



Vina Groundwater Sustainability Agency

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Subject: Draft 2027 Periodic Evaluation and Draft Plan Amendments for the Vina Groundwater Sustainability Plan

To all stakeholders and interested parties:

The Vina Groundwater Sustainability Agency (GSA) and Rock Creek Reclamation District (RCRD) GSA have completed a draft of the required Five-Year Periodic Evaluation of the Vina Groundwater Sustainability Plan (GSP), pursuant to 23 CCR § 356.4. The Periodic Evaluation assesses the accompanying draft 2027 GSP Amendments and evaluates whether the subbasin continues to meet the requirements of SGMA and remains on track to achieve its sustainability goal.

There is no indication of undesirable results occurring in the subbasin and groundwater conditions remained in compliance with all Sustainable Management Criteria (SMCs) across all applicable sustainability indicators throughout the evaluation period (WY 2021–2025). Groundwater elevations averaged 20 feet above the Measurable Objectives and 71 feet above the Minimum Thresholds (WY 2025), and groundwater storage increased by an average of about 2,100 AF per year (WY 2021–2025). The subbasin remains on track to achieve its sustainability goal by 2042.

The draft 2027 Periodic Evaluation and Draft Amended GSP (redline and clean versions) are available for public review through **October 26, 2026**, at <https://www.vinagsa.org/gsp-periodic-evaluation-plan-amendments>. Comments may be submitted through the online comment form on the webpage, or directly by email to vinagsa@gmail.com, throughout the review period.

All comments received by October 26 will be compiled and provided to the SHAC at their November 18, 2026 meeting. Staff will identify and summarize comments that could lead to changes to the draft documents. The SHAC will review the draft documents and public comments at its November meeting and make recommendations to the Board. The Joint Boards will then consider public input and the SHAC's recommendations when adopting the final Plan Amendments and finalizing the Periodic Evaluation in December, ahead of submission to DWR by the January 2027 deadline.

Overview of Plan Amendments

Draft GSP amendments to the Plan reflect changes as directed by the GSA Boards, references to or context related to the 2027 Periodic Evaluation, and limited edits to accurately reflect current practices (ex. monitoring protocols for water quality).

The Board directed amendments include:

- The groundwater level representative monitoring network expanded from 17 to 29 wells. New wells in the North and South Management Areas were assigned Minimum Thresholds using the same comparability method applied in the 2022 GSP. New Local Management Levels (LMLs) – a non-regulatory, early-warning trigger set 20 feet below the Measurable Objective – were also assigned to a subset of the RMS wells (14).

- A new quantitative Minimum Threshold for land subsidence was established: 0.5 foot of cumulative subsidence over a five-year period at the same monitoring location, resulting from declining groundwater levels. This is based on InSAR satellite monitoring data and replaces the prior approach, which relied on groundwater levels as a proxy for land subsidence.

In addition, member agency staff from the City of Chico and Butte County have identified two shallow wells within the Chico Management Area for inclusion as Groundwater Level RMS wells to monitor conditions in relation to the Chico Urban Forest, specifically deep-rooted Valley Oaks. This approach is described in the draft Periodic Evaluation and reflected as draft GSP amendments. It is provided for consideration; the GSA Boards have not yet provided direction on this approach.

In addition, draft language regarding what actions will be taken if Local Management Levels are reached is included in the Periodic Evaluation and GSP documents. Specific to this topic, SHAC input is anticipated in October and Board direction in November, ahead of final approval in December.

Also of note: At its September 9, 2026 meeting, the Vina GSA Board directed staff to bring back two topics for further discussion at a future Board meeting: the Groundwater Levels Undesirable Result definition, specifically the two-consecutive-non-dry-year provision, and a presentation on an alternative Minimum Threshold approach that would combine Local Management Levels with raised Minimum Thresholds. Future Board direction on these or any other aspects of the draft documents will lead to the next version which the Joint Boards will consider in December prior to adoption/approval.

September 2026

VINA SUBBASIN

Periodic Evaluation

DRAFT FOR PUBLIC REVIEW

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SECTION 1: EXECUTIVE SUMMARY

1.1 Background

The Vina Subbasin (Subbasin) is identified by the California Department of Water Resources (DWR) as a high-priority subbasin. The Subbasin is managed by the Vina Groundwater Sustainability Agency (GSA) and the Rock Creek Reclamation District (RCRD) GSA (**Figure 1-1**). The Vina GSA was formed through the execution of a Joint Powers Agreement (Agreement) by three member agencies - the County of Butte, City of Chico, and Durham Irrigation District. The Vina GSA Board of Directors (Board) is composed of five seats, each with equal and full voting rights, which consists of an elected official from each member agency, an agricultural groundwater user, and a domestic well user (non-agricultural); the latter two positions being appointed by the Butte County Board of Supervisors. The Vina GSA covers the portions of the Vina Subbasin outside of the RCRD GSA jurisdictional boundary. In addition, in 2017 Butte College withdrew GSA status and agreed to participate in the development of the GSP by way of a Memorandum of Understanding with the Vina GSA.

The RCRD provides flood control and groundwater sustainability services to approximately 4,625 acres of agricultural and single-family residential parcels in northern Butte County. On October 18, 2016, the RCRD elected to become a GSA and sent notice to DWR of its intent to undertake sustainable groundwater management over its jurisdictional boundaries. The Vina GSA and RCRD GSA have assumed all SGMA authorities. The GSAs entered into a Coordination Agreement for the purpose of developing and implementing a single GSP for the Vina Subbasin.

The California Code of Regulations Title 23 (23 CCR) §356.4 requires GSAs in subbasins with a DWR-approved Plan to evaluate their Plan at least every five years and whenever the Plan is amended, and to submit the Periodic Evaluation to DWR at that time. The purpose of this Periodic Evaluation is to provide (1) an evaluation and written assessment of the 2027 Plan Amendments, including a discussion of the Plan Amendments and the reasons for those amendments; and (2) an evaluation of whether the 2027 Plan Amendments both continue to meet the requirements of SGMA and will lead to achievement of the sustainability goal for the Subbasin. Specific requirements of Periodic Evaluations are further described in 23 CCR §356.4.

The Evaluation is accompanied by an Amended GSP, which was adopted by the GSA on [FILL IN], following all public notice requirements. On July 27, 2023, DWR approved the Vina Subbasin GSP with six (6) recommended corrective actions (RCA), which have been addressed in this Evaluation and as part of the Amended GSP. DWR's recommended corrective actions and activities completed by the GSA are included in Error! Not a valid bookmark self-reference.. Revisions to address DWR's recommended corrective actions are summarized in *Section 10* of this 2027 Periodic Evaluation. The GSAs' efforts to address all these topics are described throughout this Periodic Evaluation and cross-referenced with the 2027 Plan Amendment as applicable.

Table 1-1. DWR Recommended Corrective Actions

RCA Number	Recommended Corrective Action	Activities completed by GSA	Discussion of GSA's Response
1	Provide additional information on historical and current groundwater quality conditions in the Subbasin and refine the definition of sustainable management criteria including: a) Provide additional information in the GSP outlining the location	- Updated contamination plumes in the Subbasin based on new information as feasible. Explicitly listed and described all existing contamination sites and the corresponding	Section 3.4: Degraded Water Quality

RCA Number	Recommended Corrective Action	Activities completed by GSA	Discussion of GSA's Response
	and extent of contamination plumes, identifying which constituents are being monitored under various programs, and thoroughly describing ongoing remediation efforts within the Subbasin. b) Evaluate whether groundwater management actions, including production and/or replenishment under the jurisdiction of the GSAs, may influence the migration of contaminant plumes. c) Investigate if groundwater quality issues are adversely impacting groundwater supply and beneficial uses and provide information if there are any mitigation programs in place and the effectiveness of such programs. d) Coordinate with the lead agencies overseeing these remediation sites regularly and update the Plan stating how existing groundwater quality conditions and/or remediation efforts may impact the GSAs' ability to manage groundwater.	responsible agency and/or mitigation program. - Evaluated whether groundwater management actions influence the migration of contaminant plumes. - Investigated if groundwater quality issues are adversely impacting groundwater supply and beneficial uses and provided information on mitigation programs in place and their effectiveness. - Coordinated with the lead agencies overseeing remediation sites including DTSC and the Regional Water Quality Control Board. Provided an update on existing groundwater quality conditions and described how local remediation efforts impact the GSAs' ability to manage groundwater.	
2	Review the model inputs/outputs and provide consistent information regarding stream loss and gains throughout the GSP. Clarify whether these values simply represent the overall interaction between the surface water and groundwater system or the quantity of depletion due to groundwater pumping.	- Updated Butte Basin Groundwater Model (BBGM) and provided new ISW results on the location, timing, and rate of depletions. Values representing the overall interaction between the surface water and groundwater system and the quantity of depletion due to groundwater pumping were reported. - Conducted ISW inter-basin coordination.	Section 3.6: Depletion of Interconnected Surface Water
3	Provide sufficient information regarding criteria used to identify significant and unreasonable conditions, undesirable results, and the potential impacts to various beneficial uses and users of	- Updated inventory of domestic wells and used to complete a domestic well risk assessment.	Section 3.1: Chronic Lowering of Groundwater Levels

RCA Number	Recommended Corrective Action	Activities completed by GSA	Discussion of GSA's Response
	groundwater related to the chronic lowering of groundwater level minimum thresholds. The GSAs should address the following items: a) Revise the definition of undesirable results and language pertaining to significant and unreasonable lowering of groundwater level to remove the non-dry year condition or discuss how extractions and recharge will be managed as necessary to ensure that reductions in groundwater levels or storage during dry years are offset by increases in groundwater levels or storage during other years within the sustainable management criteria for the chronic lowering of groundwater levels. b) Provide information on impacts to domestic wells during projected conditions where minimum thresholds are exceeded but undesirable results do not occur and also quantify domestic wells that will be impacted by the proposed minimum threshold. Furthermore, the GSAs should evaluate the impacts of proposed minimum thresholds on other beneficial uses and users, such as public and small water systems and environmental users and users. c) Evaluate how the proposed minimum thresholds for the chronic lowering of groundwater levels may impact other sustainability indicators (e.g., groundwater storage, depletion of interconnected surface water, etc.).	- Discussed how extractions and recharge will be managed as necessary to ensure that reductions in groundwater levels or storage during dry years are offset by increases in groundwater levels or storage during other years. - Quantified the number of domestic wells at-risk at the minimum thresholds. The GSA intends to develop a Domestic Well Mitigation Program during the next implementation period (2027–2032), tailored to the specific conditions and needs of the subbasin. - Evaluated the impacts of proposed minimum thresholds on other beneficial uses and users, including public and small water systems and environmental users and users. - Evaluated how the proposed minimum thresholds for the chronic lowering of groundwater levels may impact other sustainability indicators (e.g., groundwater storage, depletion of interconnected surface water, etc.). The GSA incorporated additional RMS wells to improve groundwater storage estimate. The GSA established a shallow groundwater monitoring network to improve understanding of depletion of interconnected surface water.	
4	Revise the definition of undesirable results to remove the non-dry year condition or discuss how degradation during dry period will be managed as	- Discussed how degradation during dry period will be managed as necessary to ensure that	Section 3.4: Degraded Water Quality

RCA Number	Recommended Corrective Action	Activities completed by GSA	Discussion of GSA's Response
	necessary to ensure that adverse water quality conditions are offset during other periods.	adverse water quality conditions are offset during other periods.	
5	Provide additional information on criteria used to identify undesirable results, and sustainable management criteria for land subsidence, including: a) Provide a clear, quantitative definition of when undesirable results for land subsidence may occur in the Subbasin, as required by the GSP regulations, to support the selection of land subsidence minimum thresholds that demonstrate avoidance of undesirable results. b) Establish sustainable management criteria for land subsidence for the Subbasin utilizing a monitoring network that directly measures land elevation change such as remote sensing data, survey monuments, or global positioning system stations.	- The definition of undesirable results and SMCs have been revised. - The monitoring network has been revised to better evaluate subsidence conditions throughout the basin. Current analysis shows negligible land subsidence. - The GSA has established annual monitoring protocol for subsidence using surveyed wells, InSAR data, and local GPS stations for ground-truthing (as data allows).	Section 3.5: Land Subsidence

RCA Number	Recommended Corrective Action	Activities completed by GSA	Discussion of GSA's Response
6	Use future DWR guidance regarding estimations of the location, quantity, and timing of depletions of interconnected surface water and establish specific sustainable management criteria to sustainably manage depletions of interconnected surface water through actions including: a) Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions. b) Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing. c) Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion within the GSAs' jurisdictional area. d) Clarify the groundwater level monitoring sites that will be used for the evaluation of depletions of interconnected surface water and provide site-specific information.	- The GSAs reviewed the guidance released to date; the guidance was taken into consideration during the Periodic Evaluation and Plan Amendment process. - Improved the ISW monitoring network by classifying existing monitoring wells by depth, establishing a groundwater level monitoring network representative of the shallow aquifer, drilling new shallow monitoring wells, and installing new stream gages. - Coordinated activities along the North Sacramento River corridor including with Butte, Colusa, Corning, Red Bluff, and Los Molinos Subbasins. Coordinated efforts with DWR and the Northern California Water Association.	Section 3.6: Depletion of Interconnected Surface Water

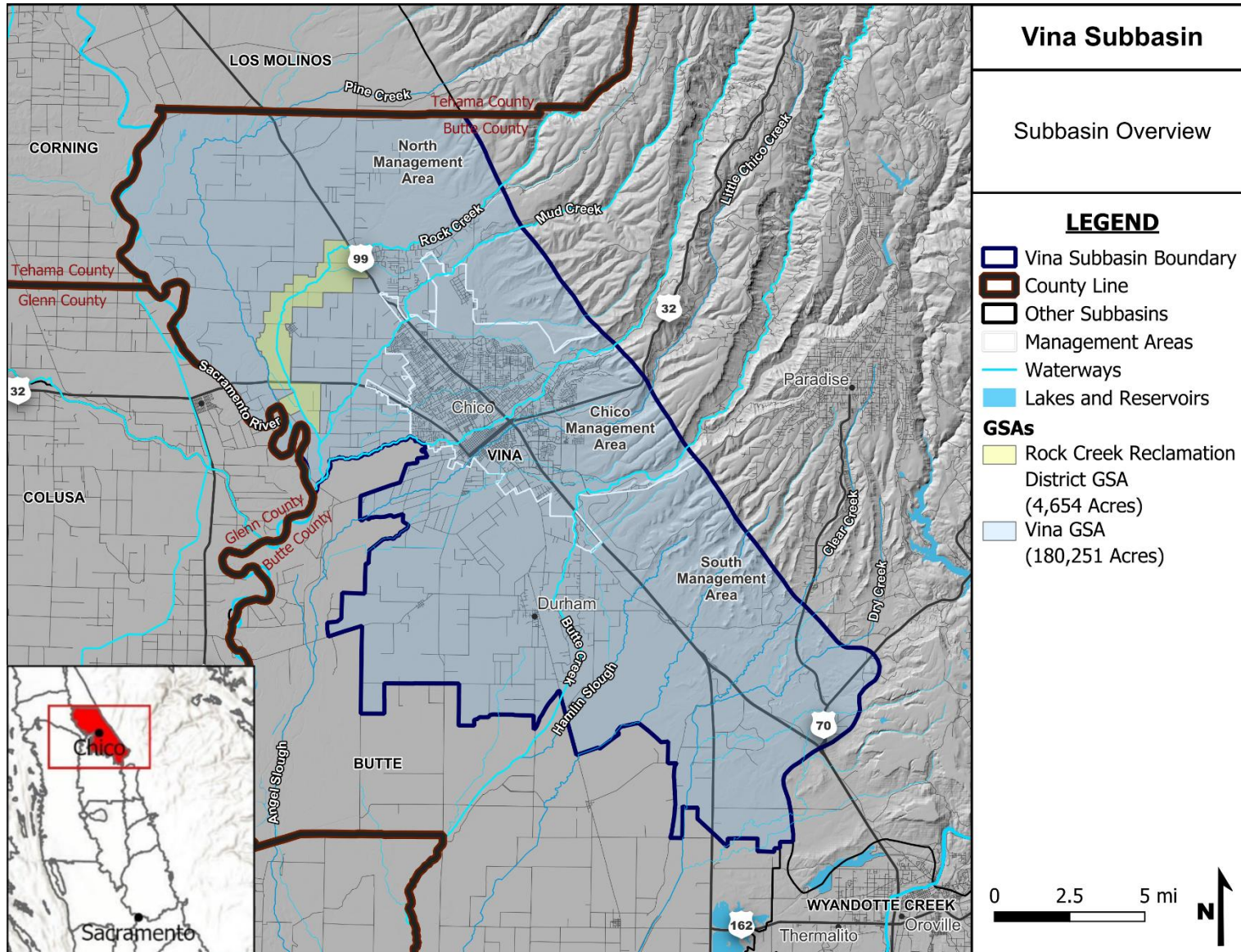


Figure 1-1. Vina Subbasin and Groundwater Sustainability Agencies Boundary.

1.2 Periodic Evaluation Overview

The Vina Subbasin sustainability goal is:

To ensure that groundwater is managed to provide a water supply of adequate quantity and quality to support rural areas and communities, the agricultural economic base of the region, and environmental uses now and in the future.

The Subbasin's sustainability goal will be reached by 2042, and to ensure successfully reaching that goal, the GSA is currently managing the basin to maintain levels at or above the MOs. Groundwater levels are currently above established SMCs. Projects and management actions to address local groundwater concerns will be implemented as needed. Implementation of the GSP seeks to improve local understanding of all beneficial uses and users of groundwater, including interconnected surface water and groundwater dependent ecosystems, and to protect local groundwater supplies for domestic and agricultural users. This Periodic Evaluation serves to evaluate and demonstrate how the GSAs activities have continued to advance the sustainability goal over the evaluation cycle of February 1, 2022, through January 30, 2027. The Periodic Evaluation, in contrast to annual report reviews, also looks at the collective data over the evaluation period to identify trends, any conditions of concern, and overall progress to reach the sustainability goal.

During this evaluation cycle, the GSAs monitored groundwater conditions, developed Annual Reports, acquired funding to support GSP implementation, and implemented projects and management actions (PMAs) as needed. This Periodic Evaluation compares current groundwater conditions to the interim milestones (IM), measurable objectives (MO), and minimum thresholds (MT) as documented in the amended GSP for groundwater levels, groundwater storage, water quality, depletion of interconnected surface waters, and land subsidence. During this time, conditions remained on track to reach sustainability by 2042. The 2022 GSP SMC for groundwater levels, groundwater storage, water quality, and depletion of interconnected surface waters were not amended over this evaluation cycle in the 2027 amended GSP. The amended 2027 GSP includes changes to subsidence SMC and expansion of groundwater level RMS wells from seventeen (17) to twenty-nine (29) with two (2) additional for GDEs within the Chico MA for a total of thirty-one (31). New groundwater level RMS wells were assigned an IM, MO, and MT comparable to those specified in the 2022 GSP, using a method developed to maintain consistency with the adopted 2022 GSP SMC framework (see amended GSP Section 3.3 for more details). For the two RMS wells within the Chico MA, the measurable objective is set at the average of the historical data for the period of record, and the minimum threshold is set 30-feet below ground surface which corresponds to the assumed rooting depth of Valley Oaks. The amended GSP also establishes non-regulatory Local Management Levels (LMLs) for groundwater levels at fourteen (14) RMS wells, described in Section 3.1.3.

Vina Subbasin implemented PMAs identified in the 2022 GSP, continued to conduct groundwater management activities, and evaluated new information and data collected to improve characterization of the Subbasin. The GSAs activities during this evaluation cycle were largely funded through DWR's Sustainable Groundwater Management (SGM) Grant Program although the GSAs also established a fee to support local implementation and administration of the GSAs. Significant new information and data acquired were incorporated into both the Periodic Evaluation and Amended GSP, as needed, and include:

- Classified each groundwater level monitoring network well using DWR's AEM surveys and well screen intervals. Wells were classified as being representative of shallow water table or deep aquifer conditions. The GSAs established a dedicated shallow monitoring network to evaluate interconnected surface waters and groundwater dependent ecosystems.
- Installation of new groundwater monitoring wells and stream gages to fill data gaps.
- Revised assessment of groundwater dependent ecosystems (GDEs) and interconnected surface water (ISW) to determine potential impacts from groundwater pumping.

- Improvements to the domestic well inventory and assessment of risks. The GSAs intend to develop a Domestic Well Mitigation Program during the next implementation period (2027–2032), tailored to the specific conditions and needs of the subbasin.
- Amended subsidence monitoring network and SMCs to use Interferometric Synthetic Aperture Radar (InSAR) subsidence data.
- Feasibility assessment of direct and in-lieu groundwater recharge projects using various recharge methods, locations, and available water supplies.

1.3 Summary of Groundwater Conditions Relative to the Sustainable Management Criteria (SMC)

Measured conditions in the Subbasin over the first five years after GSP submission (2022-2027) were in compliance with amended minimum/maximum thresholds (MTs) for all applicable sustainability indicators (SIs) as described in the 2027 amended GSP. An MT is a quantitative value that represents the groundwater conditions at a representative monitoring site that, when exceeded individually or in combination with MTs at other monitoring sites, may cause an undesirable result(s) in the basin. Whether the MT represents a minimum or maximum value is dependent on the SI. MT is a minimum threshold for all SIs except for water quality where MT is a maximum threshold. As an example of a minimum, if groundwater levels are lower than the value of the measurable objective (MO) for that site, they are moving in the direction of the MT. As an example of a maximum, for the groundwater quality sustainable management criteria (SMC), as the value of the specific conductance concentration increases from the MO established for that site, it is moving in the direction of the MT. The SIs and SMC, including MTs, are summarized in **Table 3-1**. Note that seawater intrusion is not an applicable SI in this Subbasin. Each SI is evaluated at representative monitoring sites (RMS).

1.3.1 Current Groundwater Level and Storage Conditions

The current groundwater conditions in the Subbasin are characterized by groundwater elevations that have remained consistently near or above the MO, staying well above the corresponding MT and remaining within the Subbasin's established margin of operational flexibility for each RMS well. Importantly, none of the RMS wells experienced a decline below the MT for two consecutive non-dry years, hence avoiding undesirable results as defined in the GSP.

From the WY 2025 Annual Report, groundwater elevations are, on average, 20 feet above the MOs throughout the Subbasin and, on average, 71 feet above the MTs. Elevations are mostly near or slightly higher than those observed in recent years. This positive trend is influenced by the wet and above normal hydrologic conditions experienced in WY 2023 to 2025, which resulted in increased natural recharge, surface water supplies and reduced groundwater extractions.

Fluctuations in groundwater levels and storage within the Subbasin are influenced by the balance between aquifer recharge and extraction. Groundwater levels serve as a proxy for estimating changes in groundwater storage, with observed patterns closely mirroring those in the broader Sacramento Valley. In years characterized by drought and low precipitation, diminished surface water supplies lead to increased extraction and reduced recharge, causing a decline in groundwater storage.

The annual change in groundwater storage is reported using a methodology based on observed groundwater levels. The evaluation period marked an increase in groundwater storage of approximately 79,800 acre-feet (AF) in the subbasin (WY 2022-2025). For context, in the past 25 years, the largest one-year decrease in groundwater storage is estimated to be -94,400 AF (WY 2014), and the greatest one-year increase was estimated to be 105,400 AF (WY 2017).

1.4 Status of Projects and Management Actions

During the evaluation period, the GSA began implementing projects to maintain sustainable conditions in the subbasin and to address recommended corrective actions, largely funded by the SGM Implementation Grant Program (2024-2026). The ongoing implementation of PMAs, described in Section 5 of the GSP and in Section 4 of this Periodic Evaluation, aims to address these corrective actions effectively through this Periodic Evaluation of the GSP, which is submitted to DWR in January 2027. Updates on the status of management actions are described in Section 4 and summarized in **Table 4-1**.

1.5 Other Elements of the Periodic Evaluation

1.5.1 Stakeholder and Public Engagement

The GSAs have continued to build on outreach and engagement efforts established during GSP development by regularly informing interested parties, soliciting feedback, and coordinating with agencies to support implementation of the GSP. These efforts support transparency, decision-making, and help ensure that groundwater management actions consider the needs of all beneficial users.

Outreach and engagement activities during the evaluation cycle included stakeholder advisory committee (SHAC) meetings, Board meetings, and public meetings / webinars. Outreach efforts focused on GSP implementation and development of the 2027 Periodic Evaluation and GSP Amendments. Public engagement efforts have focused on providing updates on groundwater conditions and implementation of projects and management actions. The GSAs have evaluated outreach and engagement methods described in the GSP and determined that these methods remain effective and appropriate for supporting GSP implementation.

This section summarizes the comments received during the development of the 2027 Periodic Evaluation and GSP Amendments.

[Update in 2026 after continued stakeholder outreach regarding the PE]

1.6 Organization of the Periodic Evaluation

The organization of this Periodic Evaluation meets the requirements outlined in Section 3.3 of the Groundwater Sustainability Plan Implementation: A Guide to Annual Reports, Periodic Evaluations, & Plan Amendments¹.

¹ California Department of Water Resources. 2023. Groundwater Sustainability Plan Implementation: A Guide to Annual Reports, Periodic Evaluations, & Plan Amendments. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/GSP-Implementation-Guidance-Report.pdf>

SECTION 2: NEW INFORMATION COLLECTED OR ACQUIRED (§356.4(F))

According to GSP Emergency Regulations §356.4(f) the Periodic Evaluation must include:

A description of significant new information that has been made available since Plan adoption or amendment, or the last five-year assessment. The description shall also include whether new information warrants changes to any aspect of the Plan, including the evaluation of the basin setting, measurable objectives, minimum thresholds, or the criteria defining undesirable results.

2.1 New Information Since 2022 GSP Development

New and significant information acquired since development of the 2022 GSP is summarized in **Table 2-1**.

Table 2-1. Summary of New Information Since 2022 GSP Submittal.

Significant New Information	Description	Aspects of Plan Affected	Warrant Change(s) to Any Aspects of the Plan
Joint GSP Evaluation – North Sacramento River Corridor TM (Montgomery and Associates 2025)	Technical review of adopted and revised GSPs for the North Sacramento River Corridor Subbasins comparing basin setting, water budgets, Sustainable Management Criteria, monitoring networks, and corrective actions to support inter-basin coordination and the 2027 Periodic Evaluation.	Coordination / Adjacent Basins / Monitoring Network	Key consideration for refinements to groundwater level monitoring network and development of Local Management Levels.
Inter-basin Flow Evaluation with Regional Model TM (Montgomery and Associates, 2026)	Regional groundwater modeling analysis using DWR's C2VSimFG v1.5 to estimate cross-boundary groundwater flows and stream–aquifer interactions, providing long-term and recent average inter-basin flow estimates to support quantitative assessment of boundary conditions for the 2027 Periodic Evaluation.	Basin Setting Coordination / Adjacent Basins	Not Applicable
Groundwater Monitoring Network Enhancements TM (Larry Walker Associates, 2024)	Comprehensive evaluation of the groundwater level monitoring network to identify spatial and vertical data gaps and recommend installation of new shallow wells, a multi-completion well, stream gages, and domestic well monitoring to strengthen aquifer representation, address data gaps, and support the 2027 Periodic Evaluation.	Monitoring Network	Yes – Sections 3.3 and 4.2 of the Amended GSP
Butte County Evaluation of Groundwater Level Monitoring Network (Butte County Water and Resource Conservation Department, 2025)	Technical evaluation of groundwater level monitoring wells to assess data reliability, spatial distribution, and suitability for Representative Monitoring Site (RMS) designation, supporting potential refinement of the RMS network as part of the 2027 Periodic Evaluation.	Monitoring Network	Yes – Sections 3.3 and 4.2 of the Amended GSP
Butte Basin Groundwater Model (BBGM) Updates TM (Montgomery and Associates, 2026)	Technical evaluation and update of the BBGM, including boundary condition refinements, stream–aquifer interaction analysis, regional model comparisons, incorporation of new data, and extension through WY 2024 to support SGMA implementation and the 2027 Periodic Evaluation.	Basin Setting	Not Applicable
AEM-Based Evaluation of Vina Monitoring Wells (Sub-Terra Heritage Resource Investigations 2024)	Evaluation of Vina monitoring wells using AEM data and borehole logs to identify which aquifer zones are monitored by existing well screens, supporting vertical network representation and future well design.	Monitoring Network	Yes – Sections 3.3 and 4.2 of the Amended GSP

Significant New Information	Description	Aspects of Plan Affected	Warrant Change(s) to Any Aspects of the Plan
Interferometric Synthetic Aperture Radar (InSAR) subsidence data	InSAR data is radar-based information that measures ground surface deformation with millimetre-level precision.	SMC and Monitoring Network	Yes – Sections 3.7, 4.5, and 4.9.3 of the Amended GSP
Updated Groundwater Dependent Ecosystem Desktop Analysis (Environmental Science Associates, 2026)	Updated GDE maps and proposed monitoring plan developed by Environmental Science Associates. See memorandum regarding “Vina Groundwater Subbasin - Groundwater Dependent Ecosystem Technical Study (March 2026)” for additional information.	Basin Setting and Monitoring Network	Not Applicable, but key consideration for refinements to monitoring networks
Vina Subbasin Interconnected Surface Water (Larry Walker Associates, April 2026)	Technical memorandum describing ISW interactions and presents preliminary results refining the identification of where ISW exist in the Vina Subbasin; the location, timing, and quantity of depletions; and remaining data gaps .	Basin Setting and Monitoring Network	Yes – Section 4 of the Amended GSP
Vina Subbasin Domestic Well Survey and Risk Assessment (Larry Walker Associates, April 2026)	Results from Vina Subbasin domestic well inventory including assessment of at-risk domestic wells at 2022 GSP minimum thresholds .	SMC	Not Applicable
Lindo Channel Feasibility Report (Geosyntec / West Yost, April 2026)	Feasibility study and implementation design of the Lindo Channel Recharge Pilot Project. See report titled “Feasibility of Enhanced Recharge in the Lindo Channel ”	Project and Management Actions	Not Applicable
Surface Water Supplies Feasibility Analysis - Implemented by Butte County (Water & Land Solutions, March 2026)	Planning effort to identify the best opportunities to use more surface water for irrigation to reduce groundwater pumping, and to add more water back into the ground (i.e. enhance recharge) to strengthen and sustain groundwater supplies. For further information see reports “Vina Subbasin Surface Water Supply Feasibility Analysis.”	Project and Management Actions	Not Applicable

Significant New Information	Description	Aspects of Plan Affected	Warrant Change(s) to Any Aspects of the Plan
Recharge Feasibility Analysis (Geosyntec, June 2026)	Recharge evaluation including screening of 15 candidate sites, field investigation of seven sites, and preliminary design for two projects. Results confirmed shallow perched groundwater above laterally variable low-permeability units north and northwest of Chico and informs recharge site screening, the expected potential of recharge of sites carried forward, and understanding of shallow groundwater. See report titled "Groundwater Recharge Investigation and Preliminary Design Report and Pilot Project Implementation Report" (combined) (Geosyntec, June 2026)	Basin Setting and Project and Management Actions	Not Applicable but informs HCM and understanding of groundwater conditions relative to GDEs and ISW.
Demand Reduction Strategies Project (LandIQ, March 2026)	This project developed and piloted demand reduction strategies to support groundwater sustainability in the Vina Subbasin. The project included two interrelated pilot programs: the Extend Orchard Replacement (EOR) Pilot Program and the Precision Irrigation (PI) Pilot Program. For further details see reports "Vina Subbasin GSAs Demand Reduction Strategies: Precision Irrigation Pilot Study Final Report (LandIQ, March 2026)" and "Vina Subbasin GSAs Demand Reduction Strategies: Extend Orchard Replacement Pilot Study Final Report."	Project and Management Actions	Not Applicable

SECTION 3: GROUNDWATER CONDITIONS RELATIVE TO SUSTAINABLE MANAGEMENT CRITERIA (§356.4(A))

This section fulfills the requirements for GSP Emergency Regulations §356.4(a):

A description of current groundwater conditions for each applicable sustainability indicator relative to measurable objectives, interim milestones and minimum thresholds.

The 2022 GSP originally described the sustainable management criteria (SMC) for each relevant sustainability indicator: groundwater elevations, groundwater storage, water quality, land subsidence, and interconnected surface water. The 2022 GSP SMC for groundwater levels, groundwater storage, water quality, and depletion of interconnected surface waters were carried forward without change in the 2027 amended GSP, with the exception that non-regulatory Local Management Levels were added for groundwater levels (Section 3.1.3). The amended 2027 GSP includes changes to land subsidence SMC and expansion of groundwater level RMS wells from seventeen (17) to twenty-nine (29) with two (2) additional for GDEs within the Chico MA for a total of thirty-one (31). The SMCs for all sustainability indicators listed in the 2027 GSP are shown in **Table 3-1**.

In this section, for each indicator, groundwater conditions are compared to the SMC defined in the amended GSP for the evaluation period starting in Water Year 2021 extending through Water Year 2025. Information for Water Year 2026 was included to the extent data were available at the time of writing this Periodic Evaluation. During the evaluation period, WY 2021 and WY 2022 were critical years, WY 2024 and WY 2025 were above normal years, and WY 2023 was a wet year. The relevant DWR recommended corrective actions from the 2023 GSP determination letter are listed, followed by the GSP amendments that address each corrective action.

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Table 3-1. Sustainable Management Criteria for Sustainability Indicators According to the Amended 2027 GSP.

GSP Section	Sustainability Indicator	Undesirable Results	Identification of Undesirable Results	Interim Milestones and Measurable Objective	Minimum Threshold
3.3	Groundwater Levels	The sustained groundwater levels are too low to provide a water supply of adequate quantity and quality to support rural areas and communities, and the agricultural economic base of the region, or if significant and unreasonable impacts to environmental uses of groundwater occur.	Two RMS wells within a management area reach their MT for two consecutive years of non-dry year-types.	The groundwater level based on the groundwater trend line of the RMS well for the dry periods (since 2000) of observed short-term climatic cycles extended to 2030. For the two GDE RMS wells within the Chico MA, the measurable objective is set at the average of the historical data for the period of record. IMs are set to the MOs. Local Management Levels (LMLs) — set 20 feet below the MO — were established at fourteen (14) RMS wells to prompt Board consideration of adaptive management actions.	The groundwater level that would support the majority of sustainably constructed domestic wells within its RMS zone, established individually for each RMS well. For the two GDE RMS wells within the Chico MA, the minimum threshold is set 30-feet below ground surface which corresponds to the assumed rooting depth of Valley Oaks.
3.4	Groundwater Storage	Sustained groundwater storage volumes are insufficient to support rural areas and communities, the agricultural economic base of the region, and environmental uses.	Groundwater Levels SMC are used by proxy.	Groundwater Levels SMC are used by proxy.	Groundwater Levels SMC are used by proxy.
3.5	Water Quality	Groundwater pumping that degrades water quality and compromises the long-term viability of rural areas and communities, the agricultural economic base of the region, and environmental uses for suitable habitat.	Occurs in the Vina subbasin when two RMS wells exceed their MT for two consecutive non-dry years.	Measured SC is less than or equal to the recommended Secondary Maximum Contaminant Level (900 µS/cm) based on State Secondary Drinking Water Standards at each well.	The upper limit of the Secondary Maximum Contaminant Level for SC (1,600 µS/cm) is based on the State Secondary Drinking Water Standards.
3.6	Seawater Intrusion	Not applicable.	Not applicable.	Not applicable.	Not applicable.

GSP Section	Sustainability Indicator	Undesirable Results	Identification of Undesirable Results	Interim Milestones and Measurable Objective	Minimum Threshold
3.7	Land Subsidence	Subsidence exceeding the Minimum Threshold results in significant and unreasonable impacts to beneficial uses and users, including infrastructure, namely highways, roads, drainage, irrigation, or railroad infrastructure, power transmission lines, or well casings. An undesirable result due to subsidence occurs as a result of declining groundwater levels. Groundwater levels are evaluated alongside InSAR data to assess risk of inelastic compaction and inform management actions.	Undesirable results will occur when the MT is exceeded at the same representative monitoring location for two consecutive years with confirmed infrastructure impacts and declining groundwater levels.	No interim milestone is needed because no subsidence has occurred in the Subbasin. MO is zero feet per year of land subsidence at representative monitoring locations, recognizing uncertainty	0.5 foot cumulative subsidence over a 5-year period at the same location, as a result of declining groundwater levels.
3.8	Interconnected Surface Water	Avoiding significant and unreasonable depletion of surface water flows caused by groundwater pumping that significantly impacts beneficial uses.	Groundwater Levels SMC are used by proxy.	Groundwater Levels SMC are used by proxy.	Groundwater Levels SMC are used by proxy.

3.1 Chronic Lowering of Groundwater Levels

3.1.1 Current Conditions Relative to SMC

A summary of conditions over the evaluation cycle, listing the total number of wells at or above the amended SMCs, is shown in **Table 3-2**. Hydrographs for the 29 RMS wells are provided in **Attachment A**. Local Management Levels were assigned to fourteen of the thirty-one RMS wells as described further in Section 3.1.3.

Table 3-2. Chronic Lowering of Groundwater Levels Threshold Analysis Summary, WYs 2021 to WY 2026 – Number of RMS Wells at or Above Threshold Based on Spring Measurements.

Water Year	Number of RMS Wells with Good Measurement(s) ¹	Measurable Objective	2027 Interim Milestone	Minimum Threshold	Local Management Levels
2021	27	27	27	27	14
2022	30	30	30	30	14
2023	31	30	30	31	14
2024	26	26	26	26	14
2025	29	29	29	29	14
2026	29	29	29	29	14

¹A good groundwater level measurement provides an accurate, reproducible, and timely reading (February – April) of the water table depth / elevation using standardized equipment to effectively track aquifer health and seasonal change. Bad or missing measurements are flagged by the collection organization (i.e., DWR / Butte County) and may be due to the pump or nearby wells running, presence of oil, or inability to access the well.

Groundwater levels were above the interim milestone, measurable objective, local management level, and minimum threshold during the evaluation cycle at all representative monitoring wells except for one well (PWSCH02). In 2023, well PWSCH02 dropped below the IM and MO but has since rebounded. The February 2023 measurement for PWSCH02 may have been impacted by nearby pumping. Undesirable results are not currently occurring and have not occurred over the evaluation cycle, where an undesirable result is identified as more than two representative monitoring wells below their minimum thresholds for two consecutive non-dry years, within a management area (**Table 3-1**). Groundwater levels rose and fell with the water-year type, with groundwater levels naturally falling during dry years and increasing in wet years.

3.1.2 DWR's Recommended Corrective Actions

DWR's 2023 GSP determination letter RCA 3 requested the GSAs provide sufficient information regarding criteria used to identify significant and unreasonable conditions, undesirable results, and the potential impacts to various beneficial uses and users of groundwater related to the chronic lowering of groundwater level minimum thresholds. DWR made the following requests (verbatim):

- **Corrective Action 3a:** Revise the definition of undesirable results and language pertaining to significant and unreasonable lowering of groundwater level to remove the non-dry year condition or discuss how extractions and recharge will be managed as necessary to ensure that reductions in groundwater levels or storage during dry years are offset by increases in groundwater levels or storage during other years within the sustainable management criteria for the chronic lowering of groundwater levels.

GSA Response: The GSAs will manage groundwater extractions and recharge to ensure reductions in groundwater levels or storage during dry years are offset by increases in groundwater levels or storage during other years. The basin has recently experienced two unprecedented droughts (2014/15 and 2021/22). Groundwater levels have rebounded from these droughts due to recent above normal and wet years. The GSAs expect wet and dry cycles to continue. The GSAs continue to develop recharge projects and demand management actions to implement if groundwater levels begin to drop below measurable objectives. The GSAs will manage groundwater levels at the interim milestones / measurable objectives. Local Management Levels (LMLs) – set 20 feet below the MO – were defined at fourteen (14) RMS wells to prompt Board consideration of adaptive management actions if groundwater levels persistently reach the LML. LMLs were assigned to a selection of RMS wells to provide early information for three considerations: areas of shallow groundwater and identified groundwater dependent ecosystems (based on the 2026 ESA analysis), areas near the Subbasin boundary where conditions are coordinated with adjacent subbasins, and one area with a high density of domestic wells. LMLs are further described in Section 3.1.3: Amendments to GWL SMC.

- **Corrective Action 3b:** Provide information on impacts to domestic wells during projected conditions where minimum thresholds are exceeded but undesirable results do not occur and also quantify domestic wells that will be impacted by the proposed minimum threshold. Furthermore, the GSAs should evaluate the impacts of proposed minimum thresholds on other beneficial uses and users, such as public and small water systems and environmental uses and users.

GSA Response: The Subbasin has a total of 2,069 wells installed since 1980 across four well type categories: domestic, industrial, irrigation, and public supply. Based on projected conditions where groundwater levels fall to Minimum Thresholds at all RMS wells subbasin-wide, approximately 282 wells (14%) are identified as at-risk (**Table 3-3**). There are approximately 1,472 domestic wells within the Subbasin and approximately 266 are at-risk if groundwater levels were to fall to minimum thresholds at all RMS wells subbasin wide. Domestic wells are typically shallower and are more prone to impacts from groundwater level declines. A small number of industrial wells (2 wells, 8%) are at-risk, indicating limited exposure for industrial users. Only 14 irrigation wells (3%) are at-risk, as most irrigation wells are constructed to greater depths or in areas less impacted by projected MT exceedances. No public supply wells are projected to be at-risk (0%), indicating that public water systems are constructed with sufficient depth. MT is a regulatory line defining where Undesirable Results occur — not the level the GSAs manage toward. Measurable Objectives sit about 62 feet higher on average, and a separate mitigation program will address individual impacts (see Section 4.6.2). The GSAs intend to develop a Well Mitigation Program during the next implementation period (2027–2032), tailored to the specific conditions and needs of the Subbasin. Real-world impacts to wells of all types (domestic, industrial, irrigation, and public supply) are expected to be substantially lower than the numbers shown in **Table 3-3**. Public and small water systems, along with environmental users, will continue to be evaluated in coordination with beneficial use assessments to ensure MT-setting remains protective across all user categories

Table 3-3. Number of At-Risk Wells by Well Type.

