduct Stakeholder Engagement Related to the GSP Foundation Phase
(0% complete)

Under Task 13, the GSA will begin to implement the SCEP. As a first step, the GSA will invite the beneficial users identified during the GSA formation processes (i.e., agricultural water users, TRC, DAC representatives, municipalities, etc.) to participate in an initial stakeholder workshop focused on identifying their interests, concerns, and priorities; the best tools for communicating with them (i.e., e-mail, direct mail, newsletters, social media, etc.); what issues or concerns they would like to see addressed in the GSP development process; and who else they think should be involved in the GSP development and implementation process.

Stakeholder engagement during Phase 1 is anticipated to include dissemination of information (through appropriate modes of communication, as discussed above) regarding the data compilation, numerical model evaluation, and data gaps assessment efforts. Additionally, the GSA will communicate and accept input on the tasks to be completed in Phase 2.

Task 14: Participate in Intrabasin and Interbasin Coordination Efforts *(0% complete)*

Successful GSP development hinges on effective intra- and inter-basin coordination, and the GSA has made such coordination a priority.

Participate in Intrabasin Coordination

Coordination amongst the public agencies comprising the GSA (AEWSD, TCWD, WRMWSD, and Kern County) will be essential throughout the GSP development process. The GSA Board will appoint the TC, composed of staff from each public agency that will meet regularly to coordinate GSP development and implementation in the Basin. Currently, the GSA meets quarterly, and it is assumed that the TC will meet monthly. During the GSP Foundation Phase, intrabasin coordination will be conducted related to decisions regarding the DMS selection and development, compilation of data and information into the DMS and document repository, numerical model options and selection, data gap filling efforts, development of a GSP funding plan, and stakeholder engagement activities.

Participate in Interbasin Coordination

To support SGMA implementation, the GSA may want to enter into formal or informal agreements with GSAs in the adjacent Kern County Subbasin (DWR 5-022.14) to “establish compatible sustainability goals and understanding regarding fundamental elements of the Plans of each Agency as they relate to sustainable groundwater management” (CCR § 357.2). Interbasin coordination will be especially useful when deriving water budget components relating to cross-boundary surface/subsurface flows (see Task 18 for further clarification).

The GSA has expressed an interest in accelerating the development of certain portions of the GSP development to foster effective communication with the neighboring Kern Subbasin, which is critically

overdrafted and thus has an accelerated SGMA compliance timeline. This accelerated timeline is reflected in the Project Schedule.

A key factor in this on-going coordination will be the attendance at pertinent meetings and review of technical documents produced by entities in adjacent basins. It is anticipated that the following coordination activities will occur:

- Attendance at regularly, scheduled SGMA-related public meetings in the Kern Subbasin, assumed to occur monthly;
- As-needed meetings between technical counterparts in the Kern Subbasin; and
- Review and comment on significant work products produced in the Kern Subbasin.

AEWSD, WRMWSD, and Kern County all overlie both the White Wolf Subbasin and the Kern Subbasin. Due to this connection, the GSA will be able to easily stay abreast of key developments in the Kern Subbasin.

PHASE 2 - BASIN CHARACTERIZATION AND ANALYSIS

As described further below, Phase 2 of the Work Plan focuses on technical analysis of Basin conditions and will build towards a complete and coherent understanding of the Basin that will serve as the foundation for sustainability planning efforts under Phase 3. Phase 2 will extend from July 2018 to July 2019.



Task 15: Implement Plan for Filling Data Gaps Needed for GSP Preparation (0% complete)

Based on results from the data gaps assessment performed under Task 9 above, the GSA will perform selected data collection activities to fill high-priority data gaps in support of improving the Phase 2 work effort.

Based on the preliminary data gaps assessment that has already been initiated as a part of Task 9 (see Figure 2 through Figure 5), the GSA has identified the following data gap filling actions to be taken:

- Processing and analysis of DWR well completion reports for in-Basin wells;
- Pump tests to better understand principal aquifer characteristics and boundary conditions;
- Groundwater quality sampling and analysis; and
- Groundwater elevation data collection.

These efforts will be focused on filling data gaps relevant to understanding the Basin setting during Phase 2, which will set the groundwork for Phase 3 efforts to develop sustainable management criteria and identify projects and management actions that will be instrumental to achieve the Basin’s sustainability goal. The technical consultant will work with the GSA and landowners to identify and gain access to desired wells for testing. Results from this analysis will be incorporated into the DMS and will support subsequent work efforts in Task 16 through Task 18.

Process and Analyze DWR Well Completion Reports

As part of Task 15, the GSA will compile, digitize, process, and analyze all available well completion reports provided by DWR in its Well Completion Report Map Application (*forthcoming*). Data extracted from well reports will include:

- General well information (type, location, capacity, status, etc.);
- Well screening intervals; and
- Well log data (i.e. lithologic units), as available.

This information will be used to bolster understanding of subsurface lithology under the Basin, to help characterize wells by the principal aquifer(s) they pump from, to identify candidate wells to include in a SGMA compliant monitoring network (further discussed in Task 19 and Task 27), and to perform selected data gap filling analyses (see below).

Conduct Pumping Tests

In order to understand key characteristics of the principal aquifers in the Basin, the GSA will conduct up to three (3) pump tests at select locations throughout the Basin. These pump tests will utilize existing well infrastructure and will be designed and implemented to achieve various objectives, such as:

- Quantifying aquifer parameters (hydraulic conductivity, transmissivity, storativity, etc.); and
- Testing boundary conditions and verifying the lateral/ vertical extent of discrete aquifer units.

Sample and Analyze Groundwater Quality

As shown on Figure 3a through Figure 3g, groundwater quality data are not readily available throughout the Basin. In order to more comprehensively understand water quality in the principal aquifers and throughout the Basin, a “snap shot” of water quality samples will be collected from 10 wells and analyzed for general chemistry and minerals, metals, as well as stable and reactive isotopes for conducting recharge source and age dating analyses.

Collect Groundwater Elevation Data

As shown on Figure 2, groundwater elevation data are only available near the northern boundary of the Basin and are not well characterized by aquifer unit. In order to more comprehensively understand groundwater elevation in principal aquifers and throughout the Basin, two “snap shots” of groundwater elevation data will be collected from 10 wells.

Task 16: Assess Groundwater Conditions and Develop Hydrogeologic Conceptual Model (0% complete)

The GSP Regulations (23-CCR §354.14 and §354.16) require the assessment of groundwater conditions in the Basin and the development of a HCM. The efforts described in Task 16 will be coordinated given that insight related to the Basin’s groundwater conditions and the HCM are interconnected.

As noted in Task 4, AEWS has already developed and WRMWSD is currently developing HCMs and definitions of groundwater conditions for their service areas. The service areas of these two districts collectively overlie the majority of the White Wolf Subbasin, with substantial overlap. These work

products and the data supporting their development will form the basis of the efforts of the GSA to assess groundwater conditions and develop a HCM for the White Wolf Subbasin.

Assess Groundwater Conditions

The GSP Regulations (23-CCR §354.16) require each GSP to include a description of groundwater conditions in the Basin, including the following:

- Groundwater elevations, spatially, with depth, and over time;
- Estimated change in storage by water year type and cumulatively over time;
- Seawater intrusion conditions;
- Groundwater quality issues, including known contamination sites and plumes;
- Land subsidence;
- Interconnected surface water; and
- Groundwater dependent ecosystems.

Under Task 16, the GSA will assess groundwater conditions with respect to the above topics. This assessment will be based on the data compiled into the Basin DMS under Phase 1 and Task 15. The assessment will include preparation of representative maps and graphs (i.e., groundwater elevation contour maps and hydrographs, graph(s) of change in groundwater storage, and map(s) showing groundwater quality issues, subsidence, interconnected surface water, and groundwater dependent ecosystems). Updated data sources from DWR shall be incorporated into the groundwater conditions assessment as they become available.

Develop Hydrogeologic Conceptual Model

The GSP Regulations (23-CCR §354.14) describe the requirements for a HCM to be included in a GSP. Further guidance is contained within *BMP 3 Hydrogeologic Conceptual Model*. An HCM is a conceptual representation of the physical basin characteristics that affect and/or control the occurrence, movement, and quality of groundwater in a basin. The HCM describes how a basin functions and how water moves through the system, and serves as a foundation for further quantitative and data-driven analyses of sustainability and planning efforts. The HCM necessarily includes both narrative and graphical components.

Building upon the data compilation efforts completed under Phases 1 and Task 15, and upon work completed to date within the Basin (e.g., through the development of GWMPs, AWMPs, UWMPs, and CASGEM Monitoring Network Plans), a preliminary HCM will be developed under Task 16 that includes all elements required under the GSP Regulations, including:

- Regional geologic setting;
- Basin boundaries, both laterally and vertically;
- Principle aquifers, including formation names, physical properties, general water quality, primary uses of each aquifer and data gaps/uncertainty;
- Two scaled cross sections depicting major stratigraphic and structural features; and
- A set of maps depicting topography, surficial geology, soil characteristics, recharge areas, surface water bodies, and points of delivery for imported water supplies.

BMP 3 describes data sources that may be of use in developing the HCM. These data include, but are not limited to DWR, USGS, and CDMG maps and reports on geology; USCEPA, USGS, SWRCB, and DOGGR maps

and information on the base of fresh water and definable bottom of the Basin; and USGS and SWRCB information on physical properties and water quality within principle aquifers, supplemented by local information from aquifer testing and sampling, as available. The HCM will cover all required aspects listed in the GSP Regulations, but will also aim to focus on the most significant issues and questions facing the White Wolf Subbasin (based on GSA's current understanding of the Basin), including

- Assessment of aquifer parameters and their spatial and vertical extent, hydrogeologic flow barriers, and the degree of confinement in the aquifer system;
- Identification of potential sites for groundwater recharge projects;
- Identification of potential land subsidence areas; and
- Analysis of groundwater quality for each principal aquifer in the Basin.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from Task 16 will be summarized in technical presentation(s) to the GSA and TC and in a *Draft TM#6 – Groundwater Conditions and Hydrogeologic Conceptual Model* that includes narrative/descriptive and graphical components of the HCM and groundwater conditions, including maps, charts and other graphics, tables, and supporting documentation as appendices, as appropriate.

Task 17: Coordinate Regarding C2VSim Modeling (0% complete)

As stated above under Task 10, the White Wolf GSA intends to participate in the Kern Subbasin shared modeling effort which will use the C2VSim Fine Grid Model, assuming that upon release of that model by DWR and review by the White Wolf GSA it is determined to be reasonably representative of conditions in the White Wolf Subbasin. Under Task 2.3, the White Wolf GSA will coordinate with the GSAs in the Kern Subbasin regarding the use of C2VSim for SGMA purposes. This coordination will entail the following:

- Communication with Kern Subbasin GSAs regarding the modeling effort, including defining the historical and current water budget scenarios;
- Provision of key data to support model refinement, as necessary, in the White Wolf Subbasin;
- Obtaining and processing model input and output for the White Wolf Subbasin from the C2VSim shared modeling effort; and
- Any other necessary support.

The C2VSim Fine Grid Model results will be used to support the water budget analysis described under Task 2.4 below.

Task 18: Develop Basin-Wide Water Budget (0% complete)

The GSP Regulations (23-CCR §354.18) spell out the requirements for water budgets that must be included in a GSP. Guidance on water budget development, including a partial listing of GSP-related uses, is provided in *BMP 4 Water Budget*. Per the GSP Regulations, the water budget must assess the following:

- Current, historical (at least 10 years) and projected (projecting forward based on 50 years of hydrology) water budgets;
- Quantification of total surface water entering and leaving the basin;

- Inflows and outflows to/from the groundwater system, including (but not limited to) subsurface inflows/outflows, infiltration of applied water and precipitation, and groundwater extraction;
- Change in storage between seasonal high conditions;
- Overdraft during a period when water supply conditions approximate average conditions;
- Water year types; and
- An estimate of the sustainable yield of the basin.

As noted in Task 4, AEWS D has already developed a water budget for its service area and WRMWSD is currently developing a water budget for their service areas. Furthermore, a preliminary water budget was developed by the member agencies comprising the White Wolf GSA for the entire Basin as part of the Basin Boundary Modification effort. The service areas of these two districts collectively overlie the majority of the Basin, with substantial overlap. The water budget framework developed in these efforts will form the basis of the preliminary water budget for the Basin, and the data already compiled will populate the water budget and be updated as appropriate.

Develop Preliminary Water Budget Based on Empirical Storage and Flux Relationships

Under Task 18, the GSA will develop a preliminary historical and current water budget for the Basin based on a simple “bucket model”, whereby the various storage components (e.g., atmosphere, land surface, root zone, unsaturated zone, and saturated zone) are represented as “buckets”, each subject to mass balance requirements and connected to the other buckets by various flux relationships.

The fluxes between storage components will be quantified using commonly used and accepted analysis methods (e.g., the crop coefficient method of evapotranspiration estimation, Darcy’s Law for groundwater flow through a cross section, soil moisture accounting model for deep percolation, etc.), supported by the best available information compiled under Phases 1 and 2. The preliminary “bucket model” will then be calibrated through strategic adjustment of certain parameters employed within these empirical flux relationships (e.g., hydraulic conductivity, storativity, runoff curve numbers, etc.) to better align simulated groundwater elevations (i.e., changes in groundwater storage) with current and historical water level measurements collected from in-Basin wells.

Considering the high density of irrigated lands within the Basin, the GSA will want to pay special attention to reviewing and selecting the most appropriate methodology for estimating basin-wide agricultural water demands. Additionally, recognizing the ephemeral nature of most of the Basin’s surface water features, the water budget will need to address the short- and long-term temporal dynamics and variability in streamflow conditions throughout the Basin and to quantify associated contributions of surface water seepage to the groundwater table.

The GSA understands that the GSAs in the adjacent Kern Subbasin intend to construct a water budget beginning in 1994 and extending through 2016 (a 23-year period), which fulfills the requirement for a historical water budget “starting with the most recently available information and extending back a minimum of 10 years” (CCR §354.18). To ensure that interaction between the White Wolf Subbasin and the Kern Subbasin is accurately represented in both water budgets being prepared for both subbasins, the GSA intends to use the same 1994 – 2016 period for the historical water budget.

Extract Water Budget Information from C2VSim Fine Grid Model

After developing the “bucket model”, historical and current water budget information will be extracted from the C2VSim Fine Grid Model. The preliminary historical and current water budget developed through the “bucket model” approach will then be used to further inform and/or verify analogous water budget components calculated through the C2VSim Fine Grid Model. Water budget components extracted from the C2VSim Fine Grid Model that differ significantly from the analogous “bucket model” prediction will be identified and further investigated to determine the nature of the discrepancy and to adjust assumptions/inputs as necessary.

Determine Sustainable Yield of the White Wolf Subbasin

Once the historical and current water budgets produced by the conceptual “bucket model” and C2VSim Fine Grid Model are in acceptable agreement (based on a pre-defined criteria), the C2VSim Fine Grid Model will be further employed (in coordination with the GSAs in the adjacent Kern Subbasin) to evaluate the availability and reliability of past surface water supply and demand trends “as a function of the historical planned versus actual annual surface water deliveries, by surface water source and water year type, and based on the most recent ten years of surface water supply information” (23-CCR §354.18(c)(2)(A)). The C2VSim Fine Grid Model will then be employed to establish “baseline conditions” and to derive a metric of “sustainable yield” within the Basin in accordance with the requirements described in the GSP regulations (23-CCR §354.18(b)(7), (c)(3)).

The sustainable yield of a groundwater basin is defined as “the maximum quantity of water, calculated over a base period representative of long term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result” (CWC §10721(w)). The sustainable yield will be calculated as the long-term net annual groundwater supply into the Basin based on the historical period of observation outlined above.

Develop Projected (Future) Water Budget Baseline and Uncertainty Scenarios

Once the C2VSim Fine Grid Model is sufficiently calibrated, the White Wolf GSA will use the model to develop a “baseline condition” for the Basin to simulate projected (future) water budget conditions and to “evaluate future scenarios of uncertainty” in accordance with the requirements described in the GSP Regulations (23-CCR §354.18(c)(3)). This effort will proceed independently from efforts to model future conditions in the Kern Subbasin, as those efforts have not been defined at this time. The baseline condition shall be represented by:

1. 50 years of historical hydrology (e.g. precipitation, evapotranspiration, streamflow information)
2. Water demands based on the most recent land use, evapotranspiration, and crop-coefficient information
3. Surface water supply based on the most recent water supply information (as applicable)

The baseline condition will be evaluated using the C2VSim Fine Grid Model to derive a projected (future) water budget for the Basin. The baseline condition will also be used to evaluate future scenarios of uncertainty related to climate, local land use planning, population growth, surface water supply availability/reliability, and any other factors of particular concern identified by the GSA. This uncertainty analysis will help establish a range in projected water supply and demand conditions which will help to define appropriate sustainability criteria (e.g. minimum thresholds, measurable objectives) and quantify

a “reasonable margin of operational flexibility” for these criteria during later stages of GSP development (see Phase 3 efforts for greater detail).

To inform the development of future scenarios related to land use, population growth, and surface water supply availability including the volume of imports into the Basin, the GSA intends to use data and reports compiled in Task 7. The GSA also understands that DWR will release a guidance document for uncertainty analysis related to climate change, which the GSA intends to use to inform climate uncertainty scenarios.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from the water budget analysis will be documented in technical presentations(s) and in a *Draft TM#8 – Water Budget and Preliminary Estimate of Sustainable Yield* that includes a narrative description of the water budget as well as tables and graphical depictions of historical, current and projected future water budget components, following the examples (i.e., paired bar water budget graphs) provided in BMP 3.

Task 19: Assess Existing Monitoring Programs and Develop SGMA-Compliant Monitoring Network (0% complete)

As described in GSP Regulations (23-CCR §354.34-36) and BMP 2, each basin’s monitoring network must be designed to allow for the collection of data sufficient to provide representative information on groundwater conditions and trends within a basin. The GSP must describe monitoring objectives that, when implemented, will allow for characterization of all relevant sustainability indicators, quantification of progress towards achieving measurable objectives and sustainability goals, and quantification of water budgets and impacts to beneficial uses or users in the basin. Achieving these objectives will require a monitoring network with sufficient spatial and temporal coverage that can directly measure or provide an appropriate representative (i.e. “proxy”) measurement to adequately characterize each relevant sustainability indicator throughout the Basin.

Develop Recommended Monitoring Network

Under Task 19, the GSA will assess the existing monitoring programs and infrastructure for their ability to achieve the basic objectives outlined above. Currently there exists two CASGEM monitoring entities within the Basin – AEWSD and the White Wolf GSA. The assessment of monitoring programs under Task 19 will build off the efforts of these agencies to date, as well as any efforts related to the California Irrigated Lands Regulatory Program, and will be conducted in parallel with the HCM development and groundwater conditions assessments, focusing on the sustainability indicators that are determined through those efforts to apply to the Basin.

As described in Task 9 above, preliminary data gaps assessment has shown a generally sporadic record of water level information and a lack of water quality and land subsidence data throughout Basin.

Maps of existing monitoring sites will be developed for each relevant sustainability indicator, allowing for the preliminary evaluation of spatial data gaps. Each existing monitoring site will be screened against the data and reporting standards contained in the GSP Regulations (23-CCR S352.4), and deficiencies summarized in a table.

As recommended in BMP 2, the GSA intends to follow the Data Quality Objective (DQO) process described in the US EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA, 2006) in developing the Basin's GSP monitoring network. The 8-step DQO process serves as a guide to developing a data collection and QA/QC program that will meet the intended purposes.

Prepare Technical Presentation(s) and Draft Technical Memorandum

The monitoring network assessment will be summarized in technical presentation(s) to the GSA and TC and in a *Draft TM #9 – Summary of Monitoring Network Assessment and Preliminary Monitoring Plan* that describes the planned monitoring network and plans to address relevant sustainability indicators and requirements under the GSP Regulations. To the extent that the monitoring plan identifies deficiencies, the GSA will work on plans to rectify those deficiencies prior to submittal of the GSP to DWR, or to address them as part of Plan implementation.