Well Type	Number of Wells Installed since 1980	Wells At-Risk at MT Level (Post-1980)	Percent of Total
Domestic	1,472	266	18%
Industrial	25	2	8%
Irrigation	527	14	3%
Public Supply	45	0	0%
Total:	2,069	282	14%

- **Corrective Action 3c:** Provide a description of the relationship between established minimum thresholds for the chronic lowering of groundwater levels and how they avoid undesirable results for each of the other sustainability indicators.

GSA Response: To improve monitoring for impacts on beneficial uses and users and other sustainability indicators, the groundwater level RMS network has been revised, the full network expanded, and new wells drilled to fill data gaps in groundwater level and ISW. The 2027 through 2032 implementation period will continue to collect data for improved observation of groundwater conditions relative to GDEs and ISWs. Progress has been made to fill data gaps through the installation of new shallow wells, but without the data from these new monitoring locations, the data gap remains. The 2032 PE will assess current groundwater level SMCs relative to GDEs and ISWs using new information available at that time and additional guidance from DWR. The Local Management Levels described above are intended to provide early information about groundwater level declines before an undesirable result occurs, and so also support avoiding undesirable results for the other sustainability indicators. LMLs are further described in Section 3.1.3.

The following section describes all proposed amendments to the GSP to address DWR's recommended corrective actions.

3.1.3 Amendments to GWL SMC

The interim milestones, measurable objectives, and minimum thresholds for groundwater levels were not changed during this evaluation period. The amended GSP adds non-regulatory Local Management Levels, described below. The monitoring network was changed with the number of groundwater level RMS wells increased from seventeen (17) to twenty-nine (29) wells with two (2) additional for GDEs within the Chico MA for a total of thirty-one (31). New groundwater level RMS wells were given an IM, MO, and MT comparable to those specified in the 2022 GSP, using a method developed to maintain consistency with the adopted 2022 GSP SMC framework.

Local Management Levels (LMLs) were developed to provide an early warning mechanism to support proactive water management in the Vina Subbasin and ensure management of groundwater levels within a reasonable range of the IMs and MOs. LMLs have been designated on fourteen (14) RMS wells at 20 feet below the Measurable Objectives. LMLs are assigned to a subset of the RMS wells based on three criteria: 1. In potential GDE and shallow RMS well areas (09E001, 27L001, 36P001, 20K001, and 32E001) 2. In RMS areas near subbasin boundaries (25C001, 05M001, 10B003, 27D001, 02H003, 09G001, 24C001, and 33L001), and 3. In an RMS polygon with a relatively large number of domestic wells (29P002).

LMLs reflect conservative minimum groundwater levels, which may not necessarily constitute significant or unreasonable conditions. Set at shallower levels than minimum thresholds, LMLs serve as an early warning mechanism that triggers adaptive management and enables early intervention before minimum thresholds are reached. If observed groundwater level measurements reach the LML and persist through multiple observed groundwater measurements across differing seasons (i.e. spring, summer, or fall), then the following actions would occur:

- Staff will report the hydrograph of the well with measurements at or below the LML to the SHAC and Boards at their next meeting
- The technical team will investigate whether the condition is due to localized, isolated conditions (ex. well interference) or reflective of broader changes in aquifer conditions

- Staff/technical consultants would develop a technical report explaining the underlying cause to the GSA Boards to receive direction on appropriate next steps.
- Depending on the cause, the Board could consider or direct the following actions:
 - Expansion of existing monitoring (ex. increased frequency) or expansion of measurement locations
 - Evaluation of impacts occurring to domestic wells, shallow agricultural wells, or environmental uses of groundwater in the vicinity of the RMS well
 - Further technical evaluation of factors causing the LML and potential solutions to remedy the LML exceedance
 - Activation of a GSP Project or Management Action (see Chapter 5)
- Annual Reporting will document the condition and GSA response

Potential actions will be considered through a public process, including evaluation and recommendations from the SHAC, and ultimately decided by the GSA Boards. Actions may include additional studies or assessments and management modifications including demand management in areas experiencing groundwater declines that reach or fall below LMLs. Corrective actions or information-gathering efforts will be considered successful when monitoring data confirms groundwater conditions have returned above the LML, or the condition is attributed to localized, isolated conditions that have not resulted in significant and unreasonable impacts to beneficial users or uses of groundwater and is not a subbasin-wide issue.

3.1.4 Progress Toward Achieving Sustainability

GSP implementation relative to the groundwater levels sustainability indicator has been effective in the Subbasin. Beyond several reported cases of failing domestic wells (approximately 40 reports), there were no reports over the evaluation cycle of Subbasin conditions and GSP implementation affecting beneficial uses and users of water. In WY 2022, a critical year type, Vina Subbasin residents could apply to the Butte County OEM Drought Assistance Program to receive water deliveries and or water storage tanks at their residences. Based on data during the evaluation period, conditions related to the chronic lowering of groundwater levels sustainability indicator are not negatively impacting other sustainability indicators.

3.2 Groundwater Storage

Because of the direct relationship between groundwater levels and groundwater storage, the SMC for groundwater levels is used as a proxy for groundwater storage. DWR provided no recommended corrective actions regarding groundwater storage.

3.3 Seawater Intrusion

Seawater intrusion is not applicable to the Vina Subbasin due to its distance from the ocean.

3.4 Water Quality

3.4.1 Current Conditions Relative to Water Quality SMC

Current conditions of water quality are limited to results collected over the evaluation period, between WY 2022 to WY 2025 (February 1, 2022, through September 30, 2025). Water quality conditions in relation to the MO and MT from the amended GSP are summarized in **Table 3-4**. Water quality SMC did not change from the 2022 GSP. During the evaluation period, all wells are below the MO and therefore under the MT as well (**Table 3-4**). For two wells, 28M002M and 31M001M, the tape length of the SC probe was unable to reach the last screened intervals of the wells. The reported numbers in **Table 3-4** for these two wells represent the average specific conductivity measurements from the other screened intervals. Additionally, the water quality RMS network lost one well (22N01E28J005M) compared to the original network presented in the 2022 GSP, due to obstructions observed over the past few years. For completeness,

historical data from wells that have been removed from the RMS network have been included. Salinity is the main constituent of concern in the Subbasin and is evaluated by measuring specific conductivity.

There were no MT exceedances during the evaluation period, and no management actions were implemented in response to MT exceedances. Therefore, undesirable results are not occurring and have not occurred over the evaluation period, where two RMS wells within a management area reach their MT for two consecutive non-dry years.

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Table 3-4. Water Quality SMCs and Data from February 1, 2021 through September 30, 2025.

Well ID	Measurable Objective / Interim Milestone (SC, $\mu\text{S}/\text{cm}$)	Minimum Threshold (SC, $\mu\text{S}/\text{cm}$)	WY 2021 (SC, $\mu\text{S}/\text{cm}$) ^[d]	WY 2022 (SC, $\mu\text{S}/\text{cm}$)	WY 2023 (SC, $\mu\text{S}/\text{cm}$)	WY 2024 (SC, $\mu\text{S}/\text{cm}$)	WY 2025 (SC, $\mu\text{S}/\text{cm}$)
20N02E24C003M	900	1600	--	219	233	253 ^[b]	261
21N01E13L002M	900	1600	--	290	283	284	270
21N02E18C001M	900	1600	--	278	291	278	272
21N02E26E003M	900	1600	--	219	222	231	221
22N01E28J005M ^[c]	900	1600	--	--	--	--	--
23N01W03H002M	900	1600	--	201 ^[a]	204 ^[a]	318 ^[a]	200 ^[a]
23N01W28M002M	900	1600	--	278 ^[a]	244 ^[a]	236 ^[a]	246 ^[a]
23N01W31M001M	900	1600	--	610 ^[a]	349 ^[a]	449 ^[a]	412 ^[a]

Notes:

[a] Indicates a measurement was not taken within a screened interval due to limits of the equipment. Data taken outside of the screened interval is not included in the average.

[b] Questionable measurement.

[c] Removed from RMS network in 2022 due to obstruction.

[d] Butte County began taking measurements at RMS wells starting in 2022. Water quality samples are unavailable for 2021. Earlier periodic water samples are available for most wells with no IM/MO/MT exceedances observed.

3.4.2 DWR's Recommended Corrective Actions

The goal of groundwater quality management under SGMA is to supplement information available from other sources with data targeted to assist the GSAs in the Vina Subbasin to assess how groundwater pumping and projects and management actions (PMAs) impact water quality. The GSAs do not replace other water quality agencies and programs responsible for protecting water quality across the State. Current water quality conditions are described in Section 3.4.1 of the Periodic Evaluation which shows the Subbasin does not have significant historical or existing water quality issues. There are localized contamination plumes under the jurisdiction of other regulatory programs within the Subbasin. The GSAs have not implemented large scale recharge projects yet. The planned PMAs are expected to minimize the movement of known contamination plumes and dilute contaminant concentrations through groundwater recharge. The Vina Subbasin Surface Water Supply and Recharge Feasibility Study identified known contamination plumes near proposed recharge projects (Geosyntec, June 2026). A water quality monitoring plan to monitor the water quality of recharge water and the underlying aquifer would be developed as projects are implemented.

In DWR's 2023 GSP determination letter, the department identified five recommended corrective actions regarding water quality. All aspects of these corrective actions are shown below, verbatim, followed by the GSA response.

- **Corrective Action 1a:** Provide additional information in the GSP outlining the location and extent of contamination plumes, identifying which constituents are being monitored under various programs, and thoroughly describing ongoing remediation efforts within the Subbasin.

GSA Response: The 2022 GSP listed and mapped (**Figure 2-18**) locations of impacted groundwater due to existing plumes, identified by reviewing information available on the SWRCB Geotracker / GAMA website, the California Department of Toxic Substances Control (DTSC) EnviroStor website, and the Environmental Protection Agency's (EPA) National Priorities List (NPL). After a review of all contamination plumes within the Subbasin, no significant changes have occurred since the 2022 GSP. Updated maps showing the extent of contamination plumes from recent groundwater monitoring reports available through DTSC website are included in Attachment B. Butte County Public Health will be updating plume maps as part of their Water Well Ordinance review process. The GSAs will continue to coordinate with the County as needed. Section 2.2.4.2 of the GSP lists and describes all existing contamination sites, contaminants of concern, and the corresponding responsible agency and/or mitigation program. The Vina Subbasin Surface Water Supply and Recharge Feasibility Study identified known contamination plumes near proposed recharge projects (Geosyntec, June 2026). The GSAs will continue to coordinate with other regulatory agencies to update the location and extent of contamination plumes as needed.

- **Corrective Action 1b:** Evaluate whether groundwater management actions, including production and/or replenishment under the jurisdiction of the GSA, may influence the migration of contaminant plumes.

GSA Response: Evaluation of water quality data did not reveal significant impacts from pumping. This finding is based on current conditions of specific conductance, as described in Section 3.4.1 of the Periodic Evaluation. No changes have occurred over this evaluation period. GSAs will evaluate available water quality sampling results to determine concentrations of other potential constituents of concern including nitrate, perfluorooctanoic acid, and perfluorooctanoic sulfonate per State Water Resources Control Board recommendations. The goal is to demonstrate that all constituents currently being monitored by other agencies have been kept at reasonable levels within the Subbasin and are not impacted by groundwater pumping or implementation of PMAs. As described above, water quality monitoring to monitor the water quality of recharge water and the underlying aquifer would occur as needed as projects are implemented.

- **Corrective Action 1c:** Investigate if groundwater quality issues are adversely impacting groundwater supply and beneficial uses and provide information if there are any mitigation programs in place and the effectiveness of such programs.

GSA Response: Member agency Butte County staff and members of the GSA consulting team have participated in Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) webinars and have responded to CV-SALTS requests for the GSAs input. Additionally, point-source contaminants are managed and regulated through a variety of other programs by the Regional Water Quality Control Board, DTSC, and the EPA. Through coordination with existing agencies, the GSAs will know if existing regulations are being met or groundwater pumping activities in the Vina Subbasin are contributing to significant and unreasonable undesirable effects related to degraded water quality. The GSAs will continue to track and communicate as needed to stay engaged with these other regulatory programs to monitor any groundwater quality issues and mitigation programs.

- **Corrective Action 1d:** Coordinate with the lead agencies overseeing these remediation sites regularly and update the Plan stating how existing groundwater quality conditions and/or remediation efforts may impact the GSA's ability to manage groundwater.

GSA Response: As mentioned above, the goal of groundwater quality management under SGMA is to supplement information available from other sources with data targeted to assist the GSAs in the Vina Subbasin comply with the requirements of SGMA. Development of groundwater quality-related SMC for the Subbasin is not intended to duplicate or supplant the goals and objectives of ongoing programs including Butte County, the Sacramento Valley Water Quality Coalition (SVWQC), the CRC (2019), and the State Drinking Water Information System (SDWIS).

Because irrigated agriculture is the predominant land use in the subbasin, monitoring of the groundwater quality data developed through the Groundwater Quality Trend Monitoring Work Plan (GQTMWP) being implemented by the SVWQC and by the CRC for compliance with the CVRWQCB's ILRP will be an important source of information to the GSA in the Vina Subbasin. The SVWQC has identified priority High Vulnerability Areas (HVA) in the Vina Subbasin for nitrate (SVWQC, 2023).

Among the contaminants that may affect groundwater conditions in the future are Chemicals of Emerging Concern (CECs). These are contaminants having toxicities not previously recognized, which may have the potential to cause adverse effects to public health or the environment and are found to be building up in the environment or to be accumulating in humans or wildlife.

The Butte County Department of Water and Resource Conservation (BCWRC) manages the Groundwater Quality Trend Monitoring Program to provide information on groundwater quality, specifically salinity, for GSAs. Annual data collected by the program is reported in the GSP annual reports. Program goals include establishing a baseline of water quality data to document any water quality temporal trends and ensure that groundwater resources are well managed by documenting groundwater water quality.

Water quality samples will be evaluated (as needed) to determine concentrations of other potential constituents of concern including nitrate, perfluorooctanoic acid (PFOA), and perfluorooctanoic sulfonate (PFOS) per State Water Resources Control Board recommendations. All constituents currently being monitored by other agencies have been kept at reasonable levels within the Subbasin and are not impacted by groundwater pumping. Additionally, the GSA plans to develop a handout that highlights key water quality issues in the subbasin to provide to project partners to ensure projects take water quality into consideration during feasibility, design and implementation.

Member agency Butte County staff and members of the GSA consulting team stay informed regarding groundwater quality issues and mitigation programs in the Subbasin. Staff have participated in CV-SALTS webinars and have responded to CV-SALTS requests for GSA input. Additionally, point-source contaminants are managed and regulated through a variety of other programs by the Regional Water Quality Control Board, DTSC, and the EPA. Through coordination with existing agencies, the GSAs will know if existing regulations are being met or groundwater pumping activities in the Vina Subbasin are contributing to significant and unreasonable undesirable effects related to degraded water quality. The GSA will continue to stay engaged with these other regulatory programs.

- **Corrective Action 4: Revise the definition of undesirable results** to remove the non-dry year condition or discuss how degradation during dry period will be managed as necessary to ensure that adverse water quality conditions are offset during other periods.

GSA Response: Degradation during dry period will be managed as necessary to ensure that adverse water quality conditions are offset during other periods. The basin has recently experienced two unprecedented droughts (2014/15 and 2021/22). Groundwater quality has not degraded due to droughts. The GSAs will continue to monitor water quality across the Subbasin and implement projects to address any concerns as needed.

The following section describes proposed amendments to the GSP to address DWR's recommended corrective actions as needed.

3.4.3 Amendments to Water Quality SMC

No amendments to water quality SMC were completed this evaluation period.

3.4.4 Progress Toward Achieving Sustainability

GSP implementation relative to the water quality sustainability indicator has been effective in the Subbasin with no specific actions needed by the GSAs beyond ongoing monitoring. Observed water quality conditions do not exceed their MTs (see **Table 3-4**) nor is there an observed negative trend in water quality. Groundwater management actions have not led to negative effects on water quality conditions that could adversely impact beneficial users and uses of groundwater. Based on data during the evaluation period, conditions related to the water quality sustainability indicator are not negatively impacting other sustainability indicators.

3.5 Land Subsidence

3.5.1 Current Conditions Relative to SMC

Current conditions of subsidence consider data collected over the evaluation period, between WY 2021 to WY 2025. Subsidence conditions in relation to the revised MO and MT from the amended GSP are summarized in **Table 3-5**. The SMCs have been updated from the 2022 GSP to address DWR recommended corrective actions and align with DWR's Land Subsidence Best Management Practices. Previously, the groundwater level SMCs and network served as proxy for the subsidence sustainability indicator. In the 2027 amendments, the updated subsidence RMS network consists of 29 InSAR pixel groups, centered around the 29 RMS groundwater monitoring wells, as shown in **Figure 3-1**. These pixel groups consist of nine pixels, centered around the corresponding RMS well, which together cover an area of approximately 22 acres. SMCs are based on the InSAR data and groundwater level data is used to determine if observation of subsidence is natural or from groundwater declines within the Subbasin.

During the evaluation period, all RMS sites are in compliance with the MO and MT (**Table 3-5**). Undesirable results are not occurring and have not occurred over the evaluation period, where the MT is exceeded at the same representative monitoring location for two consecutive years with confirmed associated impacts to infrastructure and declining groundwater levels. No management actions were implemented in response to MT exceedances, which did not occur. The Subbasin continues to experience no inelastic land subsidence. Observed vertical displacement at all representative monitoring locations remained less than 0.10 feet per year, which is within the range of InSAR measurement uncertainty and is not interpreted as indicative of inelastic land subsidence.

Table 3-5. Subsidence SMCs and Data from WY 2021 to WY 2025.

RMS Well / InSAR Pixel ^[a]	Site Type	Latitude	Longitude	Measurable Objective	Minimum Threshold	Cumulative Vertical Displacement, WY 2021 to WY 2025 (feet)[b]
Vina – North Management Area						
25C001M	Well/InSAR pixels	39.82220	-122.0401	0.0 feet of subsidence over 5-year period	0.5 feet of subsidence over 5-year period	<0.1
36P001M	Well/InSAR pixels	39.79720	-121.9297			<0.1
05M001M	Well/InSAR pixels	39.78711	-122.0100			<0.1
07H001M	Well/InSAR pixels	39.86482	-121.9049			<0.1
09E001M	Well/InSAR pixels	39.86510	-121.9930			<0.1
28M004M	Well/InSAR pixels	39.81877	-121.9912			<0.1
10M001M	Well/InSAR pixels	39.86194	-121.9746			<0.1
27L001M	Well/InSAR pixels	39.81800	-121.9669			<0.1
14R002M	Well/InSAR pixels	39.84105	-121.9399			<0.1
29P002M	Well/InSAR pixels	39.81332	-121.8913			<0.1
33A001M	Well/InSAR pixels	39.80970	-121.8631			<0.1
20K001M	Well/InSAR pixels	39.74450	-121.8905			<0.1
09B001M	Well/InSAR pixels	39.78180	-121.8718			<0.1
Vina – Chico Management Area						
PWSCH01b ^[c]	Well/InSAR pixels	-	-	0.0 feet of subsidence over 5-year period	0.5 feet of subsidence over 5-year period	<0.1
PWSCH02 ^[c]	Well/InSAR pixels	-	-			<0.1
PWSCH03 ^[c]	Well/InSAR pixels	-	-			<0.1
PWSCH07 ^[c]	Well/InSAR pixels	-	-			<0.1
Vina – South Management Area						
24C001M	Well/InSAR pixels	39.58120	-121.7026			<0.1

RMS Well / InSAR Pixel ^[a]	Site Type	Latitude	Longitude	Measurable Objective	Minimum Threshold	Cumulative Vertical Displacement, WY 2021 to WY 2025 (feet)[b]
18C003M	Well/InSAR pixels	39.68200	-121.7970	0.0 feet of subsidence over 5-year period	0.5 feet of subsidence over 5-year period	<0.1
26E006M	Well/InSAR pixels	39.64680	-121.7263			<0.1
10B003M	Well/InSAR pixels	39.69630	-121.8486			<0.1
27D001M	Well/InSAR pixels	39.65110	-121.8607			<0.1
13L004M	Well/InSAR pixels	39.67348	-121.8144			<0.1
25K001M	Well/InSAR pixels	39.64200	-121.8128			<0.1
02H003M	Well/InSAR pixels	39.61576	-121.8222			<0.1
32E001M	Well/InSAR pixels	39.63383	-121.7845			<0.1
09G001M	Well/InSAR pixels	39.61546	-121.7391			<0.1
32B001M	Well/InSAR pixels	39.63958	-121.6634			<0.1
33L001M	Well/InSAR pixels	39.54357	-121.6467			<0.1

Notes:

[a] Paired InSAR pixel and well.

[b] Subsidence rates less than 0.10 feet per year are considered within the range of InSAR measurement uncertainty and are not interpreted as indicative of inelastic land subsidence.

[c] The locations of public water supply wells has been redacted for public safety.

3.5.2 DWR's Recommended Corrective Actions

In DWR's 2023 GSP determination letter, they identified one recommended corrective action regarding land subsidence. The two aspects of this corrective action are shown below, verbatim:

- **Corrective Action 5a:** Provide a clear, quantitative definition of when undesirable results for land subsidence may occur in the Subbasin, as required by the GSP Regulations, to support the selection of land subsidence minimum thresholds that demonstrate avoidance of undesirable results.

GSA Response: The GSAs reviewed the newly available guidance for subsidence and the guidance was taken into consideration during the Periodic Evaluation and Plan Amendment process. The subsidence SMCs and monitoring network have been revised and documented through amendments to the GSP. The definition of undesirable results for land subsidence has been revised for Vina Subbasin; undesirable results will occur when the MT is exceeded at the same representative monitoring location for two consecutive years with confirmed associated impacts to infrastructure and declining groundwater levels. In the 2022 GSP, the groundwater level SMCs were used as a proxy for the subsidence SMCs. In the amended 2027 GSP, the new definition of undesirable results includes a measurable quantitative metric based on vertical displacement of the land surface (measured subsidence) (see Section 3.7.1 of the GSP).

- **Corrective Action 5b:** Establish sustainable management criteria for land subsidence for the Subbasin utilizing a monitoring network that directly measures land elevation change such as remote sensing data, survey monuments, or global positioning system stations.

GSA Response: The definitions of measurable objectives (MOs) and minimum thresholds (MTs) have been revised. Since no subsidence has occurred in the subbasin, no interim milestone is needed. In the 2022 GSP, the groundwater level SMCs were used as a proxy for the subsidence SMCs. In the amended 2027 GSP, the new MO and MT are based on a measurable quantitative metric of vertical displacement over time (see Section 3.7 of the GSP). Additionally, the subsidence network has been updated to rely on InSAR data, checked against groundwater levels, and ground-truthed by available GPS subsidence station(s) (see Section 4.5 and 4.9.3 of the GSP). This subsidence monitoring network utilizes direct measurements of land subsidence using InSAR satellite data.

The following section describes all proposed amendments to the GSP to address DWR's recommended corrective actions.

3.5.3 Amendments to Land Subsidence SMC

Amendments to the GSP includes changes to the Land Subsidence SMC. Prior to and during GSP development, subsidence monitoring was conducted under two programs: (1) DWR's Sacramento Valley Subsidence Network GSP Survey and (2) satellite-based subsidence monitoring with InSAR. The GSA performed an analysis of data from both programs to quantify the extent of historical subsidence (Section 2.2.5.2 of the 2022 GSP). The analysis reviewed subsidence data between 2008 to 2017 and showed that the Subbasin experienced no significant subsidence historically. Annual Reports prepared during the evaluation period have used InSAR data to assess land subsidence in the Subbasin. Extending the InSAR data through January 2026, there was no evidence that current trends have deviated from those discussed in the GSP. Historical subsidence through 2026 is likely elastic (i.e. reversible) and within the uncertainty of measurement methods.

The amended SMCs for subsidence are based on historical subsidence trends calculated from InSAR data. Should subsidence occur, the InSAR data is compared to the nearby groundwater level data to assess for any trends and causation.

- Minimum Threshold: The MT is set to 0.5 feet of cumulative subsidence over a 5-year period at the same location as a result of declining groundwater levels.
- Undesirable Results: When the MT is exceeded at the same representative monitoring location for two consecutive years with confirmed associated impacts to infrastructure and declining groundwater levels.
- Measurable Objective: The MO is set to 0.0 feet per year of land subsidence at representative monitoring locations, recognizing that minor variation within measurement uncertainty does not indicate inelastic subsidence.
- Interim Milestone: Since no subsidence has occurred in the subbasin, no interim milestone is needed.
- Measurement uncertainty: Subsidence rates less than 0.10 feet per year are considered within the range of InSAR measurement uncertainty and are not interpreted as indicative of inelastic land subsidence. SMC compliance is evaluated on a rolling five-year cumulative basis using the average of the nine-pixel cluster at each representative monitoring location, with annual rates used as supporting information.

Additionally, the subsidence monitoring network is updated to rely on the InSAR satellite data, confirmed with the one GPS site in the Subbasin with vertical displacement data, as shown in **Figure 6-4**. The RMS network consists of twenty-nine (29) monitoring well and InSAR pixel groups (see Section 4.5 and 4.9.3 of the GSP). The SHAC recommended the revised monitoring network and criteria unanimously on May 27, 2026; on June 10, 2026, both the Vina GSA and Rock Creek Reclamation District GSA Boards unanimously directed they be included in the amended GSP.

3.5.4 Progress Toward Achieving Sustainability

GSP implementation relative to the subsidence sustainability indicator has been effective in the Subbasin. Observed subsidence conditions were in compliance with the measurable objective and the minimum threshold. Subsidence conditions did not negatively affect beneficial uses and users of groundwater. Based on data during the evaluation period, conditions related to the subsidence sustainability indicator are not negatively impacting other sustainability indicators.

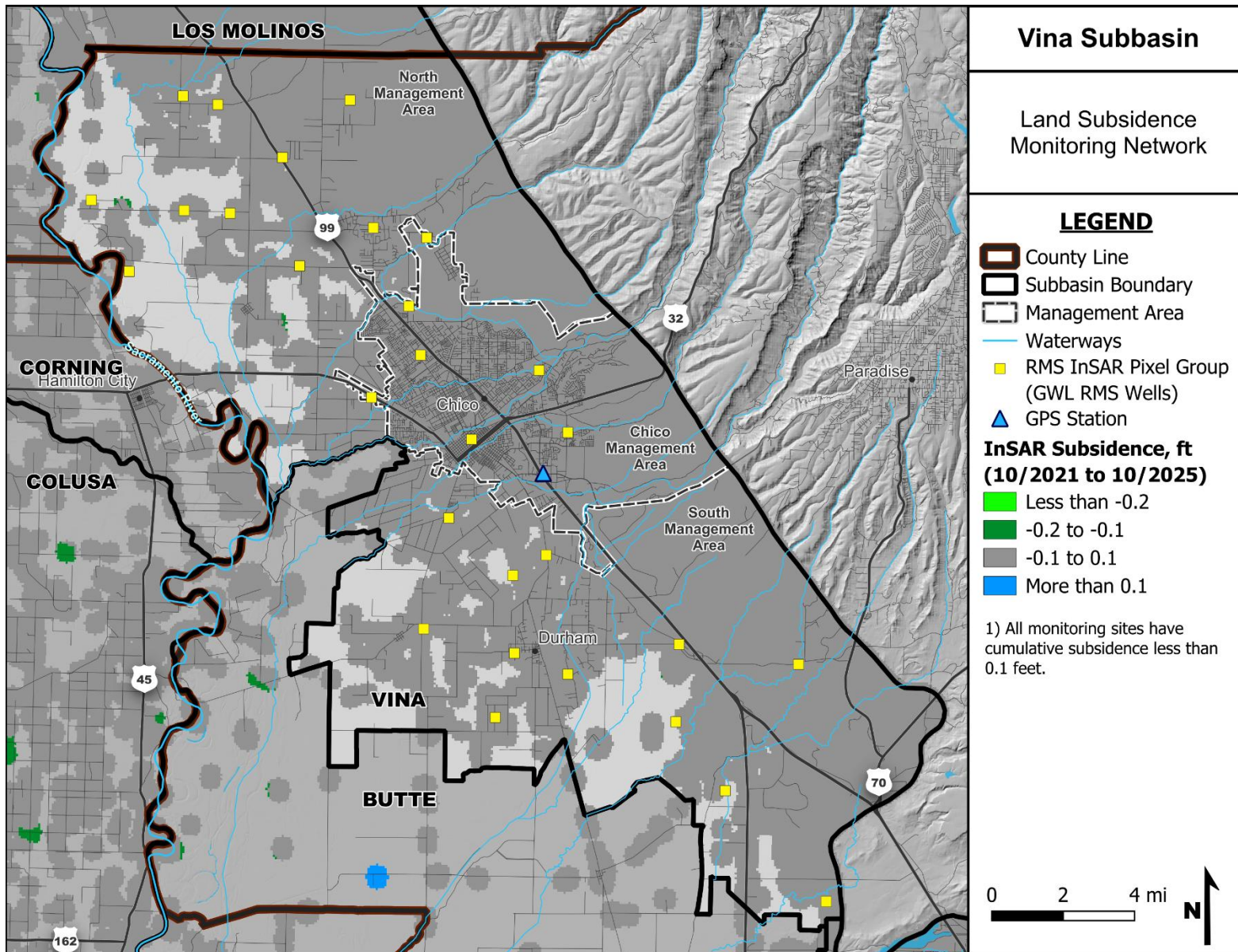


Figure 3-1. Subsidence from WY 2022 to WY 2025.

3.6 Interconnected Surface Water (ISW)

The SMC for the groundwater level sustainability indicator is used as a proxy for ISW. The GSAs have established an ISW monitoring network consisting of shallow wells and stream gages described further in Section 6.6. ISW-specific SMC have not yet been established. DWR has not released its guidance on managing depletions of interconnected surface water, and the shallow monitoring wells installed during this evaluation period need a longer period of record before baseline conditions can be characterized. Until both are available, the groundwater level SMC and RMS network remain the compliance basis for this sustainability indicator.

3.6.1 Current Conditions Relative to SMC

No new SMCs were established for depletions of ISW this evaluation period.

As described in Section 3.1.1, groundwater levels at all representative monitoring wells remained above their interim milestones, measurable objectives, and minimum thresholds throughout the evaluation period, and no undesirable results occurred. Because the groundwater level SMC serve as the proxy for this sustainability indicator, those results are also the compliance finding for depletions of interconnected surface water.

The groundwater level monitoring network was expanded and sorted by well depth during this evaluation period, which for the first time separates wells representative of shallow, upper-zone conditions near streams from wells representative of the deeper production zone. Twenty-seven (27) shallow wells are preliminarily identified as representative of conditions near streams including connected and disconnected streams (Section 6.6).

The Vina Subbasin Interconnected Surface Water technical memorandum (Larry Walker Associates, April 2026) found that streams in the Subbasin are primarily disconnected from the principal aquifer, with the exception of the Sacramento River and short stream segments in the western part of the Subbasin. The Sacramento River is connected and gaining along its 23.4 miles of Subbasin frontage. The lower reaches of Pine Creek, Rock Creek, Mud Creek, and Big Chico Creek are mixed, and their upper reaches, together with Little Chico Creek, Butte Creek, Little Dry Creek, and Dry Creek, are disconnected. Radon-222 and stable isotope sampling conducted between June and October 2025 on Big Chico Creek and Butte Creek is consistent with the modeling result that neither creek receives groundwater inflow.

Streams such as the Sacramento River would become disconnected at current groundwater level minimum thresholds. However, groundwater extraction over this five-year evaluation period was comparable to long-term historical extraction and observed groundwater levels remained above historical lows throughout. Together these conditions indicate that a significant increase in depletion of interconnected surface water is unlikely to have occurred over the evaluation period. The relationship between groundwater pumping and depletion of the Sacramento River, which forms a boundary shared with multiple subbasins, is the subject of continuing regional coordination described in Section 8.3. ISW SMC over the next periodic evaluation cycle will address and more specifically define undesirable results with respect to ISW once additional data becomes available from the newly installed monitoring wells.

3.6.2 DWR's Recommended Corrective Actions

In DWR's 2023 GSP determination letter, they identified two recommended corrective actions regarding interconnected surface water. All aspects of these corrective actions are shown below, verbatim:

- **Corrective Action 2:** Review the model inputs/outputs and provide consistent information regarding stream loss and gains throughout the GSP. Clarify whether these values simply represent the overall interaction between the surface water and groundwater system or the quantity of depletion due to groundwater pumping.

GSA Response: Larry Walker Associates prepared a technical memorandum presenting preliminary results refining the identification of where ISW exist in the Vina Subbasin including the location, timing, and quantity of depletions and identifying remaining data gaps (April 2026). The technical memorandum presents updated Butte Basin Groundwater Model (BBGM) results and clarifies stream gain and loss values. Where current data and modeling tools allow, values associated with overall interaction between the surface water and groundwater system, general stream gains and losses driven by seasonal and climatic conditions, and the incremental depletion of interconnected surface water attributable to groundwater pumping are denoted separately. Uncertainty remains regarding quantification of pumping-induced depletion, and continued model refinement is identified to support future Sustainable Management Criteria development. Additionally, the GSAs are coordinating with adjacent Subbasins as pumping in surrounding areas influence depletions along rivers that form basin boundaries (e.g., Sacramento River).

The technical memorandum reports that the Sacramento River gains more than 80 percent of the time from groundwater, as do the lower segments of Pine, Rock, and Mud Creeks, while streams in the central and southeastern portions of the Subbasin are largely losing. Stream connectivity was evaluated using three independent lines of evidence as feasible: Butte Basin Groundwater Model version 1.3 results for water years 2000 through 2024; a comparison of LiDAR streambed elevations against interpolated shallow groundwater elevations; and radon-222 and stable isotope sampling on Big Chico and Butte Creeks. Localized perched layers have been confirmed to exist within the Subbasin and may influence stream gains and losses. Field investigations for the Subbasin's recharge feasibility work (Geosyntec, June 2026) subsequently confirmed perched systems at three of seven investigated sites in the Rock Creek–Keefer Slough area, above confining units that are laterally variable and locally pinch out, so water retained above such a unit may return to a stream rather than recharge the principal aquifer (Section 5.1.2). The regional distribution and extent of perched layers remain unmapped. Remaining data gaps identified in the memorandum are limited shallow groundwater monitoring near streams, limited understanding of vertical connectivity, limitations in model calibration for the uppermost model layer, and insufficient data to distinguish the effects of groundwater pumping from broader watershed, climate, and surface water management influences.

- **Corrective Action 6a:** Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.

GSA Response: DWR has not yet released ISW-specific guidance. Establishing ISW-specific measurable objectives (MOs), minimum thresholds (MTs), and management actions prior to that guidance would be premature and could require significant revision upon its release. Accordingly, the GSAs defer ISW-specific SMC development and commit to revisiting this upon issuance of DWR's ISW guidance. The GSAs will review and incorporate applicable guidance and data collected over the next implementation period (2027–2032) to define SMCs.

- **Corrective Action 6b:** Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.

GSA Response: Since adoption of the 2022 GSP, the GSAs have made meaningful progress in characterizing the location and timing of ISW within the subbasin, including: shallow groundwater level monitoring, stream stage and streamflow data from existing and newly installed stream gages, updated BBGM results, isotope sampling, topographic survey and LiDAR-based comparisons of streambed and groundwater elevations, and AEM-based subsurface characterization and monitoring well classification as described in Section 6.6.2. The GSAs have documented these

findings and identified remaining geographic and technical data gaps. Data collection will continue through the next implementation period to inform future ISW SMC refinement.

- **Corrective Action 6c:** Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion within the GSA's jurisdictional area.

GSA Response: The GSAs have participated in regional coordination and stakeholder outreach throughout this implementation period, including participation in the North Sacramento River Corridor inter-basin coordination effort and related Sacramento Valley ISW discussions, including with DWR staff. Coordination with resource agencies, neighboring subbasins, and interested stakeholders will continue throughout the next implementation period (2027–2032) to develop a shared regional understanding of ISW beneficial uses and users before ISW SMCs are established.

- **Corrective Action 6d:** Clarify the groundwater level monitoring sites that will be used for the evaluation of depletions of interconnected surface water and provide site-specific information.

GSA Response: Groundwater level RMS wells developed primarily for the chronic lowering of groundwater levels sustainability indicator are not, by themselves, sufficient to evaluate depletions of interconnected surface water. A broad ISW monitoring network, including shallow groundwater monitoring wells and stream gages, has been established and remaining data gaps have been identified as described in Section 6.6.2. Refinement of specific ISW RMS sites is deferred until sufficient monitoring record to assess which sites are reliable, representative, and appropriate for long-term compliance purposes.

3.6.3 Amendments to ISW SMC

No amendments to ISW SMC were completed this evaluation period.

3.6.4 Progress Toward Achieving Sustainability

The current GSP implementation of ISW management utilizes groundwater level as a proxy to indicate whether there are undesirable results. Groundwater levels measured over the past 5 years indicate that no undesirable results have occurred. As discussed in the Monitoring Section on ISW, there has been additional implementation of a dedicated ISW monitoring network, and the implementation of shallow groundwater wells and stream gages in the Subbasin. These will provide data to support the re-evaluation of ISW management following the collection of enough data from the new wells and stream gages and the release of final guidance from DWR on ISW management. The GSAs will evaluate ISW sustainability indicator over the next evaluation period (2027 – 2032).

SECTION 4: STATUS OF PROJECTS AND MANAGEMENT ACTIONS (23 CCR §356.4(B))

This section fulfills the requirements of GSP Emergency Regulations §356.4(b):

A description of the implementation of any projects or management actions, and the effect on groundwater conditions resulting from those projects or management actions.

4.1 Projects and Management Actions Summary

The 2022 GSP, Section 5, categorized projects as planned, potential, or conceptual. There were five planned projects. Projects in this category are anticipated to move forward to help achieve the region's sustainability before 2042. Eight potential projects were identified. Projects in this category are currently in the initial planning stages and may move forward as feasibility and project requirements are determined. Potential projects represent a "menu of options" for the Vina Subbasin to achieve long-term sustainability and offset the remaining imbalance above and beyond implementation of the planned projects. Two conceptual projects were identified. Projects in this category were in the early conceptual planning stage and required significant additional work to move forward. Conceptual projects represent potential future projects that could conceptually provide a benefit to the Vina Subbasin in the future, but that would need to be further developed.

For this periodic evaluation and tracking purposes going forward, the GSAs have reviewed and re-categorized projects into three status groups: completed, in-progress, and potential projects. There are four in-progress projects and three potential projects. Projects that are not part of the GSAs' strategy for achieving sustainability are described as "other" projects. Other projects may benefit groundwater conditions and represent important water management approaches, but the GSAs do not rely on them to achieve the Subbasin's sustainability goal. Projects in this category are mainly led by other entities, and have ancillary benefits to groundwater. These projects will be documented and tracked in Periodic Evaluations. All completed, in-progress, and potential projects and management actions (PMAs) are summarized in **Table 4-1** and further summarized in Sections 4.2, 4.3, and 4.4. Other projects that have been recently added are summarized in Section 4.5. Additional information on PMAs can be found in Section 5 of the GSP. PMAs are implemented based on funding availability and identified need. Several PMAs could be triggered to address groundwater conditions as needed. Public noticing and engagement of interested parties regarding PMAs occur during Vina Stakeholder Advisory Committee (SHAC) meetings and Board of Director meetings. Input on PMAs is solicited during these meetings and status updates have been provided during preparation of GSP Annual Reports. No challenges or setbacks have prevented or delayed implementation of PMAs and all PMAs will be implemented during GSP implementation as needed. The addition of PMAs will be evaluated as needed and during each Periodic Evaluation cycle.

The GSA sought outside funding to reduce the local financial burden, including through state and federal grant programs. Starting in WY 2023, the GSAs have focused on implementing PMAs to address DWR's recommended corrective actions, largely funded by the SGM Implementation Grant Program.

The following sections describe the completed, in-progress, potential and recently added "other" projects within the Subbasin.

4.2 Completed Projects and Management Actions

This section fulfills the requirements of GSP Emergency Regulations §356.4(b):

For projects and management actions that are currently ongoing or have already been completed, the Periodic Evaluation should provide an evaluation and status update including realized benefits, expected benefits, and benefits and impacts to beneficial uses and users. The description should include how these projects and management actions are helping the basin achieve sustainability through the assessment of the groundwater conditions in relation to the measurable objectives for the relevant sustainability indicators. A description of the monitoring network and data related to projects and management actions that are showing progress toward sustainability, and documentation that the project is not impacting nearby beneficial users, should be included.

There are no completed projects within the Subbasin.

4.3 In-Progress Projects and Management Actions

This section fulfills the same requirements of GSP Emergency Regulations §356.4(b) as stated above in Section 4.2.

4.3.1 Agricultural Irrigation Efficiency

Realized Benefits To Date: The GSAs in partnership with Agricultural Groundwater Users of Butte County (AGUBC) and technical consultant Land IQ implemented a Precision Irrigation (PI) Pilot Program with funding by the DWR Sustainable Groundwater Management Grant. The Pilot Study found that medium-to-large farms in the Vina Subbasin already irrigate relatively efficiently, where roughly 75% of pilot growers use two or more science-based data sources for scheduling, and applied water averaged just 68% or 72% of crop ET, for almonds and walnuts respectively. The study recommends expanding pressure chamber adoption among walnut growers, promoting nighttime irrigation, and targeting outreach toward smaller farms and those not yet using science-based scheduling tools. Additional information is available in the Vina Subbasin GSAs Demand Reduction Strategies: Precision Irrigation Pilot Study Final Report (LandIQ, 2026).

Expected Benefits: As groundwater is the primary source of water for the region, these various conservation projects will reduce groundwater demand, providing benefits to groundwater levels and overall storage conditions.

Benefits and Impacts to Beneficial Users: Reduction in Groundwater Demand/Reduced Pumping.

Contribution to Achieving Sustainability: Reduction in groundwater pumping will increase groundwater storage and reduce potential overdraft.

4.3.2 Residential Conservation (Cal Water Chico)

Realized Benefits To Date: Conservation programs have resulted in reductions in urban pumping up to 200 AF per year.

Expected Benefits: As groundwater is the primary source of water for the region, these various conservation projects reduce groundwater demand, providing benefits to groundwater levels and overall storage conditions.