Task 20: Conduct Stakeholder Engagement Related to Basin Characterization and Analysis Phase (0% complete)

In accordance with the SCEP developed under Task 12, the GSA will hold at least one public workshop with stakeholders during the Phase 2. The workshop will be focused on presenting and receiving feedback on the preliminary HCM, water budget, definition of groundwater conditions, and the data gaps evaluation and plans to fill them. Additionally, during this workshop, the GSA will outline and receive initial input on the tasks to be completed in the Sustainability Planning (Phase 3) portion of this Work Plan.

Throughout this process, quarterly GSA Board meetings will continue to provide a forum for interested members of the public to track GSP development and provide ongoing input.

Task 21: Implement GSP Development Funding Plan (0% complete)

The GSA will continue to implement the GSP Development Funding Plan created in Phase 1.

Task 22: Participate in Intrabasin and Interbasin Coordination Efforts (0% complete)

The GSA will follow the developments of basin characterization and analysis in the Kern Subbasin, to ensure that assumptions and estimates of projected values of the major components of interaction between the basins (e.g., groundwater inflow/outflow and stream inflow/outflow) align, or to resolve any differences.

Participate in Intrabasin Coordination

The TC will continue to organize and convene regularly scheduled monthly meetings to foster timely and effective discussion of the Phase 2 tasks associated with GSP development and ongoing data-sharing.

Participate in Interbasin Coordination

The GSA will continue to foster interbasin dialogues through targeted meetings, integrated participation at GSA Board meetings and ongoing data-sharing to support GSP development, with a particular focus on the water budget and sustainable yield estimates and application of the Numerical Model.

PHASE 3 - SUSTAINABILITY PLANNING

As described further below, Phase 3 of the Work Plan focuses on planning for the sustainable management of the Basin. Phase 3 will extend from July 2019 to July 2020.



Task 23: Evaluate Potential Management Areas (0% complete)

Based on the understanding of the Basin gained through stakeholder engagement efforts and technical analyses completed in Phases 1 and 2, the GSA will consider whether defining separate management areas within the Basin will facilitate implementation of the GSP and provide an increased ability to achieve Basin-wide sustainable groundwater management (per 23-CCR §354.20). Based on initial GSA and stakeholder input from the GSA and TC meetings held to date, and considering the size, hydrogeology, and groundwater conditions within the Basin, it is unlikely the GSA will consider the use management areas in the GSP. However, should management areas be defined, the GSP will define distinct minimum thresholds, measurable objectives, and monitoring requirements for each management area and will describe how the use of these tailored management criteria will help foster sustainable management across the entire Basin.

Task 24: Develop Sustainable Management Criteria (0% complete)

Task 24 will involve developing sustainable management criteria, including the Sustainability Goal for the Basin, as well as Undesirable Results, Minimum Thresholds, Measurable Objectives, and Interim Milestones for the Basin and/or specific management areas. Per the GSP regulations (23-CCR §354.24-30), the GSA will select the Sustainability Goal, Minimum Thresholds, and Measurable Objectives to avoid causing Undesirable Results within the Basin or in adjacent basins, or affecting the ability of adjacent basins to achieve sustainability goals.

The GSA understands that DWR will release a sixth BMP related to developing Sustainable Management Criteria, and will use this document to further inform methodologies for selecting appropriate criteria for the Basin.

Define Sustainability Goal

Per the GSP Regulations (23-CCR §354.24), the GSA will develop a Sustainability Goal for the Basin that culminates in the absence of Undesirable Results and the operation of the Basin within its sustainable yield by 2042. Definition of the Sustainability Goal will be based in part on information on the basin setting,

HCM, groundwater conditions, and water budget developed during Phase 2. Stakeholder input will also be critical to defining the Sustainability Goal.

Define Undesirable Results and Minimum Thresholds

Per the GSP Regulations (23-CCR §354.26), Undesirable Results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the Basin. Minimum Thresholds are the numeric values for each sustainability indicator that, if exceeded, may cause Undesirable Results. As demonstrated by their regulatory definitions, Undesirable Results and Minimum Thresholds are closely linked, and therefore must be developed in concert with each other. Furthermore, the meaning of “significant and unreasonable” is subject to local interpretation and will thus need to be defined with ample stakeholder input. As described in the GSP Regulations, an Agency may need to evaluate multiple Minimum Threshold values to determine whether an Undesirable Result is occurring. This suggests that an iterative approach, where whereby multiple potential values are considered before determining a final value, may be required.

Recognizing that Undesirable Results and associated Minimum Thresholds may differ from one location to another within the Basin, the GSA will develop a systematic process for evaluating the occurrence of Undesirable Results across the entire Basin, which may include:

1. **Chronic lowering of groundwater levels** indicating a significant and unreasonable depletion of supply over the planning and implementation horizon;
2. Significant and unreasonable **reduction of groundwater storage**;
3. Significant and unreasonable **seawater intrusion**;
4. Significant and unreasonable **degraded water quality**;
5. Significant and unreasonable **land subsidence** that substantially interferes with surface land uses; and
6. **Depletions of interconnected surface water** that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

These will be defined based on the groundwater conditions assessment performed under Phase 2. For each sustainability indicator, the GSA will identify the primary cause(s) of groundwater conditions occurring throughout the Basin that would lead to or has led to Undesirable Results, and will consider potential effects of Undesirable Results on beneficial uses and users of groundwater. Last, per 23-CCR §354.30, the GSA will determine whether it wants to include in its GSP Measurable Objectives to address Undesirable Results that occurred before, and have not been corrected by, January 1, 2015.

The GSA will then develop Minimum Thresholds for each sustainability indicator, which are quantifiable metrics for each applicable sustainability indicator at each monitoring site or representative monitoring site. The GSA will base its Minimum Thresholds definition on the GSP Regulations (23-CCR §354.28(c)) and the understanding of the Basin generated during Phase 2. Specifically, the GSA will base its Minimum Thresholds definitions on the following analyses:

- **Chronic Lowering of Groundwater Levels.** The GSA will calculate the rate of groundwater elevation decline based on historical trends, water year type, and projected water use in the Basin. Additionally, the GSA will consider the potential effects of groundwater level on other sustainability indicators. The Minimum Threshold will be set as the elevation indicating a depletion of supply at a given location that would lead to Undesirable Results.

- **Reduction of Groundwater Storage.** The GSA will calculate the sustainable yield of the Basin based on historical trends, water year type, and projected water use in the Basin. The Minimum Threshold will be set as the volume of water that can be withdrawn from storage without causing conditions that may lead to Undesirable Results.
- **Seawater Intrusion.** The GSA will base its assessment of seawater intrusion on 1) any existing maps and cross sections that document chloride concentrations within each principal aquifer, and 2) any other existing information or public knowledge that documents the presence of elevated chloride levels within the Basin that could have resulted from an advancing seawater front. The Minimum Threshold would be defined using a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to Undesirable Results. Seawater intrusion is not anticipated to occur at any significant rate due to the Basin’s location on the southern edge of the Central Valley.
- **Degraded Water Quality.** The GSA will base the Minimum Threshold for degradation of water quality on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the GSA to be of concern for the Basin. The Minimum Threshold will be set as the degradation of water quality that may lead to Undesirable Results.
- **Land Subsidence.** The GSA will base the Minimum Threshold for land subsidence on 1) the land uses and property interests that have been or are likely to be affected by land subsidence, and 2) generating maps and graphs showing the extent and rate of land subsidence in the Basin. The Minimum Threshold will be set as the rate of subsidence that substantially interferes with surface land uses and may lead to Undesirable Results.
- **Depletions of Interconnected Surface Water.** The GSA will use the analyses from Phase 2 (including, potentially, the groundwater and surface water model from Task 17) to quantify surface water depletion and will identify the location, quantity, and timing of depletions of interconnected surface water, if present. The Minimum Threshold will be set as the rate or volume of surface water depletion that has adverse impacts on beneficial uses of surface water and that may lead to Undesirable Results.

The GSA will evaluate whether groundwater levels, and the Minimum Threshold defined for this sustainability indicator, can serve as a proxy for other sustainability indicators, as allowed for under the GSP Regulations (23-CCR §354.28(d)).

Define Measurable Objectives and Interim Milestones

Measurable objectives refer to “specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions” (23-CCR §351(s)), and can be considered as indicators of progress towards achieving the long-term sustainability goal for the Basin. The GSA will define Measurable Objectives by applying both qualitative and quantitative optimization techniques using the same metrics and monitoring sites as are used to define the Minimum Thresholds for the Basin, as described above. The Measurable Objectives will be defined based on the 20-year Sustainability Goal and will include the definition of Interim Milestones in increments of five years. The GSA will identify triggers that, when comparing Interim Milestones to actual basin conditions, will prompt corrective actions.

The GSA will provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty defined in the Basin Setting section of the GSP. The margin of operational flexibility will be informed, in part, by the results of the uncertainty analyses related to projected surface water supply reliability, climate, land use planning, and population growth dynamics performed under Task 18. This will likely involve defining proportionality criteria for successive interim milestones relative to the sustainability goal and then approximating reasonable measurable objectives for each sustainability indicator for both the “baseline”, “low uncertainty”, and “high uncertainty” scenarios developed in Task 18.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from Task 24 will be summarized in technical presentation(s) and in a *Draft TM #10 – Establishment of Sustainability Criteria* that includes a narrative description of the sustainable management criteria and which is supported by maps, charts and other graphics, tables, and supporting documentation as appendices, as appropriate.

Task 25: Identify Projects and Management Actions (0% complete)

Given an understanding of the sustainable management criteria relevant to the Basin, the GSA will identify projects and management actions that will need to be carried out in order to meet the Sustainability Goal by 2042 (California Water Code 10727.2(d)(3)).

- **Potential projects** may include any efforts designed to increase available groundwater supplies within the Basin (e.g., WRMWSD has investigated the potential for a groundwater storage and recovery project), while
- **Potential management actions** may include any efforts designed to reduce groundwater demands within the Basin (e.g., AEWSD is implementing a pilot groundwater metering project as part of the Agricultural Water Conservation and Efficiency Program).

Identify and Analyze Projects and Management Actions

Projects and management actions will be identified through careful consideration and engagement with Basin stakeholders, as described by the SCEP developed in Task 12. The potential impacts of these projects and management actions will be assessed using appropriate quantitative and qualitative analytical techniques.

Consistent with DWR’s GSP Checklist, the description of projects and management actions in the GSP will include:

- Description of projects and management actions that will help achieve the basin’s sustainability goal;
- Measurable objective that is expected to benefit from each project and management action;
- Circumstances for implementation;
- Public noticing;
- Permitting and regulatory process;
- Time-table for initiation and completion, and the accrual of expected benefits;
- Expected benefits and how they will be evaluated;

- How the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that water shall be included;
- Legal authority required;
- Estimated costs and plans to meet those costs; and
- Management of groundwater extractions and recharge.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from Task 25 will be summarized in technical presentation(s) and in a *Draft TM #11 – Proposed Projects and Management Actions* that includes a narrative description of the projects and management actions, supported by maps, charts and other graphics, tables, and supporting documentation as appendices, as appropriate.

Task 26: Create GSP Implementation Plan (0% complete)

The GSP must include a plan for implementation, including an estimate of GSP implementation costs, schedule, plan for required annual reporting, and process for required periodic evaluations of the GSP. Task 26 will involve developing this plan for inclusion in the GSP.

Create Programmatic GSP Implementation Plan

The GSA will develop a programmatic plan for GSP implementation outlining the framework and general processes associated with meeting SGMA compliance beyond the GSP submission deadline of January 2022. This programmatic plan will include elements related to:

- Annual Reporting, per the GSP Regulations (23-CCR §356.2);
- Periodic (5 Year) Plan Evaluations per the GSP Regulations (23-CCR §356.4); and
- Maintenance of the DMS (including documentation and training for use by GSA staff).

Create Plan for Implementation of GSP Projects and Management Actions

The GSA will develop a foundational plan to support implementation of projects and management actions identified in Task 25 in order to ensure that the GSAs will have the legal, funding, and permitting authority to enact these measures, if needed. This implementation plan will outline all efforts related to:

- Conducting feasibility studies for identified projects and/or management actions;
- Performing CEQA and other environmental impact analyses;
- Initiating development/construction efforts for any projects involving built infrastructure; and
- Supporting development of a funding plan (see below).

Develop Funding Plan for GSP Implementation

After assessing GSP implementation costs, the GSA will identify potential funding sources and develop a plan to fund GSP implementation. Funding sources may include grants from federal, state, or local governments, as well as monies raised through the collection of fees on Basin landowners levied by the GSA. Should it be decided that fees will be levied, the GSA will follow the required process for public notice and public hearings as documented in California Water Code 10730. This effort may require retention of a rate consultant and/or economics consultant.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from Task 26 will be summarized in technical presentation(s) and in a *Draft TM #12 – GSP Implementation Plan*.

Task 27: Finalize Monitoring Network and Protocols (0% complete)

Designate Final Monitoring Network and Protocols

Per the GSP Regulations (23-CCR §354.34(b)), the GSA must develop a monitoring network fit to achieve the following:

- Demonstrate progress toward achieving measurable objectives described in the Plan;
- Monitor impacts to the beneficial uses or users of groundwater;
- Monitor changes in groundwater conditions relative to Measurable Objectives and Minimum Thresholds; and
- Quantify annual changes in water budget components.

Given the results of the preliminary assessment of the monitoring network in Task 19, the understanding of the Basin generated in the Phase 2, and the development of sustainable management criteria completed in Task 24, the GSA will finalize the monitoring network and protocols. The monitoring network will be designed to leverage existing infrastructure to the extent possible and appropriate and such that the data collected will allow for assessment of the sustainability indicators with respect to the Measurable Objectives and Minimum Thresholds.

Table 1 shows the infrastructure/approach, measurement type, and temporal, spatial, and other considerations corresponding to data collection for each undesirable result. As shown in Table 1, monitoring wells are the main infrastructure used for data collection for groundwater levels, groundwater storage, seawater intrusion, and water quality. There are several options of relevant infrastructure land subsidence and surface water depletion data collection. The GSA will consider which monitoring infrastructure options are most appropriate for the Basin and the sustainable management criteria.

Given the understanding of the Basin generated in Phase 2, the GSA may designate representative monitoring sites at which the sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined (23-CCR §354.36).

Consistent with DWR’s GSP Checklist, the documentation of the Monitoring Network in the GSP will include the following:

- Description of monitoring network;
- Description of monitoring network objectives;
- Description of how the monitoring network is designed to demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features; estimate the change in annual groundwater in storage; monitor seawater intrusion; determine groundwater quality trends; identify the rate and extent of land subsidence; and calculate depletions of surface water caused by groundwater extractions;
- Description of how the monitoring network provides adequate coverage of Sustainability Indicators;

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- Density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends;
- Scientific rationale (or reason) for site selection;
- Consistency with data and reporting standards;
- Corresponding sustainability indicator, minimum threshold, measurable objective, and interim milestone;
- Location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used; and
- Description of technical standards, data collection methods, and other procedures or protocols to ensure comparable data and methodologies.

To document the use of representative monitoring sites, if applicable, the GSP will include:

- Description of representative sites;
- Demonstration of adequacy of using groundwater elevations as proxy for other sustainability indicators; and
- Adequate evidence demonstrating site reflects general conditions in the area.

To document the assessment and improvement of the monitoring network, the GSP will further include:

- Review and evaluation of the monitoring network;
- Identification and description of data gaps;
- Description of steps to fill data gaps; and
- Description of monitoring frequency and density of sites.

Prepare Technical Presentation(s) and Draft Technical Memorandum

Results from Task 27 will be summarized in technical presentation(s) and in a *Draft TM#13 – Proposed Monitoring Network and Protocols* that includes a narrative description of the plans to implement a monitoring network, supported by maps, charts and other graphics, tables, and supporting documentation as appendices, as appropriate.

Task 28: Conduct Stakeholder Engagement Related to Sustainability Planning (0% complete)

The Sustainability Planning Phase of GSP development is expected to generate the most interest among Basin stakeholders, and therefore will require substantial stakeholder engagement. We anticipate holding at least two workshops during this phase.

The first workshop will be focused on presenting and receiving feedback on the sustainable management criteria.

The second workshop will be focused on presenting and receiving input on the sustainable management criteria and identifying potential projects and management actions. Additionally, during this workshop, the GSA will outline and receive initial input on the tasks to be completed in the GSP Preparation (Phase 4) portion of this Work Plan.

Throughout this process, GSA Board meetings will continue to provide a forum for interested members of the public to track GSP development and provide ongoing input.

Task 29: Implement GSP Development Funding Plan (0% complete)

The GSA will continue to implement the GSP Development Funding Plan created in Phase 1.

Task 30: Participate in Intrabasin and Interbasin Coordination Efforts (0% complete)

The GSA will continue to follow developments in the Kern Subbasin, with particular attention paid to the development of sustainable management criteria.

Participate in Intrabasin Coordination

The TC will continue to organize and convene regularly scheduled, monthly meetings to foster timely and effective discussion of the Phase 3 tasks associated with GSP development and ongoing data-sharing.

The GSA will also initiate work on a long-term governance framework to guide Plan implementation.

Participate in Interbasin Coordination

The GSA will continue to foster interbasin dialogues through targeted meetings, integrated participation at GSA Board meetings and ongoing data-sharing to support Phase 3. The GSA will develop Interbasin Agreements if necessary. Attendance at public meetings of GSAs in the Kern Subbasin, meetings with technical counterparts in the Kern Subbasin, and review and comment on significant work products produced in the Kern Subbasin will continue.

PHASE 4 - GSP PREPARATION AND SUBMITTAL

Phase 4 of the Work Plan involves preparation of the GSP and associated deliverables for use by the GSA in adopting the GSP, with subsequent submittal to DWR. It is anticipated that Phase 4 will extend from July 2020 to January 2022.



Task 31: Compile Complete Draft GSP (0% complete)

Most of the major GSP components will have been developed and included, in whole or in part, in the TMs prepared in previous tasks of this Work Plan. These previously prepared elements include:

- Data Management System;
- Plan Area Information;
- Data Gaps Assessment;
- Stakeholder Communication and Engagement Plan;

- Hydrogeological Conceptual Model;
- Current and Historical Groundwater Conditions;
- Water Budget Information, including an Estimate of Sustainable Yield of Basin;
- Sustainable Management Criteria;
- Projects and Management Actions, and Plans for Implementation and Funding; and
- Monitoring Network and Protocols.

Under Task 31, these existing GSP components will be compiled and reworked into a full GSP along with additional components such as Administrative Information (23-CCR §354.4–354.6), documentation of notice and communication (23-CCR §354.10), and “additional plan elements” (as applicable, and listed in CWC §10727.4). The GSP will be structured to conform with the GSP regulations, GSP Annotated Outline, and Preparation Checklist for GSP Submittal.

An Administrative Draft will be prepared for TC and GSA review. After comments have been received, a revise draft GSP will be released for public review.

Task 32: Distribute Draft GSP and Revise (if necessary) per Stakeholder Feedback *(0% complete)*

As required by CWC §10728.4, the GSA will distribute a draft GSP to Basin stakeholders and hold a public hearing to receive feedback on the draft GSP. Per CWC §10728.4, the public hearing will be held at least 90 days after providing notice to a city or county within the area of the proposed plan. As necessary, the GSA will revise the draft GSP to reflect stakeholder feedback.

Task 33: Submit Final GSP to DWR (0% complete)

The GSA will submit the final GSP to DWR, after which DWR is to establish a period of at least 60 days to receive comments on the adopted Plan (per 23-CCR §355.2). Final deliverables to DWR will include:

- The Final (written) GSP;
- Coordination Agreements (as applicable);
- A Data Management System, integrated with all existing data; and
- Numerical Model Inputs/Outputs.

DWR will then have up to two years to review the Final GSP, after which it will be given the status of approved, incomplete, or inadequate. Should the GSA’s GSP be deemed incomplete, the GSA will take corrective actions, revise, and resubmit the GSP within 180 days of DWR’s assessment, as required.

Task 34: Participate in Intrabasin and Interbasin Coordination Efforts (0% complete)

The GSA will continue follow developments in the neighboring Kern Subbasin.

Participate in Intrabasin Coordination

The TC will continue to organize and convene regularly scheduled, monthly meetings to foster timely and effective discussion of the Phase 4 tasks associated with GSP development and ongoing data-sharing.

If not completed under Phase 3, the GSA will also continue and adopt a long-term governance framework to guide Plan implementation.