Benefits and Impacts to Beneficial Users: Water Conservation/Efficiency, Reduction in Groundwater Demand/Reduced Pumping

Contribution to Achieving Sustainability: Reduction in groundwater pumping will increase groundwater storage and reduce potential overdraft.

4.3.3 Scoping for Flood MAR / Surface Water Supply and Recharge

Realized Benefits To Date: Project identification and field investigation activities (i.e. tTEM) occurred for Flood MAR / recharge concepts throughout the Vina Subbasin at locations with willing landowners through the Water Supply and Recharge Project that was funded by the SGM grant program. Groundwater Recharge Investigation and the Preliminary Design report was completed in June of 2026 (Geosyntec), and the Surface Water Supply Feasibility Study was completed in March of 2026 (Water & Land Solutions). These reports identified a multitude of potential projects and documented results of pilot projects, which will guide future recharge project implementation.

Expected Benefits: Future recharge or water supply projects will increase groundwater levels, through groundwater offset or direct recharge.

Benefits and Impacts to Beneficial Users: Successful scoping will lead to recharge projects raising the local groundwater levels which may benefit shallow wells and/or groundwater dependent ecosystems.

Contribution to Achieving Sustainability: Increase in groundwater levels through recharge will increase groundwater storage therefore reducing potential overdraft.

4.3.4 Rangeland Management and Water Retention (BCCER)

Realized Benefits To Date: To be determined

Expected Benefits: Future increase of groundwater levels.

Benefits and Impacts to Beneficial Users: This project would evaluate characteristics of local soil and the feasibility to initiate water retention projects. Water retention would help increase the overall water supply for the region.

Contribution to Achieving Sustainability: Increase in groundwater levels through recharge will increase groundwater storage therefore reducing potential overdraft.

4.4 Potential Projects

This section fulfills the requirements of GSP Emergency Regulations §356.4(b):

For projects and management actions that have yet to begin or are still conceptual, assess the need for those based on the current conditions and expected outcomes of the existing projects and management actions. Describe the potential timeline to get those projects and management actions implemented or what may be needed to take them from the conceptual or as-needed phase to the "shovel ready" phase.

4.4.1 Extend Orchard Replacement

Status and Conditions to Advance: The project proponents are in the process of determining the feasibility of this project moving forward with funding by the DWR Sustainable Groundwater Management Grant. A pilot study performed concluded that Extend Orchard Replacement is a viable demand-reduction tool but requires further program development, including development of enrollment structure, availability of financial incentives, and willingness of growers to participate. Additional information is available in the Vina Subbasin GSAs Demand Reduction Strategies: Extend Orchard Replacement Pilot Study Final Report (LandIQ, 2026).

Expected Benefits and Evaluation: By increasing the time between orchard removal and replanting, the soil may be allowed to fallow, restoring its fertility, and decreasing its water demand. This would decrease the overall use of groundwater in the Subbasin. Implementation for this program will occur as needed. This Project may reduce groundwater demand by up to 10,000 AF per year, or more as needed.

4.4.2 Agricultural Surface Water Supplies Project

Status and Conditions to Advance: Surface Water Supply Feasibility Study was completed March of 2026 with funding by the DWR Sustainable Groundwater Management Grant (Water & Land Solutions). The study evaluated the feasibility of two specific projects: South Vina Extension, which would bring Feather River water through Western Canal Water District to the southern portion of the subbasin; and Ridge to Valley which would bring Paradise Irrigation District water to agricultural users along Comanche Creek. These studies quantified the benefits of these projects and identified the path to implementation.

Expected Benefits and Evaluation: Implementation of these two projects would directly offset groundwater pumping, benefiting groundwater levels in the Vina south management area. The Ridge to Valley project would offset 1,400 – 3,500 AF/year, and the South Vina Extension Project would offset at least 6,970 AF/year.

4.4.3 Surface Water Supply and Recharge

Status and Conditions to Advance: Under this project, Vina GSA and RCRD GSA will expand on the Flood MAR initiative, which was originally developed by DWR to promote recharge programs that use fields, recharge basins, and/or recharge ponds to divert high flows in creeks and streams. A feasibility study for recharge across the Subbasin including along Lindo Channel and other recharge sites was completed in the spring of 2026 with funding by the DWR Sustainable Groundwater Management Grant (Geosyntec, June 2026). Fieldwork began in early 2025 with infiltration testing, stilling well installations, and domestic well monitoring setup. Modeling efforts have analyzed historical streamflow and weather data, evaluated environmental constraints, and developed a flow model for Big Chico Creek and Lindo Channel. Consultants ran scenarios to estimate potential recharge under different flow conditions, including storm events and altered channel velocities. Recharge alternatives were evaluated. This study, Feasibility of Enhanced Recharge in the Lindo Channel, was completed April of 2026 (Geosyntec and West Yost).

Expected Benefits and Evaluation: Implemented recharge projects will increase groundwater levels. The amount of recharge depends on the specific projects implemented.

Table 4-1. Projects and Management Actions Summary Table

Name	Description	Targeted Sustainability Indicator	Status	Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Agricultural Irrigation Efficiency (5.2.3.1)	Recommendations from the Precision Irrigation Pilot Study wide survey has been made available to the local agricultural community. Implementation of the practices will be voluntary, and the goal is reducing groundwater demand by modernizing on-farm irrigation systems.	Groundwater Levels; Groundwater Storage; Water Quality; Land Subsidence	In-progress	Precision Irrigation Pilot Study has been completed. Future implementation to occur as feasible.	Reduction in groundwater demand in the subbasin.	Adoption of more efficient practices could reduce groundwater demand by up to 2%, or about 4,000 AFY.

Name	Description	Targeted Sustainability Indicator	Status	Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Residential Conservation (Cal Water) (5.2.3.2)	Implementation water conservation practices in accordance with the 2020 UWMP by municipal water suppliers. Some of these conservation projects include: -installation of low flow fixtures -toilet replacements -urinal valve and bowl replacements -clothes washer replacements -residential conservation kits -smart controllers -high efficiency irrigation nozzles -water waste prevention ordinances -metering -conservation pricing -public education and outreach -distribution system loss assessment	Groundwater Levels; Groundwater Storage	In-progress	Began in 2022, complete by 2025.	Conservation programs have resulted in reductions in urban pumping to the order of 50.5 AF in 2022, 100 AF in 2023, and 0.2 AF in 2024. Annual water savings compared to 2021 water usage equate to roughly 150 AFY.	Based on current estimates, the project will have saved a total of ~500 AF by the end of 2025. The current water savings estimate of 150 AFY meet the original goal of 100 to 200 AFY.

Name	Description	Targeted Sustainability Indicator	Status	Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Scoping for Flood MAR/Surface Water Supply and Recharge (5.2.3.3)	GSAs will expand on the Flood MAR initiative, which was originally developed by DWR to promote recharge programs that use fields, recharge basins, and/or recharge ponds to divert high flows in creeks and streams. Individual recharge projects will eventually occur, following the guidance from completed feasibility and pilot program studies. These studies identified areas of greatest need and locations where recharge projects are the most feasible. The GSAs will seek grants and other funding sources to implement these identified projects. Interested landowners would be identified and participation in the program would be voluntary.	Groundwater levels; Groundwater storage	In-progress	Feasibility and Pilot Program studies completed.	Reduction in pumping and increase of groundwater levels.	N/A

Name	Description	Targeted Sustainability Indicator	Status	Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Rangeland Management and Water Retention (BCCER) (5.2.4.6)	Under this project, CSUC and Chico State Enterprises would initiate a study of adaptive/regenerative grazing practices on 2,000 or more acres in the region. The study, which would take place between 2021 and 2022, would measure soil compaction, erosion, groundwater retention, and biological diversity. If this study finds that water retention engineering projects would be feasible in the region, based on the collected data on local soil, then CSUC would create a master management plan and take necessary steps to complete the water retention projects. This project would take place in two locations across 3,850 acres of historical rangeland between Musty Buck Ridge and Cohasset Road.	Groundwater levels	In-progress	This project is currently in the initial planning stages.	N/A	To be determined
Extend Orchard Replacement (5.2.5.1)	A program would be developed that would incentivize local growers to increase the duration of their current fallowing practice between orchard removal and replanting by one growing season. The program would temporarily reduce groundwater demand, possibly reduce the need for soil treatments such as fumigation, and expand recycling options for the previous orchard. Participation would require incentives and be voluntary.	Groundwater Levels	Potential	Program development began in 2024 for the Vina Subbasin. Implementation schedule is TBD.	Reduction in groundwater demand in the subbasin.	Up to 10,000 AFY

Name	Description	Targeted Sustainability Indicator	Status	Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Agricultural Surface Water Supplies Project (5.2.4.2)	Under this project, surface water from water right holders in the neighboring Butte Subbasin and the upper watershed would provide water for the Vina North and South areas. Some of these surface water sources would include the Sacramento River and Lake Oroville. Surface water would help agricultural users reduce their groundwater usage. Agricultural users may need to install a dual irrigation system that allows them to switch between groundwater and surface water depending on the availability of the surface water. Implementation of some of the projects could also lead to recharge opportunities, as additional water may be available during the off-peak irrigation season.	Groundwater Levels	Potential	Surface Water Supply Feasibility Study completed.	N/A	8,370 to 10,470 AFY
Surface Water Supply and Recharge (5.2.4.8)	Projects under this category would involve activities that increase the surface water supply to the Vina Subbasin through: 1) direct application of surface water to crops along the lines of the Agricultural Surface Water Supplies Project described above; 2) application of surface water and/or flood water to land surface (i.e. existing orchards) for recharge purposes, sometimes referred to as Flood MAR projects; 3) surface water and/or flood water application to recharge basins and/or recharge ponds; or 4) other applications.	Groundwater Levels	Potential	Lindo Channel Feasibility Report Completed.	N/A	N/A

4.5 Other Projects

There are currently eight projects from the 2022 GSP classified as other projects including:

1. City of Chico Wastewater Recycling (GSP Section 5.2.4.5)
2. Paradise Irrigation District Intertie (GSP Section 5.2.4.1)
3. Community Water Education Initiative (GSP Section 5.2.3.4)
4. Fuel Management for Watershed Health (GSP Section 5.2.3.5)
5. Removal of Invasive Species (GSP Section 5.2.4.7)
6. Streamflow Augmentation (GSP Section 5.2.4.3)
7. Recharge from the Miocene Canal (GSP Section 5.2.5.2)
8. Community Monitoring Program (CSUC) (GSP Section 5.2.4.4)

Status of other projects are provided in **Table 4-2**. The GSAs do not rely on these projects to achieve sustainability in the Subbasin; however the GSAs recognize that these activities/projects being pursued and implemented by other entities remain valuable efforts that support local water resource management, monitoring and data analysis, or tangentially benefit groundwater conditions.

Table 4-2. Status of Other Projects

Name	Description	Status
City of Chico Wastewater Recycling (GSP Section 5.2.4.5)	This project would divert treated wastewater, that would otherwise be pumped into the Sacramento River, towards recharge ponds and non-crop vegetation. This would increase groundwater recharge, decrease groundwater demand for farming, and help groundwater levels stabilize in the region.	The City of Chico has funded and initiated a Recycled Water Feasibility Study (RWFS). The RWFS is scheduled to be complete by 2027.
Paradise Irrigation District Intertie (GSP Section 5.2.4.1)	This project will allow PID to provide a surface water source to the City of Chico to help offset groundwater demand. Groundwater is currently the only source of water for Chico.	Not being pursued at this time.
Community Water Education Initiative (GSP Section 5.2.3.4)	This project would expand the education and outreach on important watershed and groundwater issues in the region, helping community members better understand their role in sustainable water management.	No status update reported.
Fuel Management for Watershed Health (GSP Section 5.2.3.5)	This project would involve fuel management in the Upper Watershed, including multiple sites on the 3,950-acre Big Chico Creek Ecological Reserve, 1,500 acres above the Reserve in the Big Chico Creek Watershed, and on private land within the watershed.	Not being pursued at this time.

Name	Description	Status
Removal of Invasive Species (GSP Section 5.2.4.7)	The removal of invasive species would benefit the natural ecosystem and prevent them from negatively affecting the amount of available water and the ability for water to recharge.	Two springs enclosures were developed at just over ~10 acres and invasive species removal within those enclosures occurred.
Streamflow Augmentation (GSP Section 5.2.4.3)	Under the management of the Vina GSA, this project would transport excess untreated surface water from PID, PG&E, and / or other water right holders in the upper watershed to various parts of the Vina Subbasin through creeks and streams.	Waiting on CDFW access approval.
Recharge from the Miocene Canal (GSP Section 5.2.5.2)	This project would rebuild the upper Miocene Canal and making improvements to the overall system would increase recharge into the Vina South Subbasin and surface water availability for other uses.	Not being pursued at this time.
Community Monitoring Program (CSUC) (GSP Section 5.2.4.4)	This project would create routine water table monitoring programs for approximately 8,000 acres of Ecological Reserves in the region between lower Forest Ranch and Cohasset Road near Chico Airport, including the Big Chico Creek, Sheep Hollow, and Cabin Hollow tributaries.	No status update reported.

The following new projects have been added as other projects:

1. Lindo Channel Recharge – Multi-Benefit Plan for Five Mile
2. Lindo Channel Multi-Benefit Stormwater Recharge Initiative
3. Biomass and Biochar Utilization for Demand Management, Regenerative Agriculture, and Multibenefit Recharge
4. Local Refinement of GDE Mapping with Place-Based Monitoring Plan
5. Community Science, Watershed Stewardship, and SGMA Implementation Support Program
6. Chico Urban Forest Vulnerability Assessment

The added projects are further described in Section 4.5.1, 4.5.2, and 4.5.3; respectively.

4.5.1 Lindo Channel Recharge – Multi-Benefit Plan for Five Mile

In June 2026, the Vina GSA completed the “Project Feasibility and Alternatives Report -Feasibility of Enhanced Recharge in the Lindo Channel”. Importantly, to accrue any recharge benefits in Lindo Channel, changes in operation of the Big Chico Creek Gates (a part of the flood management facility located in the Five Mile Recreation Area) will need to occur while also addressing the dynamic gravel/cobble-bedded channel inside the flood management facility which govern flows diverted to Lindo Channel. To enable a recharge project in Lindo Channel, the conditions of the channel inside the facility will need to be monitored and maintained to enable and quantify recharge. Related, Butte County is

facing significant deferred channel maintenance challenges at the Five Mile flood management facility. Advancing a Lindo Channel recharge project requires comprehensively addressing operations and maintenance at the Five Mile flood facility.

Butte County and the Vina GSA have an opportunity to simultaneously enhance recharge and address deferred maintenance by developing and implementing a comprehensive Multi-Benefit Management Plan (Plan) for Five Mile. The Plan would include a reconfigured channel design at Five Mile through a one-time channel and vegetation maintenance action to balance flood conveyance, fish passage, habitat and recharge. That new template would be monitored and maintained (using techniques informed by TEK) through time, balancing flood conveyance, habitat, and recharge via a sustainably funded program. The funding program would be through a new governance structure that facilitates long-term, multi-benefit O&M at Five Mile in alignment with necessary funding assessment on beneficiaries of the flood facility. Developing and implementing the Plan will provide the multiple benefits from the Five Mile facility that are expected by the citizens of the County.

The Plan, funding program, and governance would be developed through a special project completed by an engineering and environmental services team that specializes in integrated, multi-benefit water resource projects. Funding opportunities include grants from upcoming DWR Proposition 4 grant programs and conditions are correct for the project to be implemented as soon as funding is available and received. This project description was provided by Environmental Science Associates in coordination with Butte County. Project partners could include CA Urban Streams Alliance, California Open Lands, and local agencies.

Expected Benefits and Evaluation: Additional work is needed to assess benefits. This project may be conducted in coordination with the Scoping for Flood MAR / Surface Water Supply and Recharge Project described in Section 4.3.3.

4.5.2 Lindo Channel Multi-Benefit Stormwater Recharge Initiative

This project supports implementation of the Vina GSA GSP by integrating stormwater management, managed aquifer recharge, water quality protection, monitoring, and watershed stewardship into a coordinated, multi-benefit approach. Building on planned City of Chico MS4 stormwater improvements, the project would evaluate opportunities to capture, treat, monitor, and infiltrate seasonal stormwater flows to improve groundwater recharge while enhancing understanding of interconnected surface water-groundwater interactions. Expanded monitoring of streamflow, groundwater, water quality, and groundwater-dependent ecosystems (GDEs), combined with community science and ground-truthing of monitoring networks, would provide supplemental information to improve monitoring confidence, identify areas of remaining uncertainty, and support adaptive management. The project also expands meaningful stakeholder engagement through hands-on participation and partnerships with the City, watershed organizations, schools, and other agencies. By leveraging existing and planned infrastructure investments to achieve multiple resource objectives, the project directly supports SGMA implementation and helps address several DWR recommendations for the 2027 GSP Periodic Evaluation, including improving evaluation of recharge opportunities, interconnected surface waters, groundwater quality, GDEs, monitoring network effectiveness and stakeholder engagement.

Expected Benefits and Evaluation: Additional work is needed to assess benefits. This project may be conducted in coordination with the Scoping for Flood MAR / Surface Water Supply and Recharge Project described in Section 4.3.3.

4.5.3 Biomass and Biochar Utilization for Demand Management, Regenerative Agriculture, and Multi-benefit Recharge

This effort centers Traditional Ecological Knowledge (TEK) and cultural burning alongside demand-management strategies to address localized groundwater level declines and stabilize groundwater levels

near priority GDEs. Biochar is a carbon-rich material produced from biomass under controlled, oxygen-limited thermal conversion. Applying biochar to farmland would deliver measurable soil health, water retention, and water-quality benefits across the Vina subbasin. Low-intensity cultural burning would reduce invasive species that compete with and degrade GDEs, lower hazardous fuels, and convert excess biomass into biochar. That biochar could also improve water-quality outcomes from recharge projects and filter urban runoff contaminants before they reach the shallow aquifer. On-farm recharge and demand management pilots would include before-and-after monitoring to document soil, water-quality, recharge, and other hydrologic outcomes. Beyond these hydrologic benefits, the project would build durable local capacity through tribal co-management agreements, job training, eco-tourism, and cultural education centered on groundwater-dependent native foods, fiber, and medicine. California Open Lands would lead a partnership that could include CAL FIRE, growers, and local agencies and partners. With growing state support for Indigenous-led stewardship, funding is anticipated through CAL FIRE, DWR, Proposition 4, and other sources. No groundwater level triggers are associated with the implementation of this project.

Expected Benefits and Evaluation: Additional local data is needed to quantify benefits.

4.5.4 Local Refinement of GDE Mapping with Place-Based Monitoring Plan

This effort aims to develop and implement a place-based monitoring plan for priority Groundwater-Dependent Ecosystems (GDEs), building upon the shallow groundwater monitoring wells identified by the Vina GSA. The implementation of this management action would yield several key outcomes. First, refined GDE maps would be developed to capture oak woodlands and urban canopy areas that are currently absent from the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset. Additionally, the action would establish baseline ecological conditions and identify groundwater-driven impacts to GDEs, while also defining potential timing and response triggers tied to Minimum Management Levels (LMLs) and ecological thresholds. Finally, the management action would integrate the best available science and engage local schools and partners including the California Urban Streams Alliance in ground-truthing efforts to ensure the accuracy and reliability of the monitoring data collected. No groundwater level triggers are associated with this refinement work. Local environmental stakeholders, California Open Lands, CA Urban Streams Alliance, Butte County Resource Conservation District, Audubon, and The Nature Conservancy would support this work. Initial support is anticipated from the DWR URCTA program, and Proposition 4 has been identified as an additional potential funding source. Project proponents would pursue future implementation funding.

Expected Benefits and Evaluation: This would provide new information that could be used to refine monitoring and groundwater management approaches in the Vina Subbasin.

4.5.5 Community Science, Watershed Stewardship, and SGMA Implementation Support Program

This program supports implementation of the Vina GSA GSP by establishing a community science and watershed stewardship program that complements the GSAs' technical monitoring and stakeholder engagement efforts. Using trained volunteers, schools, and local partners to collect supplemental observations on streamflow, groundwater-dependent ecosystems, water quality, and watershed conditions, the project helps improve understanding of interconnected surface water-groundwater relationships, provides ground-truthing for monitoring networks, identifies areas where additional characterization would be beneficial, and supports adaptive management. The program also expands meaningful stakeholder engagement beyond traditional public meetings by actively involving residents in monitoring and stewardship activities. These efforts directly address several deficiencies identified by the California Department of Water Resources for the 2027 GSP Periodic Evaluation, including the need for additional information and analysis related to interconnected surface waters, GDEs, monitoring network confidence, groundwater quality protection, and more robust stakeholder involvement, while creating

opportunities to leverage partnerships with the City of Chico, watershed organizations, schools, and other agencies.

Expected Benefits and Evaluation: This would provide new information that could be used to refine monitoring and groundwater management approaches in the Vina Subbasin.

4.5.6 Chico Urban Forest Vulnerability Assessment

This effort addresses a data gap regarding the extent to which Chico's unirrigated, deep-rooted trees rely on groundwater versus soil moisture and creek recharge, directly supporting DWR Corrective Action 3 for environmental users. The assessment will employ a two-tiered vulnerability evaluation approach: Tier 1 will utilize satellite z-NDVI greenness screening based on the Rohde et al. methodology, while Tier 2 will incorporate the City's tree inventory alongside field checks conducted near shallow, GDE-sensitive RMS wells. Baseline data collection will commence immediately; however, formal evaluation will only be triggered if a Chico-area or GDE well reaches its Local Management Level (LML). This collaborative effort will be carried out in partnership with the City of Chico Urban Forestry division, the County, and potentially California State University, Chico.

Expected Benefits and Evaluation: This would provide new information that could be used to refine monitoring and groundwater management approaches in the Vina Subbasin.

4.6 Management Actions

There are currently seven management actions listed in the 2022 GSP including:

1. General Plan Updates (County and City) (GSP Section 5.3.1)
2. Domestic Well Mitigation (GSP Section 5.3.2)
3. Well Permitting Ordinance (GSP Section 5.3.3)
4. Landscape Ordinance (GSP Section 5.3.4)
5. Prohibition of Groundwater Use for Ski (Recreational) Lakes (GSP Section 5.3.5)
6. Expansion of Water Purveyors' Service Area (GSP Section 5.3.6)
7. Groundwater Allocation (GSP Section 5.3.7)

The following sections provide an update on General Plan Updates, Domestic Well Mitigation, Well Permitting Ordinance, and Groundwater Allocation. The following management actions are not being pursued at this time: Landscape Ordinance, Prohibition of Groundwater Use for Ski (Recreational) Lakes, and Expansion of Water Purveyors' Service Area. The GSAs will try to track status of the other management actions as feasible.

4.6.1 General Plan Updates

Butte County staff, who serve as members on the Vina GSA Management Committee, have cooperated with the Butte County Department of Development Services in the 2040 General Plan Update. Specifically, staff along with the Water Commission made suggested revisions to the Water Resources Element and applicable General Plan Goals, Policies, and Actions. The 2040 General Plan update was adopted in March 2023. Its Water Resources Element makes GSP consistency a condition of County action in several places: Policy W-P1.1 requires County planning and programs to be integrated with local GSPs; Policy W-P2.2 commits the County to continued participation in local GSAs and regional water management efforts; Policy W-P2.9 requires applicants for new major development projects to demonstrate adequate water supply, including an evaluation of potential cumulative impacts to surrounding groundwater users and the environment in accordance with local GSPs; Policy W-P4.4 requires the County to consult applicable GSPs when making decisions that could affect groundwater resources; and Action W-A2.1 commits the County to participating in the implementation and update of GSPs. Together these provisions align County land use decision-making with GSP implementation.

4.6.2 Domestic Well Mitigation

As described in Section 5.3.2 of the GSP, a domestic well mitigation program would provide short- and long-term relief to residents whose domestic wells have failed as a result of declining groundwater levels. The management action in the 2022 GSP is directional rather than programmatic: it identifies the types of actions the GSAs could pursue, but does not establish eligibility criteria, funding mechanisms, administrative procedures, or implementation triggers.

During this evaluation period the GSAs advanced the information base for such a program. A domestic well inventory and risk assessment was completed (Larry Walker Associates, April 2026), refining the well dataset available from DWR's Online System for Well Completion Reports and quantifying the number of domestic wells at risk at the minimum thresholds, which responds in part to DWR's request for quantification of domestic wells that would be impacted by the proposed minimum thresholds. In Fall 2025 the GSAs held a series of stakeholder meetings, including a meeting of domestic well users on October 27, 2025, at which participants expressed strong interest in the development of a mitigation program. At the direction of the Boards, staff also reviewed how other subbasins are approaching well mitigation and well registries in order to inform an initial framework for the Vina Subbasin.

The GSAs intend to initiate development of a Domestic Well Mitigation Program in early 2027, tailored to the specific conditions and needs of the Subbasin. Program development will require Board direction on eligibility criteria, interim water supply assistance, long-term remedies such as pump lowering, well deepening, replacement wells, connection to an existing system or treatment, funding mechanisms and administration, and the monitoring and notification triggers that would activate the program. The GSAs note that the Vina Subbasin did not receive a recommended corrective action requiring a mitigation program; program development is proceeding because the Boards and stakeholders have identified it as a priority for the next implementation period.

4.6.3 Well Permitting Ordinance

As described in Section 5.3.3 of the GSP, the GSAs will work with Butte County to amend the well ordinance as it relates to small and large diameter wells to take into consideration the HCM based on best available data (i.e. AES data), adopted SMC, historical groundwater conditions, and impacts of new wells on existing wells. Butte County Public Health has begun a public process to revise sections of Chapter 23B, the Water and Well Ordinance. The County has initiated a Rural Water Safety Project, which includes a comprehensive review and update of the County's existing ordinances and manuals governing water wells (Butte County Code Chapter 23B and Well Construction Manual) and onsite wastewater treatment systems (Butte County Code Chapter 19B and the OWTS Manual). The ordinances and manuals will be reviewed and updated as needed to better align with current regulations, standards, policies, and priorities for community wellbeing. Butte County's well ordinance updates are anticipated to occur in 2027 or 2028.

4.6.4 Groundwater Allocation

Groundwater allocation remains a management action available to the GSAs should conditions warrant it.

SECTION 5: BASIN SETTING EVALUATION BASED ON NEW INFORMATION OR CHANGES IN WATER USE (23 CCR §356.4(C)-(D))

This section fulfills the requirements of GSP Emergency Regulations §356.4(d):

An evaluation of the basin setting in light of significant new information or changes in water use, and an explanation of any significant changes. If the Agency's evaluation shows that the basin is experiencing overdraft conditions, the Agency shall include an assessment of measures to mitigate that overdraft.

As described in Section 5.3.4, the Subbasin is not currently in a condition of overdraft, although the 25-year record shows a long-term storage deficit with each dry cycle resulting in lower lows than previously observed groundwater levels. The GSAs will continue to evaluate measures to mitigate overdraft as needed and level out the declining trend, considering projected groundwater level declines associated with drought cycles and climate change. The PMAs currently in-progress for implementation are expected to address the remaining long-term imbalance.

5.1 Hydrogeologic Conceptual Model

The hydrogeologic conceptual model (HCM) presented in the 2022 GSP identifies the major factors contributing to groundwater flow and movement and how different physical features and characteristics affect conditions within the Subbasin. The HCM serves as an important component of the basin setting, providing the framework for understanding groundwater conditions and water budgets. This section summarizes new applicable data and analysis that informed a more comprehensive understanding of the HCM, including basin characterization and work to fill data gaps.

Vina Subbasin's groundwater producing formations including Riverbank and Modesto Formations (also referred to as the Quaternary Deposits), Tehama Formation, and Tuscan Formation are summarized in Section 2.1.5 of the 2022 GSP. Cross sections developed using Airborne Electromagnetic (AEM) surveys are presented in GSP Section 2.1.6. Generally, Quaternary Deposits are within approximately 150 feet of ground surface and the Tehama and Tuscan Formations are deeper. The HCM served as a basis to classify monitoring wells using well lithology and well screen interval(s) / depths to track groundwater conditions between the different formations and in different zones of the aquifer system. The purpose of improving understanding of the geologic properties will allow the GSAs to assess the vertical connectivity between aquifer layers and to identify where perched aquifer layers may be present across the Subbasin. Generally, most agricultural production wells are screened in the Tehama and Tuscan Formations and other more sensitive groups to groundwater fluctuations such as GDEs and ISWs are within from the Quaternary Deposits. The connection between the Quaternary Deposits and the deeper Tehama and Tuscan Formations is important for understanding how groundwater pumping may impact these users.

5.1.1 Monitoring Well Stratigraphic Classification

As described above, two aquifer zones were defined: a shallow and a deep zone. Shallow wells are generally screened in Quaternary Deposits and deep wells are screened within the Tehama and Tuscan Formations, depending on location. A third group for wells screen in both the shallow and deep aquifer zones were classified as "both." **Table 6-1** summarizes the aquifer zones of each groundwater level monitoring well.

5.1.2 HCM Data Gaps

Data gaps identified in the 2022 GSP and DWR recommended corrective actions have been addressed by assessing existing monitoring wells, the installation of additional monitoring wells and stream gages,

and studies of surface water outflows and groundwater dependent ecosystems. The spatial gaps in the monitoring networks have been addressed by the addition of newly designated existing wells, and installation of new wells and stream gages, through DWR's SGM Implementation Grant Program. A summary of the additions to the monitoring network are further described in Section 6.

One aspect of the vertical structure of the Subbasin was documented for the first time during this evaluation period. Field investigations conducted for the Subbasin's recharge feasibility work confirmed the presence of localized perched groundwater. Of the seven sites investigated in the Rock Creek–Keefer Slough area north of Chico, three were found to have perched systems, with shallow water encountered between approximately 4 and 11 feet below ground surface at locations where the regional water table lies at roughly 30 to 40 feet in one case and approximately 80 feet in another. Perched aquifers form where downward percolation is impeded by a low-permeability layer, producing localized and often transient zones of saturation. At two of the three sites the confining unit itself was characterized: at one it occurs at approximately 15 to 20 feet below ground surface, and at the other it is laterally extensive and slopes from about 40 feet in the east to about 70 feet in the west. These findings are reported in the Combined Groundwater Recharge Investigation and Pilot Test Report (Geosyntec, June 2026).

Two lines of field evidence establish that these shallow systems are hydraulically separate from the principal aquifer rather than an expression of it. At one boring, water present at approximately 10 feet below ground surface was no longer present once drilling advanced through the underlying low-permeability unit. At a fourth investigated site, paired stream and groundwater monitoring produced responses at depths of 30 to 50 feet that were attributed to a hydraulically connected deeper alluvial system rather than to the shallow perched water observed at the other three sites. Both confining units were reported as laterally variable and locally pinching out, so groundwater within a perched zone is expected to move primarily laterally, with vertical percolation to the principal aquifer occurring where the confining unit is absent.

Perched conditions are consequential for the hydrogeologic conceptual model in three respects. First, a water level measured in a shallow well may reflect a perched zone rather than the regional water table, so the depth classification of monitoring wells (Section 5.1.2) and the interpretation of shallow hydrographs both depend on knowing whether a perched layer is present. Second, perched layers bear on the evaluation of interconnected surface water, because water retained above a confining unit may return to a stream rather than recharge the principal aquifer (Section 3.6). Third, perched conditions constrain the recharge benefit that a project can deliver: candidate recharge sites were screened out during the feasibility work because of perched groundwater, and at sites carried forward the presence of a perched system changed the expected function of the project from direct recharge of the regional aquifer toward temporary storage and attenuation of flows.

The regional distribution and extent of perched layers remain unmapped. This is a data gap in the sense used in this Periodic Evaluation, because it limits the GSAs' ability to interpret data from the shallow monitoring wells installed during this evaluation period and to evaluate the dependence of groundwater dependent ecosystems on the principal aquifer. The recharge investigation recommends a monitoring design that addresses it directly, and the GSAs will consider it as shallow monitoring is expanded: nested measurement points comprising a shallow point screened within the perched interval, an intermediate piezometer below the confining unit, and a deeper well screened in the first regional aquifer, with continuous water level records to establish vertical gradients between the zones, supported where warranted by major ion, nutrient, and stable isotope sampling to distinguish water retained in a perched system from water reaching the principal aquifer.

5.2 Groundwater Conditions

New data sources, tools, and analysis implemented during the evaluation period have increased the understanding and management of groundwater conditions. The evaluation period began during a drought followed by wet and above normal years, and groundwater conditions have tracked the Subbasin recovery from drought. The 2021 to 2025 period includes two critically dry years (2021, 2022), a wet year

(2023), and two above normal years (2024, 2025). Sections 5.2.1 through 5.2.3 describe existing conditions and new information available related to groundwater levels, water quality, and land subsidence, respectively.

5.2.1 Groundwater Levels

Further described in Section 6.1.2, the monitoring network was separated into groups based on depth, to characterize the different aquifer layers: shallow, deep and both. “Shallow” wells observe water table conditions which are relevant to ISWs and GDEs, “deep” wells observe the deeper aquifer generally representative of irrigation / production wells, and wells identified as “both” are screened in the shallow and deep aquifer layers. **Figures 5-1, 5-2, and 5-3** show representative hydrographs for a deep production-zone well (an RMS well), a shallow well near the Sacramento River, and a shallow well near Bidwell Park (an RMS well); respectively. For the deep well (**Figures 5-1**), groundwater levels fell through the drought (2021/22) and recovered in every year since, ending WY2025 an average of 20 feet above the MOs and 71 feet above the MTs. Water levels have improved since the last drought (2021/22) and stabilized relative to the last 10 years, but a longer-term groundwater decline exists going back to the early-2000s. The shallow wells (**Figures 5-2 and 5-3**) show groundwater levels near the Sacramento River and Big Chico Creek remaining relatively stable through the drought with some rebounding following the drought.

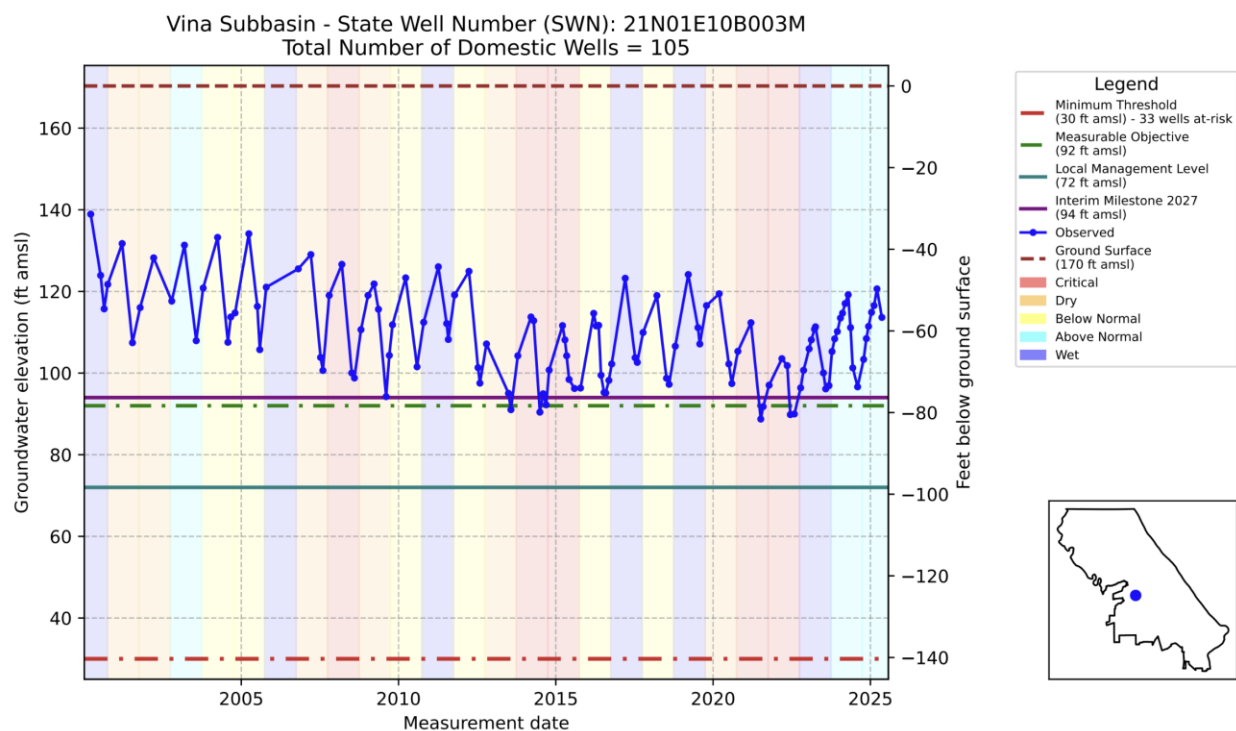


Figure 5-1. Hydrograph representative of the deep aquifer.

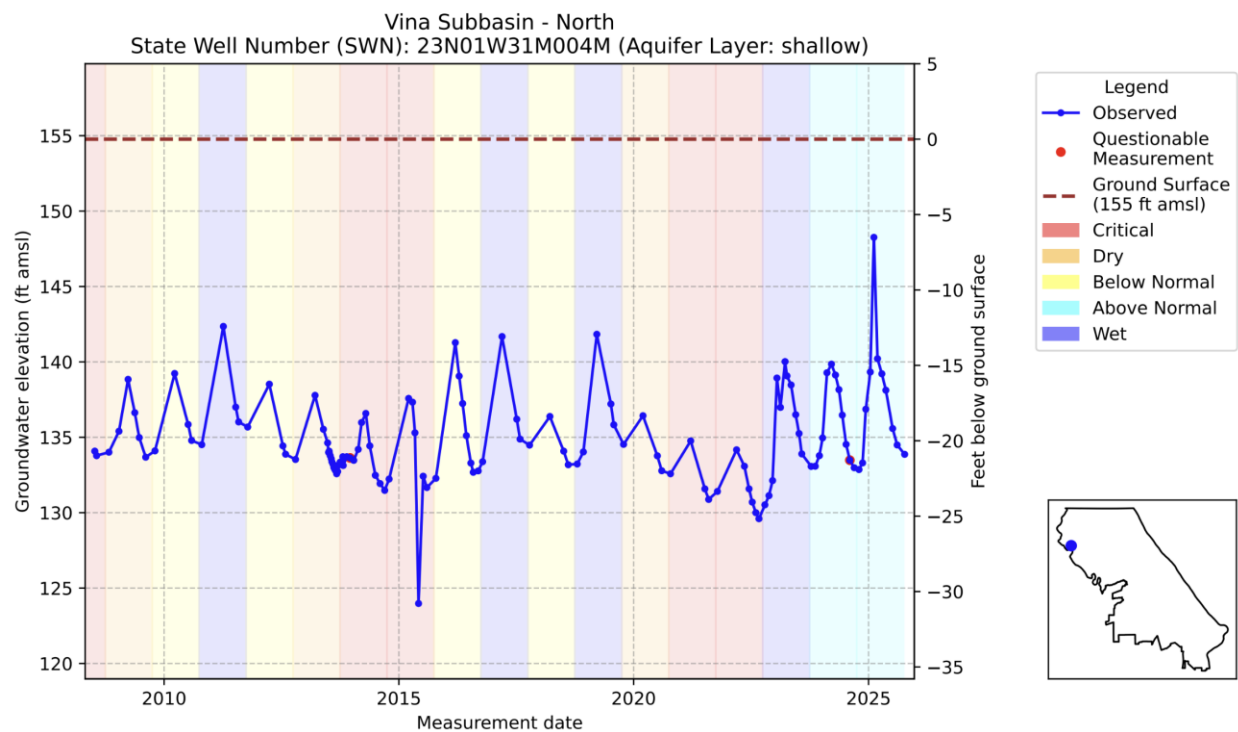


Figure 5-2. Hydrograph representative of the shallow aquifer near the Sacramento River.

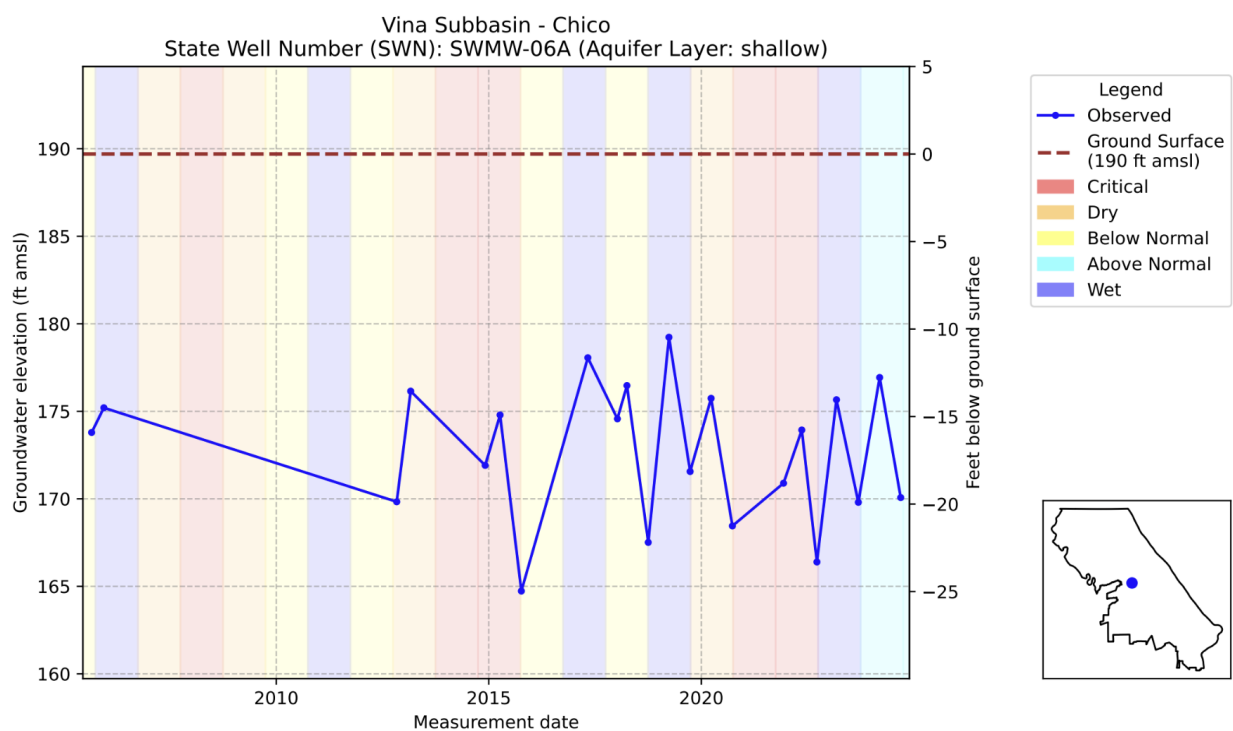


Figure 5-3. Hydrograph representative of the shallow aquifer near Big Chico Creek in Bidwell Park.

The Vina Subbasin also has a new program where private well-owners can report dry wells and ask for assistance. In Butte County, reporting can be done through DWR's voluntary Household Water Supply Shortage Reporting System (mydrywell.water.ca.gov; "Dry Well Reporting System"), through the Butte County OEM Drought Assistance Program and / or through Butte County Environmental Health Division when a well permit application is submitted. Those reporting to the County are encouraged to fill out the DWR Dry Well Reporting System reports as well, but not all do. The SGMA Data Portal shows that roughly 34 reports of dry wells, only one of which has been resolved according to the database, have been documented. Most of the reported dry wells are within the Chico and South Vina management areas. Within calendar year 2022, about 20 residents within the Subbasin applied for the Butte County OEM Drought Assistance Program to receive water deliveries and or water storage tanks due to a dry or reduced capacity household domestic well at their residences. Well Completion Reports (WCRs) are submitted to DWR, where the GSA tracks the number of agricultural and domestic wells installed per year through quarterly reports provided by Butte County Environmental Health Division. As described in Section 4.6.2, the GSAs intend to initiate development of a Domestic Well Mitigation Program in early 2027, tailored to the specific conditions and needs of the Subbasin.

In both the 2022 GSP and DWR's Determination Letter, groundwater dependent ecosystems were identified as an area with significant data gaps. To address the data gap, a new desktop analysis was performed as described in the report titled "Vina Groundwater Subbasin Groundwater Dependent Ecosystem Analysis" conducted by Environmental Science Associates (March 2026). The analysis used data from identified shallow monitoring wells, summarized in Section 6.6.2 to compare groundwater level conditions in the regional water table with assigned rooting depths of vegetation in the NCAGG database. The GDE desktop analysis indicated that likely GDEs were generally located along the Sacramento River and its floodplain and along lowland valley portions of Pine Creek, Rock Creek, Mud Creek, Big Chico Creek, Little Chico Creek, Angel Slough, and Butte Creek toward the western portion of the subbasin. Moving eastward from the Sacramento River floodplain, a northwest-southeast trending boundary line traverses the central part of the Subbasin where depth to groundwater begins to exceed GDE rooting depths, and most potential GDEs east of this boundary had depth to groundwater deeper than rooting depth thresholds and were identified as not likely GDEs. The aquifer in the eastern part of the basin is mostly volcanic and the land surface slopes uphill approaching the foothills. Additional groundwater level data from newly installed and identified shallow wells will be collected over the next evaluation period (2027 – 2032) to better characterize groundwater level conditions with respect to likely and potential GDEs: the new data, combined with more data expected to be collected are expected to provide clarity on the GDE polygons that are characterized as either "likely" or "not likely". The GSAs recognize the critical importance of the urban forest in the Chico management area and that understanding the stresses and the water sources that are supporting the forest is the key for the future management of the GDEs in the Chico management area and for the protection of the forest. The GSAs completed a preliminary assessment of the Valley Oaks within Chico including Bidwell Park. The assessment is further described in Section 5.2.1.1.

Perched groundwater is an aspect of the hydrogeologic conceptual model that warrants further documentation. As described in Section 5.1.2, field investigations for the Subbasin's recharge feasibility work confirmed perched systems at three of seven investigated sites north of Chico, with shallow water encountered between approximately 4 and 11 feet below ground surface above confining units at roughly 15 to 70 feet; the regional distribution and extent of perched layers remain unmapped. Perched conditions matter for interpreting shallow monitoring data, because a level measured in a perched layer may not respond to changes in the principal aquifer — at one boring, water present at about 10 feet below ground surface was absent once drilling advanced through the underlying confining unit — and for evaluating GDEs and the urban forest, where vegetation may rely on some combination of shallow groundwater, perched water, creek recharge, irrigation, and urban infrastructure leakage. Localized perched layers may also influence stream gains and losses (Section 3.6).

The analyses completed during this evaluation period confirm that important questions remain. Some stakeholders have questioned aspects of the study's conclusions, expressing concern with the magnitude of the reduction in mapped likely GDEs and with the spatial distribution of reclassified areas; other stakeholder comments expressed concern that the study was overly inclusive and overstated potential

impacts to GDEs. All parties agree that uncertainty remains in characterizing the dependency of deep-rooted vegetation, such as Valley Oak, on regional groundwater. The relationship between pumping, groundwater levels in the principal aquifer, shallow or perched groundwater, and vegetation health is not sufficiently understood to establish a locally validated ecological threshold across the Subbasin; vegetation condition is also influenced by precipitation, soil moisture, surface water, irrigation, pests, and other factors. The GSAs have selected two shallow monitoring wells within the Chico Management Area to serve as RMS wells near Bidwell Park (further discussed in Section 5.2.1.1). The GSAs may consider modifying management strategies during the next implementation period to address these remaining questions.

5.2.1.1 Chico Management Area

The GSA Boards have received hundreds of public comments emphasizing the importance of protecting the Chico Urban Forest, and particularly its mature, native Valley oak population, as a defining ecological and community resource within the Chico Management Area. Uncertainty remains regarding the fundamental nature of the shallow water table in the Chico Management Area; specifically, the extent to which it reflects locally perched conditions versus shallow groundwater hydraulically connected to the principal aquifer system that the GSAs are charged with managing under SGMA. The GSAs' management authority and sustainability obligations pertain to the principal aquifer system. While the GSAs recognize the potential importance of the shallow water table to GDEs, the degree to which pumping from deeper zones affects this shallow system, as compared to natural recharge processes, remains uncertain and is an area of continued investigation. The GSAs are committed to advancing this understanding through monitoring enhancements and studies, and will incorporate new findings into future evaluations and, if warranted, GSP amendments.

The Vina 2022 GSP, Section 2.2.7, identified potential GDEs within the Subbasin using vegetation polygon data developed in coordination with The Nature Conservancy (TNC), which classified polygons by dominant vegetation species. Polygons dominated by Valley Oak (*Quercus lobata*) were classified as "Likely a GDE" based on feedback from TNC staff indicating that this species can access groundwater across a wide range of depths. No subbasin-specific rooting-depth analysis tied to measured groundwater levels was performed at the time of GSP development; the classification relied on the vegetation dataset and associated professional judgment only.

ESA's analysis compared mapped GDE polygons to measured groundwater levels from a set of shallow monitoring wells specifically identified and selected as reasonably representative of regional shallow water table conditions across the entire Subbasin including the Chico Management Area (March 2026). This represents a meaningful step forward in using best available data to evaluate GDE polygons in relation to actual, measured shallow groundwater elevations, rather than vegetation mapping alone. The initial ESA analysis applied an assumed rooting depth of 18.2 feet to evaluate the relationship between measured shallow groundwater levels and potential Valley Oak root zone access. Following presentation of this analysis, significant concerns and objections were raised (including by the local urban forester, Audubon, and The Nature Conservancy) regarding the use of this rooting depth assumption, given that it is fundamental to the resulting conclusions. Commenters noted that documented Valley Oak rooting depths, including as described in the 2022 GSP, vary considerably, and that a shallower assumed rooting depth may understate the degree to which Valley Oak-dominated GDEs can access groundwater in deeper portions of the shallow aquifer system. In response to these concerns, ESA also prepared a supplemental set of maps using a 30-foot rooting depth for Valley Oaks, which is more widely accepted for planning purposes and better reflects the range of Valley Oak rooting depths described above.

Figure 5-4 shows Valley Oaks within the Chico Management Area, monitoring wells, and results from ESA's analysis based on 30-foot rooting depth and 90th percentile depth to groundwater. The City-owned Valley Oak inventory, provided by the local urban forester and developed mostly in 2020, reflected in the map on the left, is limited in scope. Within Bidwell Park specifically, only trees greater than 12 inches in diameter growing along South Park Drive or the Park Multi-use pathway (PMW) were inventoried; trees within the park's interior were not surveyed. As a result, the map likely undercounts the true Valley Oak

population within the Chico Urban Forest, which is expected to be substantially higher than depicted. ESA's analysis resulted in polygons meeting the rooting depth thresholds to the west of Highway 99 as shown on the map on the right. These points correspond to areas of Valley Oaks. ESA's analysis significantly underestimates the number of Valley Oaks within the Chico Management Area compared to the dataset provided by the urban forester due to limitations of the Natural Communities Commonly Associated with the Groundwater (NCCAG) dataset used to identify potential GDEs across the Subbasin. Given the new data and analysis conducted for this Periodic Evaluation, the GSAs have selected two shallow monitoring wells, CMW-102A and SWMW-06A, to serve as RMS wells to protect GDEs in the Chico Management Area, specifically the Urban Forest with connection to the shallow groundwater aquifer. The measurable objective is set at the average of the historical data for the period of record, and the minimum threshold is set 30-feet below ground surface which corresponds to the assumed rooting depth of Valley Oaks. **Figures 5-5 and 5-6** show hydrographs for RMS wells CMW-102A and SWMW-06A, respectively. Groundwater levels for both wells are stable for the period of record. There is still uncertainty about the nature of the water table in Chico MA with respect to areas of perched water and shallow groundwater that is connected to the principal aquifer, for which the GSAs can manage. RMS well selection may be modified during the next evaluation period after data is collected at the newly drilled monitoring wells.

The GSP's classification of all Valley Oak-dominated polygons as "Likely GDEs" is not changing because of this Periodic Evaluation including the Valley Oaks to the east of Highway 99 where depth to the regional groundwater aquifer is greater. The new shallow groundwater and rooting-depth analyses are intended to supplement and refine the GSAs' understanding of these areas, not to alter their status as likely GDEs. Questions remain regarding the degree of hydraulic connection between the shallow water table accessed by Valley Oak and other vegetation types, and the deeper principal aquifer zones subject to the influence from groundwater pumping. Newly constructed dual-completion shallow monitoring wells have not yet accumulated sufficient data to support firm conclusions regarding vertical gradients and inter-zone connectivity. As data from these sites become available over the next several years, the GSAs anticipate refining their understanding of these dynamics and will use this information to inform future GDE analyses. Where warranted, refinements to sustainable management criteria will be made. Additional projects to further characterize GDEs including within the Chico Urban Forest, will be implemented as feasible (see Sections 4.5.4: Local Refinement of GDE Mapping with Place-Based Monitoring Plan and 4.5.6: Chico Urban Forest Vulnerability Assessment).

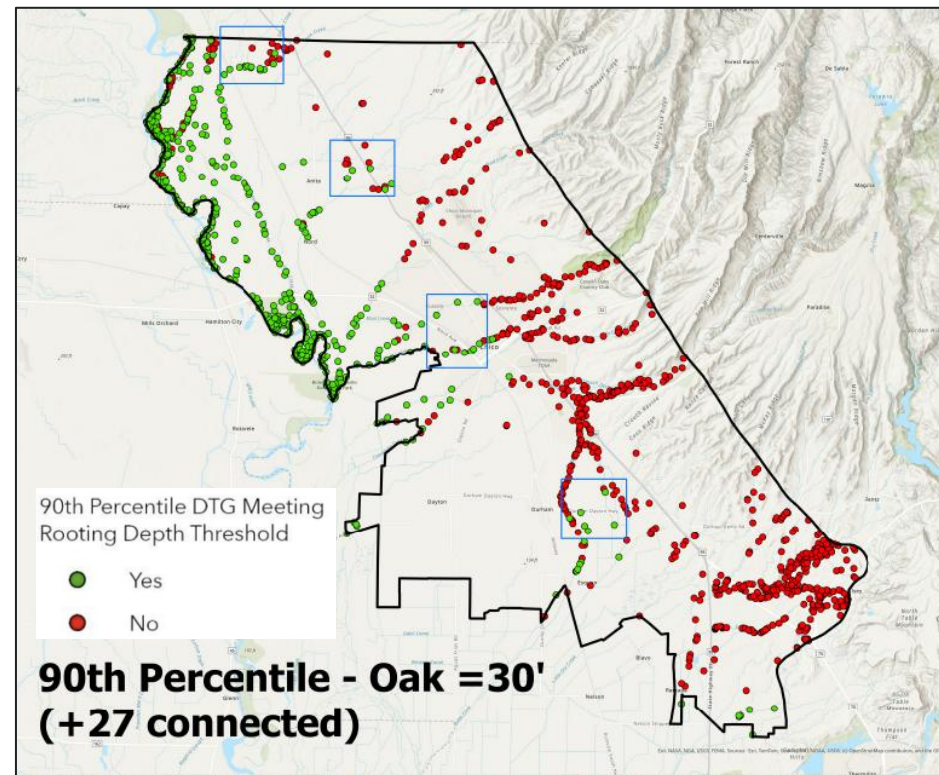
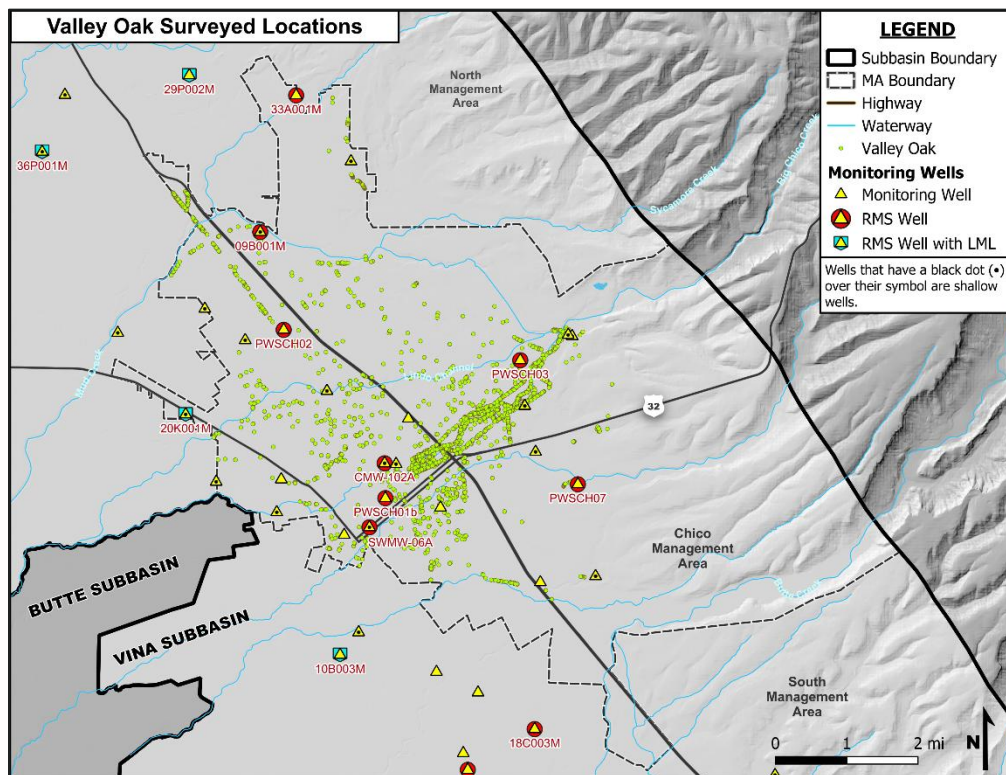


Figure 5-4. Valley Oaks within the Chico Management Area and monitoring wells (left map) and results from ESA's analysis based on 30-foot rooting depth and 90th percentile depth to groundwater (right map).

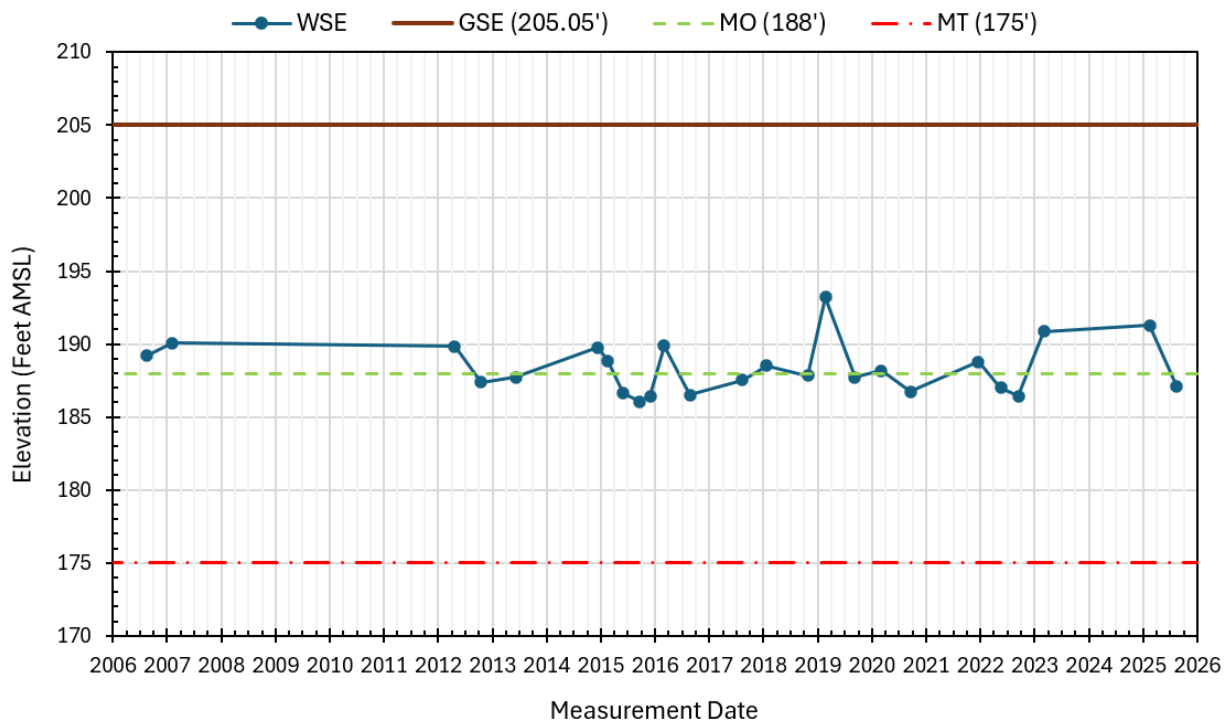


Figure 5-5. Hydrograph for RMS Well CMW-102A.

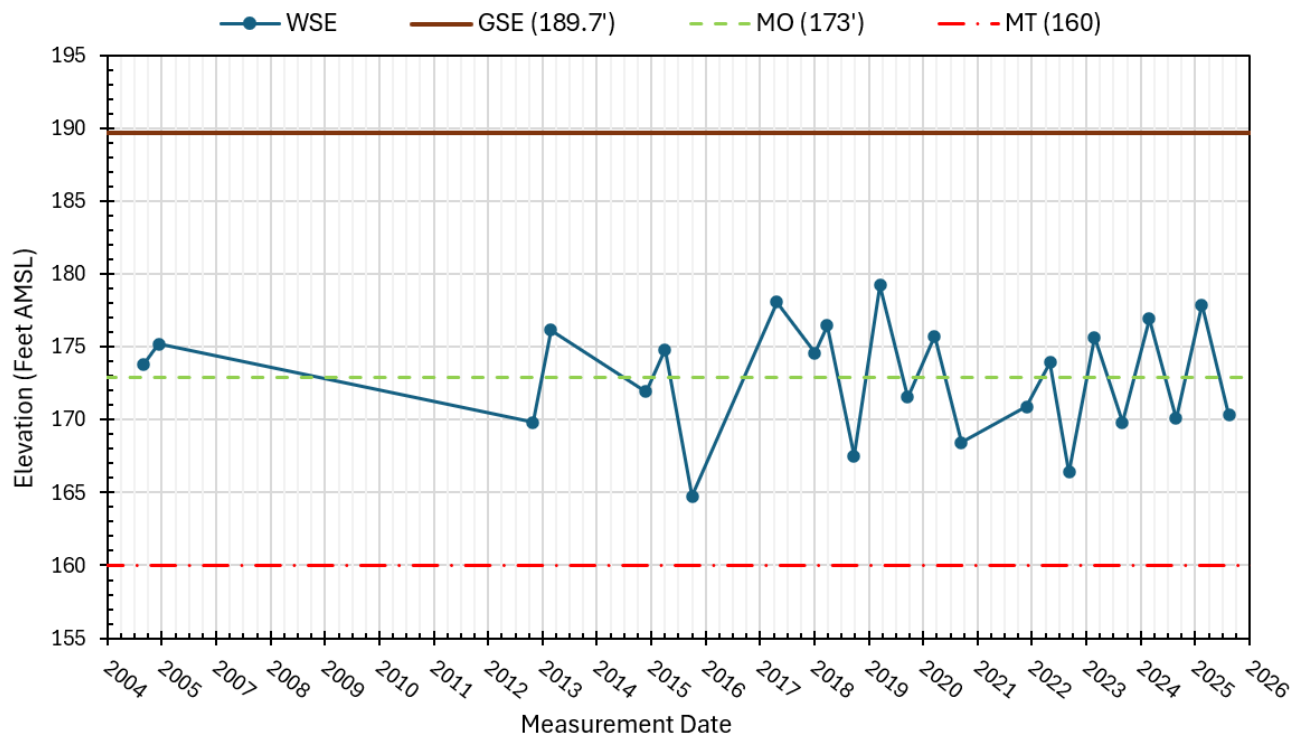


Figure 5-6. Hydrograph for RMS Well SWMW-06A.

5.2.2 Water Quality

A 2022 letter from the State Water Resources Control Board recommended adding the following constituents of concern to the GSAs' water quality monitoring network: nitrate; nitrite; perfluorooctanoic acid (PFOA); perfluorooctanoic sulfonate (PFOS), 1, 2, 3-trichloropropane (1, 2, 3 TCP), tetrachloroethene (PCE), di(2-ethylexyl)phthalate (DEHP), and arsenic. State Water Board staff compared water quality data from the State Water Board's Groundwater Ambient Monitoring and Assessment Program (GAMA) to determine which constituents have exceeded Maximum Contaminant Levels (MCLs) or Health-Based Screening Levels (HBSLs). If a constituent exceeded screening criteria in three or more well types within a groundwater basin, the constituent was labeled as a potential constituent of concern. As described in Section 6.4, the GSAs are monitoring specific conductance (SC). SC measures a liquid's ability to conduct electricity, primarily due to the presence of dissolved ions. Higher specific conductance generally indicates a higher concentration of ionic contaminants including chloride, sulfate, nitrate, calcium, magnesium, sodium, bicarbonate, arsenic, boron. Conductance changes can be due to many ions (e.g., chloride, sulfate, calcium, magnesium). The GSAs intend to use specific conductance as a first-pass screening tool in field or lab settings to identify locations for additional testing. If the GSAs begin to measure higher specific conductance, then additional contaminant-specific testing will be conducted or water quality analysis conducted by others will be evaluated as needed. Current water quality conditions are described in Section 3.4.1 which shows the Subbasin does not have significant historical or existing water quality issues. There are localized contamination plumes under the jurisdiction of other regulatory programs within the Subbasin. As described in Section 2.2.4.2 of the amended GSP: Description and Map of Known Sites and Plumes, groundwater quality has been degraded locally near industrial and commercial activities. Locations of impacted groundwater were identified by reviewing information available on the SWRCB Geotracker/GAMA website, the California Department of Toxic Substances Control (DTSC) EnviroStor website, and the United States Environmental Protection Agency's (USEPA) National Priorities List. Potential contaminants of concern from these clean-up sites include halogenated solvents, tetrachloroethene, and trichloroethene. As described in Section 3.4.2, after a review of all contamination plumes within the Subbasin, no significant changes have occurred since the 2022 GSP. Updated maps showing the extent of contamination plumes from recent groundwater monitoring reports available through DTSC website are included in Attachment B. The GSAs will continue to monitor plumes and coordinate with the other regulatory agencies and programs (e.g., CV-SALTS, ILRP, and DTSC) to ensure all the listed constituents of concern from the State Board's 2022 letter are monitored and appropriately addressed.

5.2.3 Land Subsidence

Within the Vina Subbasin the revised subsidence network uses data from a new source: satellite- and aircraft-based Interferometric Synthetic Aperture Radar (InSAR) from DWR. The dataset covers most of the plan area, with some spatial gaps in the western half of the Subbasin. The TRE Altamira InSAR dataset provides estimates of total vertical displacement from June 2015 to present. No subsidence has been observed in the Vina Subbasin. See Section 6.5 for further information on the subsidence monitoring network.

5.3 Water Use Changes and Associated Water Budget

5.3.1 Comparison of Water Budgets During Evaluation Cycle

New water budgets were developed utilizing the updated Butte Basin Groundwater Model (BBGM). BBGM 1.0 was used to develop water budgets for the 2022 GSP and has been updated to BBGM 1.3 (also known as BBGM 2025 and BBGM Version 1.2 through 2024). Additional details about the water budgets and BBGM updates are available in a Technical Memorandum prepared by Woodard & Curran (January 2026). **Table 5-1 and Figure 5-7 through Figure 5-10** show the updated annual historical water budget results from available model results (WYs 2020 through 2024) for the Vina Subbasin.

Table 5-1 shows the annual volume for each water budget component from WY 2020 to 2024 as calculated with BBGM 1.3. The figure shows all flow paths into and out of the land surface layer and groundwater aquifer. Inflows into the land surface layer include Groundwater Pumping, Precipitation, and Surface Water Diversions. Outflows from the land surface layer include Deep Percolation, Evapotranspiration, and Surface Water Outflows. The difference between inflows and outflows in the surface water layer is the change in storage in the rootzone. **Figures 5-7 and 5-8** show monthly and annual results by flow path for the land surface layer. Inflows into the groundwater aquifer include Subsurface Inflow, Groundwater Inflow from Foothill, Recharge: Rivers and Streams, Recharge: Conveyance, Deep Percolation from Rainfall, and Deep Percolation from Applied Water. Outflows from the groundwater aquifer include Subsurface Outflow, Groundwater Extraction, and Discharge to Rivers and Streams. The difference between inflows and outflows in the groundwater aquifer is the change in groundwater storage. **Figures 5-9 and 5-10** show monthly and annual results by flow path for the groundwater aquifer.

Within the Vina Subbasin, annual water budget results largely follow the pattern of water year designations, where WY 2023 (Wet) and WY 2024 (Above Normal) exhibit higher total inflows and positive changes in groundwater storage, while WY 2020 (Dry year) and WY 2021 and WY 2022 (Critical years) show substantially lower inflows and pronounced groundwater storage declines. As shown in **Table 5-1**, variability in the annual water budgets is largely driven by hydrologic conditions, as precipitation and deep percolation from rainfall show corresponding annual variation — ranging from a low of 165,800 AF (precipitation) and 61,600 AF (deep percolation) in WY 2021 (Critical) to a high of 502,800 AF and 255,600 AF, respectively, in WY 2023 (Wet) — while surface water diversions/inflows and groundwater extractions show relatively small annual variation over the evaluation cycle. Groundwater pumping noticeably decreases during Wet and Above Normal years (WYs 2023 and 2024), ranging from 217,800 to 231,900 AF, and increases during Dry and Critical years (WYs 2020 through 2022), ranging from 249,600 to 279,700 AF. Correspondingly, the groundwater budget reflects storage gains during Wet and Above Normal years (+124,100 AF in WY 2023 and +26,800 AF in WY 2024), while Dry and Critical years show storage losses ranging from -41,900 AF (WY 2022) to -146,800 AF (WY 2021). Annual water budgets over the evaluation cycle reflect continued sustainable, conjunctive management of water in the Vina Subbasin, and the water budgets within the evaluation cycle are consistent with those presented in the GSP.

The water budgets, including groundwater pumping estimates, within the evaluation cycle differ from those in the Annual Reports due to the use of different methodology. As described in Section 5.3.4, the GSA plans to use a simplified methodology developed for Annual Reports for future reporting since the BBGM requires significantly more effort to update and calibrate annually.

Table 5-1. Annual Historical Water Budget Results estimated by BBGM 1.3 From WY 2020 To 2024, Vina Subbasin

Component	WY 2020 (AF)	WY 2021 (AF)	WY 2022 (AF)	WY 2023 (AF)	WY 2024 (AF)
Water Year Designation	Dry	Critical	Critical	Wet	Above Normal
Surface Layer Water Budget - Inflows					
Groundwater Pumping	249,600	279,600	264,300	217,700	231,800
Precipitation	218,500	165,800	316,900	502,800	389,700
Surface Water Diversions / Inflows	19,800	15,600	15,600	25,700	22,900
Total Inflow	487,900	461,000	596,800	746,200	644,300
Surface Layer Water Budget - Outflows					
Deep Percolation	93,200	61,600	136,200	255,600	182,200
Evapotranspiration	356,000	363,300	348,500	367,000	375,800
Surface Water Outflows	46,100	37,400	97,700	124,300	93,700
Total Outflow	495,300	462,300	582,400	747,000	651,700
Change in Storage (Inflow-Outflow)	-7,400	-1,300	14,400	-800	-7,400
Groundwater Budget - Inflows					
Subsurface Inflow	83,600	83,200	82,500	80,700	83,400
Groundwater Inflow from Foothills	49,300	41,000	43,100	52,800	51,200
Recharge: Rivers and Streams	131,400	122,700	135,600	175,900	165,000
Recharge: Conveyance	3,100	2,400	2,300	3,700	3,400
Deep Percolation: Rainfall	54,700	32,800	100,000	212,700	144,600
Deep Percolation: Applied Water	38,400	28,800	36,200	43,000	37,500
Other[a]	100	-	200	-	-
Total Inflow	360,600	310,900	399,900	568,800	485,100
Groundwater Budget - Outflows					
Subsurface Outflow	80,800	65,500	62,400	69,000	72,600
Groundwater Extraction	249,600	279,700	264,500	217,800	231,900
Discharge to Rivers and Streams	139,900	112,300	114,900	157,600	153,800
Other[a]	-	200	-	300	-
Total Outflow	470,300	457,700	441,800	444,700	458,300
Change in Storage (Inflow-Outflow)	-109,700	-146,800	-41,900	124,100	26,800

Notes:

[a] Other includes model discrepancy and rounding errors

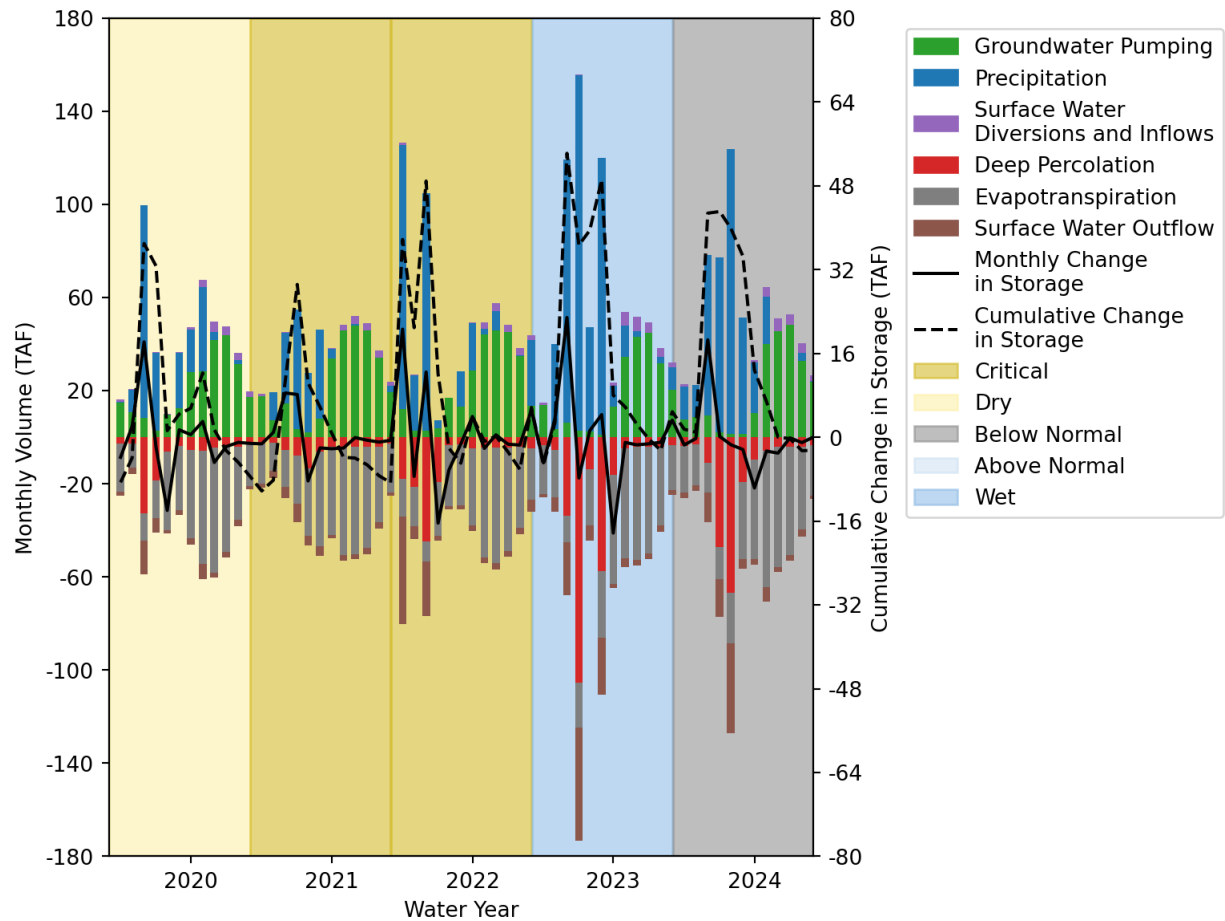


Figure 5-7. Monthly surface water budget for the Vina subbasin between water years 2020 and 2024.

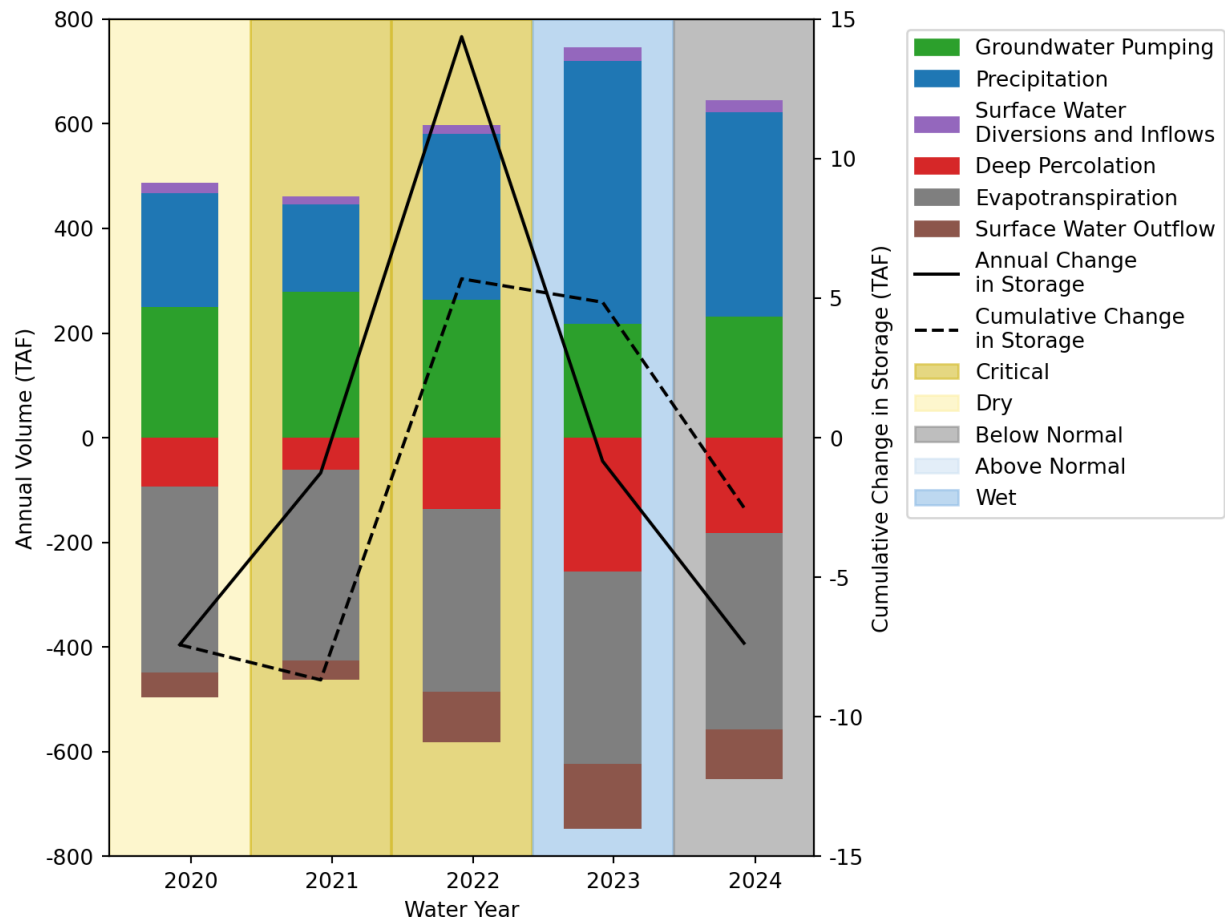


Figure 5-8. Water year surface water budget for the Vina subbasin between water years 2020 and 2024

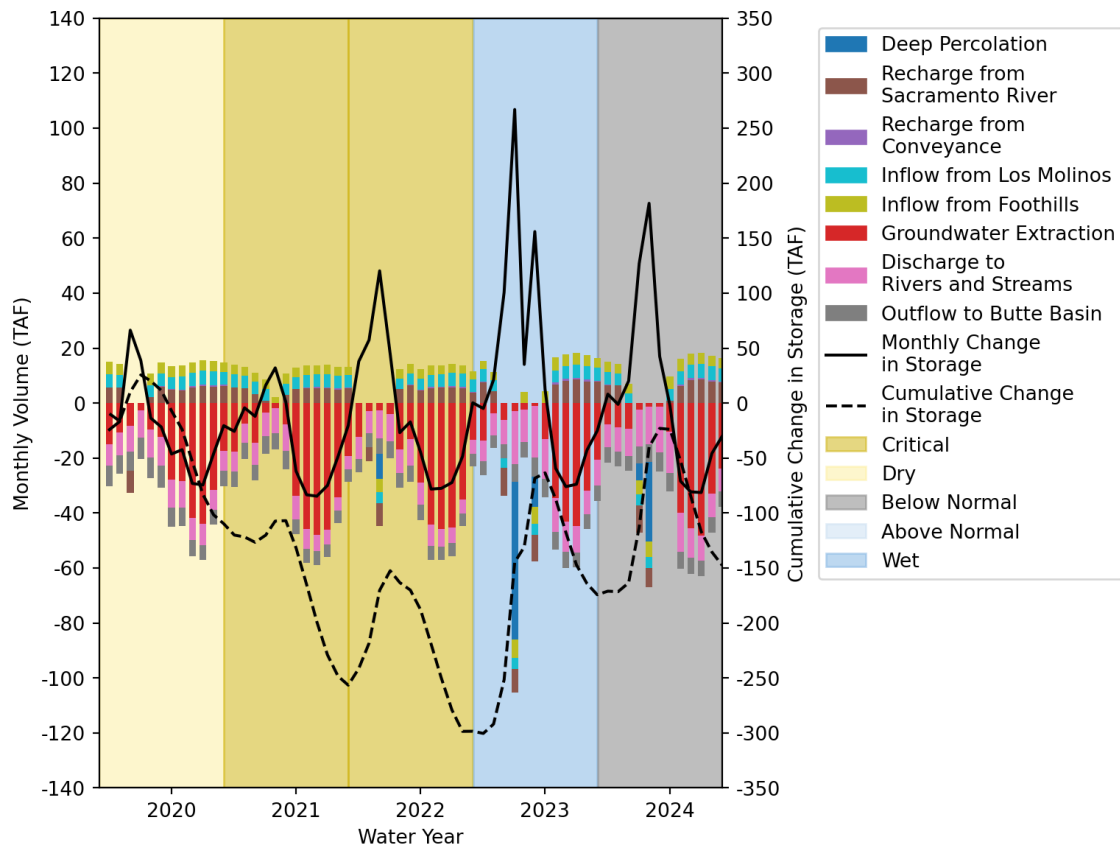


Figure 5-9. Monthly groundwater budget for the Vina subbasin between water years 2020 and 2024.