Participate in Interbasin Coordination

The GSA will continue to foster interbasin dialogues through targeted meetings, integrated participation at public meetings, and ongoing data-sharing to support GSP development.

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Figure 3g	Evaluation of Available Data and Assessment of Sustainability Indicator #4 – Groundwater Quality – GeoTracker Sites
Figure 4	Evaluation of Available Data and Assessment of Sustainability Indicator #5 – Land Subsidence
Figure 5	Evaluation of Available Data and Assessment of Sustainability Indicator #6 – Groundwater Dependence

WORK PLAN REFERENCES

This Work Plan has been prepared in accordance with the requirements, recommendations, and guidance contained in the following documents:

- “Attachment 4. Work Plan”, from the Groundwater Sustainability Plans and Projects Proposal Solicitation Package, dated September 2017;
- GSP Emergency Regulations (California Code of Regulations Title 23 [23-CCR], Division 2, Chapter 1.5, Subchapter 2; herein referred to as the “GSP Regulations”), approved by the California Water Commission on 18 May 2016;
- Groundwater Sustainability Plan (GSP) Emergency Regulations Guide, dated July 2016;
- Best Management Practices (BMPs) published by the Department of Water Resources (DWR), dated December 2016, including:
 - BMP 1: Monitoring Protocols, Standards, and Sites;
 - BMP 2: Monitoring Networks and Identification of Data Gaps;
 - BMP 3: Hydrogeologic Conceptual Model;
 - BMP 4: Water Budget; and

Attachment 4 – Work Plan

- BMP 5: Modeling; and
- BMP 6: Sustainable Management Criteria, DRAFT dated November 2017.
- Guidance documents published by DWR, including:
 - Preparation Checklist for GSP Submittal, dated December 2016;
 - GSP Annotated Outline, dated December 2016;
 - Engagement with Tribal Governments, DRAFT dated June 2017; and
 - Stakeholder Communication and Engagement, DRAFT dated June 2017.

Table 1
Summary of Monitoring Network Considerations

Undesirable Result	Infrastructure / Approach	Measurement Type	Temporal Considerations	Spatial Considerations	Other Considerations
Chronic Lowering of Groundwater Levels	Monitoring Wells	Groundwater Level	<ul style="list-style-type: none"> • Must be measured at a minimum twice per year during the seasonal high and low; • Must be measured more frequently in the case of: <ul style="list-style-type: none"> • A shallow/unconfined aquifer; • Rapid groundwater flow and recharge; • More groundwater pumping; or • More variable climatic conditions. 	<ul style="list-style-type: none"> • Density per 100 square miles could be 0.2 to 10 wells; • Density should be greater in areas of greater pumping and undesirable results; • Well screens should be aquifer-specific; • Proximity to pumping wells, basin boundaries, and significant recharge areas should be considered. 	
Reduction of Groundwater Storage	Monitoring Wells	Groundwater Level	See above.	See above.	Use of water levels to estimate storage requires assumptions about thickness, porosity, and connectivity of units.
	Remote Sensing	Differential Gravity			"Should be used cautiously as they tend to be regional in nature and may not provide the level of accuracy necessary to fully determine conditions within the basin" (BMP, p. 14)
Seawater Intrusion	Monitoring Wells	Groundwater Quality	Must be measured "at least quarterly" (BMP, p. 15) and more frequently during initial characterization.	<p>Must be:</p> <ul style="list-style-type: none"> • Accompanied by groundwater elevation monitoring; • Adequate to map isocontour of chloride; • From each aquifer that is currently, or may be in the future, impacted by degraded water quality; • Able to define the three-dimensional extent of existing seawater intrusion; • Sufficient for mapping movement of seawater or degraded water quality; and • Sufficient to assess groundwater quality impacts on beneficial uses and users. <p>May be optimized by:</p> <ul style="list-style-type: none"> • Including geophysical techniques to identify the preferential pathways controlling seawater intrusion; and • Targeting critical connections to existing water supply wells and mitigation efforts. 	<ul style="list-style-type: none"> • Must analyze for chloride concentration; • Additional analytes may be desirable; and • Use of a surrogate (e.g., electrical conductivity) must be demonstrated through correlative analysis.

Table 1
Summary of Monitoring Network Considerations

Undesirable Result	Infrastructure / Approach	Measurement Type	Temporal Considerations	Spatial Considerations	Other Considerations
Degraded Water Quality	Monitoring Wells	Groundwater Quality	Must be measured at times generally correlated to seasonal high and low, or more frequent as appropriate.	Must be: <ul style="list-style-type: none"> • Adequate to map or supplement mapping of known contaminants; • From each aquifer that is currently, or may be in the future, impacted by degraded water quality; • Able to define the three-dimensional extent of existing degraded water quality; • Sufficient for mapping movement of degraded water quality; • Sufficient to assess groundwater quality impacts to beneficial uses and users; and • Adequate to evaluate whether management activities are contributing to water quality degradation. 	Supplement to existing monitoring under regulatory programs (i.e., contaminant plumes); Additional may be needed to address unregulated contaminant plumes and naturally occurring water quality impacts
Land Subsidence	Level Surveys	Elevation	Should reflect results of initial screening level analysis for subsidence.	Should reflect results of initial screening level analysis for subsidence, which should include review of: <ul style="list-style-type: none"> • The Basin's HCM and understanding of grain-size distributions and potential for subsidence to occur; • Any known regional or correlative geologic conditions where subsidence has been observed; • Historic range of groundwater levels in the principal aquifers of the Basin; • Historic records of infrastructure impacts, including, but not limited to, damage to pipelines, canals, roadways, or bridges, or well collapse potentially associated with land surface elevation changes; • Remote sensing results such as InSAR or other land surface monitoring data; and • Existing CGPS surveys. 	Following Caltrans Surveys Manual and tied to known benchmarks.
Borehole Extensometers	Change in Elevation	Following extensometry principles and methods used by the USGS.			
CGPS Locations	Elevation	Following Caltrans Surveys Manual.			
Remote Sensing	InSAR data	Requires data (some available for free) and processing is "not a trivial task" (BMP, p. 20).			
Monitoring Wells	Groundwater Level	Correlation of subsidence to groundwater level must be demonstrated.			

Table 1
Summary of Monitoring Network Considerations

Undesirable Result	Infrastructure / Approach	Measurement Type	Temporal Considerations	Spatial Considerations	Other Considerations
Depletions of Interconnected Surface Waters (b)	Modeling	Calculated Exchange between Surface Water and Groundwater			Requires input parameters and assumptions to be made which should be based on empirical observations.
	Stream Gauges	Surface Water Flow		Must account for surface water diversions and return flows or gauging locations must be selected over which no diversions or return flows exist.	Measurements should be in accordance with USGS WSP 2175, Volumes 1 and 2.
	Monitoring Wells	Groundwater Level	Adequate to capture seasonal pumping conditions in vicinity-connected surface water bodies.	Network should: <ul style="list-style-type: none"> • Extend parallel and perpendicular to connected streams; and • Identify and quantify timing and volume of groundwater pumping within approximately 3 miles of stream or as appropriate for the flow regime. 	
	Visual Observation	Flow Cessation			Qualitative evaluation of timing and position of cessation of flow in ephemeral streams may contribute to understanding of surface water depletion.
	Other Methods for Initial Characterization	Stream Bed Conductance Surveys; Aquifer Testing; Isotopic / Geochemical Studies; Geophysical Techniques			May help to establish an appropriate monitoring method that would best provide parameters for a model or another technique to estimate depletion of surface water.

Abbreviations

BMP = Best Management Practices

Caltrans = California Department of Transportation

CGPS = continuous global position system

DWR = California Department of Water Resources

InSAR = interferometric synthetic aperture radar

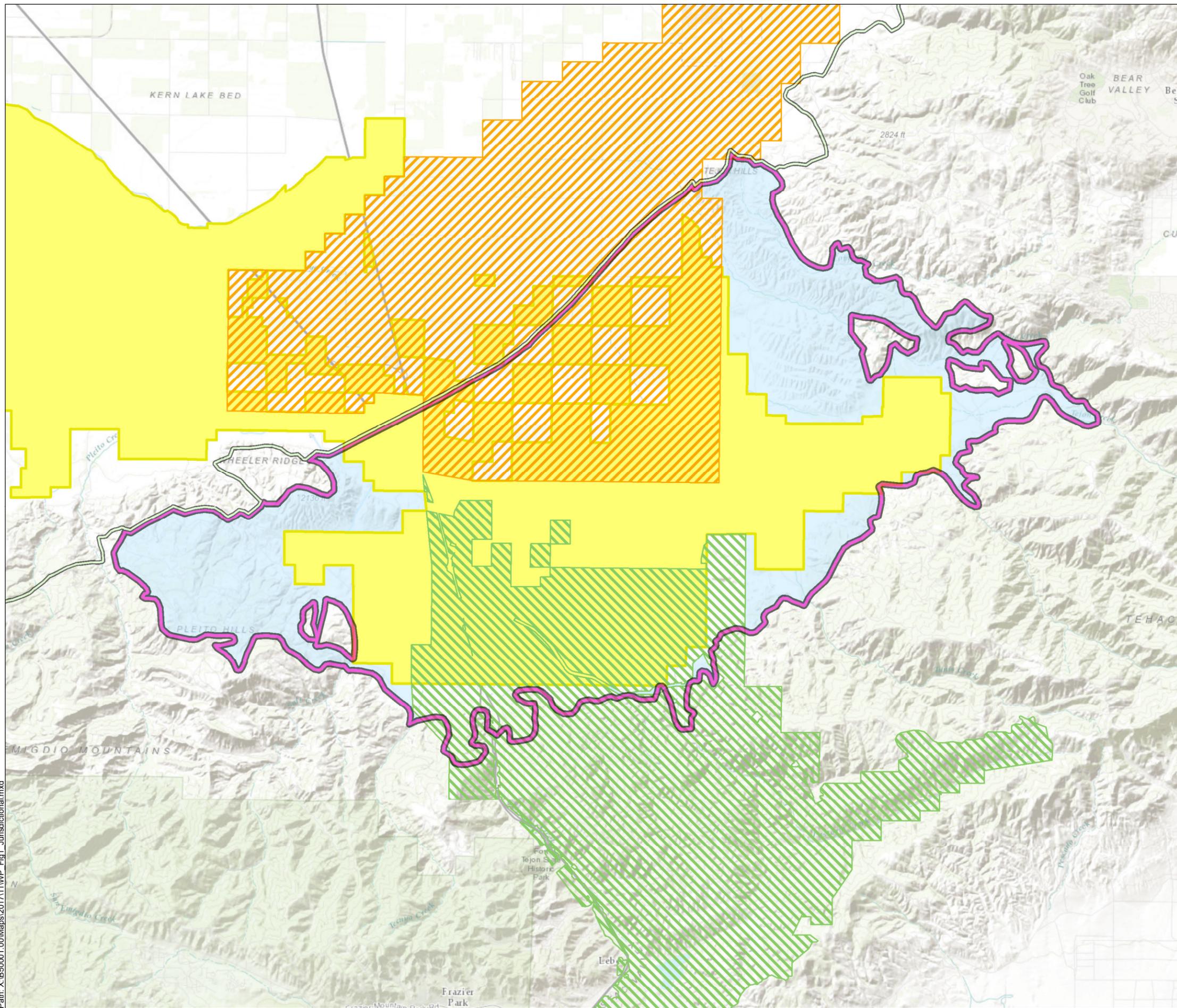
USGS = United States Geological Survey

WSP = Water Supply Paper

Notes

(a) This table has been created as a summary of the guidance provided in DWR's *Best Management Practices for the Sustainable Management of Groundwater: Monitoring Networks and Identification of Data Gaps* document, referred to herein as "BMP".

(b) Several infrastructure / approach options will have to be utilized to characterize and monitor potential depletion of interconnected surface water(s); use of a model would require data collection for input parameters.



Legend

Groundwater Subbasin

- White Wolf
- Kern County

Service Area

- AEWSD Service Area
- TCWD Service Area
- WRMWS Service Area
- Kern County (outside of other GSA parties' jurisdictions)

Abbreviations

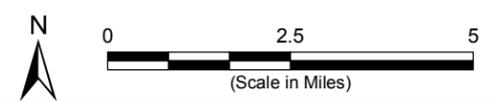
AEWSD = Arvin-Edison Water Storage District
 DWR = California Department of Water Resources
 TCWD = Tejon-Castac Water District
 WRMWS = Wheeler Ridge-Maricopa Water Storage District

Notes

1. All locations are approximate.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
 2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.



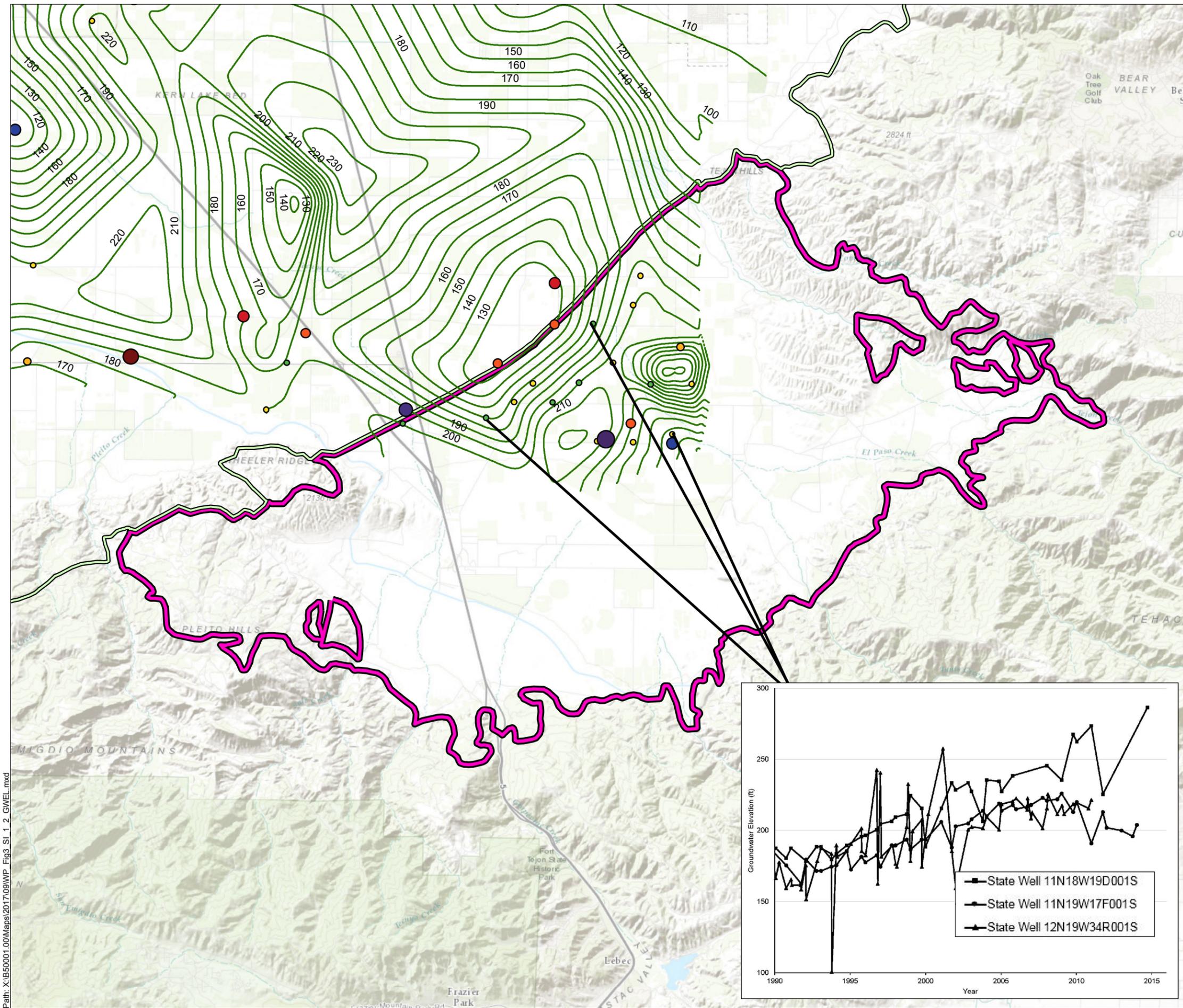
**White Wolf Subbasin
Jurisdictional Boundaries**

Tejon-Castac Water District
 Kern County, CA
 November 2017
 EK1 B50001.04



Figure 1

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Legend

Groundwater Subbasin

- White Wolf
- Kern County
- DWR Groundwater Elevation Contours

CASGEM Point Data

- > 60 foot decline
- 50 - 60 foot decline
- 40 - 50 foot decline
- 30 - 40 foot decline
- 20 - 30 foot decline
- 10 - 20 foot decline
- 0 - 10 foot decline
- 0 - 10 foot increase
- 10 - 20 foot increase
- 20 - 30 foot increase
- 30 - 40 foot increase
- 40 - 50 foot increase
- 50 - 60 foot increase
- > 60 foot increase

Abbreviations

CASGEM = California Statewide Groundwater Elevation Monitoring
 DWR = California Department of Water Resources
 GSA = Groundwater Sustainability Agency
 GWE = Groundwater Elevation
 UR = Undesirable Result

Notes

- All locations are approximate.
- Countour lines represent a 10-ft interval of GWE for Spring 2013.

Sources

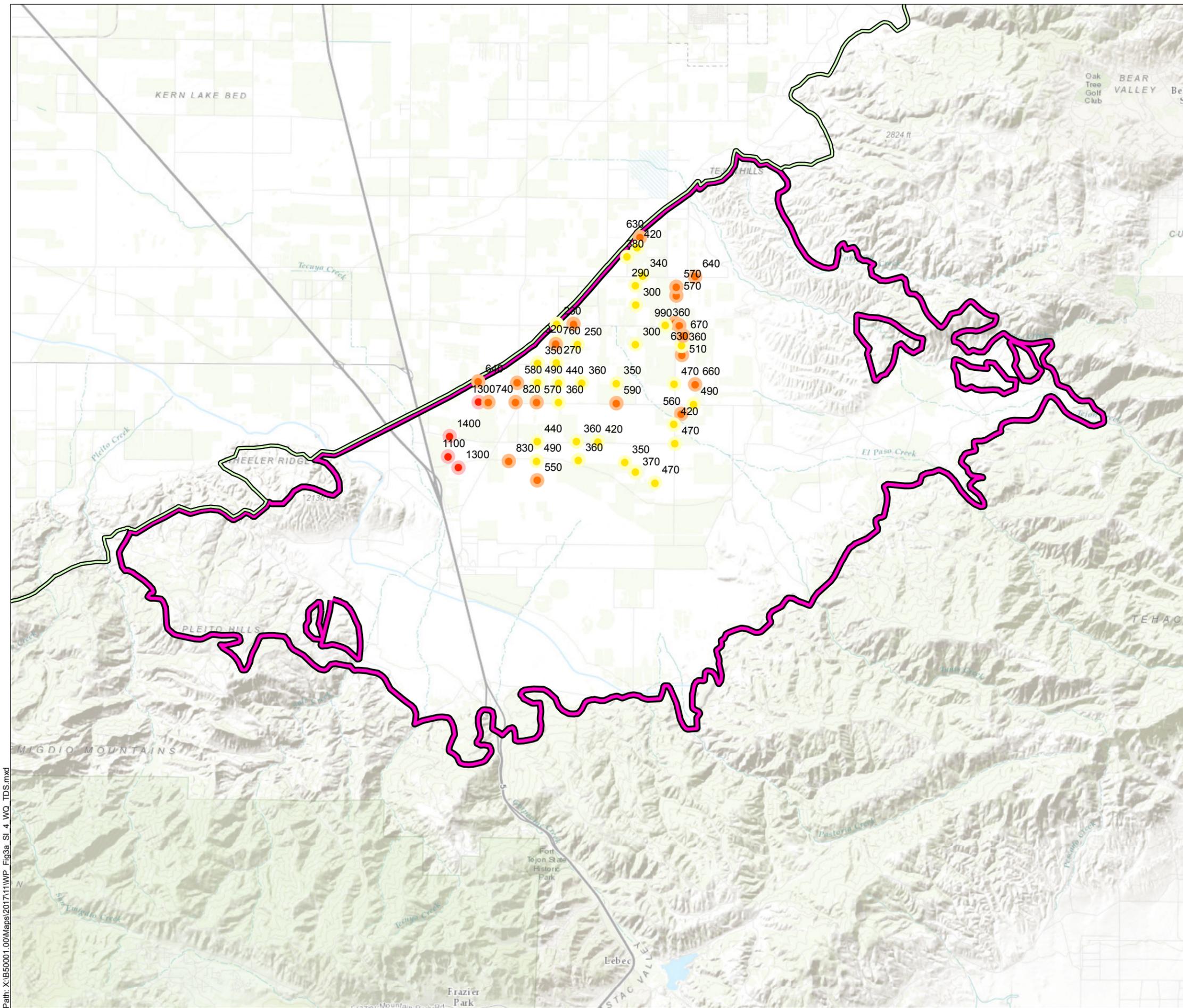
- DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
- The White Wolf GSA area is the same as the White Wolf Subbasin.
- Groundwater elevation contours obtained from the DWR Groundwater Information Center.
- Groundwater elevation change point and hydrograph data from the CASGEM public portal.
- Topographic map provided by ESRI's ArcGIS Online, obtained 27 September 2017.