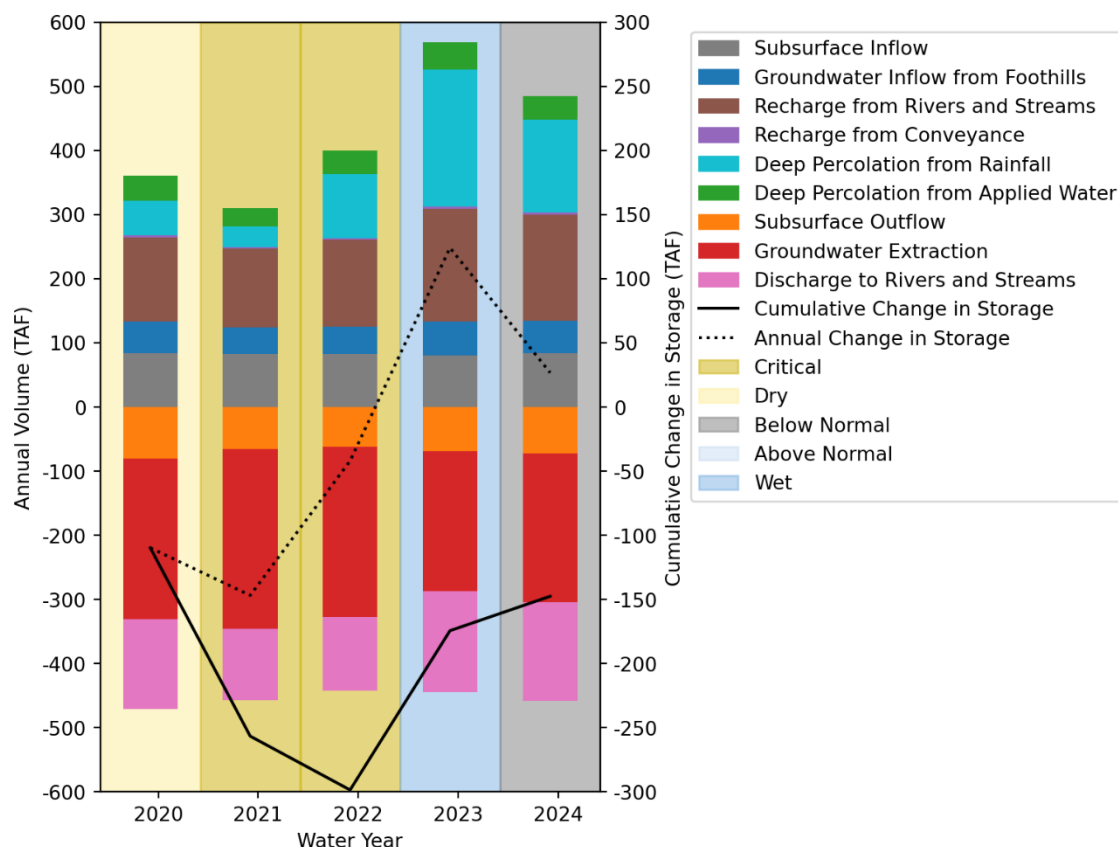


Figure 5-10. Annual groundwater budget for the Vina subbasin between water years 2020 and 2024.

5.3.2 Changes to Land Use and Crop Pattern

Over the evaluation cycle (WY 2021 to 2025), land use and cropping patterns have not experienced substantial changes that drive changing trends in water use. The City of Chico and census-designated area of Durham are the primary population centers in the Vina Subbasin. Agriculture remains the predominant land use in the Subbasin. Crop patterns within the Subbasin remained relatively stable in terms of total cropped acreage during the 2021–2024 evaluation period, ranging from a low of 75,283 acres in 2022 to a high of 78,486 acres in 2023. Crop information for 2025 is unavailable at the time of writing this Periodic Evaluation. Agricultural uses are dominated by almonds and walnuts accounting for approximately 77% of the cropped acreage in the Subbasin as shown in **Table 5-3**. Almond acreage declined modestly from 30,476 acres in 2021 to 29,193 acres in 2024, continuing a longer-term downward trend from the historical peak of 38,240 acres in 2000. Walnut acreage has followed a strong long-term upward trajectory, more than doubling from 13,465 acres in 2000, and reaching between 28,743 and 29,454 acres during 2021–2024 period. Notably, by 2024, walnut acreage (29,126 acres) nearly matched almond acreage (29,193 acres). Generally, Vina Subbasin has experienced stable irrigated acreage footprint over the past 25 years and will continue to monitor crop patterns through Annual Reporting and future Periodic Evaluations.

5.3.3 Surface Water Supply Reliability

Groundwater is the primary water source in the Subbasin. Over the evaluation period, surface water applied in the Subbasin was 9,700 AF in WY 2021 and 20,500 AF in WY 2022, both critical years, rising to

27,200 AF in WY 2023, 25,300 AF in WY 2024, and 25,800 AF in WY 2025. Diversions in the three most recent years were 30,400 AF, 28,300 AF, and 28,800 AF respectively. Surface water accounted for roughly 4 percent of agricultural demand in WY 2021, 7 percent in WY 2022, and 9 to 11 percent in WY 2023 through WY 2025. Surface water supplies accounted for a smaller share of the demand in the two critical years than in the wet and above normal years that followed.

Surface water supply reliability during the 2021–2022 drought was affected by statewide and regional curtailment actions. This included about a 50% reduction in Feather River diversions in the Butte Subbasin by the Joint Districts (which includes Richvale Irrigation District, Butte Water District and Biggs-West Gridley Water District within the Butte Subbasin) and Western Canal Water District in 2021 and 2022. The State Water Project final allocation was 5 percent in both 2021 and 2022, and the Central Valley Project allocated zero percent to agricultural contractors and 25 percent to municipal and industrial contractors in May 2021. In August 2021 the State Water Resources Control Board issued curtailment orders to more than 4,000 water right holders in the Sacramento–San Joaquin watershed, and water right holders on Butte Creek were curtailed. In 2022, Sacramento River Settlement Contractors received an 18% allocation from the Central Valley Project. No curtailments impacted diversions in WY 2023 through WY 2025. Because surface water meets a modest share of demand, reduced surface water availability translates directly into increased groundwater extraction, which is the pattern the water budget shows for WY 2021 and WY 2022.

There is a projected decrease of groundwater in storage for the future conditions scenarios relative to the current conditions scenarios as described in the 2022 GSP, likely resulting from a combination of increased urban and rural residential demands that may be met by groundwater and reduced recharge due to increased runoff on developed lands. Climate change may lead to additional reductions in storage due to increased temperatures and potential reductions in surface water availability. Changes to surface water supply reliability would be dependent on droughts, reservoir operations, and climate change. In the 2022 GSP future climate change scenarios were run by the BBGM using climate change datasets provided by DWR (2030 Central Tendency and 2070 Central Tendency climate change datasets). Scenarios results indicated that precipitation and streamflow would increase in comparison to the current conditions. Based on these results, the long-term surface water supply is relatively stable.

5.3.4 Updates of Sustainable Yield and Changes in Storage

Sustainable yield is the maximum quantity of water, calculated over a base period representative of long-term conditions in the Subbasin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result. In the 2022 GSP, the sustainable yield for the Vina Subbasin is estimated to be 233,500 AFY, based on historical groundwater pumping averages of 243,500 AFY and an average annual decrease in storage of 10,000 AFY (2022 GSP Section 2.3.6). Estimates of sustainable yield and of long-term change in storage are subject to change due to variations in climate and precipitation patterns.

The sustainable yield estimate has been evaluated from the 2022 GSP estimate based on estimated groundwater extraction and annual change in storage calculated from observed groundwater level measurements. The change in groundwater storage is estimated based on the change in measured spring-to-spring groundwater levels at each of the 29 groundwater level RMS wells (excluding wells CMW-102A and SWMW-06A), multiplied by the area of a Thiessen polygon surrounding that RMS well (defining a representative area for each RMS well) and a representative storage coefficient of 0.1 for the subbasin. For years where a well did not have a measurement the average change in storage value for the given water year type was used. The choice to fill in years with missing data allowed the Thiessen polygons to stay consistent throughout the entire time series. Change in storage was compared to the BBGM to ensure consistency with the model as feasible. Overdraft is assessed on a long-term average basis rather than year to year: single-year changes in storage are negative in dry years and positive in wet years, tracking the wet and dry patterns the region experiences, and a negative change in a single year does not by itself indicate overdraft. As described in Section 6.2, change in storage estimates

reported in recent Annual Reports were incorrectly calculated. The sustainable yield estimate uses the updated change in storage estimates derived from the 29 RMS wells since 2000.

Since the adoption of the 2022 GSP, groundwater pumping within the Subbasin has been estimated using several methods:

1. BBGM for Water Years 1971 through 2024 (Woodard & Curran, 2026).
2. Extrapolated BBGM estimates for Water Years 2019 through 2021.
3. Pumping records from water districts and municipalities, if available, combined with a separate water use analysis referred to as Groundwater Extraction Estimates from Earth Observations (GEEEO) to estimate unmeasured groundwater extraction for the agricultural water use sector for Water Years 2022 through 2025 (Davids Engineering, 2025).

The GSAs intend to use a consistent methodology to estimate groundwater pumping to include in Annual Reports and to update sustainable yield periodically (e.g., during each 5-Year Periodic Evaluation). The recommended approach to report groundwater extraction is to use pumping records from water users and municipalities where available, while the remaining groundwater extraction for irrigation should be estimated through a separate water use analysis. The proposed water use analysis estimates the unmeasured groundwater extraction for agricultural irrigation using crop water requirements by water year type derived from the BBGM v1.3 (e.g., evapotranspiration of applied water or ET_{aw}), annual land use coverages provided by DWR / LandIQ where available and BBGM v1.3, measured surface water deliveries, and assumed consumptive use fractions. Consumptive use fraction (CUF equal to ET_{aw} / Applied Water) was estimated based on irrigation method (e.g., pressurized vs surface irrigation) common for each crop type. The consumptive use fraction for crops irrigated with pressurized and surface irrigation is 0.80 and 0.65, respectively. **Table 5-2** summarizes estimated applied water by crop type and water year type. Total applied water is equal to ET_{aw} divided by CUF. Applied water is less in wetter years as more stored precipitation in the rootzone is available to meet crop water requirements (e.g., evapotranspiration). Almonds and walnuts account for approximately 77% of the cropped area in the Subbasin with total applied water ranging from 2.0 to 3.1 AF per acre and 2.3 to 3.5 AF per acre, respectively, depending on precipitation (based on the water year type assignment).

Table 5-2. Estimate Total Applied Water by Crop Type and Water Year Type (BBGM v1.3).

Crop	Assumed CUF	Total Applied Water by Water Year Type, AF/acre				
		Wet	Above Normal	Below Normal	Dry	Critical
Alfalfa	65%	3.1	3.6	3.3	4.2	4.6
Almonds	80%	2.0	2.1	2.4	2.7	3.1
Barren/wasteland	100%	0.0	0.0	0.0	0.0	0.0
Beans, dry	65%	1.7	2.3	2.3	2.4	3.5
Corn	65%	2.6	3.3	3.5	3.5	3.7
Grain (all)	65%	1.7	2.0	2.2	2.5	3.0
Idle	N/A	0.0	0.0	0.0	0.0	0.0
Misc. Deciduous (all except almonds, prunes, walnuts)	80%	1.4	1.6	1.8	2.0	2.3
Misc. Field (all except dry beans, corn, safflower, sunflower)	65%	2.3	2.9	2.1	2.5	3.5
Misc. Pasture (all except alfalfa)	65%	2.6	2.9	3.0	3.6	3.7
Misc. Subtropical (all except olives)	80%	2.3	2.6	2.8	3.0	3.4
Misc. Truck (all except tomato, melon, squash, cucumber)	80%	1.5	2.0	1.9	2.1	2.6

Crop	Assumed CUF	Total Applied Water by Water Year Type, AF/acre				
		Wet	Above Normal	Below Normal	Dry	Critical
Olives	80%	0.9	1.1	1.2	1.4	1.6
Prunes	80%	1.9	2.1	2.3	2.6	3.0
Rice with Flooded Decomposition	65%	5.1	5.5	5.3	5.9	5.9
Rice with No Decomposition	65%	4.0	4.2	4.0	4.6	4.6
Safflower	65%	2.2	2.2	3.1	3.1	3.7
Seasonal Refuge	65%	3.2	3.4	3.3	3.5	3.6
Semi-agriculture	95%	0.0	0.0	0.0	0.0	0.0
Sunflowers	65%	2.0	2.5	2.8	3.0	3.4
Tomato, melon, squash, cucumber	65%	1.6	2.3	2.3	2.5	3.8
Vineyards (all)	80%	0.9	1.1	1.2	1.4	1.6
Walnuts	80%	2.3	2.6	2.6	3.1	3.5

Estimated total applied water is calculated for each crop type every year by multiplying the crop area by the total applied water per acre (determined based on water year type) per **Table 5-2. Table 5-3** summarizes land use areas from 2000 through 2025. Irrigated area by crop type was obtained from BBGM v1.3 for WYs 2000-2017 and from DWR statewide coverage developed by LandIQ for WYs 2018 through 2024. Land use for 2025 was assumed to be the same as 2024 until DWR releases updated land use datasets. Almonds and walnuts account for approximately 77% of the cropped area in the Subbasin accounting for approximately 58,300 acres. The cropped footprint in the Subbasin has been relatively stable over the past twenty-five years. Total applied water was then summed across all crop types. Surface water use is estimated using electronic Water Rights Information Management System (EWRIMS) data or historic diversions when records were not available. Groundwater extraction is then estimated as the difference between the total applied water and surface water deliveries.

Table 5-3. Land Use Summary from 2000 through 2024.

Year	Alfalfa	Almonds	Barren / wasteland	Dry Beans	Corn	Grain (all)	Idle	Misc. Deciduous	Misc. Field	Misc. Pasture	Misc. Subtropical	Misc. Truck	Olives	Prunes	Rice with Flooded Decom.	Rice No Decomp	Safflower	Seasonal Refuge	Semi- Ag	Sunflowers	Tomato, melon, squash, cucumber	Grapes	Walnuts	Total Acres	Total Cropped
2000	818	38,240	329	415	702	2,080	1,409	903	116	1,332	413	376	677	6,420	5,158	5,702	477	2,240	1,341	1,056	981	18	13,465	84,667	81,588
2001	714	35,877	331	333	895	1,885	6,159	929	136	1,546	416	436	621	5,858	5,195	5,016	353	2,218	1,248	845	1,088	22	13,352	85,472	77,733
2002	596	33,750	331	165	757	1,827	10,618	825	145	1,799	405	563	669	5,358	5,153	4,571	349	2,230	1,159	759	1,122	23	13,407	86,581	74,473
2003	592	33,705	349	118	747	1,831	9,373	764	173	2,008	391	621	700	5,065	5,358	4,751	268	2,274	1,164	677	1,050	24	14,253	86,257	75,370
2004	610	35,983	377	123	858	1,709	3,534	700	139	2,321	378	447	651	5,153	5,546	4,918	158	2,386	1,255	458	694	22	15,877	84,295	79,130
2005	522	35,806	385	138	731	1,173	4,698	794	113	2,418	342	771	740	4,575	5,448	4,831	74	2,418	1,263	254	463	33	17,206	85,196	78,850
2006	491	34,555	388	110	340	1,194	6,184	867	75	2,349	322	645	870	4,573	5,669	5,028	49	2,407	1,294	114	238	39	18,533	86,331	78,465
2007	537	35,244	403	63	124	1,583	2,632	821	5	2,428	302	54	987	5,354	6,065	5,379	85	2,477	1,418	34	47	33	19,358	85,430	80,977
2008	445	33,538	399	53	646	1,590	5,908	1,249	32	2,285	263	881	1,102	5,147	6,263	5,555	74	2,419	1,420	140	344	61	18,803	88,619	80,892
2009	439	33,007	407	66	746	1,490	6,397	1,239	32	2,243	211	960	1,395	5,101	6,436	5,707	29	2,441	1,467	161	365	63	19,190	89,592	81,321
2010	400	34,308	421	52	665	1,268	4,325	1,075	8	2,253	196	792	1,695	5,203	6,505	5,770	37	2,528	1,548	164	196	52	19,812	89,272	82,979
2011	323	34,146	429	18	623	1,281	2,783	1,374	7	2,241	215	1,293	1,833	5,057	6,575	5,831	59	2,623	1,609	228	216	67	20,869	89,699	84,878
2012	336	34,056	434	6	222	1,664	3,331	1,383	1	2,226	215	1,176	1,861	4,852	6,640	5,888	64	2,622	1,641	176	105	70	21,728	90,697	85,291
2013	377	33,598	433	5	210	1,529	4,821	1,327	0	2,065	209	1,160	1,794	4,549	6,654	5,900	75	2,589	1,642	141	74	71	22,305	91,526	84,630
2014	434	33,465	444	9	220	661	3,969	1,253	0	2,017	203	1,223	1,777	3,950	5,789	6,658	56	2,674	1,674	120	50	71	23,319	90,037	83,950
2015	318	33,082	464	73	118	701	3,972	1,042	7	1,677	185	887	1,312	3,473	4,329	5,573	10	1,876	1,544	78	179	61	24,882	85,841	79,861
2016	155	32,076	470	82	87	995	3,956	2,302	7	1,211	172	430	804	3,087	3,844	3,844	39	1,091	1,343	75	303	54	25,338	81,767	75,997
2017	126	31,524	461	32	166	734	5,504	3,692	1	1,128	180	348	765	2,751	3,633	3,633	78	1,103	1,278	107	289	55	24,240	81,828	74,585
2018	84	31,303	0	161	51	2,450	3,838	992	0	664	159	166	755	2,854	4,490	4,239	75	1,088	1,243	389	22	43	26,954	82,020	76,939
2019	43	30,854	0	249	41	2,366	6,382	988	0	667	159	266	754	2,777	3,511	3,114	75	1,071	1,205	69	189	43	26,924	81,747	74,160
2020	54	31,348	0	244	184	1,730	3,512	905	7	611	139	169	754	2,985	4,756	4,217	72	1,120	1,200	101	52	58	28,627	82,844	78,132
2021	54	30,476	1,766	40	443	2,035	1,457	1,078	7	567	106	179	772	3,273	4,540	4,026	0	1,114	1,198	103	286	59	28,743	82,324	77,904
2022	30	29,721	1,466	0	220	1,606	2,619	1,054	192	844	83	175	773	3,081	4,400	3,901	0	1,059	1,196	186	12	61	27,886	80,565	75,283
2023	63	29,804	1,774	536	108	2,286	1,389	1,056	2	861	84	129	779	3,081	4,513	4,002	0	1,046	1,194	64	555	61	29,454	82,843	78,486
2024	65	29,193	1,737	281	105	3,038	5,202	1,172	2	983	85	210	817	3,003	2,911	2,581	0	1,034	1,191	16	690	62	29,126	83,504	75,373
Avg	345	33,146	560	135	400	1,628	4,559	1,191	48	1,630	233	574	1,026	4,263	5,175	4,825	102	1,926	1,349	261	384	49	21,746	85,558	79,090

- Notes:
- Misc. Deciduous (all except almonds, prunes, walnuts)
 - Misc. Field (all except dry beans, corn, safflower, sunflower)
 - Misc. Pasture (all except alfalfa)
 - Misc. Subtropical (all except olives)
 - Misc. Truck (all except tomato, melon, squash, cucumber)

Figure 5-11 compares groundwater pumping estimates from the BBGM version 1.3, GSP Annual Report methodology estimates (2019-2025), and the proposed method described above. From 2019 through 2021, the GSP Annual Reports use a similar method as the proposed methodology described above extrapolating BBGM results, but switches to a separate water use analysis referred to as Groundwater Extraction Estimates from Earth Observations (GEEEO) to estimate unmeasured groundwater extraction for the agricultural water use sector starting in 2022. GEEEO utilizes remote sensed estimates of actual evapotranspiration from OpenET to estimate total applied water.² Starting in Water Year 2023, the GEEEO based method reports higher pumping estimates compared to historical estimates in wet to above normal year types. This is likely due to differences in methodology and GEEEO underestimating the amount of demand (e.g., evapotranspiration) being met by stored precipitation in the rootzone in the recent above normal and wet years. The proposed methodology to estimate groundwater extraction follow historical trends from the BBGM in wet and dry conditions and typically agrees with BBGM results within +/- 5%. The proposed approach has several advantages including provides a cost-effective method to comply with SGMA annual reporting requirements, ensures consistency with the BBGM without having the annual cost of updating the BBGM, allows the GSAs to track land use and irrigation efficiency changes which may support implementation of PMAs (e.g., extend orchard replacement and irrigation efficiency programs), utilizes publicly available datasets provided by DWR, and increases data transparency to local stakeholders and managing agencies. The GSAs may consider alternative methods to estimate groundwater extraction as warranted in the future.

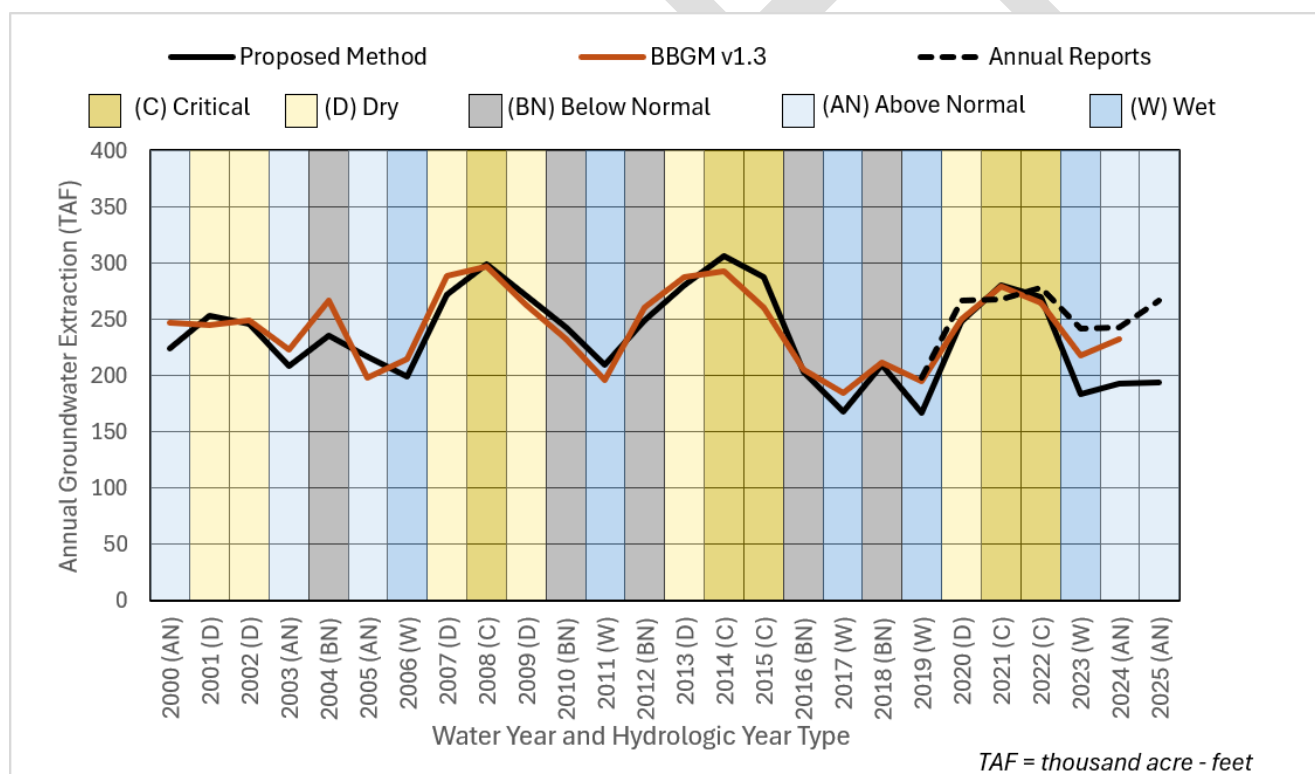


Figure 5-11. Groundwater Extraction Estimates from 2000 through 2025 from BBGM version 1.3, GSP Annual Reports, and the proposed method.

Table 5-4 shows the resulting time series for groundwater extraction using the proposed method and annual and cumulative change in storage using the 2027 RMS wells. **Table 5-5** presents the sustainable yield estimates using 5, 10, and 25-year averages for groundwater extraction and annual change in

² For additional information refer to the OpenET website: <https://etdata.org/>

storage. The 5, 10, and 25-year averages are representative of periods with varying number of wet and dry years with two recent droughts occurring in 2014/15 and 2021/22. Groundwater extraction for the 5, 10, and 25-year averages are 224 TAFY, 212 TAFY, and 236 TAFY; respectively. Change in storage for the 5, 10, and 25-year averages are -2,100 AFY, 8,600 AFY, and -8,300 AFY; respectively. **Figure 5-12** shows average annual change in storage by RMS zone for the 5, 10, and 25-year periods. Sustainable yield for the 5, 10, and 25-year averages are 226 TAFY, 220 TAFY, and 228 TAFY; respectively. Over the most recent 25 years the Subbasin has averaged a net decrease in groundwater storage of approximately 8,300 AFY, reflecting a long-term storage deficit. Conditions over the most recent 10- and 5-year periods do not indicate active overdraft: storage increased by an average of 8,600 AFY over the 10-year period and was essentially in balance over the 5-year period, an increase of 2,100, which is less than 1 percent of average annual extraction and within the uncertainty of the estimate. Average annual extraction over the most recent five years, 224 TAFY, is approximately equal to the corresponding estimate of sustainable yield, 226 TAFY. The Subbasin is therefore not currently in overdraft, although the margin is narrow and conditions remain sensitive to drought and future precipitation patterns. Given the uncertainty surrounding current groundwater conditions, these findings reinforce the importance of employing adaptive management strategies to proactively respond to groundwater declines as necessary and to continue to evaluate conditions with respect to all groundwater uses and users. As described in Section 4, the GSAs are currently developing recharge projects and demand management practices to implement as needed.

DWR commented in the GSP determination letter that a single sustainable yield value is preferred to better describe the management approach for the Subbasin and to clarify how the sustainable yield is calculated. The GSAs may update the sustainable yield estimate periodically to reflect current conditions as needed using a similar approach based on estimated groundwater pumping and change in groundwater storage over a representative period. The sustainable yield of 233,500 TAFY reported in GSP Section 2.3.6 remains unchanged. The results from the independent evaluation, described above, resulted in similar sustainable yield estimates which did not warrant a change at this time.

Table 5-4. Groundwater Extraction, Annual and Cumulative Change in Storage.

Water Year	Groundwater Extraction (AFY)	Annual Change in Storage (AFY)	Cumulative Change in Storage (AFY)
2000 (AN)	224,100	-27,400	-27,400
2001 (D)	253,300	-53,300	-80,700
2002 (D)	246,400	-42,100	-122,800
2003 (AN)	208,900	10,400	-112,400
2004 (BN)	235,700	52,200	-60,300
2005 (AN)	216,800	-12,700	-73,000
2006 (W)	199,100	56,500	-16,400
2007 (D)	272,300	-80,700	-97,100
2008 (C)	298,700	-45,000	-142,100
2009 (D)	270,700	-37,100	-179,300
2010 (BN)	243,300	4,800	-174,500
2011 (W)	209,500	51,000	-123,500
2012 (BN)	249,000	-43,500	-167,000
2013 (D)	280,200	-54,800	-221,800
2014 (C)	306,100	-95,200	-317,000
2015 (C)	287,600	-4,200	-321,200
2016 (BN)	203,800	20,200	-301,000
2017 (W)	167,800	105,400	-195,600
2018 (BN)	209,400	-58,800	-254,400
2019 (W)	167,000	74,900	-179,500
2020 (D)	247,600	-66,100	-245,600
2021 (C)	279,800	-78,400	-324,000
2022 (C)	270,100	-85,400	-409,400
2023 (W)	183,900	55,800	-353,600
2024 (AN)	193,000	64,100	-289,500
2025 (AN)	194,100	54,400	-235,100

Table 5-5. Sustainable yield calculations for 5-, 10-, and 25-year periods.

Averaging Period	Average Groundwater Extraction (AF)	Average Change in Storage (AF)	Sustainable Yield (AF)
5-Year (2021-2025)	224,200	2,100	226,300
10-Year (2016-2025)	211,700	8,600	220,300
25-Year (2001-2025)	235,800	-8,300	227,500

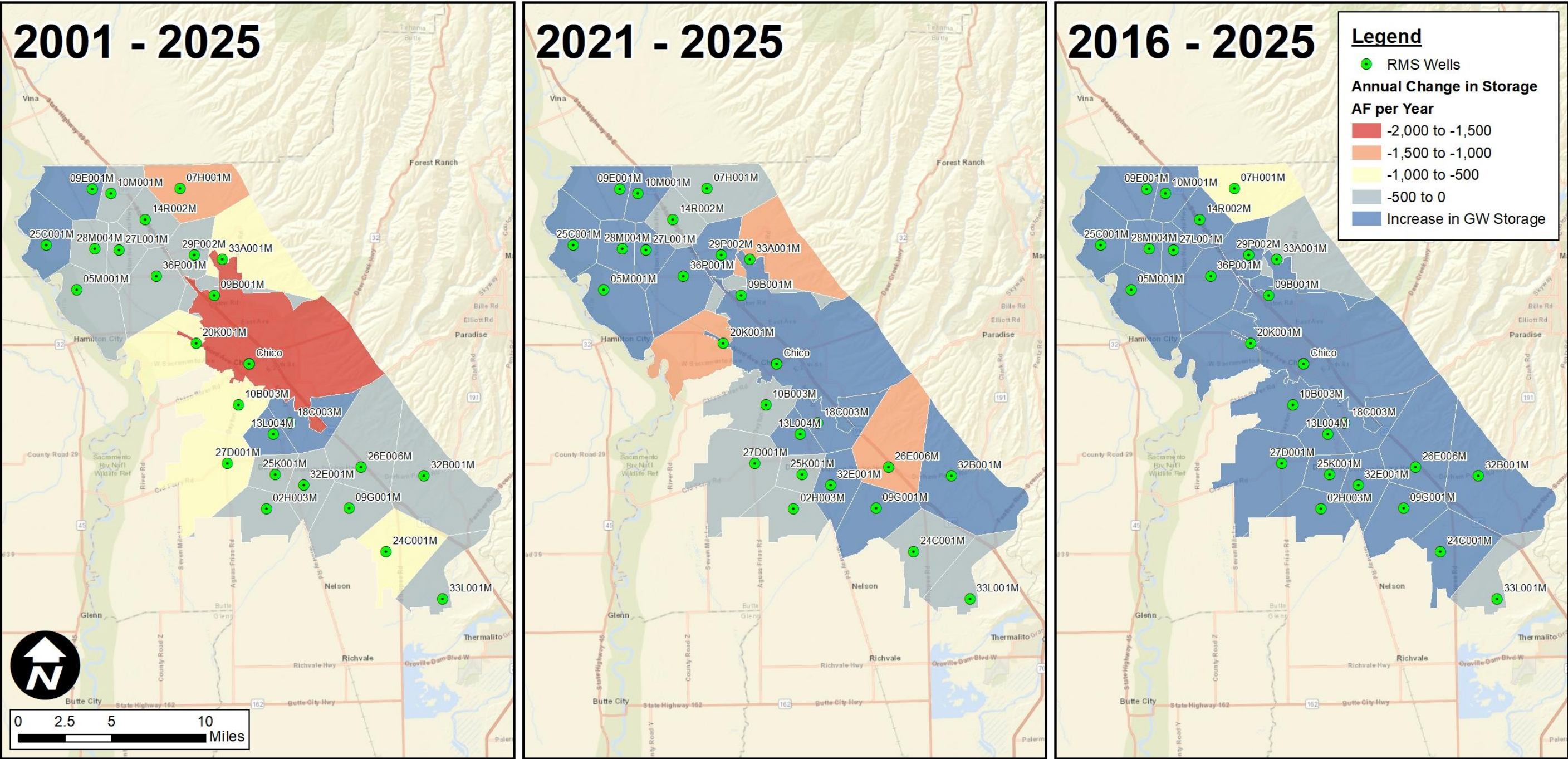


Figure 5-12. Average annual change in storage by RMS zone for the 5, 10, and 25-year periods.

5.3.5 Overdraft Evaluation

As described in Section 5.3.4, the Subbasin is not currently in a condition of overdraft based on the 5- and 10-year estimates, although the 25-year record shows a long-term storage deficit of 8,300 AFY. This finding is subject to change with future precipitation and climate. The GSAs will assess groundwater extractions in relation to sustainable yield and change in storage estimates annually through the Annual Reports and will reassess overdraft conditions at each Periodic Evaluation.

5.4 Model Updates

As described the technical memorandum regarding the “Summary of Analysis of BBGM Version 1.0, Update to BBGM Version 1.2, and Time Series Extension,” the BBGM update focused on the following (Woodard & Curran, 2026):

- Revise model based on recommended improvements documented in the BBGM Version 1.0 (BCDWRC, 2021).
- Enhance the model’s simulation of interbasin flows and stream-aquifer interaction, as included in the Sustainable Groundwater Management (SGM) Grant Program’s Implementation Round 2 grants received by the Vina and Wyandotte Creek Groundwater Subbasins. The Sacramento River model boundary was identified as the primary area of focus for interbasin flows and stream-aquifer interaction.
- Extended BBGM time-series inputs through Water Year 2024.

Additional information regarding the modifications to the BBGM is available in the technical memorandum referenced above.

The BBGM needs further calibration and will be completed as feasible. Currently the difference between the BBGM v 1.3 results and observed groundwater level data in the most recent years is significant enough that the sustainable yield and change in storage are reported in this Periodic Evaluation based on the proposed methodology for GSP Annual reports instead of the BBGM. Model performance in the Vina Subbasin may be improved through additional calibration using additional groundwater level and streamflow monitoring, which has been implemented during this evaluation period.

SECTION 6: MONITORING NETWORKS EVALUATION (23 CCR §356.4(E))

This section meets the requirements for GSP Emergency Regulations §356.4(e):

A description of the monitoring network within the basin, including whether data gaps exist, or if any areas within the basin are represented by data that does not satisfy the requirements of Sections 352.4 and 354.34(c). The description shall include the following:

- (1) An assessment of monitoring network function with an analysis of data collected to date, identification of data gaps, and the actions necessary to improve the monitoring network, consistent with the requirements of Section 354.38.
- (2) If the Agency identifies data gaps, the Plan shall describe a program for the acquisition of additional data sources, including an estimate of the timing of that acquisition, and for incorporation of newly obtained information into the Plan.
- (3) The Plan shall prioritize the installation of new data collection facilities and analysis of new data based on the needs of the basin.

6.1 Groundwater Levels

6.1.1 Overview of Existing Monitoring Network

The 2022 GSP identified 78 wells (located across 59 individual sites) that were included in the broad groundwater level monitoring network. The network consists of wells currently monitored by DWR and Butte County. A subset of 17 wells were selected as representative monitoring sites (RMS) to set sustainable management criteria to protect domestic wells. The RMS network included 6 wells in the North management area (MA), 5 wells in the Chico MA, and 6 wells in the South MA. The monitoring network has been expanded to include newly installed monitoring wells and other existing monitoring wells within the Subbasin such as City of Chico nitrate monitoring wells, Department of Toxic Substance Control (DTSC) wells, and CSU Chico shallow well transect. A new subset of wells consisting of 29 wells were selected as RMS as documented in the amended GSP, Section 4.2, and in the following sections.

6.1.2 Data Gaps and Enhancements

Two limitations of the 2022 GSP monitoring network were addressed during this evaluation period: the basis for selecting RMS wells was not well documented, and the network had data gaps related to characterizing and managing ISWs and GDEs. During this evaluation period the monitoring network further characterized based on depth and analysis of likely monitoring unconfined vs. semi-confined/confined conditions, to characterize the different aquifer layers: shallow, deep and both. “Shallow” wells observe water table conditions which are relevant to ISWs and GDEs, “deep” wells observe the deeper aquifer generally representative of irrigation / production wells, and depending on total depth, domestic wells. Wells identified as “both” are screened in the upper and deeper aquifer layers.

The objective of the groundwater level monitoring network is to identify a subset of wells that are representative of aquifer conditions in relation to domestic wells and upper and lower aquifer conditions. Most domestic wells are between 100 to 300 feet deep. Butte County Water and Resource Conservation assessed monitoring well suitability for inclusion as RMS wells (Attachment C). A total of thirty-one (31) wells, twenty-nine (29) wells with two (2) additional wells for GDEs within the Chico MA, were selected to be part of the updated RMS network. The two additional RMS wells included for monitoring GDEs are

further described in Section 5.2.1.1: Chico Management Area. Eleven (11) wells were part of the RMS network specified in the 2022 GSP and eighteen (18) wells have been added. Six (6) wells from the 2022 GSP RMS network were removed from the RMS network. **Table 6-1** includes the list of wells in the groundwater level monitoring network and explains why a well was added or removed from the RMS network. **Figure 6-1** shows the groundwater level monitoring network (broad and updated RMS). Residents within the Chico MA are served mostly by Cal Water – Chico with a relatively small population of residents dependent on shallower domestic wells. The four public water system supply wells in the Chico management area are the wells most representative of conditions relative to municipal water supply infrastructure in that management area and are classified as RMS wells. All selected RMS wells have at least five years of data. This allows the GSA to assess and evaluate the impact from declining groundwater levels on all wells, including domestic and irrigation wells.

Newly drilled and existing monitoring wells (monitored for other programs such as the Chico Nitrate Monitoring Program) were identified and incorporated into the broad monitoring network to:

- Improve the density and spatial distribution of wells throughout the Subbasin.
- Improve the network to understand Interconnected Surface Water/associated impacts on GDEs - there is a lack of sufficient data to analyze interaction of streams and pumping within the principal aquifer system. Additional wells and other monitoring networks will be incorporated or installed, as appropriate, following the framework discussed in Section 3.8.2 of the GSP.

To address data gaps over the course of the evaluation cycle, 28 well sites were added to the broad groundwater level monitoring network. The additions include:

- Twelve newly installed (within 2025 and 2026) observation wells including one deep multi-completion well (labeled as M1), seven shallow dual completion wells (listed as S1, S2, S4, S6, S7, S8, and S9), and four single completion shallow wells (listed as RP-MW01, VP-MW01, WP-MW01, and MWSB-25). Installation was funded by DWR's Sustainable Groundwater Management (SGM) Grant Program. Well names are anticipated to be updated once State Well Numbers can be assigned to these new wells.
- Eight existing domestic wells recently equipped with continuous monitoring equipment. Monitoring equipment and installation was funded by DWR's Sustainable SGM Grant Program.
- Four observation wells from the Department of Toxic Substances Control's EnviroStor database (i.e., CMW-102A, GW-4, FC-MW-2, and SWMW-06A).
- Two observation wells from the City of Chico nitrate monitoring program (i.e., DMW-3, MW-21).
- One observation well located at Neal Road Recycling and Waste Facility (i.e., MW-6).
- One observation well owned by The Nature Conservancy (TNC).

The newly drilled wells installed were not added to the groundwater level RMS network during this evaluation period, as there is insufficient historical data available to establish numeric SMC. During the next evaluation period, these new wells may be evaluated as candidates for expanding the RMS network for the groundwater level sustainability indicator or used to refine the ISW RMS network.

Density of groundwater level monitoring sites has increased since development of the 2022 GSP. The monitoring network in the 2022 GSP was more robust than the spatial density guidelines recommended by DWR's best management practices, which ranged from 0.2 to 10 wells per 100 square miles [Heath 1976, Sophocleous 1983, Hopkins 1994 as cited by (DWR, 2016)]. Based on a Subbasin area of approximately 289 square miles and 86 individual monitoring site locations, after the installation of the new monitoring wells, the monitoring well density is approximately 30 wells per 100 square miles.

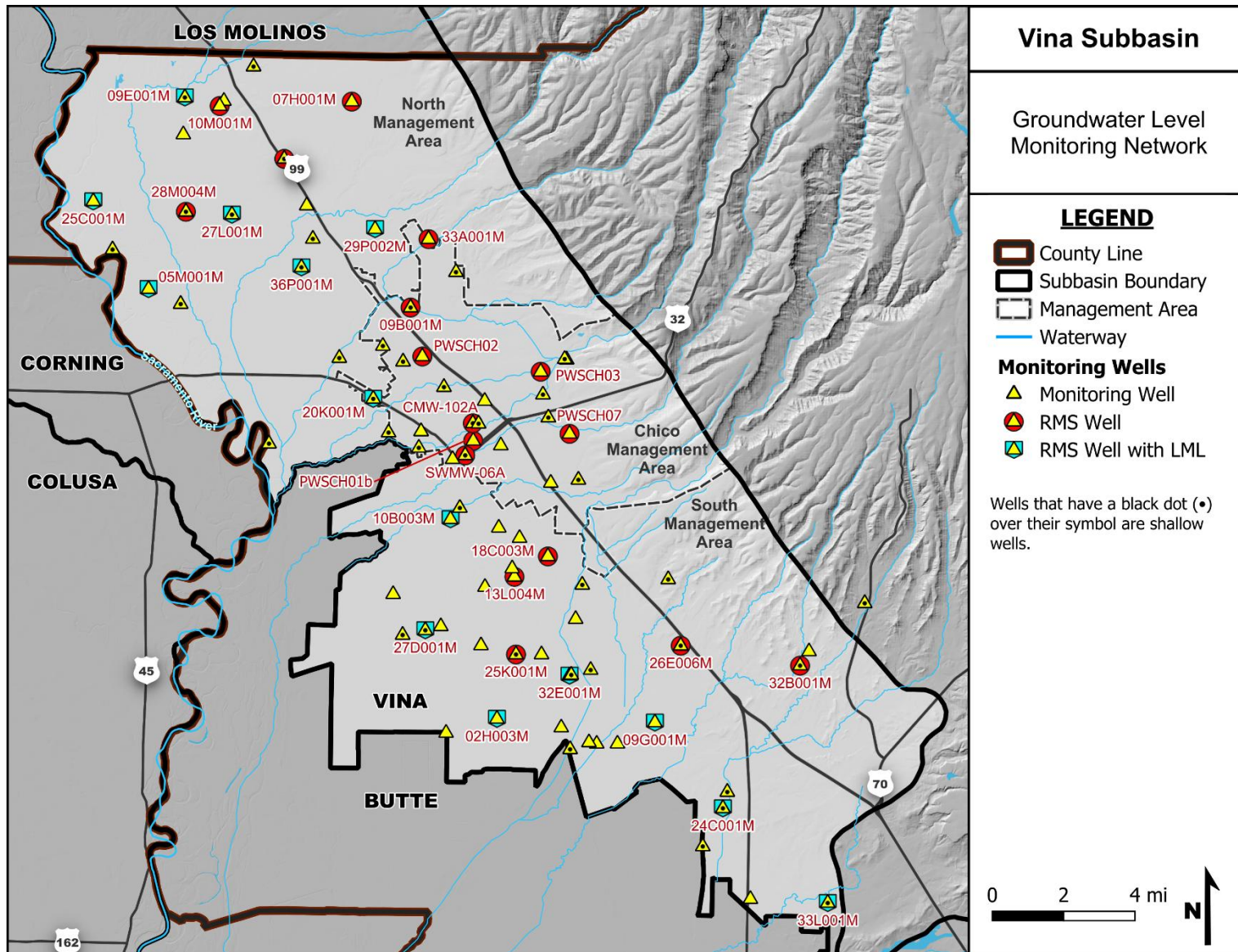


Figure 6-1. Groundwater Level Monitoring Network.

Table 6-1. Revised Vina Subbasin Groundwater Level Broad Monitoring Network Wells (114 well completions total at 86 unique locations).

Well ID	State Well Number	Monitoring Frequency	Multi-Completion	Well Type	Aquifer Category	Drill Depth	Date of First Meas.	2022 RMS?	2027 RMS?	RMS Selection Comments
Vina – North Management Area										
05M001M	22N01W05M001M	Quarterly	No	Observation	Both	200	4/1/1947	Yes	Yes	
07H001M	23N01E07H001M	Quarterly	No	Residential	Deep	195	8/10/2018	Yes	Yes	
36P001M	23N01W36P001M	Monthly	No	Residential	Shallow	165	8/20/1959	Yes	Yes	
25C001M	23N02W25C001M	Quarterly	No	Irrigation	Both	243	2/28/1967	Yes	Yes	
10E001M	23N01W10E001M	Quarterly	No	Irrigation	Deep	668	4/18/2001	Yes	No	Well missing data: replaced by 03H004M
29P002M	23N01E29P002M	Quarterly	No	Irrigation	Both	265	10/9/1990	No	Yes	Fills data gap; near significant number of domestic wells
03H004M	23N01W03H004M	Monthly	Yes	Observation	Shallow	115	3/30/2012	No	No	
28M004M	23N01W28M004M	Hourly	Yes	Observation	Both	217	1/15/2009	No	Yes	Fills data gap
03H002M	23N01W03H002M	Monthly	Yes	Observation	Deep	553	3/30/2012	No	No	
03H003M	23N01W03H003M	Monthly	Yes	Observation	Deep	351	3/30/2012	No	No	
09E001M	23N01W09E001M	Quarterly	No	Irrigation	Shallow	110	2/7/1947	No	Yes	Fills data gap
10M001M	23N01W10M001M	Hourly	No	Observation	Both	220	10/11/2001	No	Yes	Fills data gap
14R002M	23N01W14R002M	Quarterly	No	Irrigation	Shallow	183	11/13/1985	No	Yes	Fills data gap
16E001M	23N01W16E001M	Quarterly	No	Irrigation	Both	365	4/18/2001	No	No	
25G001M	23N01W25G001M	Quarterly	No	Irrigation	Deep	660	6/29/2007	No	No	
27L001M	23N01W27L001M	Quarterly	No	Residential	Shallow	102	3/10/1976	No	Yes	Fills data gap; representative of domestic wells
28M002M	23N01W28M002M	Hourly	Yes	Observation	Deep	1044	1/15/2009	No	No	

Well ID	State Well Number	Monitoring Frequency	Multi-Completion	Well Type	Aquifer Category	Drill Depth	Date of First Meas.	2022 RMS?	2027 RMS?	RMS Selection Comments
28M003M	23N01W28M003M	Hourly	Yes	Observation	Deep	696	1/15/2009	No	No	
28M005M	23N01W28M005M	Hourly	Yes	Observation	Shallow	72	1/15/2009	No	No	
31M001M	23N01W31M001M	Hourly	Yes	Observation	Deep	1200	7/2/2008	No	No	
31M002M	23N01W31M002M	Hourly	Yes	Observation	Deep	616	7/4/2008	No	No	
31M003M	23N01W31M003M	Hourly	Yes	Observation	Deep	245	7/4/2008	No	No	
31M004M	23N01W31M004M	Hourly	Yes	Observation	Shallow	106	7/4/2008	No	No	
TNC Well		Hourly	No	Observation	Shallow	70	11/10/2021	No	No	
M1 ^[b]		Hourly	Yes	Observation	Shallow / Deep / Deep		7/23/2026	No	No	New well fills data gap; No historical data
S2 ^[b]		Hourly	Yes	Observation	Shallow		7/28/2026	No	No	New well fills data gap; No historical data
RP-MW01 ^[b]		Hourly	No	Observation	Shallow	60	3/31/2026	No	No	New well fills data gap; No historical data
09B001M ^[a]	22N01E09B001M	Quarterly	No	Residential	Shallow	156	5/9/2001	No	Yes	Fills data gap
20K001M ^[a]	22N01E20K001M	Quarterly	No	Residential	Shallow	110	5/10/1961	No	Yes	Fills data gap
33A001M ^[a]	23N01E33A001M	Quarterly	No	Observation	Both	506	10/14/2001	Yes	Yes	
DW01 ^[c]		Hourly	No	Domestic	Shallow	80	9/30/2026	No	No	
Vina – Chico Management Area										
PWSCH01b		Tri-annually	No	Municipal	Deep	>600	2/1/1988	Yes	Yes	
PWSCH02		Tri-annually	No	Municipal	Deep	>600	4/1/1988	Yes	Yes	
PWSCH03		Tri-annually	No	Municipal	Deep	>600	4/1/1988	Yes	Yes	
PWSCH07		Tri-annually	No	Municipal	Deep	<600	4/1/1991	Yes	Yes	
28J003M	22N01E28J003M	Hourly	Yes	Observation	Both	320	1/6/1958	Yes	No	Removed; Casing damaged
PWSCH04		Tri-annually	No	Municipal	Deep		4/1/1988	No	No	
PWSCH06		Tri-annually	No	Municipal	Deep		10/1/1988	No	No	

Well ID	State Well Number	Monitoring Frequency	Multi-Completion	Well Type	Aquifer Category	Drill Depth	Date of First Meas.	2022 RMS?	2027 RMS?	RMS Selection Comments
PWSCH05		Tri-annually	No	Municipal	Both		4/1/1988	No	No	
28J001M	22N01E28J001M	Hourly	Yes	Observation	Deep	660	1/16/1958	No	No	
28J005M	22N01E28J005M	Hourly	Yes	Observation	Deep	948	1/3/1958	No	No	
18J001M	22N02E18J001M	Quarterly	No	Residential	Shallow	180	4/6/2001	No	No	
30C002M	22N02E30C002M	Hourly	No	Observation	Shallow	203	12/19/2001	No	No	
CMW-102A		Biannually	No	Observation	Shallow	36.5	8/16/2006	No	Yes	Shallow zone; relevant to Valley Oaks in Chico Urban Forest
DMW-3		Biannually	No	Observation	Shallow	55	11/17/1993	No	No	
GW-4		Biannually	No	Observation	Shallow	116	10/2/1990	No	No	
FC-MW-2		Biannually	No	Observation	Shallow	40	3/1/2007	No	No	
MW-21		Biannually	No	Observation	Shallow	25	6/28/2004	No	No	
SWMW-06A		Biannually	No	Observation	Shallow	35	8/29/2005	No	Yes	Shallow zone; relevant to Valley Oaks in Chico Urban Forest
S1 ^[b]		Hourly	Yes	Observation	Shallow		7/28/2026	No	No	New well fills data gap; No historical data
S4 ^[b]		Hourly	Yes	Observation	Shallow			No	No	New well fills data gap; No historical data
S9 ^[b]		Hourly	Yes	Observation	Shallow			No	No	New well fills data gap; No historical data
MWSB-25		Hourly	No	Observation	Shallow	32	2/13/2025	No	No	New well fills data gap; No historical data
DW04 ^[c]		Hourly	No	Domestic	Shallow	120	3/19/2026	No	No	
DW08 ^[c]		Hourly	No	Domestic	Shallow	120	3/18/2026	No	No	
Vina – South Management Area										
18C003M	21N02E18C003M	Hourly	Yes	Observation	Deep	240	7/8/2010	Yes	Yes	
24C001M	20N02E24C001M	Hourly	Yes	Observation	Shallow	155	12/29/1999	Yes	Yes	

Well ID	State Well Number	Monitoring Frequency	Multi-Completion	Well Type	Aquifer Category	Drill Depth	Date of First Meas.	2022 RMS?	2027 RMS?	RMS Selection Comments
10C002M	20N01E10C002M	Quarterly	No	Observation	Both	210	3/31/1947	Yes	No	Outside of Subbasin
09L001M	20N02E09L001M	Quarterly	No	Irrigation	Deep	710	10/29/1953	Yes	No	Poor readings (e.g., oil in casing & always pumping)
21C001M	21N01E21C001M	Quarterly	No	Irrigation	Deep	565	4/12/1993	Yes	No	Poor readings (e.g., oil in casing)
26E005M	21N02E26E005M	Hourly	Yes	Observation	Deep	315	1/2/1970	Yes	No	Redundant (shallower completion selected); replaced by 26E006M
02H003M	20N01E02H003M	Monthly	No	Observation	Both	201	10/11/2001	No	Yes	Fills data gap; representative of domestic wells
10B003M	21N01E10B003M	Quarterly	No	Observation	Deep	525	7/15/1995	No	Yes	Fills data gap
13L004M	21N01E13L004M	Hourly	Yes	Observation	Deep	353	12/2/2011	No	Yes	Fills data gap, MC well and representative of domestic wells
27D001M	21N01E27D001M	Quarterly	No	Observation	Shallow	112	10/9/1946	No	Yes	Fills data gap; representative of domestic wells
26E006M	21N02E26E006M	Hourly	Yes	Observation	Shallow	179	9/13/2007	No	Yes	MC well; representative of nearby domestic wells
30L001M	21N02E30L001M	Monthly	No	Observation	Both	317	3/14/1995	No	No	
29J003M	21N03E29J003M	Quarterly	No	Irrigation	Deep	513	8/7/2007	No	No	
06Q001M	20N02E06Q001M	Monthly	No	Observation	Both	383	10/17/1947	No	No	
08C001M	20N02E08C001M	Quarterly	No		Deep	660	8/7/2018	No	No	
08H003M	20N02E08H003M	Quarterly	No	Residential	Deep	187	3/12/2008	No	No	
09G001M	20N02E09G001M	Hourly	No	Observation	Deep	202	2/12/2002	No	Yes	Fills data gap
24C002M	20N02E24C002M	Hourly	Yes	Observation	Deep	390	12/29/1999	No	No	
24C003M	20N02E24C003M	Hourly	Yes	Observation	Deep	520	12/30/1999	No	No	

Well ID	State Well Number	Monitoring Frequency	Multi-Completion	Well Type	Aquifer Category	Drill Depth	Date of First Meas.	2022 RMS?	2027 RMS?	RMS Selection Comments
31M001M	20N03E31M001M	Hourly	No	Observation	Deep	201	2/12/2002	No	No	
33L001M	20N03E33L001M	Hourly	No	Observation	Shallow	101	8/12/1999	No	Yes	Fills data gap
12D001M	21N01E12D001M	Quarterly	No	Irrigation	Both	600	7/15/1995	No	No	
12K001M	21N01E12K001M	Quarterly	No	Irrigation	Deep	465	8/12/1959	No	No	
13F001M	21N01E13F001M	Quarterly	No	Observation	Both	515	7/15/1995	No	No	
13L002M	21N01E13L002M	Hourly	Yes	Observation	Deep	771	12/2/2011	No	No	
13L003M	21N01E13L003M	Hourly	Yes	Observation	Deep	574	12/2/2011	No	No	
14Q002M	21N01E14Q002M	Quarterly	No	Irrigation	Both	290	7/15/1995	No	No	
25K001M	21N01E25K001M	Quarterly	No	Residential	Shallow	93	4/8/1993	No	Yes	Fills data gap; near domestic wells
26K001M	21N01E26K001M	Quarterly	No	Irrigation	Deep	462	4/8/1993	No	No	
27B001M	21N01E27B001M	Hourly	No	Observation	Both	517	4/26/1994	No	No	
28F001M	21N01E28F001M	Quarterly	No	Irrigation	Shallow	173	8/20/1998	No	No	
18C001M	21N02E18C001M	Hourly	Yes	Observation	Deep	914	7/8/2010	No	No	
18C002M	21N02E18C002M	Hourly	Yes	Observation	Deep	701	7/8/2010	No	No	
20P001M	21N02E20P001M	Quarterly	No	Irrigation	Deep	238	7/23/1995	No	No	
26E003M	21N02E26E003M	Hourly	Yes	Observation	Deep	660	9/13/2007	No	No	
26E004M	21N02E26E004M	Hourly	Yes	Observation	Deep	518	9/13/2007	No	No	
32E001M	21N02E32E001M	Quarterly	No	Irrigation	Shallow	184	3/26/2009	No	Yes	Fills data gap; near domestic wells
22C001M	21N03E22C001M	Quarterly	No	Residential	Shallow	143	3/19/2001	No	No	
32B001M	21N03E32B001M	Quarterly	No	Observation	Shallow	57	10/15/1999	No	Yes	Fills data gap
MW-6		Biannually	No	Observation	Shallow	122	8/20/2012	No	No	

Well ID	State Well Number	Monitoring Frequency	Multi-Completion	Well Type	Aquifer Category	Drill Depth	Date of First Meas.	2022 RMS?	2027 RMS?	RMS Selection Comments
S6 ^[b]		Hourly	Yes	Observation	Shallow			No	No	New well fills data gap; No historical data
S7 ^[b]		Hourly	Yes	Observation	Shallow		7/28/2026	No	No	New well fills data gap; No historical data
S8 ^[b]		Hourly	Yes	Observation	Shallow		7/28/2026	No	No	New well fills data gap; No historical data
VP-MW01 ^[b]		Hourly	No	Observation	Shallow	60	3/31/2026	No	No	New well fills data gap; No historical data
WP-MW01 ^[b]		Hourly	No	Observation	Shallow	60	3/31/2026	No	No	New well fills data gap; No historical data
DW05 ^[c]		Hourly	No	Domestic	Unknown	120	3/19/2026	No	No	
DW06 ^[c]		Hourly	No	Domestic	Shallow	80	3/2/2026	No	No	
DW11 ^[c]		Hourly	No	Domestic	Unknown	140	3/3/2026	No	No	
DW14 ^[c]		Hourly	No	Domestic	Shallow	130	9/30/2026	No	No	
DW15 ^[c]		Hourly	No	Domestic	Unknown	170	12/9/2025	No	No	

Notes:

[a] RMS well is located in Chico MA but is representative of a portion of North MA.

[b] New wells drilled in 2026.

[c] New domestic well part of the community monitoring program.

6.2 Groundwater Storage

Annual change in storage is calculated using observed groundwater level measurements. The change in groundwater storage is estimated based on the change in measured spring-to-spring groundwater levels at each RMS well multiplied by the area of a Thiessen polygon surrounding that RMS well (defining a representative area for each RMS well) and a representative storage coefficient of 0.1 for the Subbasin. The storage coefficient may be modified overtime as the groundwater aquifer parameters for the shallow and deep aquifer layers are better understood. The updated groundwater level RMS wells are used to calculate change in storage (unless otherwise noted) to improve spatial representation across the Subbasin. As described in Section 5.3.4, this Periodic Evaluation uses the 29 RMS wells identified in the amended 2027 GSP. The two GDE RMS wells within the Chico MA are excluded from this analysis. Any changes to the set of wells used in the calculation will be identified in future Annual Reports or Periodic Evaluations.

Annual change in groundwater storage has been submitted to DWR using a similar approach in the GSP Annual Reports for Water Years 2021 through 2025. The previous estimates included an error, described below. The methodology used for estimating storage change relies on the development of Thiessen polygons around each well to determine a representative area. Cal Water is unable to provide exact locations for its wells, due to public safety concerns related to the City of Chico's water supply. Instead, identical coordinates were provided for all four Cal Water wells included in the analysis (PWSCH01b, PWSCH02, PWSCH03, and PWSCH07). As a result of the identical coordinates provided for each well, each Cal Water well generated and utilized the same Thiessen polygon area. The polygon area was consequently added to the total Subbasin area three additional times. This error was isolated to the four Cal Water wells only and did not affect any other wells within the Vina Subbasin. Storage change values reported in recent Annual Reports were overestimated in both positive and negative directions. Given that negative storage changes have predominated since 2000, the net cumulative effect resulted in storage reductions being overestimated by approximately 92 TAF as shown in **Table 6-2** and **Figure 6-2**. **Table 6-2** and **Figure 6-32** compare the change in groundwater storage from the previously submitted GSP Annual Reports to the revised estimates using the updated RMS network consisting of 29 wells.

Table 6-2. Annual Change in Storage Comparison based on 2027 GWL RMS Wells and Estimates from GSP Annual Reports.

Water Year	Annual Change in Storage (AFY) as shown in WY 2025 Annual Report	Annual Change in Storage (AFY) based on 2027 GWL RMS Wells	Difference (2027 GWL RMS-AR)
2000 (AN)	-41,000	-27,400	13,600
2001 (D)	-40,800	-53,300	-12,500
2002 (D)	-30,300	-42,100	-11,800
2003 (AN)	-83,900	10,400	94,300
2004 (BN)	144,100	52,200	-91,900
2005 (AN)	-38,800	-12,700	26,100
2006 (W)	48,700	56,500	7,800
2007 (D)	-151,700	-80,700	71,000
2008 (C)	-18,900	-45,000	-26,100
2009 (D)	20,700	-37,100	-57,800
2010 (BN)	-17,600	4,800	22,400
2011 (W)	-2,100	51,000	53,100
2012 (BN)	-75,700	-43,500	32,200
2013 (D)	-53,000	-54,800	-1,800
2014 (C)	-112,600	-95,200	17,400
2015 (C)	16,800	-4,200	-21,000
2016 (BN)	37,200	20,200	-17,000
2017 (W)	140,300	105,400	-34,900
2018 (BN)	-73,900	-58,800	15,100
2019 (W)	106,700	74,900	-31,800
2020 (D)	-109,400	-66,100	43,300
2021 (C)	-120,400	-78,400	42,000
2022 (C)	-90,700	-85,400	5,300
2023 (W)	70,200	55,800	-14,400
2024 (AN)	104,500	64,100	-40,400
2025 (AN)	44,300	54,400	10,100
Total:	-327,300	-235,000	92,300

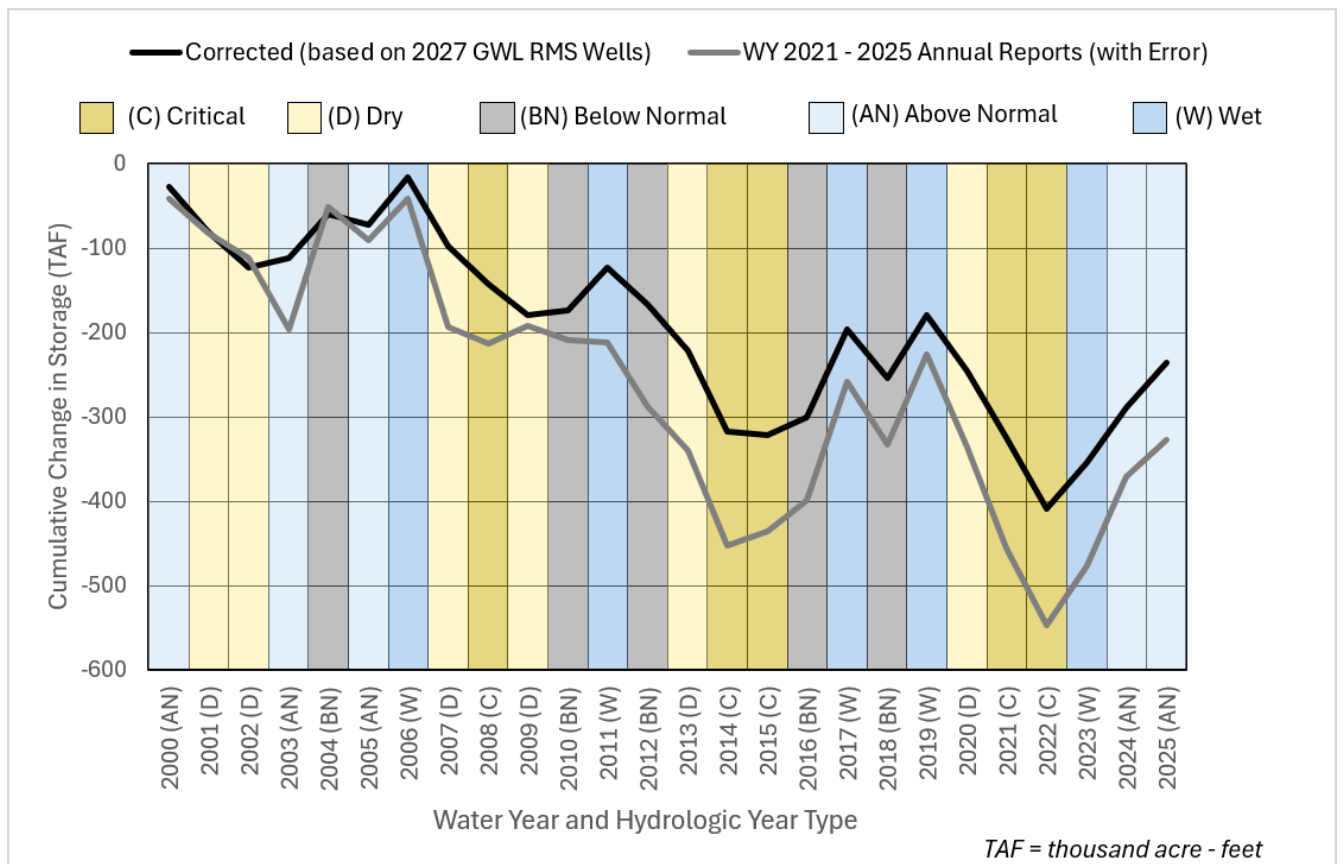


Figure 6-2. Cumulative Change in Storage based on 2027 GWL RMS Wells and Estimates from GSP Annual Reports.

6.3 Seawater Intrusion

Seawater intrusion is not an applicable sustainability indicator to the Vina Subbasin, as seawater intrusion is not present and is not likely to occur due to distance from the Pacific Ocean, bays, deltas, and inlets. Therefore, there is no monitoring network established for the seawater intrusion sustainability indicator.

6.4 Water Quality

6.4.1 Overview of Existing Monitoring Network

The Butte County Department of Water & Resource Conservation monitors groundwater quality across Butte County, including within the Vina Subbasin, and provides the specific conductance data the GSAs use to evaluate water quality conditions in relation to the GSP water quality SMC. As described in the County's 2025 Groundwater Quality Monitoring Update, one of the original RMS wells identified in the Vina GSP, 28J005M, was not monitored throughout the evaluation period due to an obstruction in the well blocking measurement equipment from reaching the perforated interval of the well. Due to this issue, the GSA removed this well from the water quality RMS network in 2024. As of Water Year 2025, the revised monitoring network includes seven of the eight original RMS sites identified in the 2022 GSP. The water quality monitoring network is shown on the map in **Figure 6-3**, and water quality monitoring well information is shown in **Table 6-3**. The monitoring network module on the SGM Portal will be updated accordingly.

The water quality in GAMA wells are also monitored for constituents of concern (COC) and for the tracking of impacted groundwater due to contamination plumes or PMAs (GSP Section 2.2.4). The GAMA wells are not included in the GSA water quality monitoring network but are monitored for current and emerging water quality issues. GAMA wells are managed by other agencies to track water quality issues beyond the GSA COCs such as contamination plumes. Included in the potential COCs per the recommendation of the State Water Resources Control Board are nitrate, nitrite, PFOA, PFOS, TCP, PCE, DEHP, and arsenic. Plume maps are provided in Attachment B.

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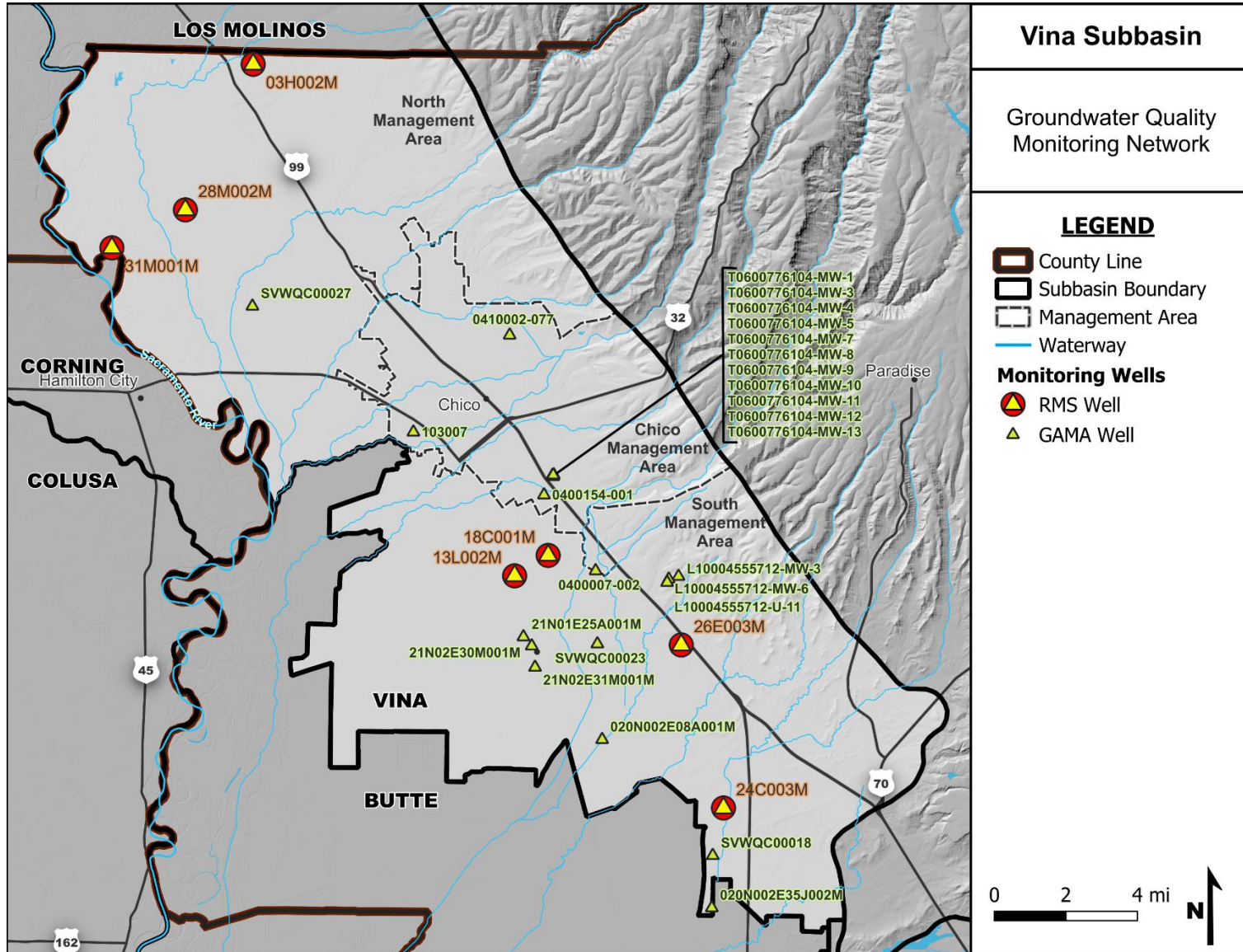


Figure 6-3. Water Quality Monitoring Network.

Table 6-3. Water Quality Monitoring Network.

Site ID	State Well Number	Latitude ^[a]	Longitude ^[a]	Reference Point Elevation (ft)	Monitoring Entity	Screened Interval	Total Depth (ft)	Monitoring Frequency	RMS Well
Vina – North Management Area									
03H002M	23N01W03H002M	39.8782	-121.9571	218.84	Butte County	510-540	553	Annual	Yes
28M002M	23N01W28M002M	39.8188	-121.9752	160.33	Butte County	791-801 881-891 951-961 1011-1021	1,031	Annual	Yes
31M001M	23N01W31M001M	39.8028	-122.0294	162.86	Butte County	969-979 1020-1030	1,055	Annual	Yes
Vina – Chico Management Area									
Chico	No RMS in MA								
Vina – South Management Area									
24C003M	20N02E24C003M	39.5812	-121.7026	159.14	Butte County	484-505	526	Annual	Yes
13L002M	21N01E13L002M	39.6734	-121.8144	181.9	Butte County	735-760	771	Annual	Yes
18C001M	21N02E18C001M	39.6820	-121.7970	191.56	Butte County	770-880, 800-810, 830-840, 870-880	914	Annual	Yes
26E003M	21N02E26E003M	39.6468	-121.7263	184.97	Butte County	610-620	660	Annual	Yes

Notes:

[a] North American Datum 1983 (NAD83).

6.4.2 Data Gaps and Enhancements

In the 2022 GSP, the main limitation of the original groundwater quality monitoring network was the presence of temporal data gaps for water quality measurements in RMS wells. The frequency of sampling proposed in the GSP was anticipated to provide consistent and comparable data to fill this data gap. During implementation of the 2022 GSP, annual monitoring began in the network to address the temporal data gap. Excluding 28J005M, high-quality water samples have successfully been taken at each of the RMS wells shown in **Table 6-3** each year since 2022.

The updated RMS network continues to address the prior temporal data gap through annual monitoring but has decreased spatial coverage. GSA staff have coordinated with other regulatory programs (e.g., CVSALTS and ILRP) and lead agencies overseeing local remediation sites including the Department of Toxic Substance Control. Thus far, water quality samples suggest monitoring of specific conductance is sufficient.

6.5 Land Subsidence

6.5.1 Overview of Existing Monitoring Network

The subsidence monitoring network from the 2022 GSP used a group of established GPS monuments from the Sacramento Valley GPS Subsidence Monitoring Network, supplemented by InSAR data released by DWR. Undesirable results, measurable objectives, and minimum thresholds used the groundwater level network as a proxy. The GPS Subsidence Monitoring Network is not regularly monitored within the Subbasin.

As described in Section 3.5.2, DWR's Recommended Corrective Action 5b recommended changing the monitoring network:

Establish sustainable management criteria for land subsidence for the Subbasin utilizing a monitoring network that directly measures land elevation change such as remote sensing data, survey monuments, or global positioning system stations.

In accordance with DWR's Land Subsidence Best Management Practices, subsidence is instead monitored using InSAR data published by DWR on a monthly interval and ground-truthed with the one available GPS subsidence station in the Subbasin. The GSAs review all available InSAR data annually as part of annual reporting, and SMC compliance is evaluated on a rolling five-year cumulative basis, with annual rates used as supporting information. Interferometric Synthetic Aperture Radar (InSAR) is a satellite-based remote sensing technique that measures vertical ground surface displacement changes at high degrees of measurement resolution and spatial detail. InSAR and GPS measure total elevation change and do not distinguish elastic from inelastic subsidence; paired groundwater level data are used to evaluate causation, and rates below 0.10 feet per year are treated as within measurement uncertainty. The updated subsidence RMS network consists of 29 InSAR pixel groups, centered around the 29 RMS groundwater monitoring wells. These pixels groups consist of nine pixels, one at the corresponding RMS well and eight surrounding pixels, which together cover an area of approximately 22 acres. The broad monitoring network for land subsidence includes all available InSAR data and the one available GPS monitoring site available within the Vina Subbasin. The subsidence monitoring network is shown in **Figure 6-4**. The Sacramento subsidence network is no longer active but is included for reference.

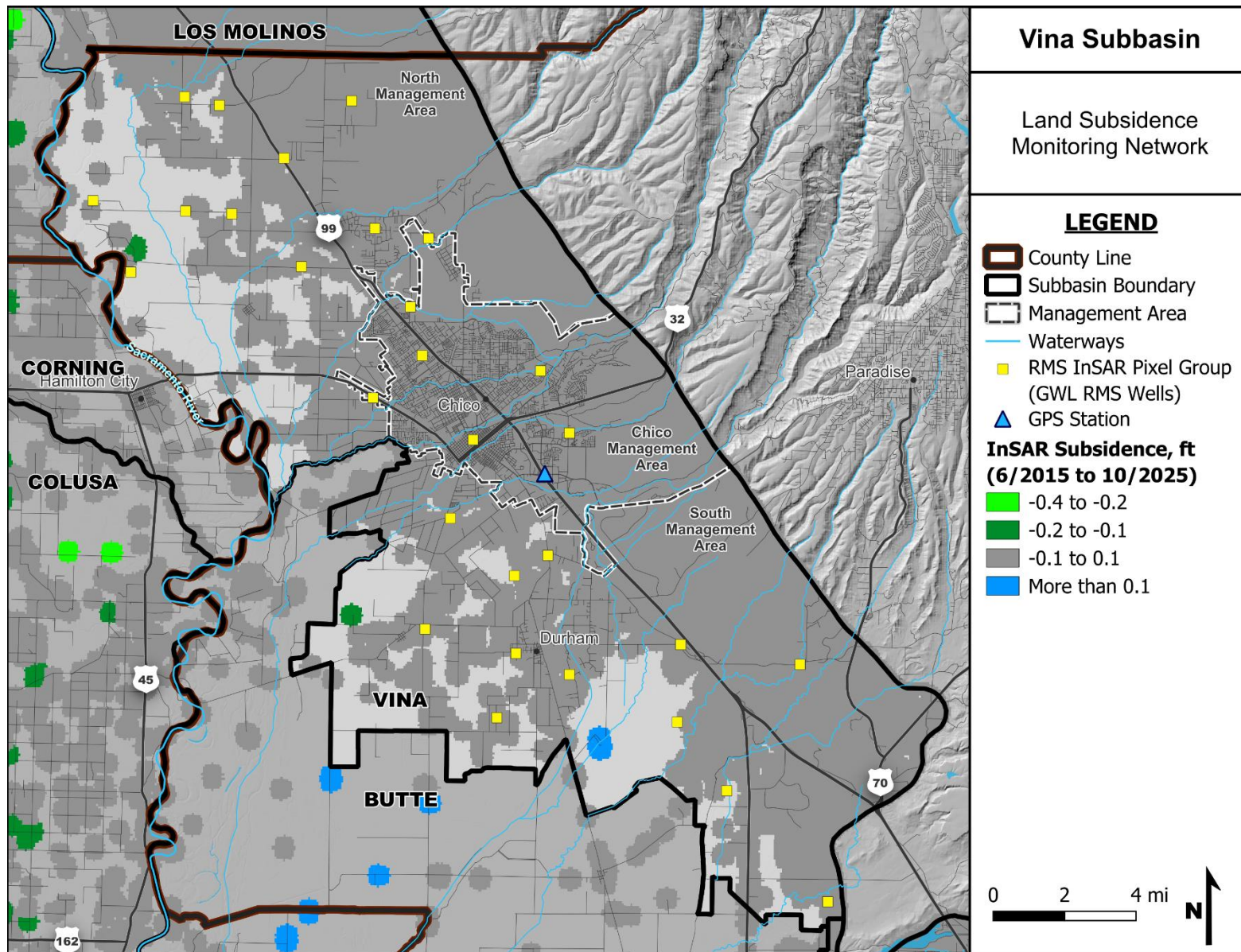


Figure 6-4. Subsidence Monitoring Network.

6.5.2 Data Gaps and Enhancements

In the 2022 GSP, limitations to the original subsidence monitoring network included temporal and spatial data gaps. The network relied on the GPS Subsidence Monitoring Network, which is no longer active. The updated subsidence monitoring network addresses prior temporal data gaps since data is available monthly using InSAR satellite vertical displacement data. The updated subsidence monitoring network has addressed the prior limitation in temporal coverage through review of annual InSAR satellite vertical displacement data. The coverage over the Subbasin is also sufficient and aligns well with available groundwater level monitoring locations. Some areas with less coverage include a portion of the North MA along the Sacramento River and on the eastern side of the South MA.

6.6 Interconnected Surface Water

6.6.1 Overview of Existing Monitoring Network

In the 2022 GSP, groundwater levels are used as a proxy to monitor depletions from interconnected surface water. The groundwater level monitoring network was identical and used for both sustainability indicators. The ISW monitoring network included the addition of three stream gages. The 2022 GSP noted the lack of sufficient data to analyze interaction of streams and pumping within the principal aquifer system and the need to install additional wells. The following section describes the process used to establish a monitoring network for ISW. Additional work to further characterize ISW and set SMCs will be completed during the next evaluation cycle.

6.6.2 Data Gaps and Enhancements

The GSAs' approach to this sustainability indicator can be summarized as follows. Monitoring wells relevant to interconnected surface water have been identified within the expanded groundwater level network, and additional shallow wells have been installed but have little or no period of record to date. Together with the stream gages, these wells make up the broad ISW monitoring network. Specific representative monitoring sites for ISW have not yet been selected from that set, and ISW-specific sustainable management criteria have not been established, because DWR guidance on managing ISW depletion is not yet available and because further regional coordination on the shared Sacramento River boundary is needed to support SMC refinement. In the meantime, the groundwater level SMC and RMS network remain the compliance network for this indicator, until DWR guidance and data from the new wells can support refinement of ISW-specific criteria.

One qualification applies to the shallow wells in this network. Field investigations for the Subbasin's recharge feasibility work confirmed localized perched groundwater at three of seven investigated sites north of Chico, above confining units that are laterally variable and locally pinch out (Section 5.1.3). A shallow well completed within a perched zone records conditions in that zone rather than in the principal aquifer, so establishing whether a perched layer is present at a given site is a prerequisite to using its record to evaluate depletions of interconnected surface water. As shallow monitoring is expanded, new shallow wells will incorporate at least two completions — a shallow point within the potentially perched interval and a deeper completion in the first regional aquifer — to help characterize vertical connectivity and gradients as feasible. The GSAs may also consider the fuller nested design recommended by the recharge investigation (adding an intermediate piezometer below the confining unit, with continuous water level records) at sites where perched conditions are suspected. As discussed in Section 6.1.2, seven shallow dual completion wells have been installed in 2026.

Since 2024, DWR has issued information on interconnected surface water through a series of technical papers. The first paper introduced ISW, the second paper explains techniques for estimating ISW depletion caused by groundwater use, and the third paper provides examples for estimating ISW depletion caused by groundwater pumping. DWR has not released the fourth paper discussing managing

ISW depletion and setting SMCs. In accordance with Paper 2, the GSA established a monitoring network specifically for ISW incorporating existing and newly installed groundwater level monitoring wells and stream gages and improving understanding of the hydrogeologic conceptual model. As described in Section 6.1.2 of this PE, the GSA compiled a comprehensive list of possible monitoring wells within the Subbasin and then classified existing monitoring wells based on well lithology and screening intervals to include wells representative of water table conditions. The updated shallow network representative of water table conditions across the entire Subbasin has a total of forty-six (46) shallow wells, including twenty-nine (29) existing wells with historical data, twelve (12) newly drilled wells, five (5) domestic wells recently equipped with monitoring equipment. The locations of the newly installed wells and twelve (12) stream gages were selected to achieve the following:

- Improve understanding of streams prioritized by local stakeholders including Big Chico and Butte Creeks and Lindo Channel.
- Assess benefits of SGMA project implementation in critical watersheds.

In 2026, four (4) stream gages were installed using SGM grant funds and eight (8) gages were installed using funding from the California Stream Gage Improvement Program (CalSIP) for a total of nineteen (19) stream gages across the Subbasin, as listed in **Table 6-4**. The broad groundwater level monitoring network is summarized in **Table 6-5** and shown in **Figure 6-5**. ISW monitoring wells were selected using the following steps:

1. Reviewed data quality (e.g., presence of oil) and removed wells with questionable measurements.
2. Selected ISW monitoring wells within a half a mile of a stream.

Based on the criteria above, there are thirty-one (31) shallow monitoring wells within the Subbasin that have been preliminarily selected as representative of conditions near streams. SMC have not been developed for the selected wells as connectivity to the principal groundwater aquifer and groundwater pumping impacts have not been verified to cause significant and unreasonable impacts to the aquatic species and habitat. Further analysis is needed to assess how pumping is impacting stream depletions. As described in report titled "Vina Subbasin Interconnected Surface Water," preliminary results show the Sacramento River is connected and gaining, and that the lower reaches of Pine, Rock, Mud, and Big Chico Creeks are mixed or locally connected (April 2026). Little Chico Creek, Butte Creek, Little Dry Creek, and Dry Creek are reported as disconnected from the principal aquifer, and stream reaches further east within the Subbasin are losing. Additional information is available in the report. Stream SMCs will be developed during the next evaluation cycle, as technically feasible, in coordination with neighboring basins and as DWR continues to release guidance on developing SMCs.

Table 6-4. Vina Subbasin Active Surface Water Stream Gauges

Stream Monitored	Gage ID	Gage Network	Measurement Frequency	Status	Start Date
Vina - North Management Area					
Sacramento River	VIN	CDEC	Hourly	Active	1/1/1984
Sacramento River	HMC	CDEC	Hourly	Active	6/19/1991
Mud Creek	MUD CR NR AT WEST SACRAMENTO AVE	CDEC	Hourly	Active	10/1/2026

Stream Monitored	Gage ID	Gage Network	Measurement Frequency	Status	Start Date
Pine Creek	PINE CR NR CANA PINE CREEK ROAD	CDEC	Hourly	Active	10/1/2026
Pine Creek	PINE CR ALONG NORD GIANELLA RD	CDEC	Hourly	Active	10/1/2026
Rock Creek	ROCK CR NR ROCK CREEK ROAD	CDEC	Hourly	Active	10/1/2026
Rock Creek	ROCK CR AT WEST SACRAMENTO AVE	CDEC	Hourly	Active	10/1/2026
Vina - Chico Management Area					
Big Chico Creek	BIC	CDEC	Hourly	Active	7/21/1997
Lindo Channel	LCH	CDEC	Hourly	Active	1/25/2027
Mud Creek	MUC	CDEC	Hourly	Active	1/25/2007
Butte Creek	BCD	CDEC	Hourly	Active	4/7/1997
Butte Creek	11390000	USGS	Hourly	Active	3/14/1997
Big Chico Creek	BIG CHICO CR AT ROSE AVE	GSA	Continuous	Active	10/1/1975
Comanche Creek	COMANCHE CR NR HONEY RUN ROAD	CDEC	Hourly	Active	10/1/2026
Little Chico Creek	NEW_LCC_US	GSA	Continuous	Active	8/15/2026
Vina - South Management Area					
Butte Creek ^[a]	BUTTE CK NR DURHAM BLW GORRILL DAM	GSA	Continuous	Active	10/29/2015
Dry Creek	DRY CR NR NELSON ROAD	CDEC	Hourly	Active	10/1/2026
Hamlin Slough	HAMLIN CR NR OROVILLE CHICO HWY	CDEC	Hourly	Active	10/1/2026
Little Chico Creek ^[a]	LITTLE CHICO CK AT TAFEE AVE	GSA	Continuous	Active	2/10/2018

Notes:

[a] Stage discharge relationships are currently being developed for both future streamflow values, as well as to back cast streamflow for historical stage measurements.