Evaluation of Available Data and Assessment of Sustainability Indicators #1 and #2 - Groundwater Elevation Change and Contours

Tejon-Castac Water District
 Kern County, CA
 November 2017
 EKI B50001.04

Figure 2

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Total Dissolved Solids Concentration (mg/L)

- 33 - 200
- 200 - 500
- 500 - 1000
- > 1000

Abbreviations

AEWSD = Arvin-Edison Water Storage District
 CCR = California Code of Regulations
 DWR = California Department of Water Resources
 EPA = United States Environmental Protection Agency
 MCL = Maximum Contaminant Level
 mg/L = milligrams per Liter
 TDS = Total Dissolved Solids
 UR = Undesirable Result

Notes

1. All locations are approximate.
2. For a given well, reported water quality values represent the latest sample collected during the 2016 calendar year.
3. Water quality data provided by AEWSD.
4. TDS measurements obtained using EPA-160.1 method, with a detection limit of 33 mg/L.
5. CCR 22-4 Table 64449-B lists "Upper" Secondary MCL for TDS at 1000 mg/L.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
3. Water quality data obtained from AEWSD on 3 April 2017.

N

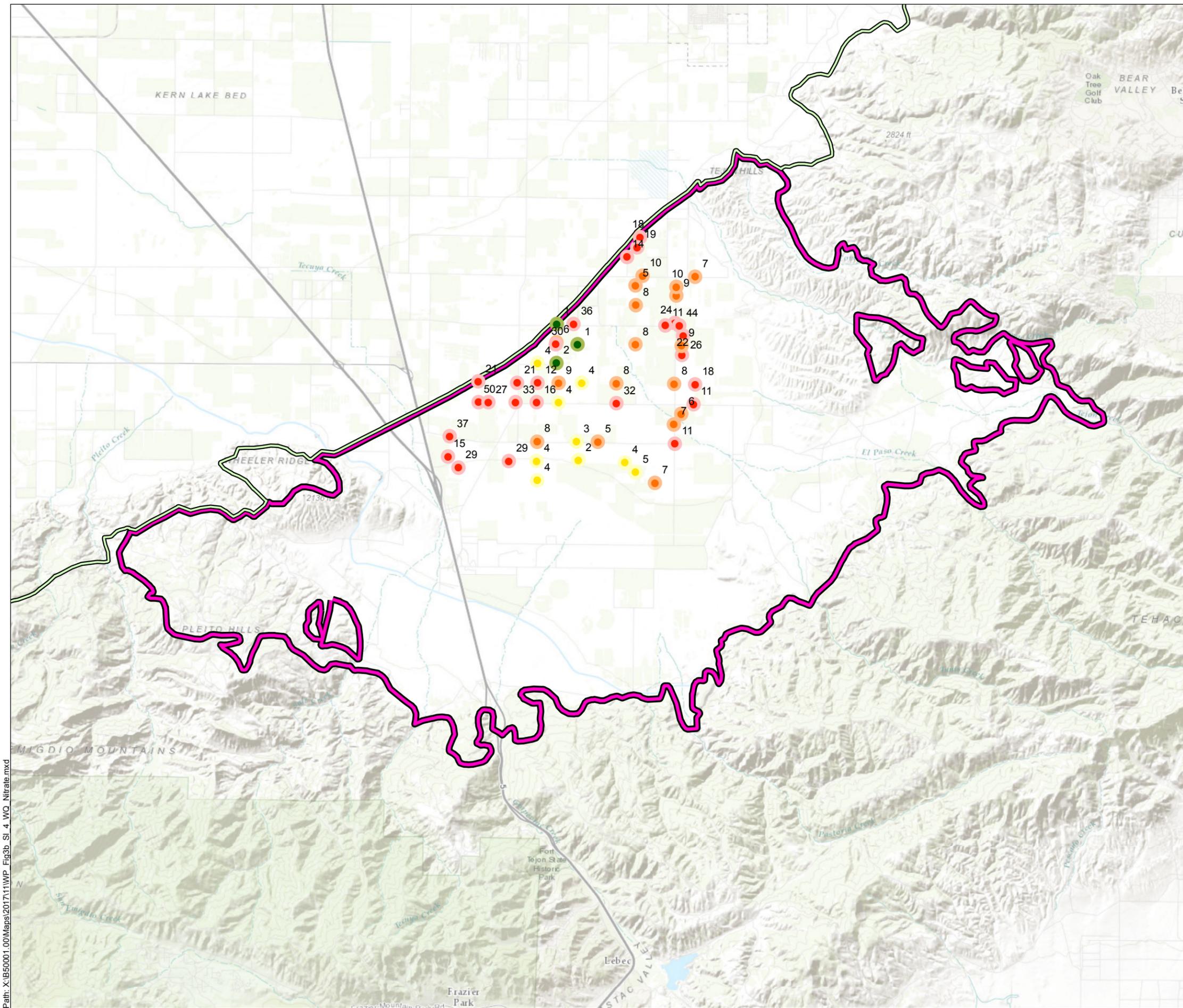
(Scale in Miles)

Evaluation of Available Data and Assessment of Sustainability Indicator #4 - Water Quality - Total Dissolved Solids

Tejon-Castac Water District
 Kern County, CA
 November 2017
 EKI B50001.04

Figure 3a

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Nitrate (as N) Concentration (mg/L)

- ND (< 0.1)
- 0.1 - 2
- 2 - 5
- 5 - 10
- > 10

Abbreviations

AEWSD = Arvin-Edison Water Storage District
 CCR = California Code of Regulations
 DWR = California Department of Water Resources
 EPA = United States Environmental Protection Agency
 MCL = Maximum Contaminant Level
 mg/L = milligrams per Liter
 ND = Not Detected
 UR = Undesirable Result

Notes

- All locations are approximate.
- For a given well, reported water quality values represent the latest sample collected during the 2016 calendar year.
- Water quality data provided by AEWSD.
- Nitrate measurements obtained using EPA-300.0 method, with a detection limit of 0.1 mg/L.
- CCR 22-4 Table 64431-A lists Primary MCL for Nitrate (as N) at 10 mg/L.

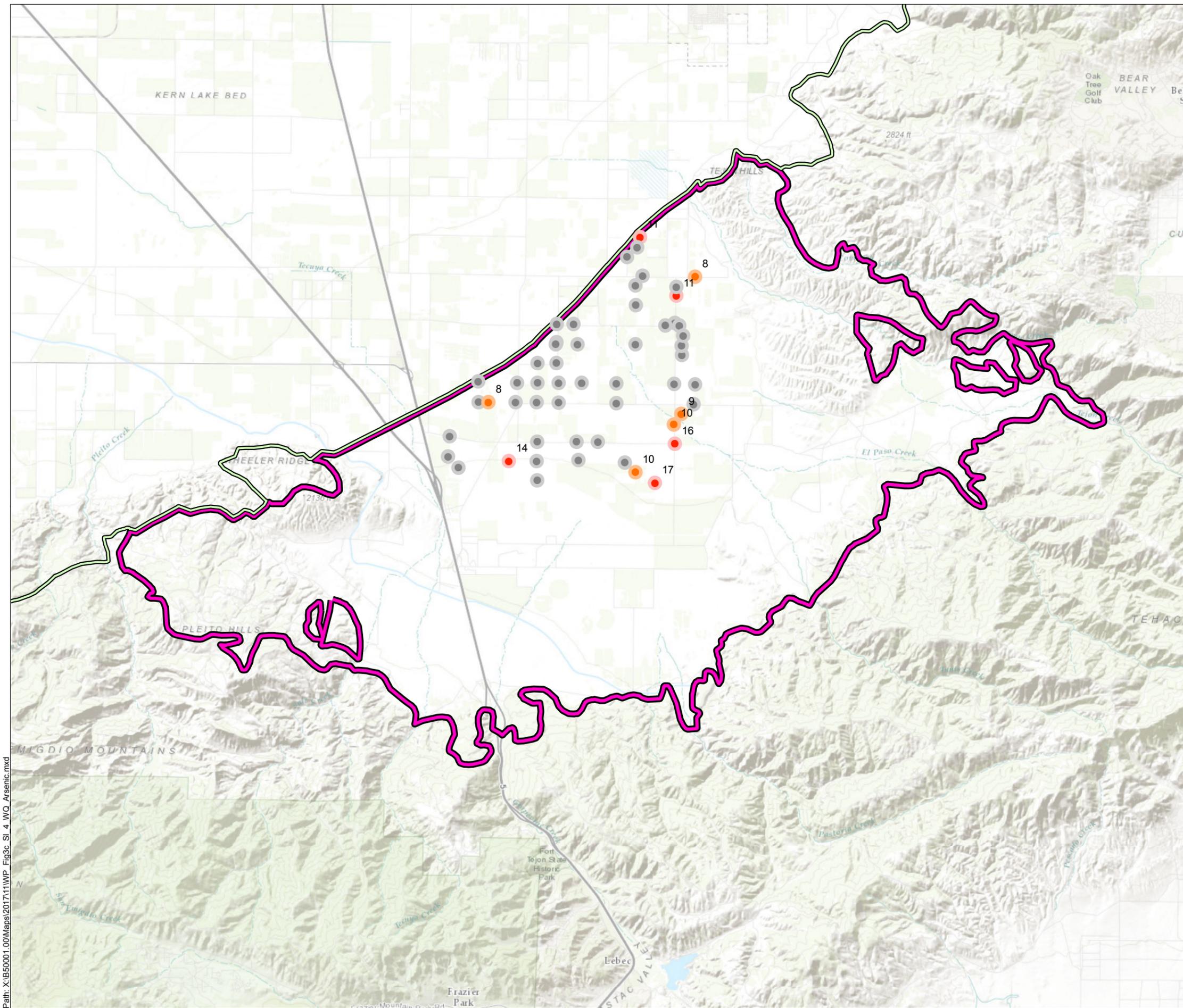
Sources

- Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
- DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
- Water quality data obtained from AEWSD on 3 April 2017.

N

0 2.5 5
(Scale in Miles)

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Total Recoverable Arsenic Concentration (ug/L)

- ND (< 7.8)
- 7.8 - 10
- > 10

Abbreviations

AEWSD = Arvin-Edison Water Storage District
 CCR = California Code of Regulations
 DWR = California Department of Water Resources
 EPA = United States Environmental Protection Agency
 MCL = Maximum Contaminant Level
 ug/L = micrograms per Liter
 ND = Not Detected
 UR = Undesirable Result

Notes

1. All locations are approximate.
2. For a given well, reported water quality values represent the latest sample collected during the 2016 calendar year.
3. Water quality data provided by AEWSD.
4. Arsenic measurements obtained using EPA-200.7 method, with a detection limit of 7.8 ug/L.
5. CCR 22-4 Table 64431-A lists Primary MCL for Arsenic at 10 ug/L.

Sources

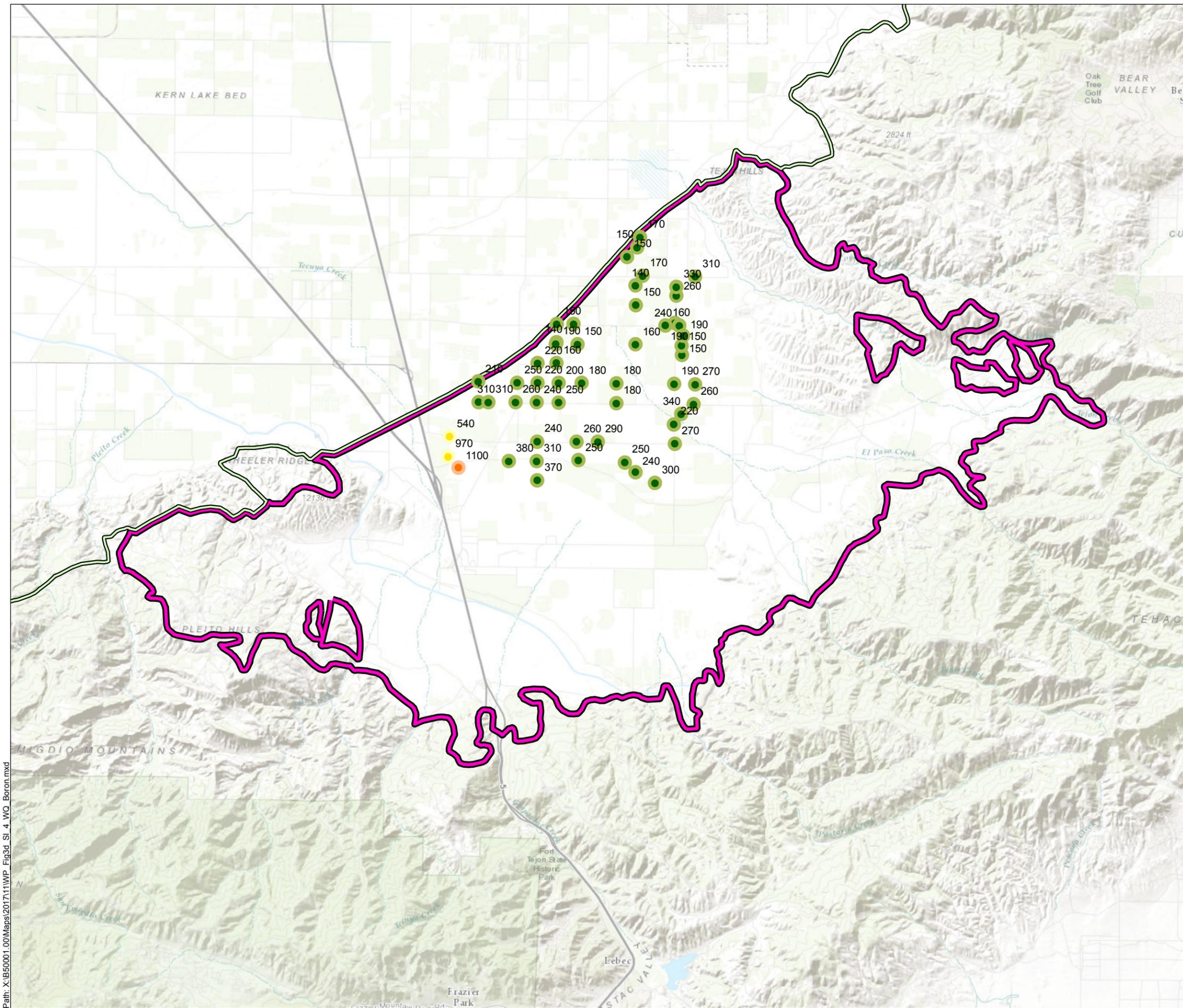
1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
3. Water quality data obtained from AEWSD on 3 April 2017.

N

0 2.5 5
(Scale in Miles)

Evaluation of Available Data and Assessment of Sustainability Indicator #4 - Water Quality - Arsenic

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Total Recoverable Boron Concentration (ug/L)

- 10 - 400
- 400 - 1000
- 1000 - 2000
- > 2000

Abbreviations

AEWSD = Arvin-Edison Water Storage District
 CCR = California Code of Regulations
 DWR = California Department of Water Resources
 EPA = United States Environmental Protection Agency
 MCL = Maximum Contaminant Level
 ug/L = micrograms per Liter
 ND = Not Detected
 UR = Undesirable Result

Notes

1. All locations are approximate.
2. For a given well, reported water quality values represent the latest sample collected during the 2016 calendar year.
3. Water quality data provided by AEWSD.
4. Boron measurements obtained using EPA-200.7 method, with a detection limit of 10 ug/L.
5. Boron levels >700-2000 ug/L can exhibit slight to moderate restrictions on agricultural productivity, depending on crop type.

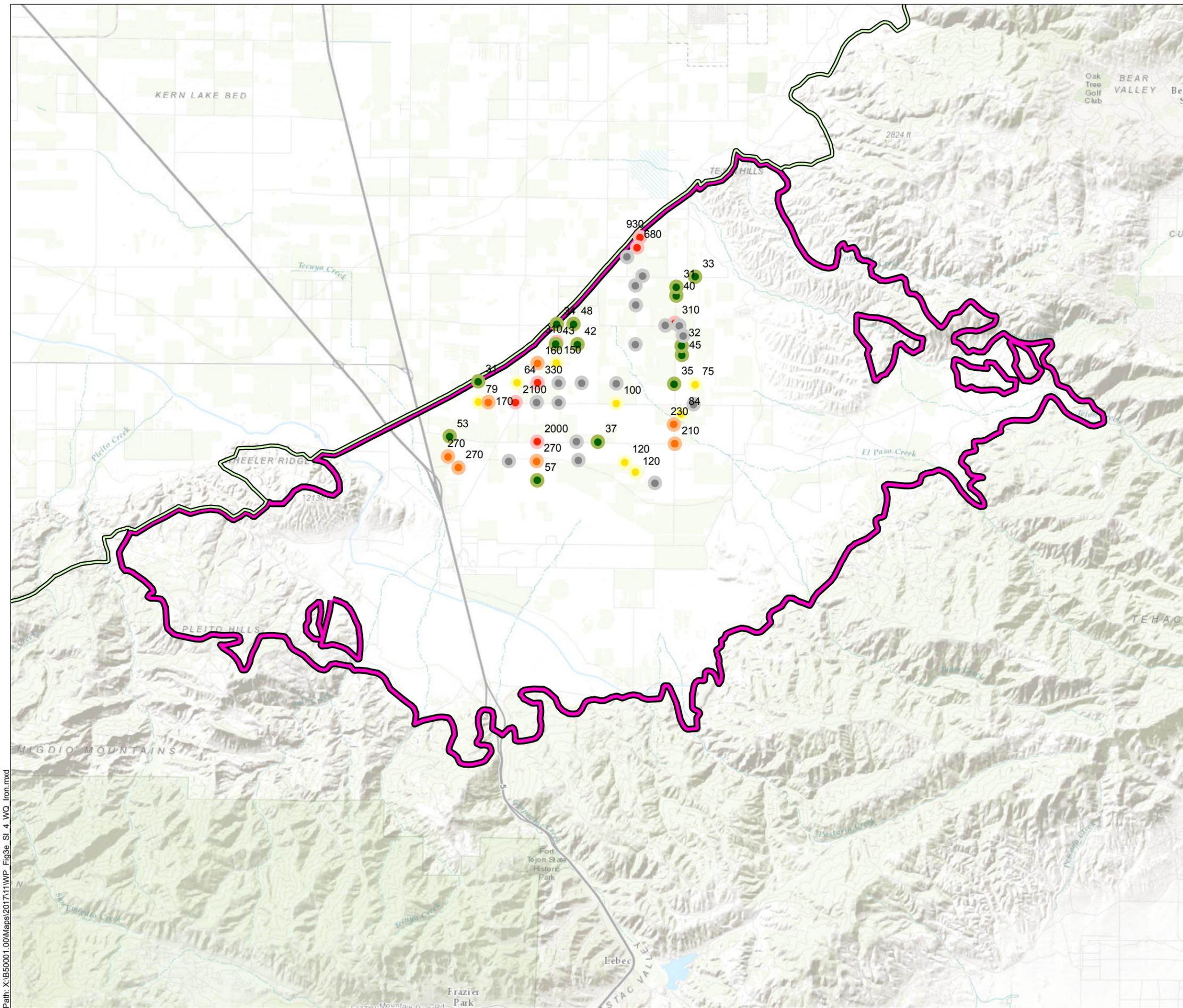
Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
3. Water quality data obtained from AEWSD on 3 April 2017.