Table 6-5. Vina Subbasin ISW Monitoring Network Shallow Wells (all identified as representative of regional water table conditions)

Well ID	State Well Number	MCW	Well Type	Total Depth	Date of First Meas.	Monitoring Frequency	Nearby Stream	Distance to Nearest Waterway (mi)	Selected ISW Wells
Vina – North Management Area									
03H004M	23N01W03H004M	Yes	Observation	115	3/30/2012	Monthly	Pine Creek	0.40	Yes
09E001M	23N01W09E001M	No	Irrigation	110	2/7/1947	Quarterly	Pine Creek	0.20	Yes
14R002M	23N01W14R002M	No	Irrigation	183	11/13/1985	Quarterly	Rock Creek	1.65	No
27L001M	23N01W27L001M	No	Residential	102	3/10/1976	Quarterly	Rock Creek	1.72	No
28M005M	23N01W28M005M	Yes	Observation	72	1/15/2009	Hourly	Pine Creek	0.82	No
31M004M	23N01W31M004M	Yes	Observation	106	7/4/2008	Hourly	Sacramento River	0.75	No
36P001M	23N01W36P001M	No	Residential	165	8/20/1959	Monthly	Rock Creek	0.71	No
TNC Well		No	Observation	70	11/10/2021	Hourly	Sacramento River	0.35	Yes
M1 ^[a]		Yes	Observation		7/23/2026	Hourly	Pine Creek	0.26	Yes
S2 ^[a]		Yes	Observation		7/28/2026	Hourly	Big Chico Creek	0.15	Yes
RP-MW01		No	Observation	60	3/31/2026	Hourly	Rock Creek	0.01	Yes
DW01 ^[b]		No	Domestic	80	9/30/2026	Hourly	Mud Creek	0.7	No
Vina – Chico Management Area									
09B001M	22N01E09B001M	No	Residential	156	5/9/2001	Quarterly	Sycamore Creek	0.10	Yes

Well ID	State Well Number	MCW	Well Type	Total Depth	Date of First Meas.	Monitoring Frequency	Nearby Stream	Distance to Nearest Waterway (mi)	Selected ISW Wells
20K001M	22N01E20K001M	No	Residential	110	5/10/1961	Quarterly	Lindo Channel	0.34	No
30C002M	22N02E30C002M	No	Observation	203	12/19/2001	Hourly	Little Chico Creek	0.12	Yes
18J001M	22N02E18J001M	No	Residential	180	4/6/2001	Quarterly	Big Chico Creek	0.13	Yes
CMW-102A		No	Observation	36.5	8/16/2006	Biannually	Big Chico Creek	0.50	Yes
DMW-3		No	Observation	55	11/17/1993	Biannually	Lindo Channel	0.82	No
FC-MW-2		No	Observation	40	3/1/2007	Biannually	Big Chico Creek	0.50	Yes
GW-4		No	Observation	116	10/2/1990	Biannually	Mud Creek	0.50	Yes
MW-21		No	Observation	25	6/28/2004	Biannually	Little Chico Creek	0.19	Yes
SWMW-06A		No	Observation	35	8/29/2005	Biannually	Little Chico Creek	0.14	Yes
S1 ^[a]		Yes	Observation		7/28/2026	Hourly	Mud Creek	0.33	Yes
S4 ^[a]		Yes	Observation			Hourly	Big Chico Creek	0.08	Yes
S9 ^[a]		Yes	Observation			Hourly	Lindo Channel	0.05	Yes
MWSB-25		No	Observation	32	2/13/2025	Hourly	Comanche Creek	0.05	Yes

Well ID	State Well Number	MCW	Well Type	Total Depth	Date of First Meas.	Monitoring Frequency	Nearby Stream	Distance to Nearest Waterway (mi)	Selected ISW Wells
DW04 ^[b]		No	Domestic	120	3/19/2026	Hourly	Big Chico Creek	0.01	Yes
DW08 ^[b]		No	Domestic	120	3/18/2026	Hourly	Big Chico Creek	0.10	Yes
Vina – South Management Area									
25K001M	21N01E25K001M	No	Residential	93	4/8/1993	Quarterly	Butte Creek	1.35	No
27D001M	21N01E27D001M	No	Observation	112	10/9/1946	Quarterly	Butte Creek	3.80	No
28F001M	21N01E28F001M	No	Irrigation	173	8/20/1998	Quarterly	Angel Slough	3.66	No
32E001M	21N02E32E001M	No	Irrigation	184	3/26/2009	Quarterly	Butte Creek	0.33	Yes
22C001M	21N03E22C001M	No	Residential	143	3/19/2001	Quarterly	Clear Creek	0.15	Yes
33L001M	20N03E33L001M	No	Observation	101	8/12/1999	Hourly	Cottonwood Creek	0.21	Yes
24C001M	20N02E24C001M	Yes	Observation	155	12/29/1999	Hourly	Dry Creek	0.20	Yes
32B001M	21N03E32B001M	No	Observation	57	10/15/1999	Quarterly	Little Dry Creek	0.01	Yes
26E006M	21N02E26E006M	Yes	Observation	179	9/13/2007	Hourly	Hamlin Slough	0.88	No
MW-6		No	Observation	122	8/20/2012	Biannually	Hamlin Slough	0.52	No
S6 ^[a]		Yes	Observation			Hourly	Butte Creek	0.13	Yes
S7 ^[a]		Yes	Observation		7/28/2026	Hourly	Butte Creek	0.04	Yes
S8 ^[a]		Yes	Observation		7/28/2026	Hourly	Dry Creek	0.51	No

Well ID	State Well Number	MCW	Well Type	Total Depth	Date of First Meas.	Monitoring Frequency	Nearby Stream	Distance to Nearest Waterway (mi)	Selected ISW Wells
WP-MW01 ^[a]		No	Observation	60	3/31/2026	Hourly	Dry Creek	0.07	Yes
VP-MW01 ^[a]		No	Observation	60	3/31/2026	Hourly	Comanche Creek	0.08	Yes
DW06 ^[b]		No	Domestic	80	3/2/2026	Hourly	Butte Creek	0.29	Yes
DW14 ^[b]		No	Domestic	130	9/30/2026	Hourly	Butte Creek	0.24	Yes

Notes:

[a] Wells drilled in 2025/2026.

[b] New domestic well part of the community monitoring program.

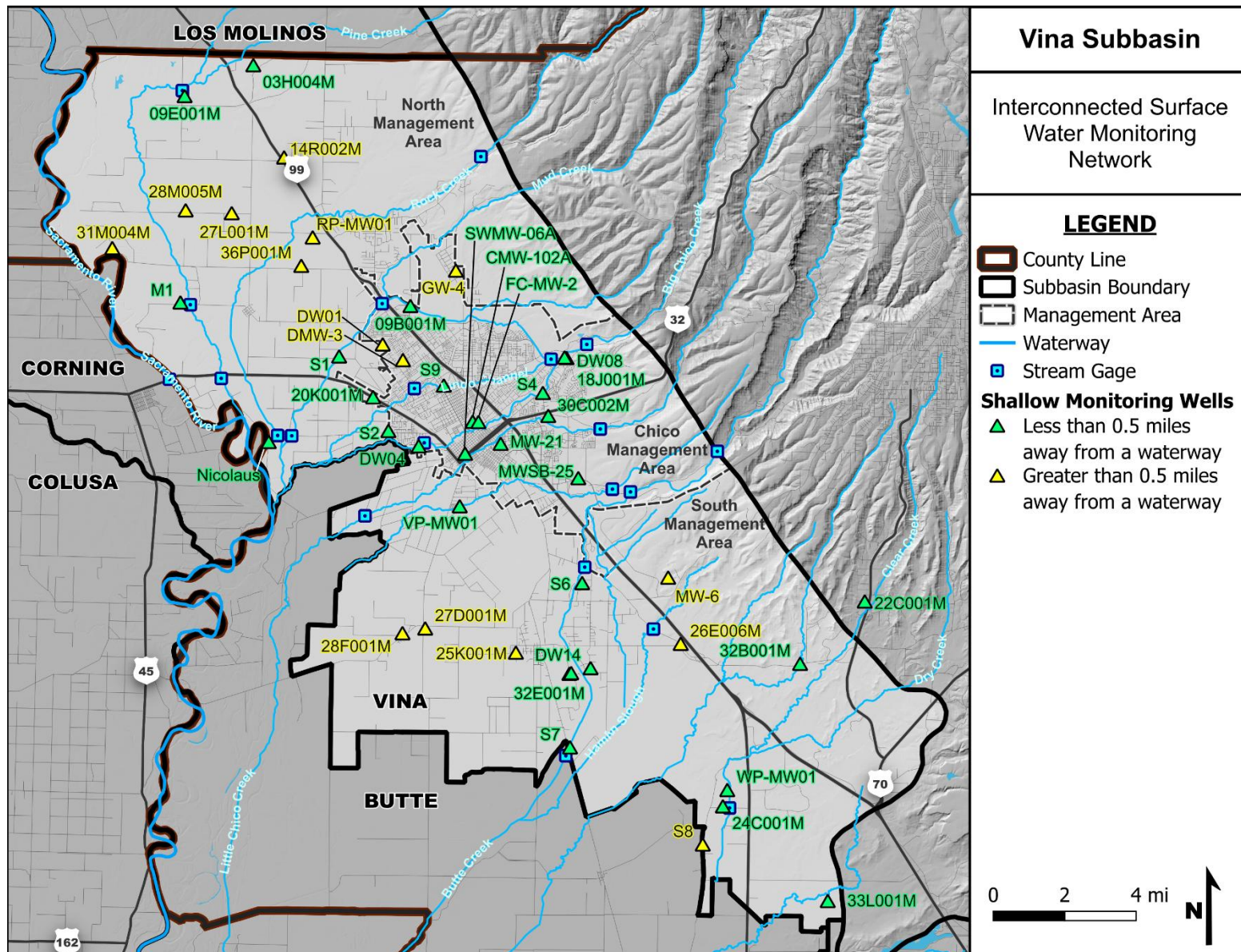


Figure 6-5. Interconnected Surface Water Monitoring Network.

SECTION 7: GSA AUTHORITIES AND ENFORCEMENT ACTIONS (23 CCR §356.4(G)-(H))

This section meets the requirements of GSP Emergency Regulations §356.4:

(g) A description of relevant actions taken by the Agency, including a summary of regulations or ordinances related to the Plan.

(h) Information describing any enforcement or legal actions taken by the Agency in furtherance of the sustainability goal for the basin.

7.1 Relevant Actions

Butte County staff, who serve as members of the Vina GSA Management Committee, have cooperated with the Butte County Department of Development Services in the 2040 General Plan Update. Specifically, staff along with the Water Commission have made suggested revisions to the Water Resources Element and applicable General Plan Goals, Policies, and Actions. These updates help coordinate the County's General Plan policies with GSP implementation. The 2040 general plan update was adopted in March 2023.

In WY 2023, the GSA adopted a property-related service fee to fund its operations and implementation costs to comply with SGMA.

Butte County has begun a public process to revise Chapter 23B of the County Code, the Water and Well Ordinance, as part of its Rural Water Safety Project. The GSAs are coordinating with the County on this update as it relates to well construction standards, the hydrogeologic conceptual model, adopted SMC, and the potential effects of new wells on existing wells.

SECTION 8: OUTREACH, ENGAGEMENT, AND COORDINATION WITH OTHER AGENCIES (23 CCR §356.4(J))

This section fulfills the requirements of GSP Emergency Regulations §356.4(j):

Where appropriate, a summary of coordination that occurred between multiple Agencies in a single basin, Agencies in hydrologically connected basins, and land use agencies.

8.1 Outreach and Engagement

The methods described in the Plan for outreach and engagement activities relevant to implementation are being maintained. Public engagement efforts include Vina Stakeholder Advisory Committee (SHAC) meetings, Board meetings, and public workshops/webinars, which are held on a roughly monthly schedule across all meeting types combined. As shown in **Table 8-1**, a total of 100 public meetings have been held since January 2022 through the scheduled meetings of 2026, including 27 SHAC meetings, 52 Board meetings, and 21 public workshops/webinars. Meeting frequency has varied by year, with a notable increase in outreach activity in 2026 (28 total meetings scheduled), reflecting heightened engagement as the GSAs approach key implementation milestones. **Table 8-2** details key meeting topics discussed during each SHAC meeting since January 2022, immediately after submission of the GSP. These topics include PMAs, annual reports, DWR recommended corrective actions, and SMC revisions.

Table 8-1. Number of Vina Public Meetings Since January 2022.

Public Meeting	2022	2023	2024	2025	2026	Total
SHAC	6	3	3	6	9	27
Board Meetings	10	13	8	10	11	52
Public Workshops / Webinars	5	2	4	2	8	21
Total	21	18	15	18	28	100

Note: table includes 2026 scheduled meetings as September 9, 2026.

Several SHAC meetings discuss PMA implementation, including updates, prioritization and grant funding. Discussions include potential impacts on beneficial users and benefits to GSP implementation.

Table 8-2. List of Vina SHAC Meetings Since January 2024.

Meeting Title	Date	Location	Key Meeting Topics
SHAC Meeting	July 22, 2026	- Chico City Council Chamber, Conference Room #1 - Virtual (Zoom)	- Update on the anticipated timeline for the Vina Groundwater Sustainability Plan (GSP) Periodic Evaluation and Plan Amendments - Consideration and potential recommendation on topics related to the Vina Periodic Evaluation and potential amendments to the Groundwater Sustainability Plan
SHAC Meeting	June 24, 2026	Chico City Council Chamber, Conference Room #1	Recharge feasibility analysis project recap

Meeting Title	Date	Location	Key Meeting Topics
		Virtual (Zoom)	- Update on the anticipated timeline for the Vina Groundwater Sustainability Plan (GSP) Periodic Evaluation and Plan Amendments - North Sacramento River Corridor (NSRC) inter-basin coordination framework update and regional interconnected surface water initiative - Introduction to the groundwater level strawman proposal including discussion of the proposed 2027 Representative Monitoring Site (RMS) Network and recent analysis of the Groundwater Dependent Ecosystems (GDE) in the Vina Subbasin - Update and discussion of sustainable yield, groundwater extraction and change in storage calculations to guide Periodic Evaluation content development
SHAC Meeting	May 27, 2026	- Butte County Library, Chico Branch - Virtual (Zoom)	- Consideration Groundwater Sustainability Plan Amendments to the land subsidence Sustainable Management Criteria (SMC) in response to the Department of Water Resources' Recommended Corrective Actions - Consideration of the approach to addressing Interconnected Surface Water (ISW) in the Periodic Evaluation in response to the Department of Water Resources' Recommended Corrective Actions - Update on the anticipated timeline for the Vina Groundwater Sustainability Plan (GSP) Periodic Evaluation
SHAC Meeting	April 22, 2026	- Chico City Council Chamber, Conference Room #1 - Virtual (Zoom)	- Update on the status and anticipated timeline for the Vina Groundwater Sustainability Plan (GSP) Periodic Evaluation - Review of Sustainable Groundwater Management (SGM) grant-funded projects – status and next steps - Consideration of a well mitigation program in the Vina subbasin
SHAC Meeting	March 25, 2026	- Butte County Library, Chico Branch - Virtual (Zoom)	Annual status of the Vina subbasin brochure

Meeting Title	Date	Location	Key Meeting Topics
			• Consideration of approach to projects and management actions for the GSP Periodic Evaluation • Sustainable Groundwater Management Program Project recap presentations: Feasibility of enhanced recharge in Lindo Channel, Demand reduction strategies project recap, surface water supplies feasibility analysis, and Inter-basin coordination analysis.
SHAC Meeting	December 3, 2025	• Butte County Library, Chico Branch • Virtual (Zoom)	• Groundwater Sustainability Plan (GSP) Stakeholder Meeting Feedback • Sustainable Groundwater Management (SGM) grant project update
SHAC Meeting	September 24, 2025	• Butte County Library, Chico Branch • Virtual (Zoom)	• Presentation Vina Subbasin Groundwater Sustainability Plan (GSP) Data Gaps Update: Status of the Domestic Well Survey • Presentation on modelling scenarios using the Butte Basin Groundwater Model (BBGM) • Vina subbasin Groundwater Sustainability Plan (GSP) data gaps update: Interconnected surface waters (ISWs) • Sustainable Groundwater Management (SGM) grant projects update
SHAC Meeting	August 27, 2025	• Butte County Library, Chico Branch • Virtual (Zoom)	• Presentation on roadmap for GSP periodic evaluation and amendments • Update on demand reduction strategies project: Extend Orchard Replacement pilot program tax incentives inquiry • Review of “Community Understanding of SGMA and GSA Responsibilities” memo • Sustainable Groundwater Management (SGM) grant projects update
SHAC Meeting	May 28, 2025	• Butte County Library, Chico Branch • Virtual (Zoom)	• Presentation of the vina subbasin status report • SHAC perspectives on community understanding of SGMA and GSA responsibilities

Meeting Title	Date	Location	Key Meeting Topics
SHAC Meeting	April 23, 2025	- Butte County Library, Chico Branch - Virtual (Zoom)	- Presentation on the status and activities of the water supply and recharge project (Component 5) - Discussion and possible recommendation on use of additional funds within the data gap identification and data improvement project (Component 2) - Overview of stakeholder input collection, integration, and communication processes
SHAC Meeting	March 26, 2025	- Butte County Library, Chico Branch - Virtual (Zoom)	- Data gaps and identification and data improvement project update - Presentation on sustainable groundwater management (SGM) grant projects - Discussion of SWR SGM grant agreement - Update on the vina GSA board action regarding the draft fee report
SHAC Meeting	November 20, 2024	- Butte County Library, Chico Branch - Virtual (Zoom)	- Update on fee study outreach and discussion of potential fee structures - Discussion and potential recommendation on proposed monitoring network locations
SHAC Meeting	October 23, 2024	- Butte County Library, Chico Branch - Virtual (Zoom)	- Discussion of proposed new monitoring network locations - Presentation of SGM grant projects progress report
SHAC Meeting	May 22, 2024	- Old Municipal Building - Virtual (Zoom)	- Presentation of the 2023 Annual Report - Update on SGMA Grant Projects - Fee Study update & stakeholder engagement

Meeting Title	Date	Location	Key Meeting Topics
SHAC Meeting	April 26, 2023	Butte County Chico Library	- Review/approval of 3/22/23 minutes - Overview of 2022 Annual Water Report - Update on Board's action re: Long-Term Funding Technical Memorandum - Update on funding pursuits for GSP projects/management actions
SHAC Meeting	March 22, 2023	Butte County Chico Library	- Review/approval of 10/26/22 minutes - Review of funding options for long-term fee - Outreach materials for long-term funding project - Funding pursuits update for GSP projects - SHAC 2023 meeting calendar - Correspondence: Executive Order N-4-23 (Floodwater Recharge)
SHAC Meeting	October 26, 2022	East Conference Room, Butte County Public Works	- Review/approval of 7/27/22 minutes - Discussion/recommendation on project prioritization for SGM Grant Program application (detailed vote on 13 projects — see notes below)
SHAC Meeting	July 27, 2022	Chico Old Municipal Building Conference Room	Discussion/recommendation of specific projects/activities for scope, budget, schedule development — SGM Grant Program funding application introduction
SHAC Meeting	June 22, 2022	Online Only (Zoom)	- Election of Chair (Samantha Lewis) and Vice-Chair (Sam Goepp) - Approval of 3/15/22 & 4/27/22 minutes - Vina GSA financing options discussion - SGMA Implementation Grant application/process overview - Facilitation and Support Services (FSS) request from DWR update - Executive Order N-7-22 update
SHAC Meeting	May 25, 2022	Online Only (Zoom)	- Public workshop on funding approaches for Vina GSA & GSP implementation (Provost & Pritchard Consulting Group presentation) - GSA Board/Committee & public comments
SHAC Meeting	April 27, 2022	Online Only (Zoom)	- Review/approval of SHAC Charter redline revisions (per Board approval) - Introduction to GSA administration and financing options - Management Committee update: Executive Order N-7-22 (well permitting coordination with Butte County)

Meeting Title	Date	Location	Key Meeting Topics
SHAC Meeting	March 15, 2022	Online Only (Zoom)	- Review of 2021 Water Year Annual Report for Vina Subbasin - Management Committee update: GSP/SGMA Implementation grant, lawsuit/complaint filed against Vina GSA Board - Consideration of 2022 SHAC meeting schedule

8.1.1 Comments and Responses

During initial GSP development, a draft GSP was distributed to the SHAC and Interested Parties list and published to the Vina GSA website. The comment period was open from September 10, 2021 to October 19, 2021. During the public review, the Vina GSA held an in-person workshop on October 4, 2021, and virtual workshop on October 13, 2021. The GSA Board heard additional comments and considered final revisions during the Public Hearing of the GSP on November 15, 2021. Comments were received from community members, the Audubon California, Clean Water Action, Clean Water Fund, Local Government Commission, The Nature Conservancy, American Rivers and Union of Concerned Scientists, California Department of Fish and Wildlife (CDFW), Audubon California, Agriculture Groundwater Users of Butte County, Butte Environmental Council, AquAlliance, and Glenn-Colusa Irrigation District. The received comments are included in *Appendix 1-F* to the 2022 GSP and comments were addressed and incorporated into the final 2022 GSP as directed by the GSA Board.

The GSP evaluation period held by DWR following submittal of the 2022 GSP resulted in comment letters available through the SGM Portal including from the following:

- AquAlliance, the California Sportfishing Protection Alliance, and the California Water Impact Network;
- Audubon California;
- National Marine Fisheries Service;
- California Department of Fish and Wildlife (CDFW); and
- Domestic well owners and other community members
- Agricultural Groundwater Users of Butte County

These comment letters and other public comments were reviewed by the GSA and considered during GSP implementation. Meetings of the SHAC continued to be held following submittal of the 2022 GSP, monthly. Interested parties were notified and encouraged to attend to provide comments on the final GSP and engage in efforts for further GSP development and GSP implementation.

The Vina GSA continued to hold public outreach meetings during the development of the 2027 Periodic Evaluation and GSP Amendments. Public comments are summarized in the amended GSP.

8.2 Responsibilities of GSA Boards

The Vina GSA and RCRD Boards are the final decision-makers for the Vina Subbasin and the governing body. The Vina and RCRD Boards serve in a policy-making role for SGMA implementation. All GSA Board meetings are subject to the Brown Act and are noticed and open to the public. Periodic SGMA and GSP-related updates are provided during meetings as needed.

The Vina Stakeholder Advisory Committee (SHAC) provides input and recommendations to Vina GSA Board on GSP development and implementation as well as other items outlined in its Charter. Meetings of

the SHAC are detailed in **Table 8-2**. Notice is provided to the Interested Persons (IP) email list for all GSA meetings with additional GSP- or SGMA-related information conveyed through the IP email list as needed.

8.3 Coordination with Other Agencies

The Vina GSA has participated in inter-agency coordination during the evaluation period. GSA representatives participate in quarterly meetings of the Groundwater Task Force through Northern California Water Association (NCWA), where representatives from subbasins across the Sacramento Valley coordinate on regional water management. GSA staff and members of the consulting team have participated in CV-SALTS webinars and have responded to CV-SALTS requests for GSA input. Inter-basin coordination meetings with adjacent subbasins to the Subbasin are shown in **Table 8-3**.

Table 8-3. List of Interbasin Coordination Meetings During GSP Implementation Period to Date Since February 2022.

Meeting Title	Date	Location	Key Meeting Topics
North American Subbasin Interbasin Coordination	August 4, 2022	Virtual (Microsoft Teams)	Updates on groundwater conditions and monitoring, groundwater substitution transfers, groundwater modeling activities, and projects and management actions
North American Subbasin Interbasin Coordination	August 16, 2023	Virtual (Microsoft Teams)	Status of each subbasin (including sustainable management criteria and past and future grant activities), groundwater substitution transfers, and characterization of interconnected surface waters
Wyandotte Creek Subbasin Interbasin Coordination	May 1, 2024	Virtual (Microsoft Teams)	Planned monitoring/modeling activities to address interconnected surface waters, GDEs, and domestic users; Overview of monitoring activities near Honcut Creek; Collaboration opportunities
Part 1: North Sacramento River Corridor Results	July 24, 2025	Virtual (Microsoft Teams)	Joint GSP Evaluation for the North Sacramento River Corridor covering Vina, Butte, Colusa, Corning, Red Bluff, and Los Molinos Subbasins.
Part 3: Inter-basin Flow Evaluation with Regional Model	August 28, 2025	Virtual (Microsoft Teams)	Focused on groundwater and stream-aquifer modeling across subbasin boundaries.

SECTION 9: OTHER INFORMATION (23 CCR §356.4(K))

This section fulfills the requirements for the GSP Emergency Regulations §356.4(k):

Other information the Agency deems appropriate, along with any information required by the Department to conduct a periodic review as required by Water Code Section 10733.

9.1 Consideration of Adjacent Basins (23 CCR §356.4(j))

Vina GSA representatives participate in quarterly meetings of the Groundwater Task Force through NCWA, where representatives from subbasins across the Sacramento Valley coordinate on regional water management. Interbasin coordination meetings have been held with adjacent and nearby subbasins to discuss boundary conditions, monitoring along subbasin boundaries, compare SMC along subbasin boundaries, and discuss PMAs (**Table 8-**).

Coordination in the North Sacramento River Corridor — comprising the Red Bluff, Antelope, Los Molinos, Corning, Vina, Colusa, and Butte Subbasins — is the principal forum for issues that cross the Subbasin's boundaries. Coordination operates at three scales: regionally through the Northern Sacramento Valley Integrated Regional Water Management program, where GSP implementation is a standing agenda item for information; along the corridor through the inter-basin coordination effort; and directly between neighboring subbasins. The GSAs plan to convene or participate in at least one regional coordination meeting annually, and more frequently as warranted. Characterization of interconnected surface water has been identified as the priority regional activity for the 2027–2032 implementation period, including shared methods for estimating depletion volumes along the Sacramento River, which forms a boundary with multiple subbasins.

The land subsidence SMC in the amended GSP were considered against those of neighboring subbasins and adjusted for conditions in the Vina Subbasin. The revised subsidence SMC of 0.5 feet of cumulative subsidence over a five-year period is consistent with the criteria used in the Butte, Red Bluff, Los Molinos, and Corning Subbasins, which use the same value or a similar cumulative framing.

The North Sacramento River Corridor Joint GSP evaluation found that neighboring subbasins used different MT methodologies, creating potential concern where threshold levels differ significantly near shared boundaries. Vina MTs are currently up to 60 feet lower than those in Corning and 25-59 feet lower than along the boundary with the Butte Subbasin. The same evaluation found that Vina MOs near the Corning and Butte boundaries are generally within about 15 feet and 10 feet, respectively, of neighboring MOs. This similarity makes the Vina GSP framework of managing toward the MO rather than allowing groundwater levels to decline toward the MT important for inter-basin coordination considerations. The Vina GSP sustainable yield and projects and management actions were developed to stabilize long-term groundwater levels around the MOs through recharge, irrigation efficiency, and other conservation and demand-reduction efforts. In addition, the introduction of Local Management Levels by Vina, which more closely align with MT levels of neighboring subbasins, reinforces Vina's intent to avoid conditions reaching the MT. Continued inter-basin coordination and the coordinated interconnected surface water effort planned for the next five-year implementation period will provide additional information about boundary conditions and potential cross-boundary effects..

Vina GSA participated in the Inter-Basin Coordination Analysis and Modeling Project to evaluate and compare GSPs, Butte Basin Groundwater Model (BBGM) updates and enhancements, and inter-basin flow evaluation with a regional model. This project's efforts focused on establishing common understanding of inter-basin flows, ISW conditions, and basin boundary conditions for subbasins along the Northern Sacramento River and Feather River Corridors. Additional model coordination with DWR and neighboring subbasins is anticipated to occur over the next 5 year implementation period.

9.2 Challenges of SGMA Implementation in the Subbasin

Challenges during SGMA implementation include data gaps, data limitations, financial resource limitations, and drought. Data gaps most affect the interconnected surface water sustainability indicator, where the GSAs do not yet have sufficient data to establish refined ISW SMC. The water quality RMS network has a shorter period of record, beginning in 2022, which limits trend analysis but has not prevented evaluation against the water quality SMC. Data limitations include issues with monitoring network sites that required removal from the network, such as a landowner request to remove a well from the network, or the termination of DWR monitoring of subsidence monuments. However, alternate sources of data, such as InSAR, have filled the gap. PMAs and other GSP implementation activities required outside funding through DWR's Sustainable Groundwater Management (SGM) Grant Program. WY 2022 was a critical year type, followed by several above normal and wet years. In general, groundwater levels dropped in WY 2022 but have risen in subsequent years. Drought will always be a challenge for continued SGMA implementation and for considering the interests of all beneficial uses and users of groundwater. The GSA will continue its public outreach to stakeholders for data access, continue its data collection during the new evaluation period, and seek additional funding, where needed for GSP implementation.

SECTION 10: SUMMARY OF PROPOSED OR COMPLETED REVISIONS TO PLAN ELEMENTS (23 CCR §356.4(I))

This section fulfills the requirements of GSP Emergency Regulations §356.4(i):

A description of completed or proposed Plan amendments.

10.1 DWR's Recommended Corrective Actions

The GSA reviewed the recommended corrective actions identified in DWR's 2023 Determination Letter for the Vina Subbasin GSP and determined that a Plan Amendment was necessary. The Approved status of the 2022 GSP included six recommended corrective actions from DWR. The Vina Subbasin 2022 GSP was amended to address DWR's recommended actions, incorporate new information collected during the evaluation period, and update relevant information up through spring 2026 as feasible. The following amendments to the GSP were made:

- *Recommended Corrective Action 3b & 3C:* Updated and expanded the groundwater level network. Groundwater level monitoring network was amended to include additional RMS wells and to establish Local Management Levels.
- *Recommended Corrective Action 5:* The definition of undesirable results and SMCs have been revised for the subsidence SI. The monitoring network for subsidence has been revised.

The Amended GSP was approved by the Vina Board of Directors on **Date TBD, 2026**. As shown in **Table 8-2 and 8-2**, outreach and engagement with interested stakeholders was conducted at SHAC meetings, Board Meeting, and public workshops/webinars. Approximately sixty meetings from 2024 to 2026 included discussion of this Periodic Evaluation and Amended GSP where SHAC members, Board of Directors, and the public were invited to provide comments. A public comment period on the draft Periodic Evaluation and Amended GSP took place from **XX to XX, 2026**, where stakeholders and interested parties could submit comments. Public comments were received from **XX on XX, 2026**. Public comments were reviewed by the GSA and incorporated into the final Amended GSP per Board direction or identified for further evaluation.

During the next evaluation period (2027 to 2032), the Vina Subbasin GSA will implement the Amended GSP, including new monitoring networks, continued PMA implementation, and collecting data to fill data gaps. Additional data will continue to be collected, particularly for considering ISW SMCs in the next Periodic Evaluation. Annual Reports will provide implementation progress updates, track the advancement towards the sustainability goal, and evaluate the state of the Subbasin relative to sustainable management criteria.

10.2 Specific Revisions to the Plan Elements

The amended GSP includes revisions to the following sections:

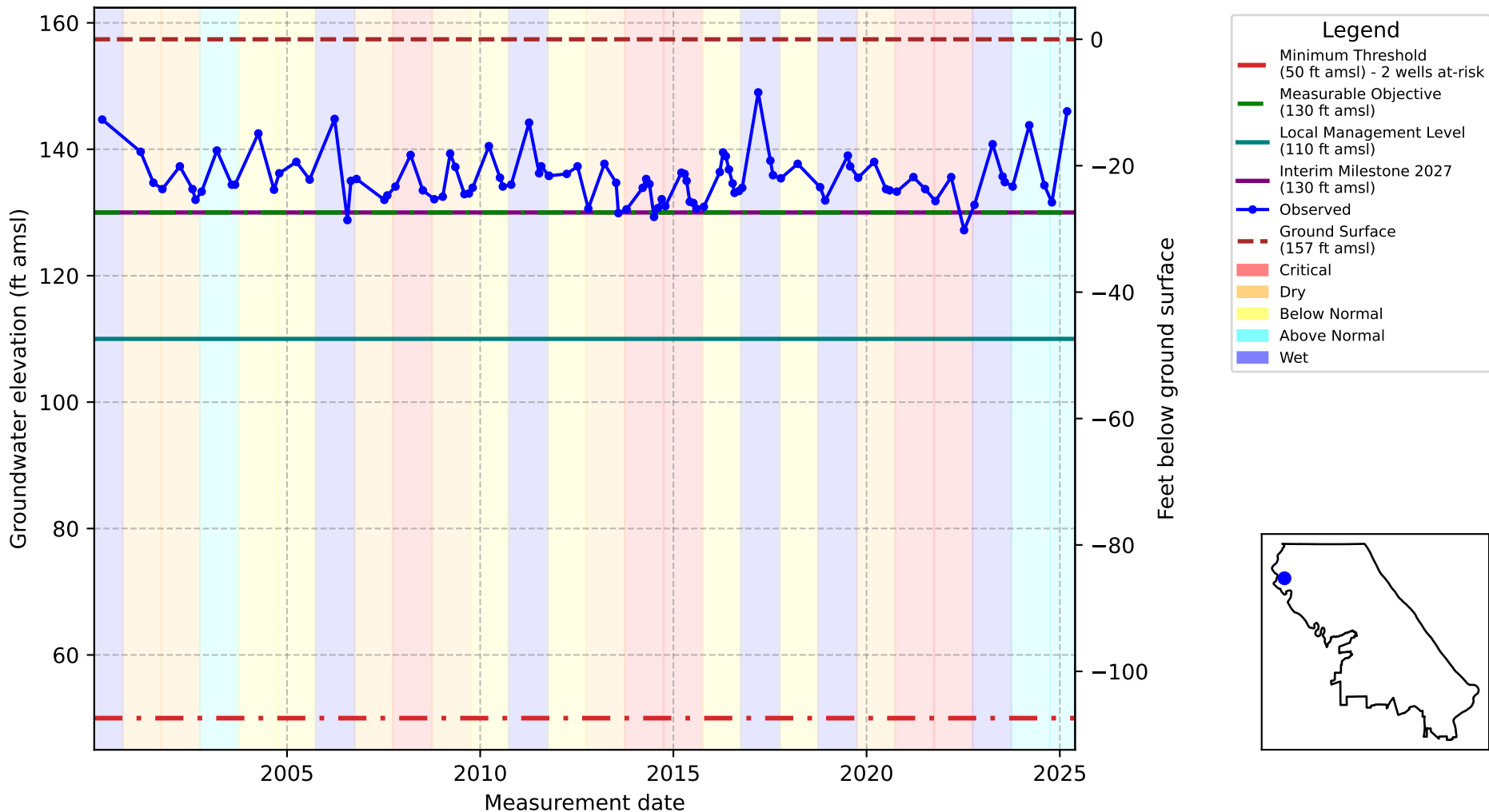
- Executive Summary: Updates to the SMCs and monitoring networks have been added to the Executive Summary.
- Section 3 - Sustainable Management Criteria: Section 3 of the amended GSP updates SMCs for land subsidence and adds Local Management Levels for groundwater levels. The revisions reflect the GSA response to the DWR recommended corrective actions and filling of data gaps.
- Section 4 - Monitoring Networks: Section 4 of the amended GSP updates the monitoring network for groundwater levels and land subsidence sustainability indicators. The revisions reflect the GSA response to the DWR's recommended corrective actions and filling of data gaps.

ATTACHMENT A

HYDROGROGRAPHS FOR GROUNDWATER LEVEL RMS WELLS

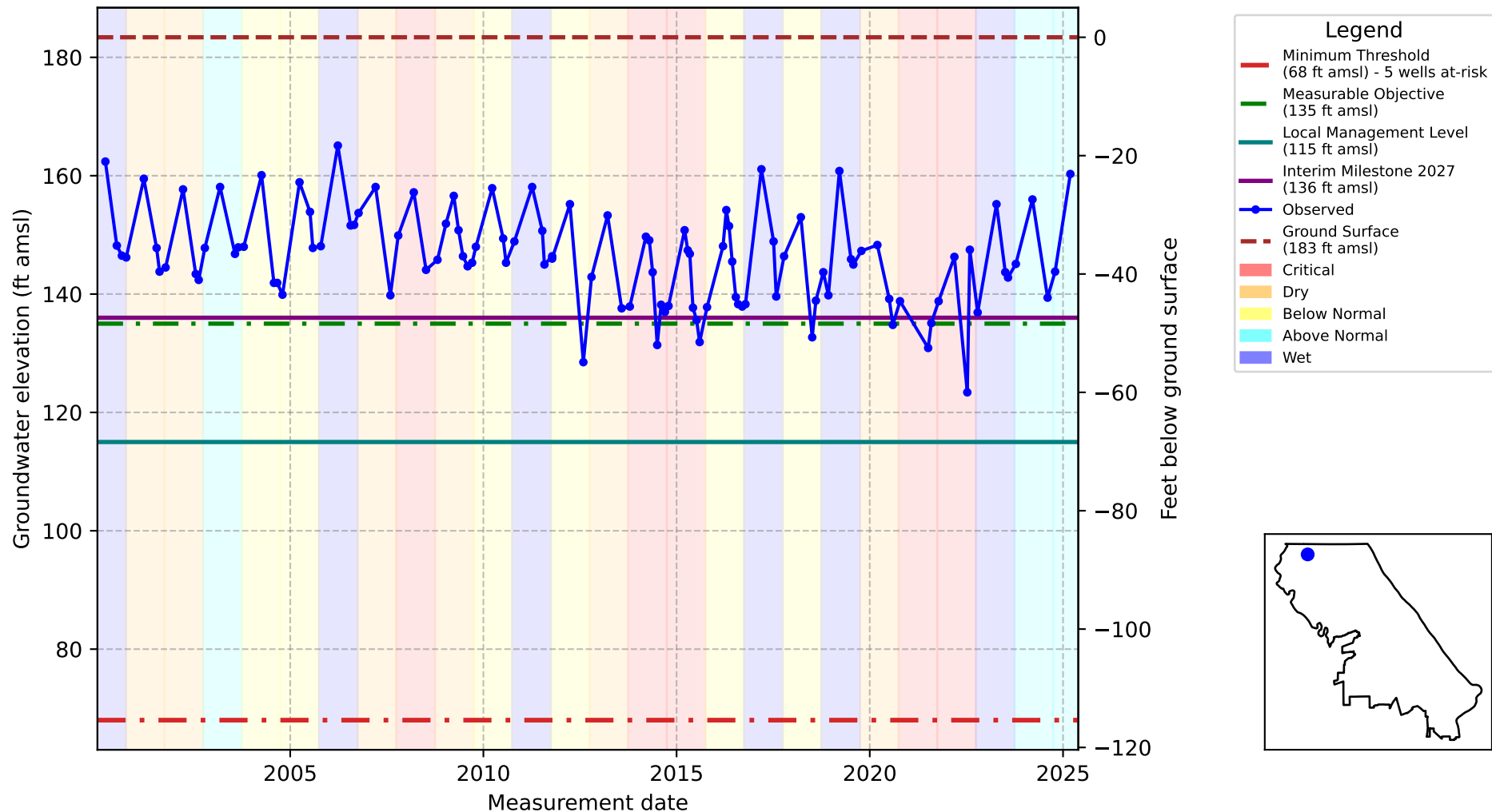
Vina Subbasin - State Well Number (SWN): 23N02W25C001M

Total Number of Domestic Wells = 6



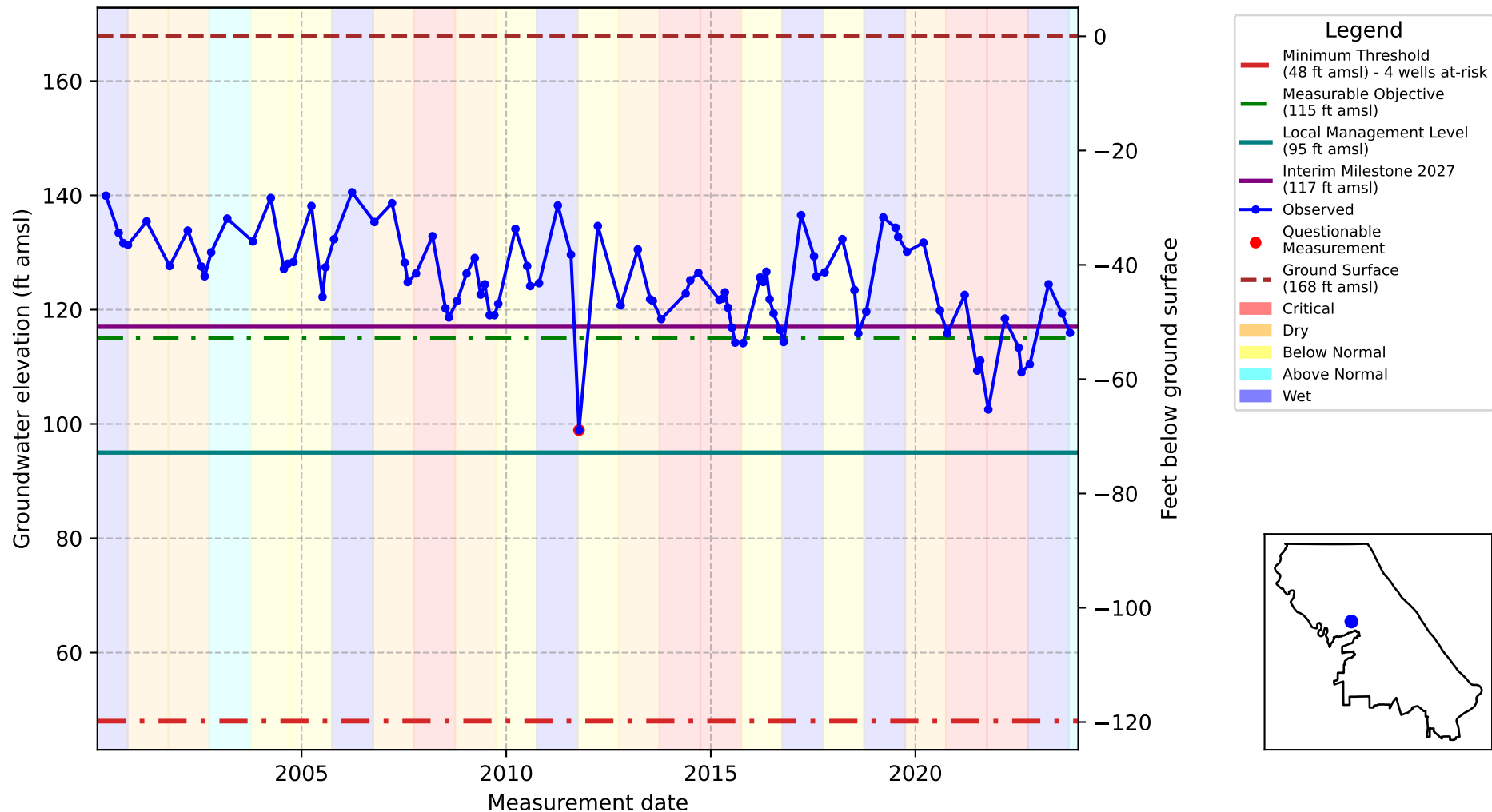
Vina Subbasin - State Well Number (SWN): 23N01W09E001M