N

0 2.5 5
(Scale in Miles)

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Total Recoverable Iron Concentration (ug/L)

- ND (<30)
- 30 - 60
- 60 - 150
- 150 - 300
- > 300

Abbreviations

AEWSD = Arvin-Edison Water Storage District
 CCR = California Code of Regulations
 DWR = California Department of Water Resources
 EPA = United States Environmental Protection Agency
 MCL = Maximum Contaminant Level
 ug/L = micrograms per Liter
 ND = Not Detected
 UR = Undesirable Result

Notes

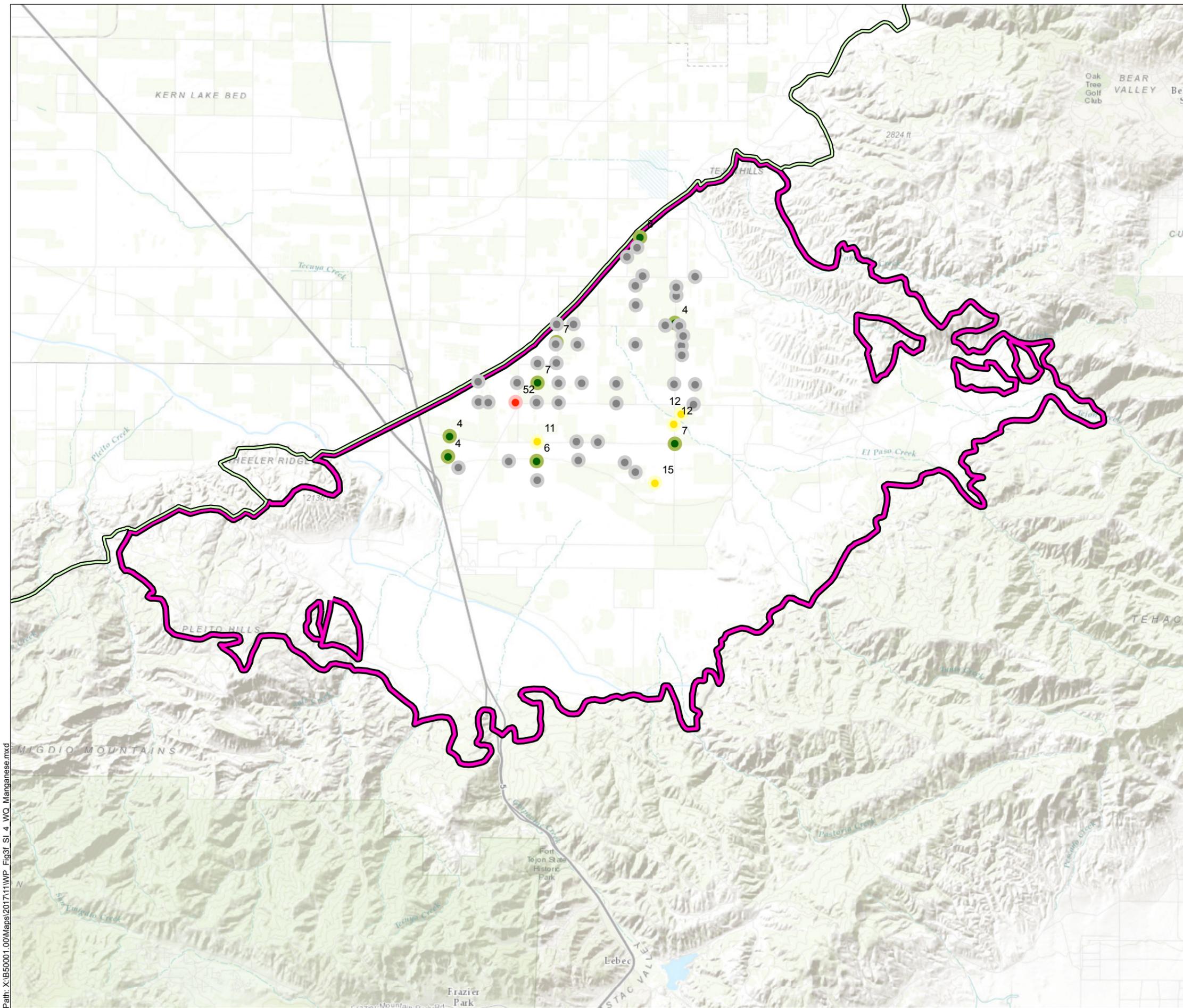
- All locations are approximate.
- For a given well, reported water quality values represent the latest sample collected during the 2016 calendar year.
- Water quality data provided by AEWSD.
- Iron measurements obtained using EPA-200.7 method, with a detection limit of 30 ug/L.
- CCR 22-4 Table 64449-A lists Secondary MCL for Iron at 300 ug/L.

Sources

- Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
- DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
- Water quality data obtained from AEWSD on 3 April 2017.

N
 0 2.5 5
 (Scale in Miles)

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Total Recoverable Manganese Concentration (ug/L)

- ND (< 4)
- 4 - 10
- 10 - 25
- 25 - 50
- > 50

Abbreviations

- AEWSD = Arvin-Edison Water Storage District
- CCR = California Code of Regulations
- DWR = California Department of Water Resources
- EPA = United States Environmental Protection Agency
- MCL = Maximum Contaminant Level
- ug/L = micrograms per Liter
- ND = Not Detected
- UR = Undesirable Result

Notes

- All locations are approximate.
- For a given well, reported water quality values represent the latest sample collected during the 2016 calendar year.
- Water quality data provided by AEWSD.
- Manganese measurements obtained using EPA-200.7 method, with a detection limit of 4 ug/L.
- CCR 22-4 Table 64449-A lists Secondary MCL for Manganese at 50 ug/L.

Sources

- Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
- DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
- Water quality data obtained from AEWSD on 3 April 2017.

N

0 2.5 5
(Scale in Miles)

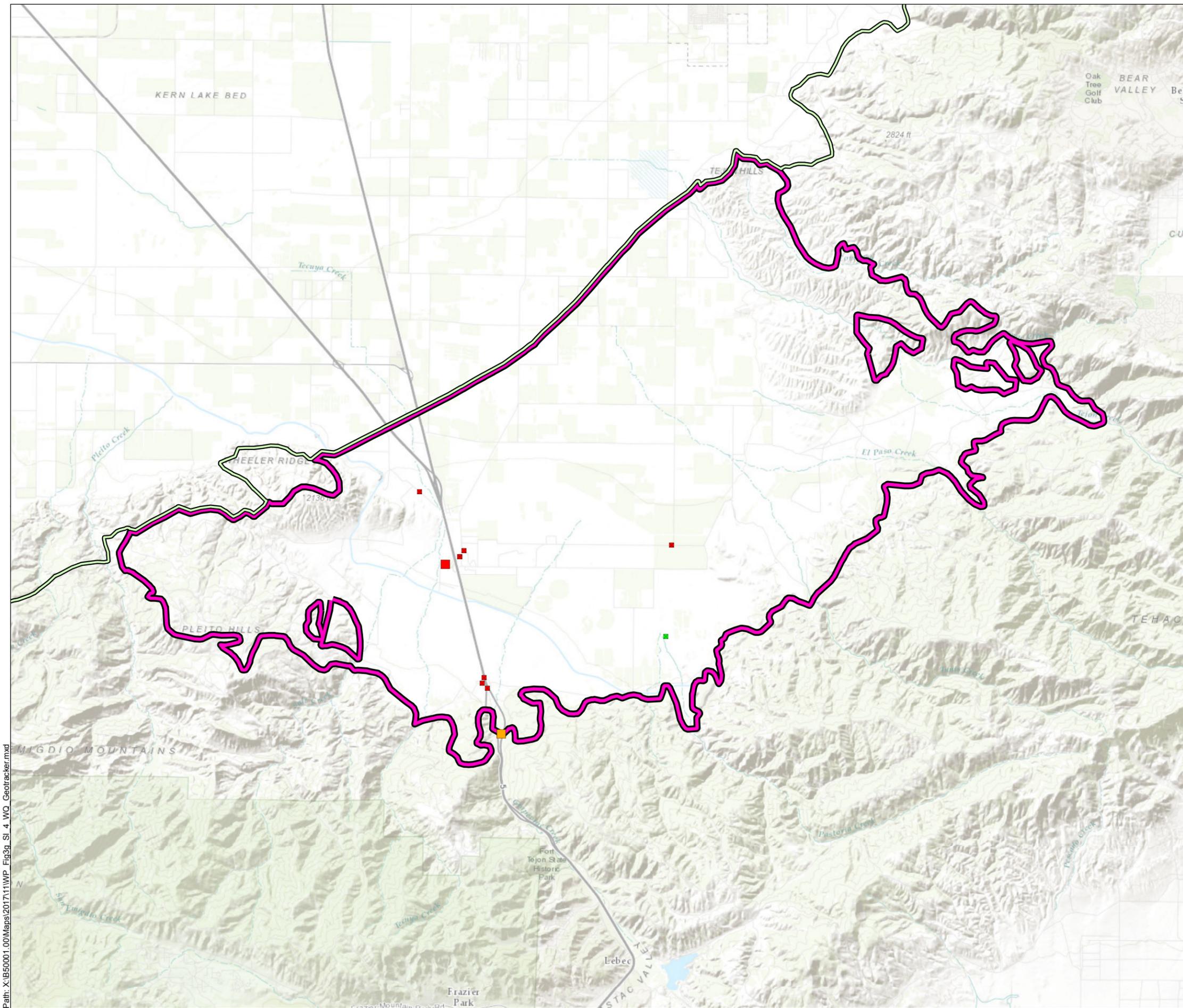
Evaluation of Available Data and Assessment of Sustainability Indicator #4 - Water Quality Manganese

Tejon-Castac Water District
Kern County, CA
November 2017
EKI B50001.04

eki environment & water

Figure 3f

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

GeoTracker Sites

- Cleanup Program Site, Open
- Cleanup Program Site, Closed
- LUST Cleanup Site, Open
- LUST Cleanup Site, Closed
- Military/UST Site, Open
- Military/UST Site, Closed
- Land Disposal Site, Open
- Land Disposal Site, Closed

Abbreviations

DWR = California Department of Water Resources
 LUST = Leaking Underground Storage Tank
 SWRCB = State Water Resources Control Board
 UR = Undesirable Result
 UST = Underground Storage Tank

Notes

1. All locations are approximate.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
 2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
 3. Locations of contamination sites from SWRCB GeoTracker website (<http://geotracker.waterboards.ca.gov/datadownload>), accessed 31 August 2017.

N

0 2.5 5
(Scale in Miles)

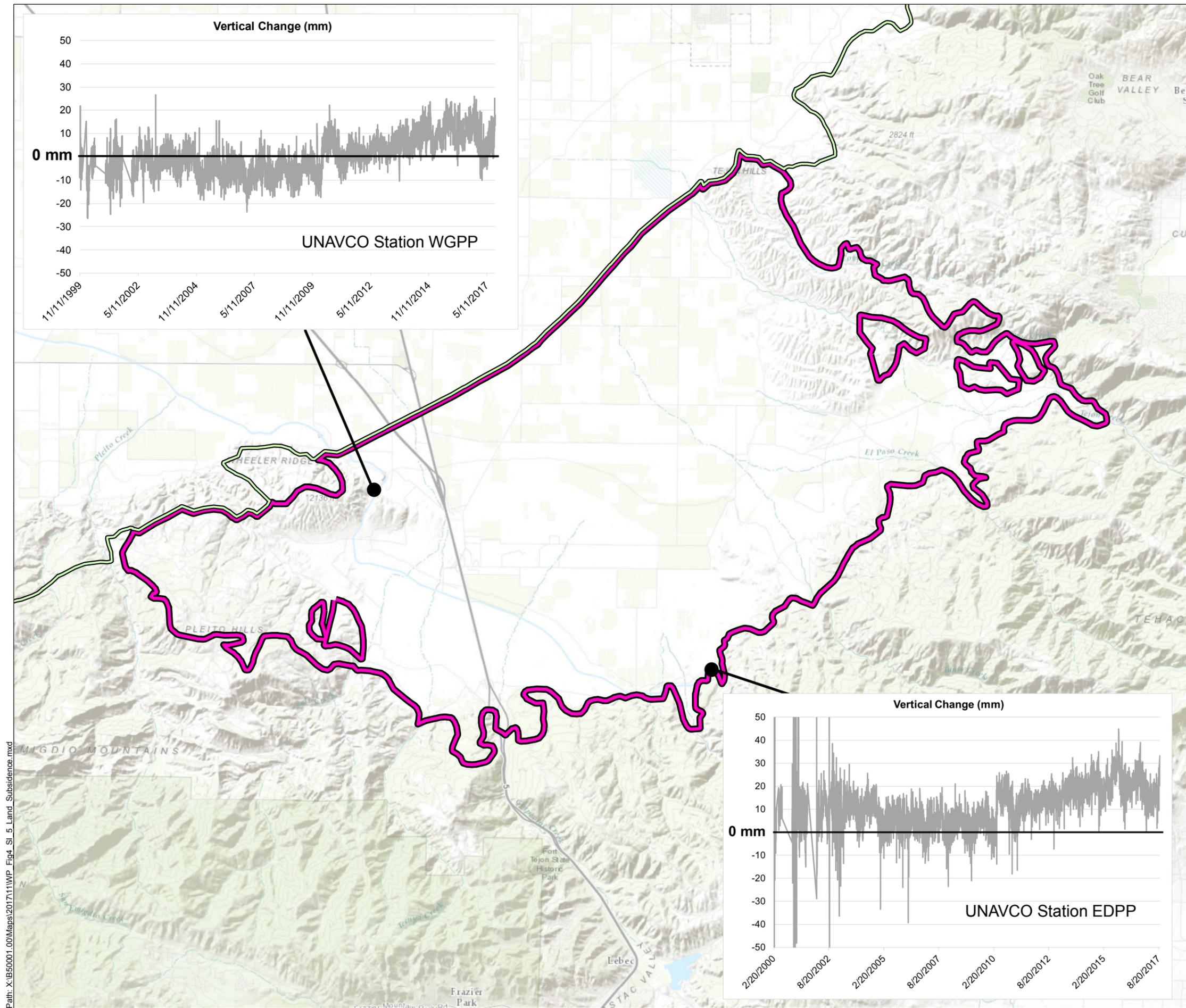
Evaluation of Available Data and Assessment of Sustainability Indicator #4 - Water Quality GeoTracker Sites

Tejon-Castac Water District
 Kern County, CA
 November 2017
 EKI B50001.04

Figure 3g

eki environment & water

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Legend

Groundwater Subbasin

- White Wolf
- Kern County
- UNAVCO Station

Abbreviations

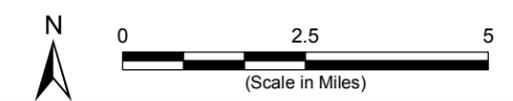
DWR = California Department of Water Resources
 mm = millimeters
 UR = Undesirable Result

Notes

- All locations are approximate.
- Vertical change in millimeters measured with respect to initial elevation on first measurement date. For UNAVCO Station WGPP (northwest portion of the White Wolf Subbasin), the first measurement was taken on 11 November 1999. For UNAVCO Station EDPP (southern border of the White Wolf Subbasin), the first measurement was taken on 20 February 2000.

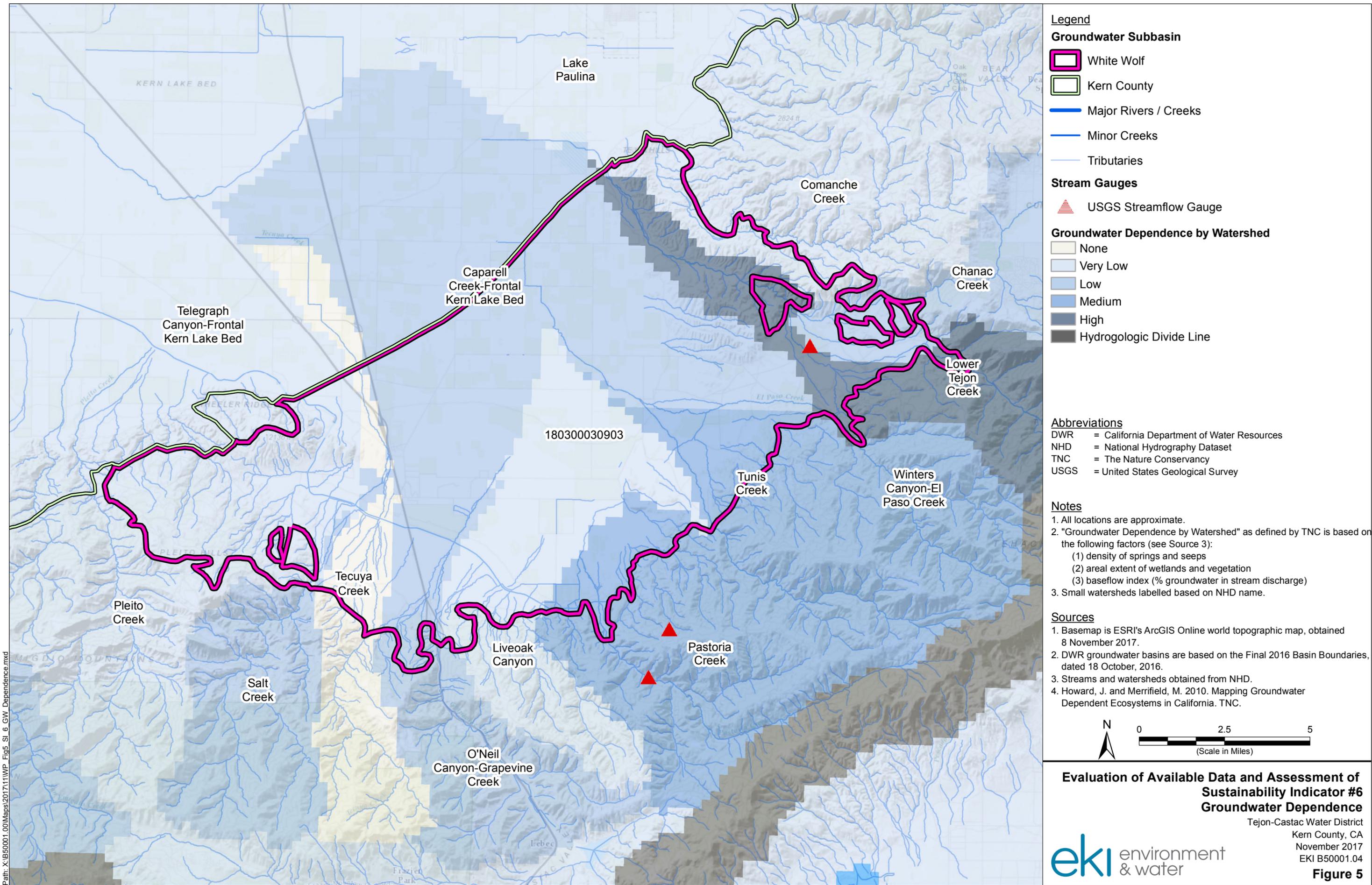
Sources

- Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
- DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
- Land subsidence data acquired from UNAVCO's Plate Boundary Observatory database on 18 September 2017.



Evaluation of Available Data and Assessment of Sustainability Indicator #5 - Land Subsidence

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Stream Gauges

- USGS Streamflow Gauge

Groundwater Dependence by Watershed

- None
- Very Low
- Low
- Medium
- High
- Hydrogeologic Divide Line

Abbreviations

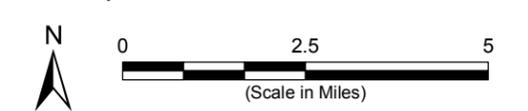
DWR = California Department of Water Resources
 NHD = National Hydrography Dataset
 TNC = The Nature Conservancy
 USGS = United States Geological Survey

Notes

- All locations are approximate.
- "Groundwater Dependence by Watershed" as defined by TNC is based on the following factors (see Source 3):
 - density of springs and seeps
 - areal extent of wetlands and vegetation
 - baseflow index (% groundwater in stream discharge)
- Small watersheds labelled based on NHD name.

Sources

- Basemap is ESRI's ArcGIS Online world topographic map, obtained 8 November 2017.
- DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
- Streams and watersheds obtained from NHD.
- Howard, J. and Merrifield, M. 2010. Mapping Groundwater Dependent Ecosystems in California. TNC.



Evaluation of Available Data and Assessment of Sustainability Indicator #6 Groundwater Dependence

Tejon-Castac Water District
 Kern County, CA
 November 2017
 EKI B50001.04

eki environment & water

Figure 5

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Proposal Budget

Table 5 – Proposal Budget					
Proposal Title: White Wolf Subbasin Groundwater Sustainability Plan Development					
Individual Project Title ¹	(a)	(b)	(c)	(d)	(e)
	Requested Grant Amount	Cost Share: Non-State Fund Source ²	Other Cost Share	Total Cost	% Cost Share (Col b/Col d)
(a) Project 1 – White Wolf Subbasin Groundwater Sustainability Plan Development	\$ 557,998	\$ 557,998	\$ -	\$ 1,115,997	50.00%
(b) Proposal Total (Sum rows (a) through (d) for each column)	\$ 557,998	\$ 557,998	\$ -	\$ 1,115,997	50.00%

¹ Refer to Work Plan for description of Project.

² Cost Share will be provided as financial and in-kind contributions from the GSA's comprising entities - Arvin-Edison Water Storage District, Tejon-Castac Water District, and Wheeler Ridge-Maricopa Water Storage District. Column B is exactly 50% of the total project cost.

Project Budget

Table 4 – Project Budget				
Proposal Title: White Wolf Subbasin Groundwater Sustainability Plan Development Project Title: White Wolf Subbasin Groundwater Sustainability Plan Development Project serves a need of a DAC?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Cost Share Waiver request?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Tasks ¹	(a)	(b)	(c)	(d)
	Requested Grant Amount	Cost Share: Non-State Fund Source	Other Cost Share	Total Cost
Phase PM - Project Management and Administration (Tasks 1 - 3)	\$ 48,871	\$ 48,871	\$ -	\$ 97,742
Phase 1 - GSP Foundation (Tasks 4 - 14)	\$ 204,240	\$ 204,240	\$ -	\$ 408,481
Phase 2 - Basin Characterization and Analysis (Tasks 15 - 22)	\$ 119,964	\$ 119,964	\$ -	\$ 239,928
Phase 3 - Sustainability Planning (Tasks 23 -30)	\$ 126,514	\$ 126,514	\$ -	\$ 253,028
Phase 4 - GSP Preparation and Submittal (Tasks 31 - 34)	\$ 58,409	\$ 58,409	\$ -	\$ 116,818
(ai) Grand Total (Sum rows (a) through (d) for each column)	\$ 557,998	\$ 557,998	\$ -	\$ 1,115,997

¹ Refer to Work Plan for description of tasks. Tasks are organized by Work Plan phase and subtotals are shown for each phase.
² Cost Share will be provided as financial and in-kind contributions from the GSA's comprising entities - Arvin-Edison Water Storage District, Tejon-Castac Water District, and Wheeler Ridge-Maricopa Water Storage District. The total for Column B is exactly 50% of the total project cost.

Attachment 6 - Project Schedule

ID	Phase/Task #	Phase/Task Name	Start	Finish	Duration	2015				2016				2017				2018				2019				2020				2021				2022			
						Q2	Q3	Q4	Q1	Q2	Q3	Q4																									
1	PM Phase	Project Management	Fri 12/1/17	Mon 1/31/22	1087 days																																
2	Task 1	Prop 1 Grant Management, Administration, and Reporting	Fri 12/1/17	Mon 1/31/22	1087 days																																
3	Task 2	Project Management	Fri 12/1/17	Mon 1/31/22	1087 days																																
4	Task 3	Quality Assurance/Quality Control	Fri 12/1/17	Mon 1/31/22	1087 days																																
5	Phase 1	GSP Foundation	Thu 1/1/15	Sat 6/30/18	913 days																																
6	Task 4	Conduct Preliminary GSP Development Efforts	Thu 1/1/15	Fri 5/4/18	872 days																																
7	Task 5	Provide Initial Notification of GSP Development	Sat 5/5/18	Mon 6/4/18	22 days																																
8	Task 6	Select or Design Data Management System	Mon 5/21/18	Fri 6/1/18	10 days																																
9	Task 7	Gather Available Data & Compile into DMS	Mon 6/4/18	Fri 6/22/18	15 days																																
10	Task 8	Compile Info on Plan Area & Basin Mgmt. Activities	Tue 5/1/18	Mon 6/11/18	30 days																																
11	Task 9	Conduct Data Gaps Assessment	Mon 6/25/18	Fri 7/20/18	20 days																																
12	Task 10	Evaluate Numerical Groundwater Model Options	Mon 1/1/18	Fri 6/15/18	120 days																																
13	Task 11	Update GSP Development Funding Plan	Mon 1/1/18	Fri 6/29/18	130 days																																
14	Task 12	Develop Stakeholder Communication & Engagement Plan	Mon 4/16/18	Fri 5/25/18	30 days																																
15	Task 13	Conduct Stakeholder Engagement Re: GSP Foundation	Tue 8/1/17	Sat 6/30/18	240 days																																
16	Task 14	Participate in Intrabasin & Interbasin Coordination Efforts	Mon 1/1/18	Sat 6/30/18	131 days																																
17	Phase 2	Basin Characterization and Analysis	Sun 7/1/18	Sun 6/30/19	262 days																																
18	Task 15	Implement Plan for Filling Data Gaps Needed for GSP Preparation	Mon 7/23/18	Tue 1/22/19	132 days																																
19	Task 16	Assess Groundwater Conditions & Develop HCM	Mon 7/23/18	Tue 1/22/19	132 days																																
20	Task 17	Coordinate Regarding C2VSim Modeling	Mon 10/1/18	Fri 3/29/19	130 days																																
21	Task 18	Develop Basin-Wide Water Budget	Tue 1/1/19	Sun 6/30/19	130 days																																
22	Task 19	Assess Existing Monitoring Programs & Develop SGMA Network	Sat 9/1/18	Thu 2/28/19	130 days																																
23	Task 20	Conduct Stakeholder Engagement Re: Basin Char. & Analysis	Sun 7/1/18	Sun 6/30/19	262 days																																
24	Task 21	Implement GSP Development Funding Plan	Sun 7/1/18	Sun 6/30/19	262 days																																
25	Task 22	Participate in Intrabasin & Interbasin Coordination Efforts	Sun 7/1/18	Sun 6/30/19	262 days																																
26	Phase 3	Sustainability Planning	Mon 7/1/19	Tue 6/30/20	262 days																																
27	Task 23	Evaluate Potential Management Areas	Mon 7/1/19	Mon 9/30/19	66 days																																
28	Task 24	Develop Sustainable Management Criteria	Mon 7/1/19	Fri 12/27/19	130 days																																
29	Task 25	Identify Projects and Management Actions	Tue 10/1/19	Tue 3/31/20	131 days																																
30	Task 26	Create GSP Implementation Plan	Wed 4/1/20	Tue 6/30/20	65 days																																
31	Task 27	Finalize Monitoring Network & Protocols	Tue 10/1/19	Tue 6/30/20	196 days																																
32	Task 28	Conduct Stakeholder Engagement Re: Sustainability Planning	Mon 7/1/19	Tue 6/30/20	262 days																																
33	Task 29	Implement GSP Development Funding Plan	Mon 7/1/19	Tue 6/30/20	262 days																																
34	Task 30	Participate in Intrabasin & Interbasin Coordination Efforts	Mon 7/1/19	Tue 6/30/20	262 days																																
35	Phase 4	GSP Preparation & Submittal	Wed 7/1/20	Mon 1/31/22	414 days																																
36	Task 31	Compile Complete Draft GSP	Wed 7/1/20	Wed 3/17/21	186 days																																
37	Task 32	Distribute Draft GSP & Revise per Stakeholder Feedback	Thu 4/1/21	Sun 1/30/22	218 days																																
38	Task 33	Submit Final GSP to DWR	Mon 1/31/22	Mon 1/31/22	1 day																																
39	Task 34	Participate in Intrabasin & Interbasin Coordination Efforts	Wed 7/1/20	Mon 1/31/22	414 days																																

White Wolf Subbasin Groundwater Sustainability Plan Development
May 2018

Phase Task Milestone



Stakeholder Communication and Engagement Plan

White Wolf Basin

Prepared for the White Wolf
Groundwater Sustainability
Agency

DRAFT
21 May 2018

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Glossary / Abbreviations

AEWSD	Arvin-Edison Water Storage District
CASGEM	California Statewide Groundwater Elevation Monitoring
CWC	California Water Code
C&E	Communications and Engagement
DAC	Disadvantaged Communities
DWR	California Department of Water Resources
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
JPA	Joint Powers Agreement
SCEP	Stakeholder Communication and Engagement Plan
SGMA	Sustainable Groundwater Management Act
TC	Technical Committee
TCCWD	Tehachapi Cummings County Water District
TCWD	Tejon-Castac Water District
TRC	Tejon Ranch Corporation
TRCC	Tejon Ranch Commerce Center
WRMWS	Wheeler Ridge-Maricopa Water Storage District

1. INTRODUCTION

§ 354.10. Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:

- (a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.*
- (b) A list of public meetings at which the Plan was discussed or considered by the Agency.*
- (c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.*
- (d) A communication section of the Plan that includes the following:*
 - (1) An explanation of the Agency's decision-making process.*
 - (2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.*
 - (3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.*
 - (4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.*

The White Wolf Groundwater Sustainability Agency (GSA) has developed this Stakeholder Communication and Engagement Plan (SCEP) to describe its approach to Communication & Engagement (C&E) throughout the Groundwater Sustainability Plan (GSP) development process. This SCEP was prepared in accordance with California Water Code (CWC), the GSP Regulations (Title 23 of the California Code of Regulations [CCR] §354.10 [see above]), and the California Department of Water Resources (DWR) Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement (DWR, 2018), as well as additional reference documents recommended by DWR for guidance.

C&E efforts carried out as described in this SCEP will help to ensure that beneficial uses and users of groundwater are adequately considered in the GSP development process as required by GSP Regulations (23-CCR §354.10). Specifically, in this SCEP:

- Section 2.2 describes the GSA decision-making process (23-CCR §354.10(d)(1));
- Section 6 identifies opportunities for public engagement and how public input and response will be used (23-CCR §354.10(d)(2));
- Section 3 identifies stakeholders and how the GSA intends to engage with them, and Section 4 describes how the GSA intends to build upon its current understanding of stakeholders in the Basin (23-CCR §354.10(d)(3) and CWC §10723.4); and
- Section 7 describes the C&E implementation timeline, including when this SCEP will be updated to describe methods to inform the public about GSP implementation progress, including the status of projects and actions (23 CCR §354.10(d)(4)).

2. GOALS AND DESIRED OUTCOMES

This program for C&E is designed to effectively engage a variety of relevant stakeholders in the development of a GSP that will guide the GSA to demonstrate sustainability by 31 January 2042 and maintain sustainability through the Sustainable Groundwater Management Act (SGMA)'s 50-year planning timeline.

2.1. GSA Description and Boundary

The GSA is comprised of Arvin-Edison Water Storage District (AEWSD), Tejon-Castac Water District (TCWD), Wheeler Ridge-Maricopa Water Storage District (WRMWSD), and Kern County (County). The GSA covers the entirety of the White Wolf Subbasin (Basin; DWR 5-022.18) of the San Joaquin Valley Basin, as shown in **Figure 1**. The Basin is high priority but not critically overdrafted, and thus has a GSP submission deadline of 31 January 2022.

2.2. GSA Structure and Decision-Making Process

Key GSP development and implementation decisions are made by the GSA Board of Directors (Board). The ad-hoc Technical Committee helps to guide the GSP development technical consultant team and provides feedback on draft work products.

2.2.1. GSA Board Structure and Meetings

Per the Joint Powers Agreement (JPA) executed on 9 May 2017, the GSA Board is composed of two voting representatives from AEWSD, TCWD, and WRMWSD and one non-voting representative from the County.

Board meetings are held on the first Tuesday of every third month (e.g., March, June, September, December) and are open to the public. Board meeting agendas and packets are posted to the GSA website (<http://whitewolfgsa.org/>) at least 72 before each Board meeting.

2.2.2. Ad-hoc Technical Committee Structure and Meetings

The ad-hoc Technical Committee (TC) is composed of one to two (1-2) representatives from each voting party of the GSA. The TC does not have regular meetings and instead meets as necessary to provide feedback to and guide the GSP development technical consultant team. The TC helps to identify and compile key data sources, refine key GSP components, and to translate technical GSP components for presentation to the Board and stakeholders.

2.3. Desired Outcome

The GSA aims to develop a GSP that sets the Plan Area on a path to maintain sustainability through SGMA's 50-year planning timeline.

2.4. Communication Objectives to Support the GSP

The GSA's C&E efforts aim to support a GSP that best meets the needs of beneficial uses and users of groundwater in the White Wolf Basin and reflects and incorporates stakeholder input as appropriate. The GSA aims to be knowledgeable about and anticipate stakeholder interests and concerns.

2.5. Challenges for the Plan Area

The GSA is aware of and plans to address the following challenges:

- Several large landowners overlie both the Basin and the Kern County Subbasin (Kern Basin; DWR 5-022.14). The GSA will need to coordinate with entities in the Kern Basin to ensure that C&E conducted by the GSA will align with and complement C&E conducted by entities in the Kern Basin. This coordination should be facilitated by the fact that AEWSD and WRMWSD currently overlie both basins and TCWD is anticipated to overlie both basins upon completion of a pending annexation. All three agencies will be closely involved in the GSP development process and C&E efforts in both basins. Should substantially different groundwater management decisions be made in each basin, the GSA will ensure that stakeholders near and straddling the basin boundary understand how GSP implementation in each basin will impact them.
- Irrigated agriculture is the primary land use in the Basin, and there will be concerns about SGMA compliance. The GSA will aim to be open and transparent in any decisions that will have a substantial impact on beneficial users of groundwater in the basin, and will aim to engage stakeholders early in the decision-making process to consider their interests and concerns.
- A major development (i.e., Grapevine at Tejon Ranch) will occur in the Basin during GSP implementation. While the development's entire demand will be met with surface water and recycled water, the GSP will need to describe how this major land use change will impact groundwater and C&E efforts will need to effectively communicate about changing land use in the Basin.

3. STAKEHOLDER IDENTIFICATION

The GSA identified current beneficial uses and users of groundwater in the Basin in its formation Notice submitted on 26 May 2017 in accordance with the interests listed in CWC §10723.2. The following are the identified beneficial uses and users of groundwater within the Basin. Representatives of specific organizations on this list form the basis of the GSA's list of interested parties, required by CWC §10723.4.

3.1. Holders of overlying groundwater rights

3.1.1. Agricultural Users

The primary land use in the Basin is irrigated agriculture, comprising 41% of the total land area in the Basin in 2013¹. Collectively, WRMWSD and AEWSO provide water service to the majority of the agricultural water users in the Basin. Each water district maintains a list of landowners within its service area, and input from agricultural groundwater users will be integral to the development of the GSP.

Agricultural groundwater users in areas outside of the WRMWSD and AEWSO service areas will be engaged through the public outreach process prior to and during the development and implementation of the GSP.

3.1.2. Domestic Well Owners

The quantity and distribution of domestic well owners within the Basin is currently unknown. The GSA seeks to compile information on the number and location of domestic wells in the Basin, as well as the concerns and interests of domestic well owners, through the stakeholder survey described in Section 4.

3.1.3. Commercial and Industrial Users

The Pastoria Energy Facility, owned and operated by Calpine Corporation, is located on the southern border of the Basin, adjacent to the A.D. Edmonston Pumping Plant. The Pastoria Energy Facility relies exclusively on surface water supplies. Griffith Company operates a sand and gravel mine in the Basin and relies on both surface and groundwater supplies. Both facilities will be invited to participate in the GSP development process by sending representatives to GSA Board meetings and stakeholder workshops.

The Basin has historically been a productive region for oil and gas exploration. Active oil fields in the Basin include the following: Comanche Point, North Tejon, Pleito, Tejon, Tejon Hills, Valpredo, and Wheeler Ridge. Oil and gas groundwater users generally extract water from hydrocarbon-bearing zones beneath the vertical extent of the Basin. Representatives of the oil and gas industry are welcome to participate in the GSP development process by attending GSA Board meetings and stakeholder workshops.

The Tejon Ranch Commerce Center (TRCC), owned and operated by the Tejon Ranch Corporation (TRC) and served by TCWD, is the only large non-agricultural development in the Basin. The interests of the TRCC will be considered in the development and implementation of the GSP through TCWD's participation in the GSA.

¹ Kern County Department of Agriculture and Measurement Standards, 2013.

Additional commercial and industrial groundwater users, if identified, will be engaged prior to and during the development and implementation of the GSP.

3.2. Municipal Well Operators

There are currently no identified municipal well operators within the Basin.

3.3. Public Water Systems

Although all four GSA parties are public agencies, only TCWD is a Public Water Agency providing potable water service from both surface water and groundwater sources. WRMWSD and AEWSD provide untreated water for irrigation and industrial purposes, and the County of Kern does not provide water service.

Tehachapi Cummings County Water District (TCCWD) may overlie a very small portion of the Basin in the eastern uplands. As part of the 2016 basin boundary modification process², TCWD informed TCCWD of the overlap. TCCWD stated that it had no interest in the management of the White Wolf Basin under SGMA, and that the apparent overlap was likely a result of imperfect shapefiles³.

Tut Brothers Farm #96 is noted as a community water system that serves 30 residents year-round and with a groundwater as its primary source (SDWIS). The GSA intends to engage with the operators of this water system to understand their interests.

While publicly available data have been examined to identify Public Water Systems in the Basin⁴, the GSA acknowledges that these datasets are known to be incomplete and thus seeks to identify and engage any additional water systems during the development and implementation of the GSP.

3.4. Local Land Use Planning Agencies

The entire Basin is comprised of unincorporated County land, and the Kern County Planning and Community Development is responsible for land use planning in the Basin. The County will be actively involved in the development and implementation of the GSP through its participation in the GSA.

3.5. Environmental Users of Groundwater

There is minimal interaction between groundwater and surface water in the Basin. In most of the Basin, the water table lies more than 300 feet below land surface⁵ and thus there is no groundwater contribution to stream flow. In the vicinity of the Springs Fault in the southeastern corner of the Basin, however, there is evidence of spring flow contributing to a strip of natural well-watered vegetation in an otherwise dry

² TCWD submitted a Basin Boundary Modification Request (BBMR) separating the White Wolf Basin from the rest of the Kern Basin in March 2016, and this BBMR was approved in October 2016.

³ TCCWD clarified the apparent area overlap in a letter to TCWD dated 4 April 2016.

⁴ Including the California Environmental Health Tracking Program Water System Map Viewer (http://www.cehtp.org/page/water/water_system_map_viewer).

⁵ California Department of Water Resources, Groundwater Information Center, Spring 2016 Depth to Water Point Data, accessed 27 July 2016.

land cover. The spring discharge rate is estimated to be approximately 200 to 500 acre-feet per year (EKI, 2016).

Wind Wolves Preserve is a nature preserve that overlies a portion of the Basin and has expressed interest in participating in the GSP development process.

To the extent that additional environmental users of groundwater are identified, they will be considered and engaged during the development and implementation of the GSP.

3.6. Surface Water Users

Surface water features in the Basin include ephemeral streams draining the Tehachapi Mountains, several small lakes and ponds, the California Aqueduct, and a network of irrigation canals and ditches.

TRC owns appropriative water rights to several of the ephemeral tributaries to the Basin. As a landowner in the Basin, TRC will be engaged during the development and implementation of the GSP.

3.7. The Federal Government

There are no identified federal lands within the Basin.

3.8. California Native American Tribes

There are no identified California Native American tribal lands within the Basin.

3.9. Disadvantaged Communities

A portion of US Census Tract 62.02, which overlies an area of the northern portion of the Basin along Interstate 5, was identified as a Disadvantaged Community Tract based on an average household income less than 80% of the State median (U.S. Census, 2015). There were no Disadvantaged Community Places identified within the Basin (U.S. Census, 2015). The GSA aims to engage residents of disadvantaged communities during the development and implementation of the GSP through identification in the stakeholder survey and coordination with relevant community groups.

3.10. Groundwater Monitoring Entities

The GSA and AEWS D are Monitoring Entities in the Basin under the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. WRMWSD conducts the CASGEM monitoring effort on behalf of the GSA. AEWS D will be actively involved in the development and implementation of the GSP through its participation in the GSA.

4. STAKEHOLDER SURVEY AND MAPPING

The GSA intends to frequently update its list of stakeholders based on new information. To learn more about its stakeholders, the GSA plans to distribute a stakeholder survey (Appendix A) by:

- Posting the survey on the GSA website (<http://whitewolfgsa.org/>);
- Having copies of the survey available at all GSA Board meetings and stakeholder workshops;
- Sending the survey in water bill mailings from AEWS, TCWD, and WRWSD; and
- Coordinating with the community organizations (e.g., Kern County Farmers Bureau, Self-Help Enterprises, etc.) to distribute the survey to diverse members of the population that may not be otherwise be reached.

Based on current knowledge of stakeholders, the GSA has completed a “Lay of the Land” exercise in **Table 1**, identifying specific stakeholder organizations/individuals, stakeholder type, key interests and issues, the sections of the GSP likely to be relevant to this stakeholder, and the level of engagement (e.g., inform, consult, involve) expected with each stakeholder organization/individual.

Given that the GSA will gain more knowledge of the interests, issues, and challenges of stakeholders over the course of GSP development, **Table 1** will be updated during each phase of GSP development. Should the GSA need to learn more about specific stakeholders, individual meetings will be arranged to find out more about their issues, interests, and challenges.

In addition to the more detailed stakeholder survey, the GSA intends to maintain a simple form on its webpage for individuals to enroll in the GSA interested parties list and provide their contact information.

Table 1
Stakeholder Constituency – “Lay of the Land” Exercise

Organization/ Individual	Type of Stakeholder (a)	Anticipated Key Interests	Anticipated Key Issues (b)	Relevant GSP Sections	Level of Engagement and Rationale (c)
Agricultural Water Users	Agricultural Users	Preserving access to high quality groundwater for irrigation	<ul style="list-style-type: none"> • Potential curtailment of pumping • GSP development and implementation costs 	<ul style="list-style-type: none"> • Sustainable Management Criteria • Projects and Management Actions 	Collaborate to ensure sustainable management of groundwater
Domestic Well Users	Domestic Well Owners	Preserving access to high quality groundwater for domestic users	<ul style="list-style-type: none"> • Water quality degradation • Declining water levels • Potential curtailment of pumping • GSP development and implementation costs 	<ul style="list-style-type: none"> • Sustainable Management Criteria • Projects and Management Actions 	Inform and involve to avoid negative impact to these users
Kern County Planning and Community Development	Local Land Use Planning Agency	Managing County-wide land use	<i>Need to identify</i>	<ul style="list-style-type: none"> • Plan Area • Projects and Management Actions 	Consult and involve to ensure land use policies are supporting GSPs
Tejon Ranch Commerce Center	Commercial User	Maintain access to groundwater supplies	<ul style="list-style-type: none"> • Potential curtailment of pumping • GSP development and implementation costs 	<ul style="list-style-type: none"> • Sustainable Management Criteria • Projects and Management Actions 	Inform and involve to avoid negative impact to these users
Tejon Ranch Corporation	Commercial User	Ensure viability of future developments	<ul style="list-style-type: none"> • Ensure that changing land use will complement GSP projects and management actions 	<ul style="list-style-type: none"> • Projects and Management Actions 	Inform and involve to avoid negative impact to these users
Griffith Company	Industrial User	Maintain access to groundwater supplies	<ul style="list-style-type: none"> • Potential curtailment of pumping • GSP development and implementation costs 	<ul style="list-style-type: none"> • Sustainable Management Criteria • Projects and Management Actions 	Inform and involve to avoid negative impact to these users
Active oil field operators	Industrial Users	Continue to operate oil fields	<ul style="list-style-type: none"> • Definition of vertical extent of the groundwater basin based on salinity 	<ul style="list-style-type: none"> • Basin Setting • Sustainable Management Criteria • Projects and Management Actions 	Inform and involve to avoid negative impact to these users
Tejon-Castac Water District	Public Water System	Continue to provide potable water service	<ul style="list-style-type: none"> • Potential curtailment of pumping • GSP development and implementation costs 	<ul style="list-style-type: none"> • Basin Setting • Sustainable Management Criteria • Projects and Management Actions 	Collaborate to ensure sustainable management of groundwater
Tut Brothers Farm #96	Public Water System	<i>Need to identify</i>	<i>Need to identify</i>	<i>Need to identify</i>	<i>Need to identify</i>

Table 1
Stakeholder Constituency – “Lay of the Land” Exercise

Organization/ Individual	Type of Stakeholder (a)	Anticipated Key Interests	Anticipated Key Issues (b)	Relevant GSP Sections	Level of Engagement and Rationale (c)
Arvin-Edison Water Storage District	Agricultural Users, Groundwater Monitoring Entity	Preserve access to high quality groundwater for irrigation	<ul style="list-style-type: none"> • Potential curtailment of pumping • GSP development and implementation costs • Operation of recharge basins 	<ul style="list-style-type: none"> • Basin Setting • Sustainable Management Criteria • Projects and Management Actions 	Collaborate to ensure sustainable management of groundwater
Wheeler Ridge- Maricopa Water Storage District	Agricultural Users, Groundwater Monitoring Entity	Preserve access to high quality groundwater for irrigation	<ul style="list-style-type: none"> • Potential curtailment of pumping • GSP development and implementation costs 	<ul style="list-style-type: none"> • Basin Setting • Sustainable Management Criteria • Projects and Management Actions 	Collaborate to ensure sustainable management of groundwater
Wind Wolves Preserve	Environmental Users	Preserve ecosystem	<ul style="list-style-type: none"> • Analyzing potential groundwater dependence of ecosystems 	<ul style="list-style-type: none"> • Basin Setting • Sustainable Management Criteria • Projects and Management Actions 	Inform and involve to sustain ecosystem

Abbreviations:

CWC = California Water Code

DWR = California Department of Water Resources

GSA = Groundwater Sustainability Agency

GSP = Groundwater Sustainability Plan

SGMA = Sustainable Groundwater Management Act

Notes:

- (a) Type of stakeholder based on CWC §10723.2 (e.g., agricultural groundwater users, municipal well operators, etc.).
- (b) Any documented issues (media coverage, statements, reports, etc.), specific issues such as past events, or issues that have been otherwise communicated to or are anticipated by the GSA.
- (c) Level of engagement based on the International Association of Public Participation Spectrum of Public Participation, as referenced in DWR’s Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement (DWR, 2018).

5. MESSAGES

The GSA aims to convey consistent high-level messaging to all stakeholders throughout GSP development and implementation. The following are the key messages that will form the foundation for all C&E efforts:

1. The GSA aims to engage with diverse stakeholders to best represent their interests in the GSP development process;
2. Key GSP development decisions will be made in an open and transparent fashion during public GSA Board meetings; and
3. Technical GSP development progress will be communicated in an accessible manner to encourage stakeholder understanding and support effective stakeholder input.

The GSA will maintain these messages in all venues for engaging, as described in Section 6. Additionally, the GSA has developed **Table 2** to document anticipated questions as well as possible responses. **Table 2** will be updated to add additional, frequently received questions as well as to build upon responses based on GSP development progress.

Table 2 Likely Questions and Responses

Likely Questions	Responses
How can I participate in the GSP development and implementation process?	GSA Board meetings are open to the public and held at 1:00 PM on the first Tuesday of every third month (e.g., March, June, September, December) in the Conference Room of the Iron Skillet, 5821 Dennis McCarthy Drive, Lebec CA 93243. Stakeholder workshops will be held throughout the GSP development process, and will be publicized on the GSA website (http://whitewolfgsa.org/).
Will I have to fallow my land?	We are currently in the initial phases of GSP development. Projects and management actions to achieve sustainability will be discussed later in the process, with ample opportunity for stakeholder input.
What types of management actions or projects are going to occur in my area?	We are currently in the initial phases of GSP development. Projects and management actions to achieve sustainability will be discussed later in the process, with ample opportunity for stakeholder input.
Are pump meters going to be required? Who will pay for meters?	We are currently in the initial phases of GSP development. Projects and management actions to achieve sustainability will be discussed later in the process, with ample opportunity for stakeholder input.
Who is paying for GSP development and implementation?	The GSA has obtained state funding to support GSP development (https://www.water.ca.gov/Work-With-Us/Grants-And-Loans/Sustainable-Groundwater). AEWSD, TCWD, and WRMWSD will share the remaining cost and actual cost to the landowner has yet to be determined.

6. VENUES FOR ENGAGING

The GSA intends to provide a variety of opportunities for engagement with stakeholders. Stakeholder input received will inform and be incorporated into corresponding sections of the GSP as appropriate.

6.1. GSA Board Meetings

As described in Section 2.2.1, the GSA Board meetings are open to the public and are a consistent venue for public engagement.

6.2. Stakeholder Workshops

Stakeholder workshops will be held to communicate progress on GSP technical components to stakeholders and to receive input on upcoming decisions and work efforts. At least two stakeholder workshops and one public hearing will be held during GSP development:

- **Stakeholder Workshop #1** – SGMA Overview, draft results of Basin Setting Information, Preliminary Undesirable Results, and Introduction to Sustainable Management Criteria.
- **Stakeholder Workshop #2** – Draft Sustainable Management Criteria and Discussion of Projects and Management Actions.
- **Public Hearing** – Review of the draft GSP.

The GSA will publicize all stakeholder workshops on its website (<http://whitewolfgsa.org/>) and to its list of interested parties and will coordinate with GSA parties (AEWSD, WRMWSD, TCWD) and community organizations (e.g., Kern County Farmers Bureau, Self-Help Enterprises, etc.) to send out emails and mailings as appropriate.

Additional stakeholder workshops may be held during GSP implementation. The timing and content of these stakeholder workshops will be determined when the GSP Implementation Plan is developed shortly before GSP submission.

6.3. Fact Sheets/Newsletters

The GSA intends to develop at least two fact sheets during GSP development, related to the information to be presented during the stakeholder workshops described in Section 6.2. These fact sheets will complement the material covered during the workshops and will be distributed at the workshops, on the GSA website, and through the GSA parties and community organizations.

6.4. Website Communication

The GSA will update its website with GSA Board meeting materials as described in Section 2.2.1, and will additionally update the website with key GSP updates.

6.5. Stakeholder Surveys

The GSA intends to learn about stakeholder interests using surveys that will be distributed as discussed in Section 4. A draft stakeholder survey is included as Appendix A.

7. IMPLEMENTATION TIMELINE

The GSA’s C&E implementation timeline aligns with a four phase GSP development timeline, as described in **Table 3** below.

Table 3 GSP Development and C&E Efforts by Phase

Phase	Timeframe	Overall GSP Efforts	C&E Efforts
GSP Foundation	May 2018 – July 2018	<ul style="list-style-type: none"> • Submit Initial Notification of GSP development • Select and design a Data Management System (DMS) • Conduct data gaps assessment • Evaluate numerical groundwater model options 	<ul style="list-style-type: none"> • Develop SCEP • Distribute Stakeholder Survey • Assess C&E progress based on survey results • Update Stakeholder Constituency Table
Basin Characterization and Analysis	July 2018 – July 2019	<ul style="list-style-type: none"> • Implement plan for filling data gaps • Develop Hydrogeologic Conceptual Model (HCM) and definition of groundwater conditions • Develop water budget • Assess existing monitoring programs 	<ul style="list-style-type: none"> • Develop and distribute SGMA Fact Sheet #1 • Conduct Stakeholder Workshop #1 • Assess C&E progress based on results of Stakeholder Workshop #1 • Update Stakeholder Constituency Table
Sustainability Planning	July 2019 – July 2020	<ul style="list-style-type: none"> • Evaluate potential management areas • Develop sustainable management criteria • Identify projects and management actions • Create GSP implementation plan • Finalize monitoring network and protocols 	<ul style="list-style-type: none"> • Develop and distribute SGMA Fact Sheet #2 • Conduct Stakeholder Workshop #2 • Assess C&E progress based on results of Stakeholder Workshop #2 • Update Stakeholder Constituency Table • Update SCEP to reflect plan for C&E efforts during GSP Implementation
GSP Preparation and Submittal	July 2020 – January 2022	<ul style="list-style-type: none"> • Compile complete draft GSP • Revise draft GSP (if necessary) per stakeholder feedback • Finalize GSP and submit to DWR 	<ul style="list-style-type: none"> • Distribute draft GSP • Hold Public Hearing on draft GSP • Assess C&E progress and plan for C&E related to GSP Implementation • Update Stakeholder Constituency Table

The GSA will update this SCEP while creating a GSP implementation plan. This update will focus on informing the public about GSP implementation progress, including the status of projects and actions (23-CCR §354.10(d)(4)).

8. EVALUATION AND ASSESSMENT

The GSA intends to assess its C&E implementation during each phase of GSP development, as shown in **Table 3**. The TC and/or the technical consultant team will present brief summaries of C&E progress at GSA Board meetings and will lead a discussion about lessons learned and what can be improved in the next phase of GSP development. The following questions will guide C&E evaluation:

- What worked well?
 - What allowed us insight into stakeholder concerns?
 - What types of materials best communicated GSP development to stakeholders?
- What didn't work as planned?
 - Could materials (e.g., presentation slides, fact sheets, website pages) have been improved to better communicate GSP development progress?
 - Are certain stakeholder groups less represented in the GSP development process than they should be?
- What do we plan on doing differently during the next phase based on what we have learned?
- How much of our C&E budget have we spent relative to work completed? Do we have enough remaining budget to complete our C&E plan?

REFERENCES AND TECHNICAL STUDIES (REG. § 354.4)

- CWC, 2015. Community Water Center. Collaborating for Success: Stakeholder Engagement for Sustainable Groundwater Management Act Implementation. July 2015.
- DWR, 2018. California Department of Water Resources. Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement. January 2018.
- EKI, 2016. Erler & Kalinowski, Inc. White Wolf Subbasin Technical Report, 16 March 2016.
- SDWIS. Safe Drinking Water Information System. Water System Details, accessed 14 May 2018. https://sdwis.waterboards.ca.gov/PDWW/JSP/WaterSystemDetail.jsp?tinwsys_is_number=1364&tinwsys_st_code=CA&counter=0.
- U.S. Census, 2015. US Census American Community Survey, 2010-2014.

APPENDIX A – STAKEHOLDER SURVEY

Date:

Affiliated organization or business name (if applicable):

Name of primary contact or individual stakeholder:

Contact information:

Email:

Phone number:

Address:

Website:

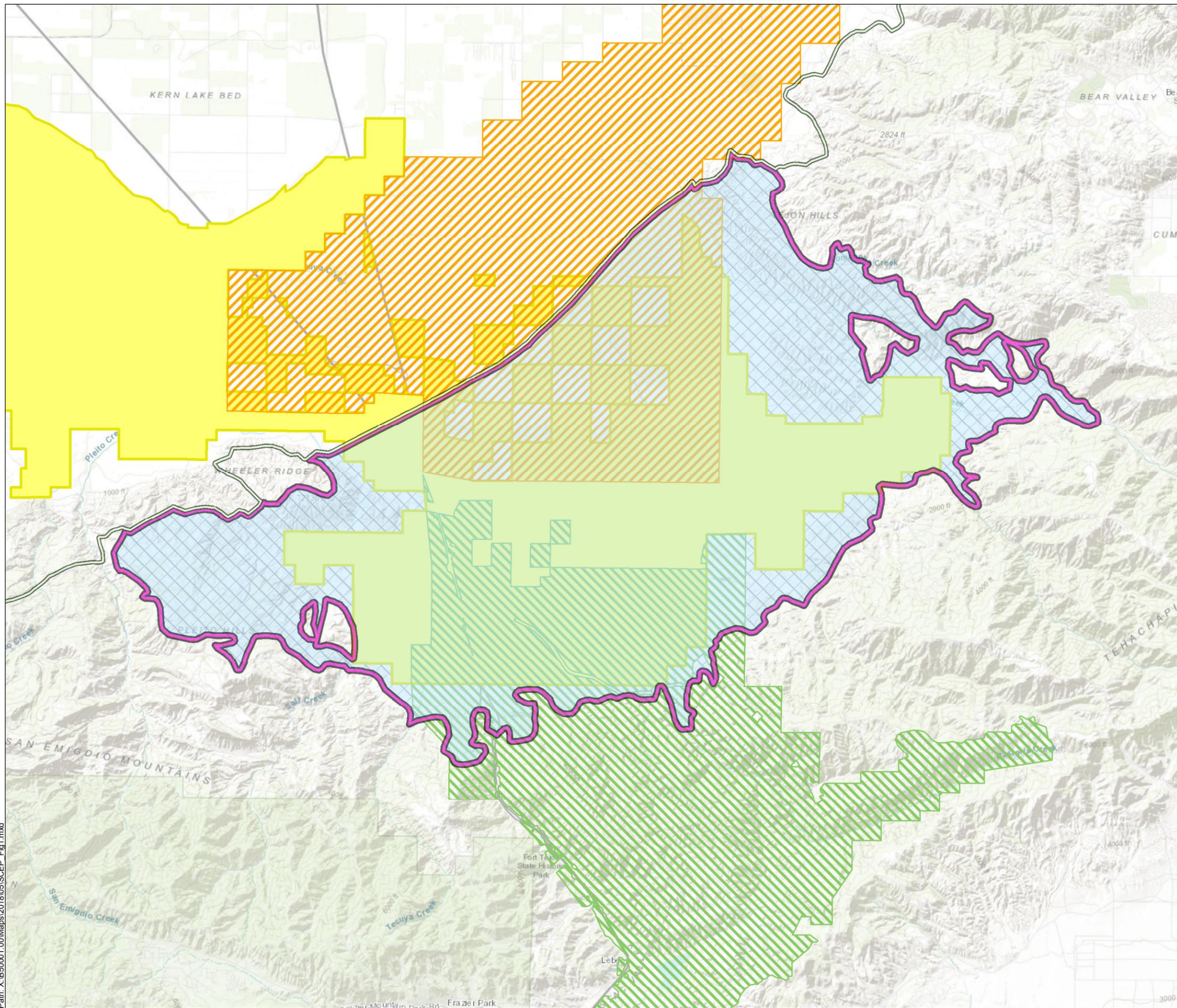
Stakeholder Type (check all that apply):

- Agricultural Groundwater User
- Domestic Well Owner/User
- Municipal Well Operator
- Commercial or Industrial Groundwater User
- Public Water System
- Local Land Use Planning Agency
- Environmental User
- Surface Water User
- Federal Government
- Native American Tribe
- Disadvantaged Community Resident or Organization
- City Resident
- Groundwater Monitoring Entity

Questions:

1. Are you familiar with the Sustainable Groundwater Management Act (SGMA) regulations?
2. Are you currently engaged in activities or discussions regarding groundwater management in this region?
3. Do you own or manage land in this region?
4. Where do you get your water supply?
 - a. City or Community Water System
 - b. Surface Water
 - c. Groundwater
 - d. Both Groundwater and Surface Water
 - e. Unknown
5. Do you manage water resources? If yes, what is your role?
6. What is your primary interest in land or water resources management?

7. (For agricultural and domestic well owners/users): What are the depth(s) and screen interval(s) of your wells?
8. (For agricultural and domestic well owners/users): Do you have a Well Completion Report, water level data, or water quality data that you are willing to share with the White Wolf GSA?
9. (For agricultural and domestic well owners/users): Has/have your well(s) ever gone dry or otherwise been impacted by declining water levels? If yes, when?
10. Do you have concerns about groundwater management? If so, what are they?
11. Do you have recommendations regarding groundwater management? If so, what are they?
12. Is there any other information that you would like the White Wolf GSA to take into consideration while developing a Groundwater Sustainability Plan (GSP)?



Legend

Groundwater Subbasin

- White Wolf
- Kern County

Jurisdictional Area

- White Wolf GSA
- AEWSD Service Area
- TCWD Service Area
- WRMWSD Service Area
- Kern County (outside of other GSA parties' jurisdictions)

Abbreviations

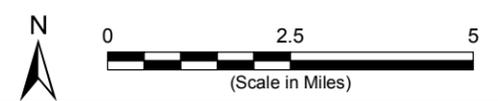
AEWSD = Arvin-Edison Water Storage District
 DWR = California Department of Water Resources
 GSA = Groundwater Sustainability Agency
 TCWD = Tejon-Castac Water District
 WRMWSD = Wheeler Ridge-Maricopa Water Storage District

Notes

1. All locations are approximate.
2. White Wolf GSA boundary is coterminous with the White Wolf Subbasin (5-022.18) boundary.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 15 May 2018.
2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
3. Service area boundaries for AEWSD, TCWD, and WRMWSD obtained from each district.



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GSA Area

Tejon-Castac Water District
 Kern County, CA
 May 2018
 EKI B50001.05

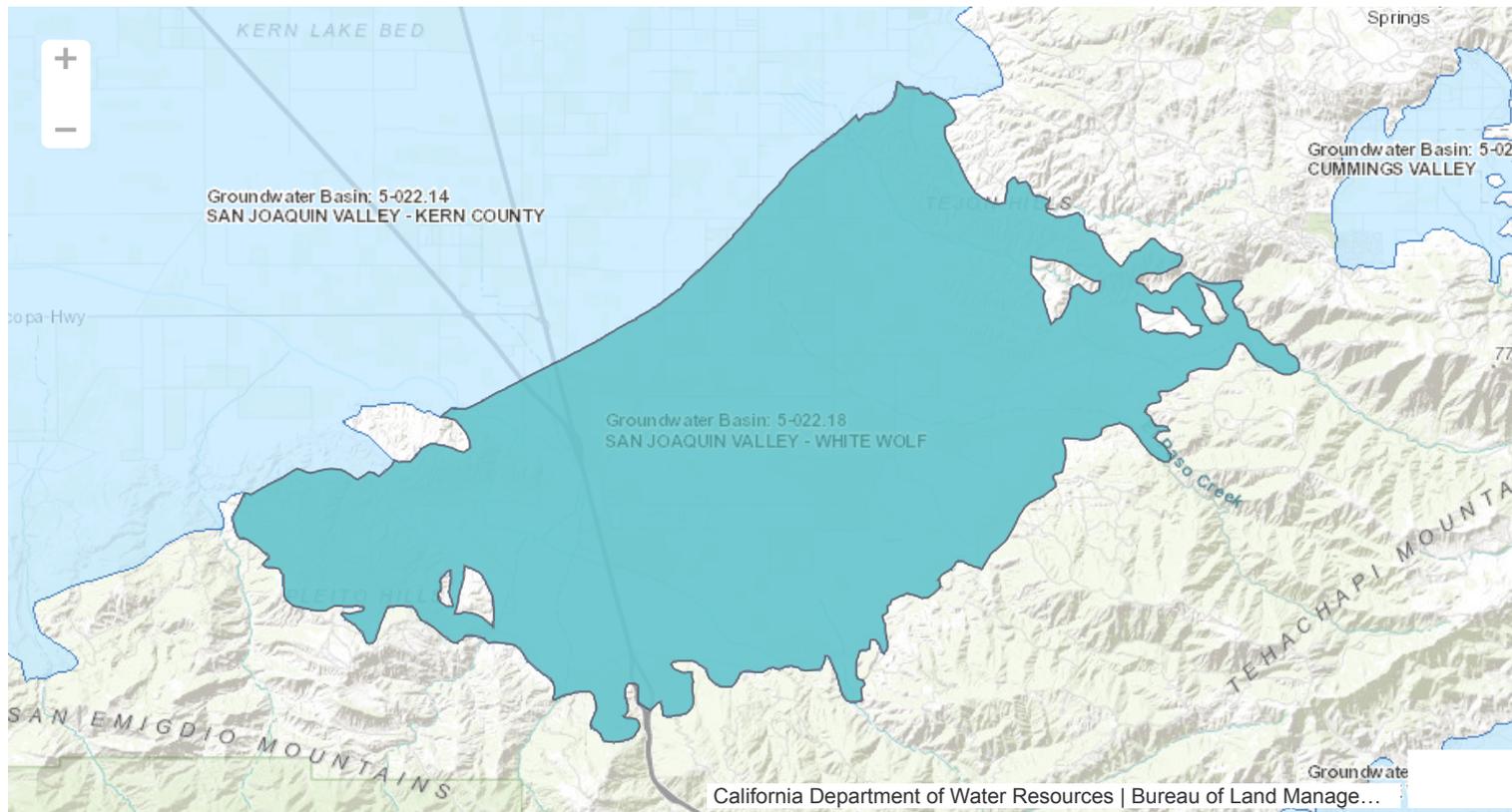
Figure 1

GSP Initial Notification Preview

5-022.18 WHITE WOLF

White Wolf Groundwater Sustainability Agency

Date Submitted: Last Modified: 04/20/2018



1. How many GSPs are planned for the basin?

Single GSP for the entire basin

2. Select GSA(s) that will develop the GSP(s)

White Wolf Groundwater Sustainability Agency (**Exclusive**)

a. (Optional) If one or more GSAs have identified a representative to submit an initial notification on their behalf, the designated representative should attach evidence of that identified.

3. Select or add the point of contact for your GSP area or Plan Manager if identified.

Angelica Martin
(Tejon-Castac Water District)
4436 Lebec Rd., Lebec, CA93243
6616634262
amartin@tejonranch.com

4. Please provide general information about the Agency's process for developing the GSP, including the manner in which interested parties may contact the Agency and participate in the development and implementation of the GSP as required by Water Codes §10723.4 and §10727.8

(Fill in the text box AND/OR attach a file).

5. Please provide link(s) to the Agency's website where relevant information regarding the GSP is posted or will be posted.

<http://whitewolfgsa.org/>

5 June 2018

To: California Department of Water Resources

Cc: Kern County

From: Tito Martinez, White Wolf Groundwater Sustainability Agency

**Subject: Initial Notification to Prepare a Groundwater Sustainability Plan
White Wolf Subbasin (DWR No. 5-022.18)**

This initial notification is to meet the requirements of California Code of Regulations (CCR) Title 23, §353.6. The White Wolf Groundwater Sustainability Agency (White Wolf GSA), hereby gives notice that it intends to initiate development of a Groundwater Sustainability Plan (GSP) for the entire White Wolf Subbasin (Department of Water Resources [DWR] Basin No. 5-022.18).

In May 2017, the White Wolf GSA, composed of Arvin-Edison Water Storage District, Tejon-Castac Water District, Wheeler Ridge-Maricopa Water Storage District, and Kern County, formed overlying the entirety of the White Wolf Subbasin. In November 2017, the White Wolf GSA submitted a Proposition 1 Sustainable Groundwater Program (SGWP) Grant Application for GSP Development in the White Wolf Subbasin. The application Work Plan includes a description of the full scope of work for GSP development, including tasks focused on stakeholder engagement. As outlined in the GSP Work Plan, the overall GSP development effort will be conducted in four phases with a schedule targeting submittal of the GSP by the statutory deadline of 31 January 2022.

The White Wolf GSA welcomes the participation of interested parties in its GSP development and implementation. The GSP Work Plan will be implemented in a transparent and collaborative fashion such that all basin stakeholders have ample opportunity to provide timely input. Each phase of GSP development includes a number of interim work products that will be prepared in draft form for review by the White Wolf GSA and interested stakeholders. A Stakeholder Communication and Engagement Plan (SCEP) will be developed during the first phase of GSP development to conform with requirements of the GSP regulations (i.e., CCR Title 23, §354.10) and to guide stakeholder engagement throughout the GSP development process. The SCEP will describe specific activities for informing interested members of the public, including periodic workshops, development of a website (already active) and mailings (email and post).

Additionally, White Wolf GSA Board Meetings are open to the public and include multiple opportunities for public comment. Technical presentations on GSP development will be made by technical specialists during the Board Meetings on a regular and as-needed basis. Regular White Wolf GSA Board Meetings are held every first Tuesday of every third month at the Conference Room of the Iron Skillet, 5821 Dennis McCarthy Drive, Lebec, CA 93243. Written meeting materials are posted to the White Wolf GSA website (<http://whitewolfgsa.org/>).

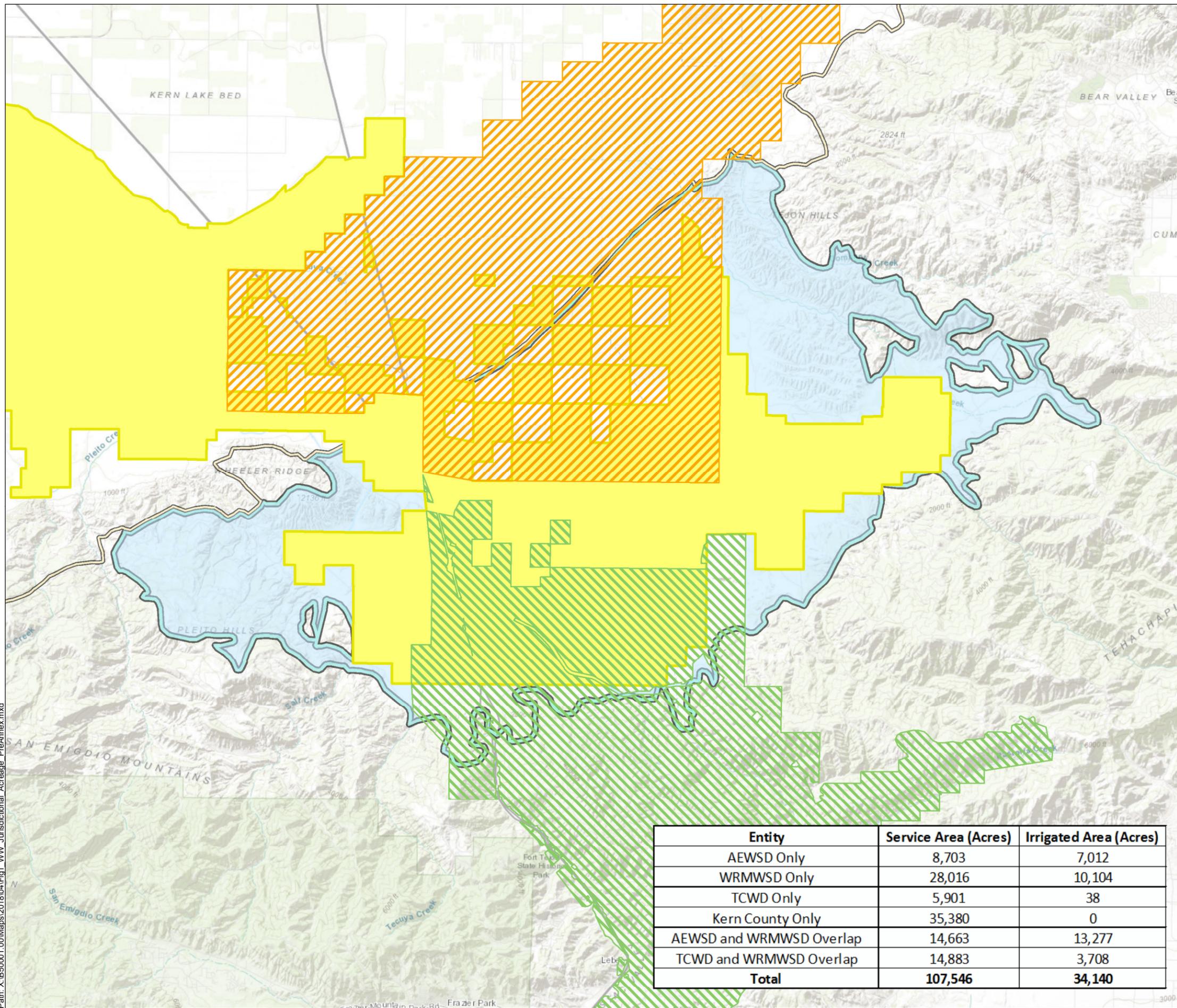
If you have any questions or comments, please do not hesitate to contact Angelica Martin at:

4436 Lebec Road
Tejon Ranch, CA 93243
Phone: 661-663-4262
E-mail: amartin@tejonranch.com

Sincerely,

Tito Martinez

President, White Wolf GSA Board of Directors



Legend

Groundwater Subbasin

- White Wolf
- Kern County

Service Area

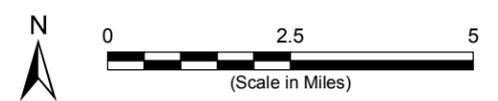
- AEWS Service Area
- TCWD Service Area
- WRM Service Area
- Kern County (outside of other GSA parties' jurisdictions)

Abbreviations

AEWS = Arvin-Edison Water Storage District
 DWR = California Department of Water Resources
 GSA = Groundwater Sustainability Agency
 TCWD = Tejon-Castac Water District
 WRM = Wheeler Ridge-Maricopa Water Storage District

- Notes**
- All locations are approximate.
 - Acreages calculated using the service area shapefiles for each district and Source 4. Irrigated acreage areas do not include parcels designated as urban or idle in Source 4.
 - The service areas of the districts are those areas within each district's boundaries. Actual water service is provided to much, but not all, the lands within these boundaries.
 - Service area boundary for TCWD includes annexations 5 and 6.

- Sources**
- Basemap is ESRI's ArcGIS Online world topographic map, obtained 23 April 2018.
 - DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
 - Service area boundaries for AEWS, TCWD, and WRM obtained from each district.
 - Irrigated acreage was obtained from the CADWR Land Use Viewer tool on 5 October 2017 at <https://gis.water.ca.gov/app/CADWRLandUseViewer/>.



Entity	Service Area (Acres)	Irrigated Area (Acres)
AEWS Only	8,703	7,012
WRM Only	28,016	10,104
TCWD Only	5,901	38
Kern County Only	35,380	0
AEWS and WRM Overlap	14,663	13,277
TCWD and WRM Overlap	14,883	3,708
Total	107,546	34,140

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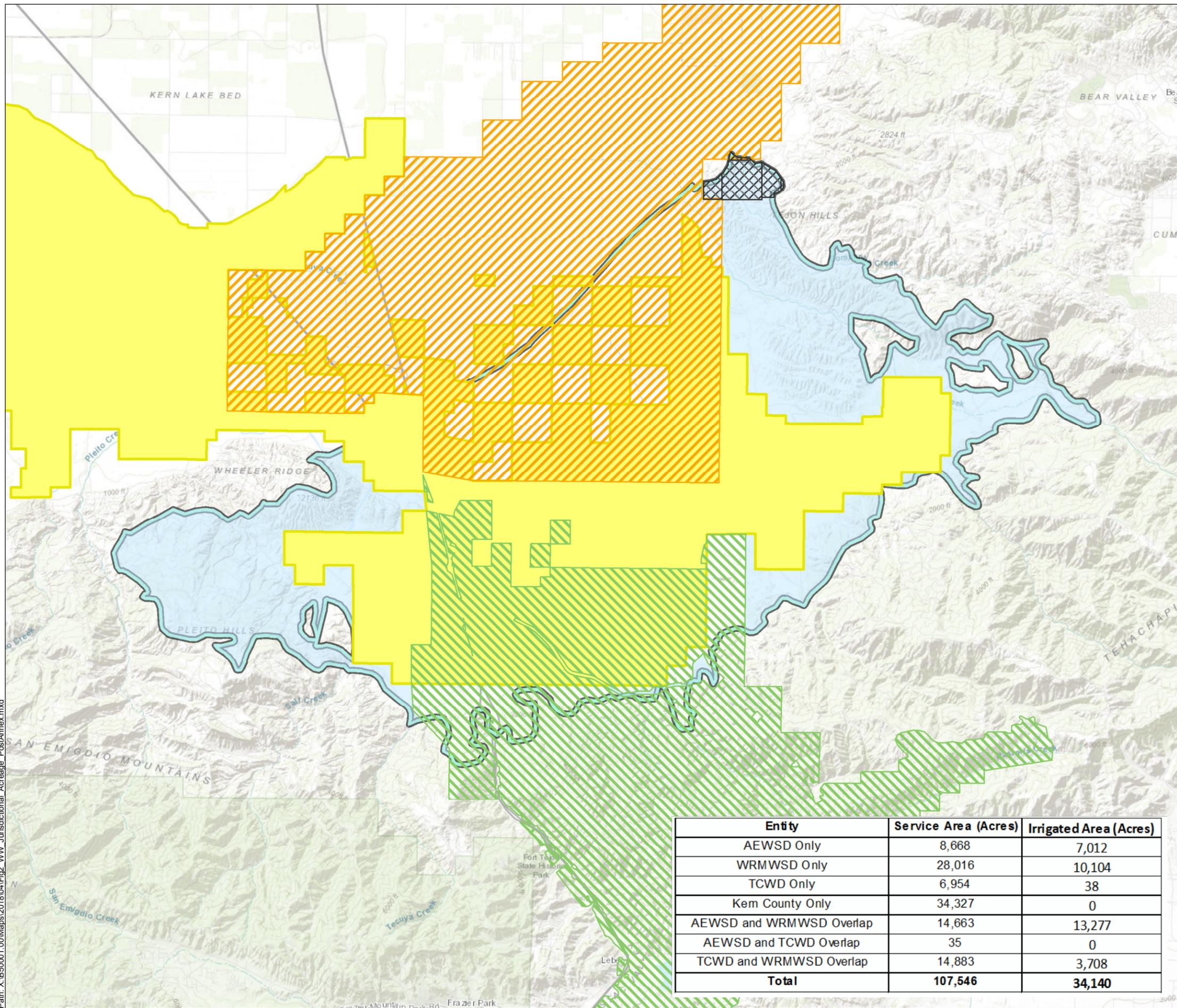
White Wolf Subbasin Jurisdictional Acreages

Tejon-Castac Water District
 Kern County, CA
 April 2018
 EKI B50001.05

eki environment & water

Figure 1

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Legend

Groundwater Subbasin

- White Wolf
- Kern County

Service Area

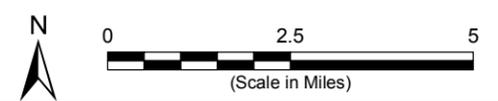
- AEWSD Service Area
- TCWD Service Area
- TCWD Proposed Annexation 7 - Area within White Wolf Subbasin
- WRMWSD Service Area
- Kern County (outside of other GSA parties' jurisdictions)

Abbreviations

- AEWSD = Arvin-Edison Water Storage District
- DWR = California Department of Water Resources
- GSA = Groundwater Sustainability Agency
- TCWD = Tejon-Castac Water District
- TRC = Tejon Ranch Corporation
- WRMWSD = Wheeler Ridge-Maricopa Water Storage District

- Notes**
1. All locations are approximate.
 2. Acreages calculated using the service area shapefiles for each district and Source 5. Irrigated acreage areas do not include parcels designated as urban or idle in Source 5.
 3. The service areas of the districts are those areas within each district's boundaries. Actual water service is provided to much, but not all, the lands within these boundaries.
 4. Service area boundary for TCWD includes annexations 5 and 6. TCWD Proposed Annexation 7 area shown is only the area of parcels to be annexed that falls within the White Wolf Subbasin.

- Sources**
1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 23 April 2018.
 2. DWR groundwater basins are based on the Final 2016 Basin Boundaries, dated 18 October, 2016.
 3. Service area boundaries for AEWSD, TCWD, and WRMWSD obtained from each district.
 4. Parcels to be included in TCWD annexation 7 isolated from Kern County parcels shapefile based on a figure provided by TRC staff on 9 April 2018.
 5. Irrigated acreage was obtained from the CADWR Land Use Viewer tool on 5 October 2017 at <https://gis.water.ca.gov/app/CADWRLandUseViewer/>.



Entity	Service Area (Acres)	Irrigated Area (Acres)
AEWSD Only	8,668	7,012
WRMWSD Only	28,016	10,104
TCWD Only	6,954	38
Kern County Only	34,327	0
AEWSD and WRMWSD Overlap	14,663	13,277
AEWSD and TCWD Overlap	35	0
TCWD and WRMWSD Overlap	14,883	3,708
Total	107,546	34,140

DRAFT

White Wolf Subbasin Jurisdictional Acreages After TCWD Annexation 7

Tejon-Castac Water District
Kern County, CA
April 2018
EKI B50001.05

eki environment & water

Figure 2

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