Total Number of Domestic Wells = 12



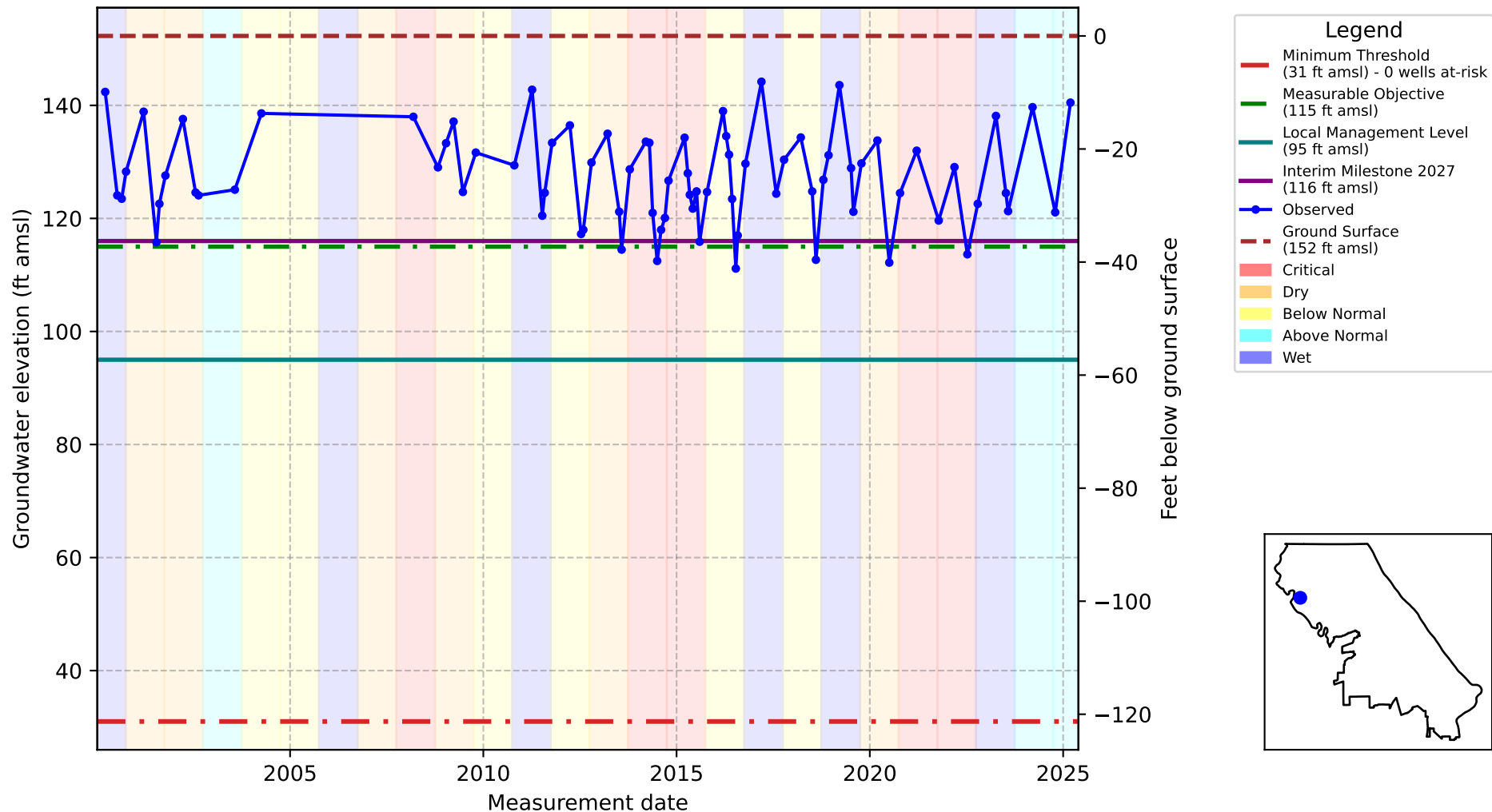
Vina Subbasin - State Well Number (SWN): 22N01E20K001M

Total Number of Domestic Wells = 108



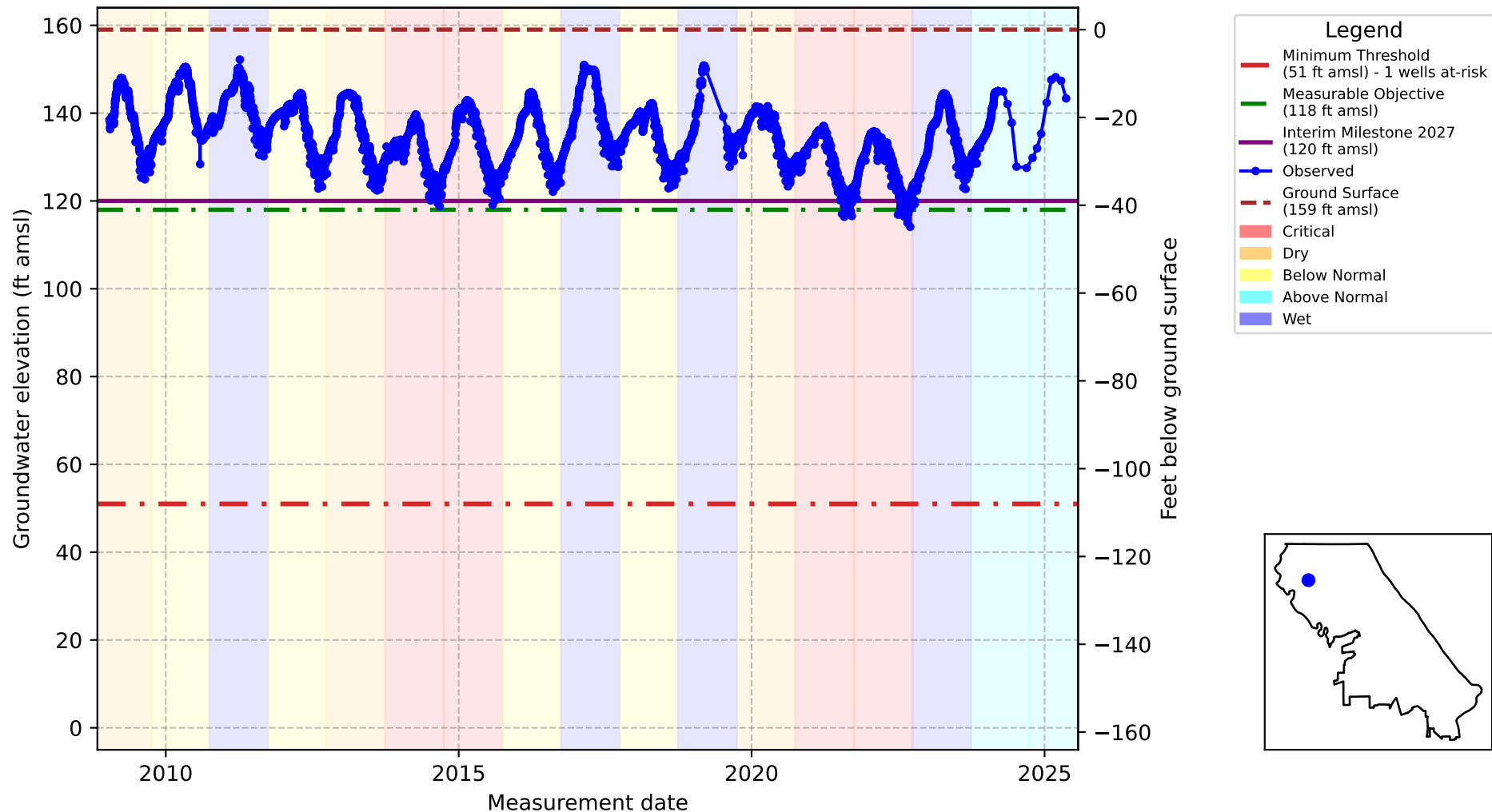
Vina Subbasin - State Well Number (SWN): 22N01W05M001M

Total Number of Domestic Wells = 1



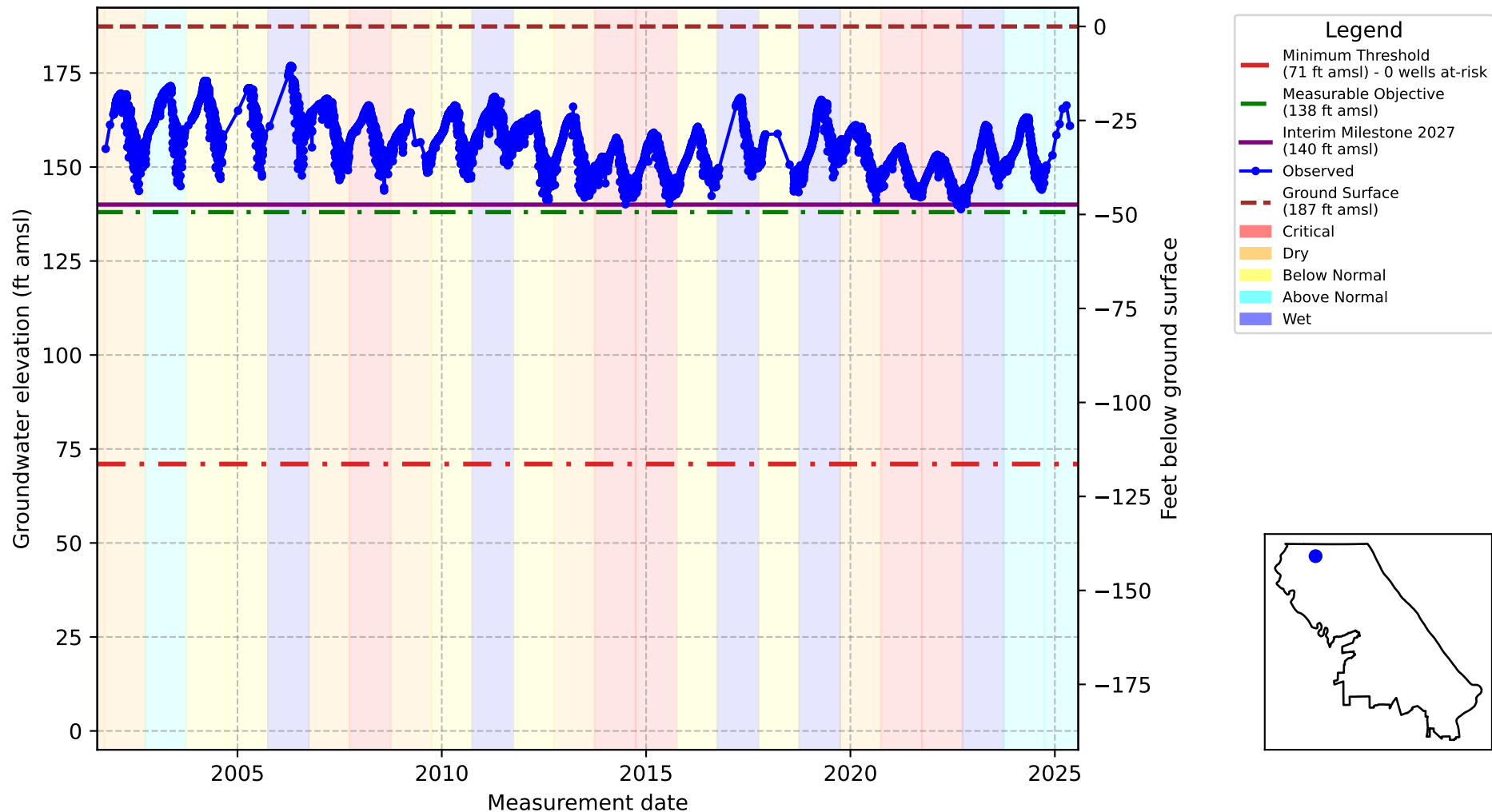
Vina Subbasin - State Well Number (SWN): 23N01W28M004M

Total Number of Domestic Wells = 6



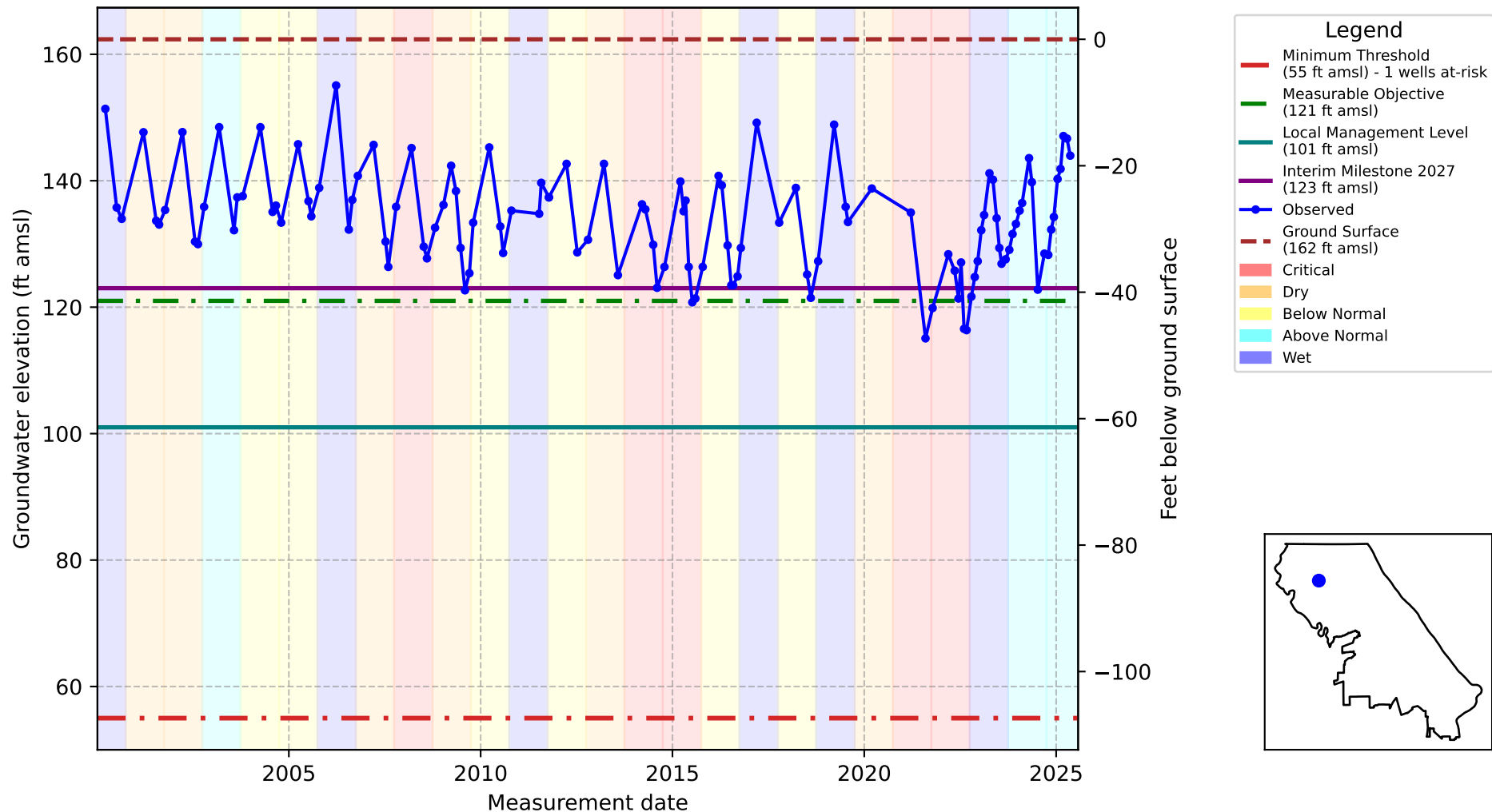
Vina Subbasin - State Well Number (SWN): 23N01W10M001M

Total Number of Domestic Wells = 7



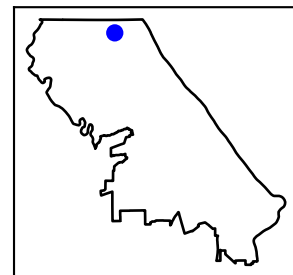
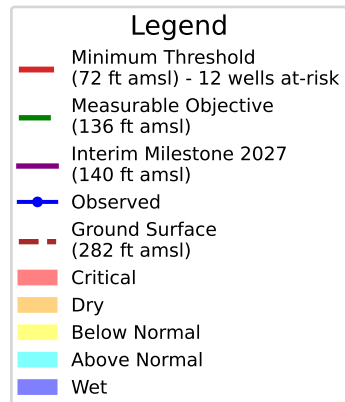
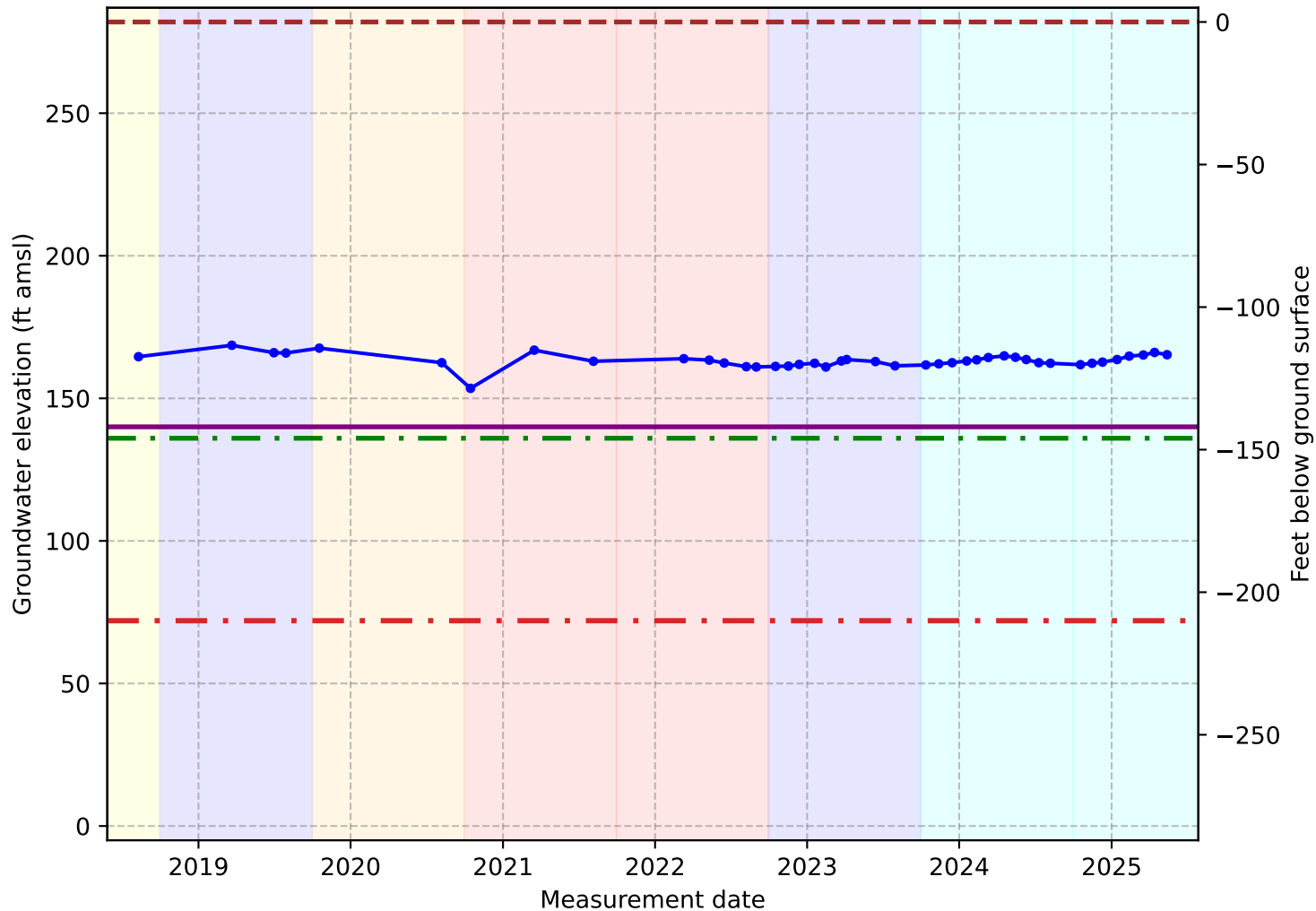
Vina Subbasin - State Well Number (SWN): 23N01W27L001M

Total Number of Domestic Wells = 15



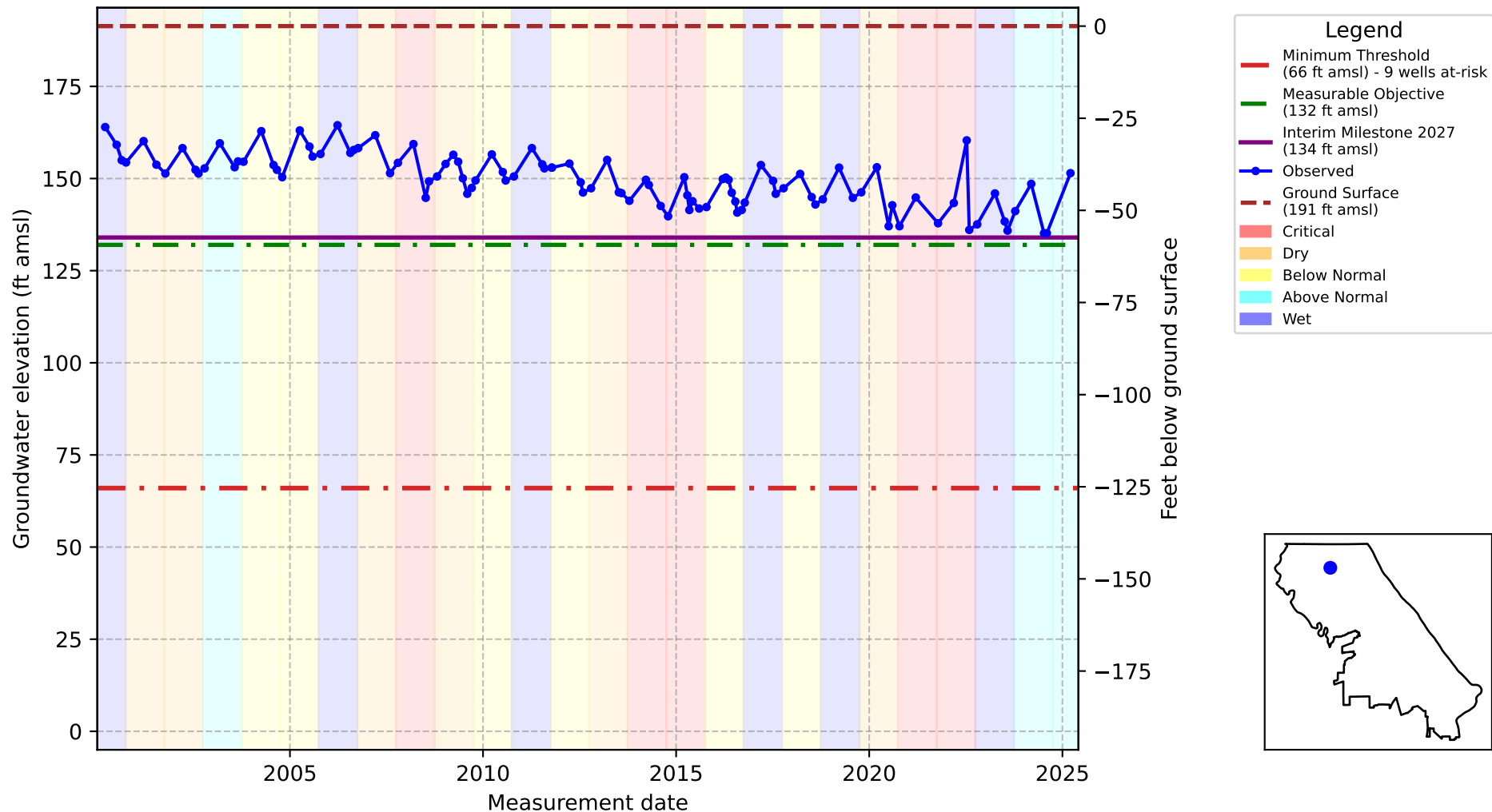
Vina Subbasin - State Well Number (SWN): 23N01E07H001M

Total Number of Domestic Wells = 32



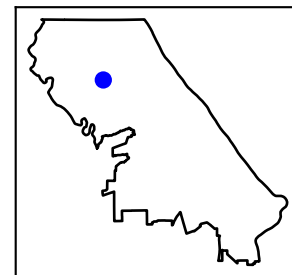
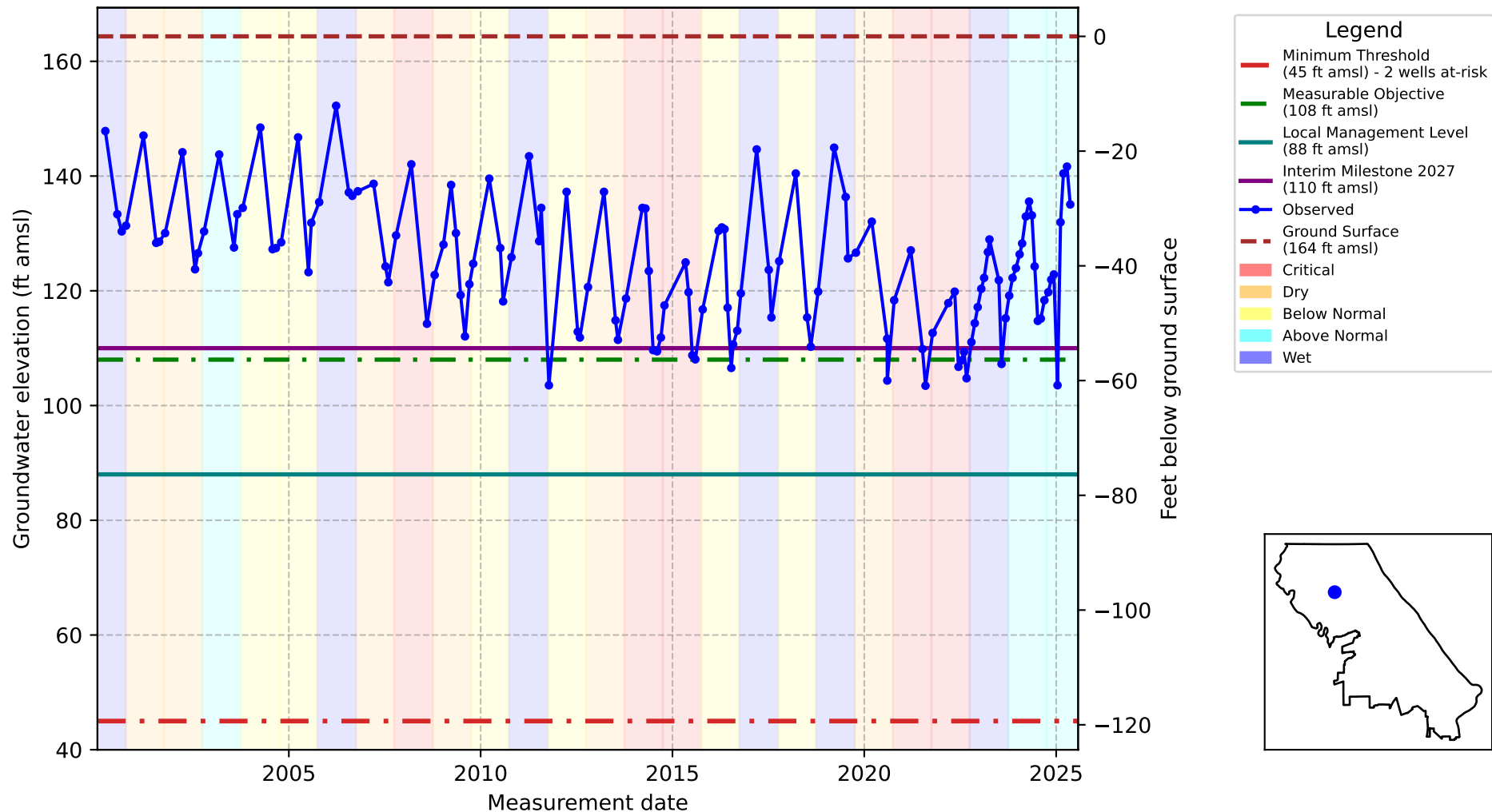
Vina Subbasin - State Well Number (SWN): 23N01W14R002M

Total Number of Domestic Wells = 30



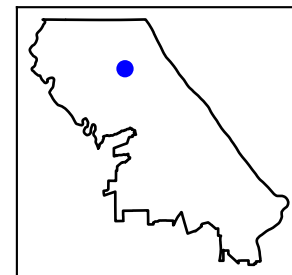
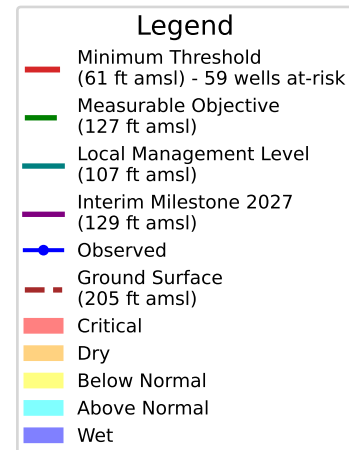
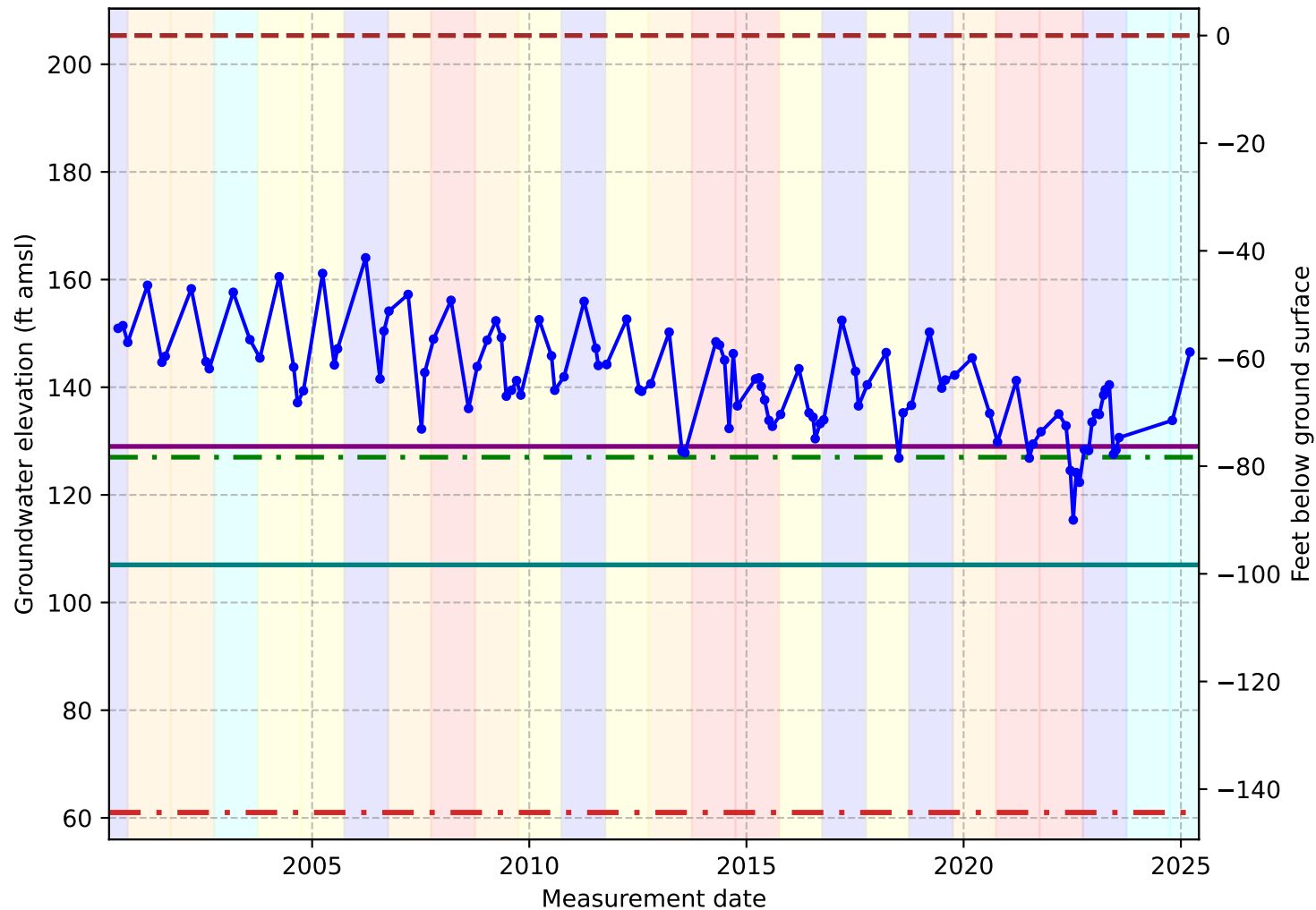
Vina Subbasin - State Well Number (SWN): 23N01W36P001M

Total Number of Domestic Wells = 53



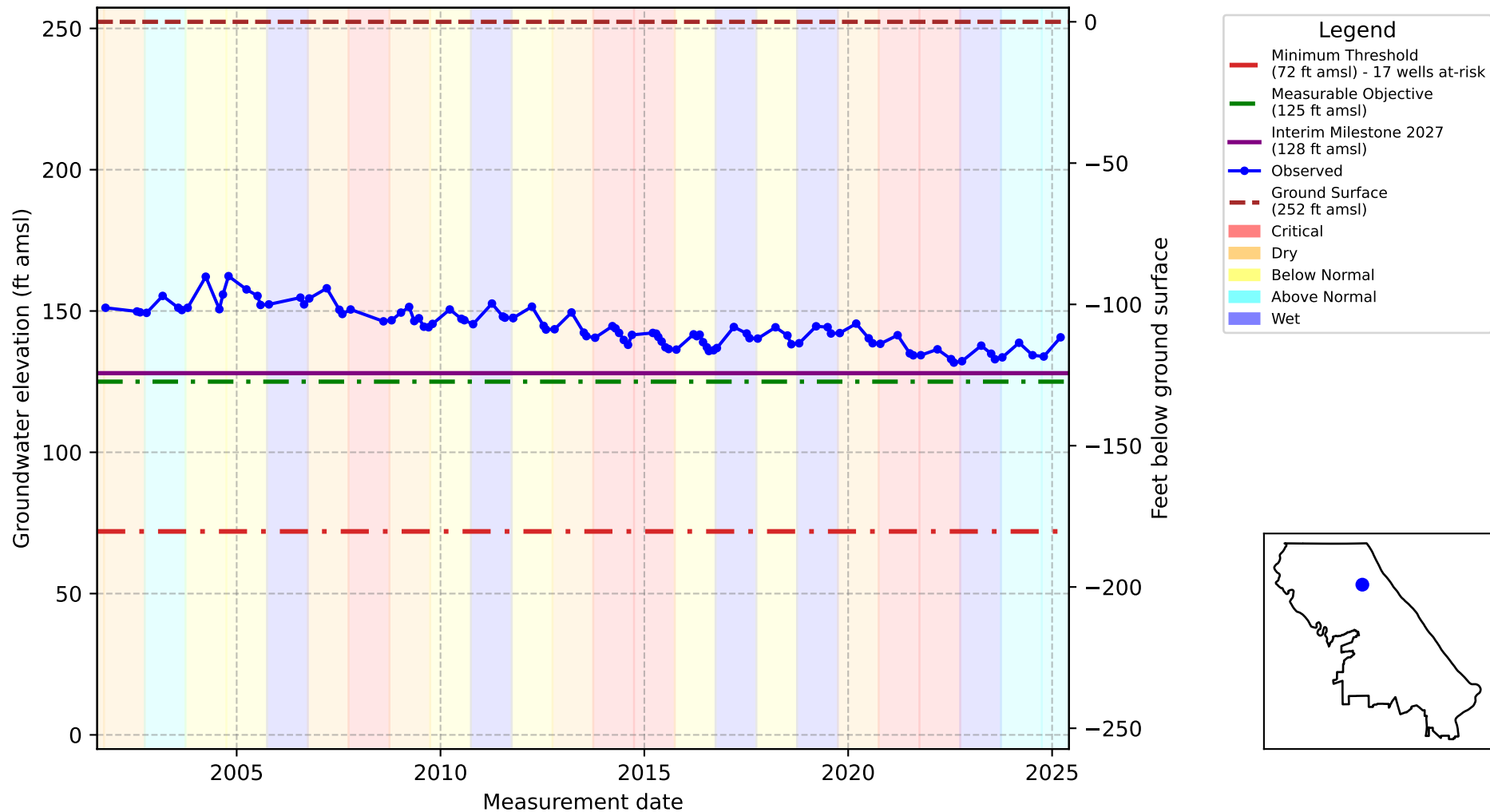
Vina Subbasin - State Well Number (SWN): 23N01E29P002M

Total Number of Domestic Wells = 239



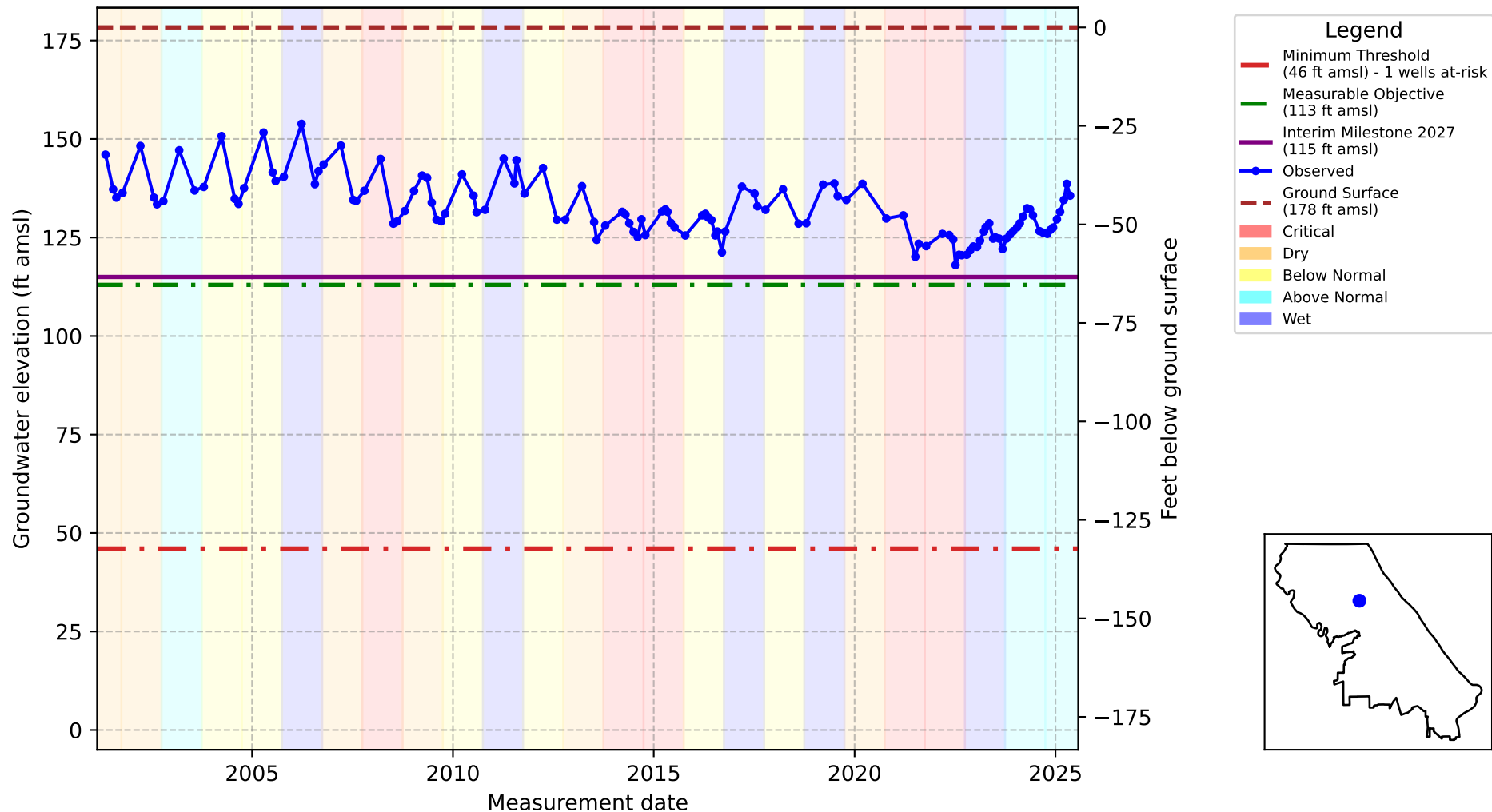
Vina Subbasin - State Well Number (SWN): 23N01E33A001M

Total Number of Domestic Wells = 88



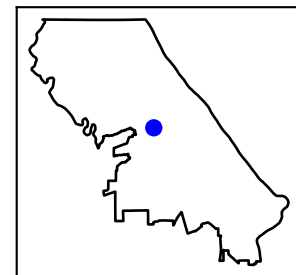
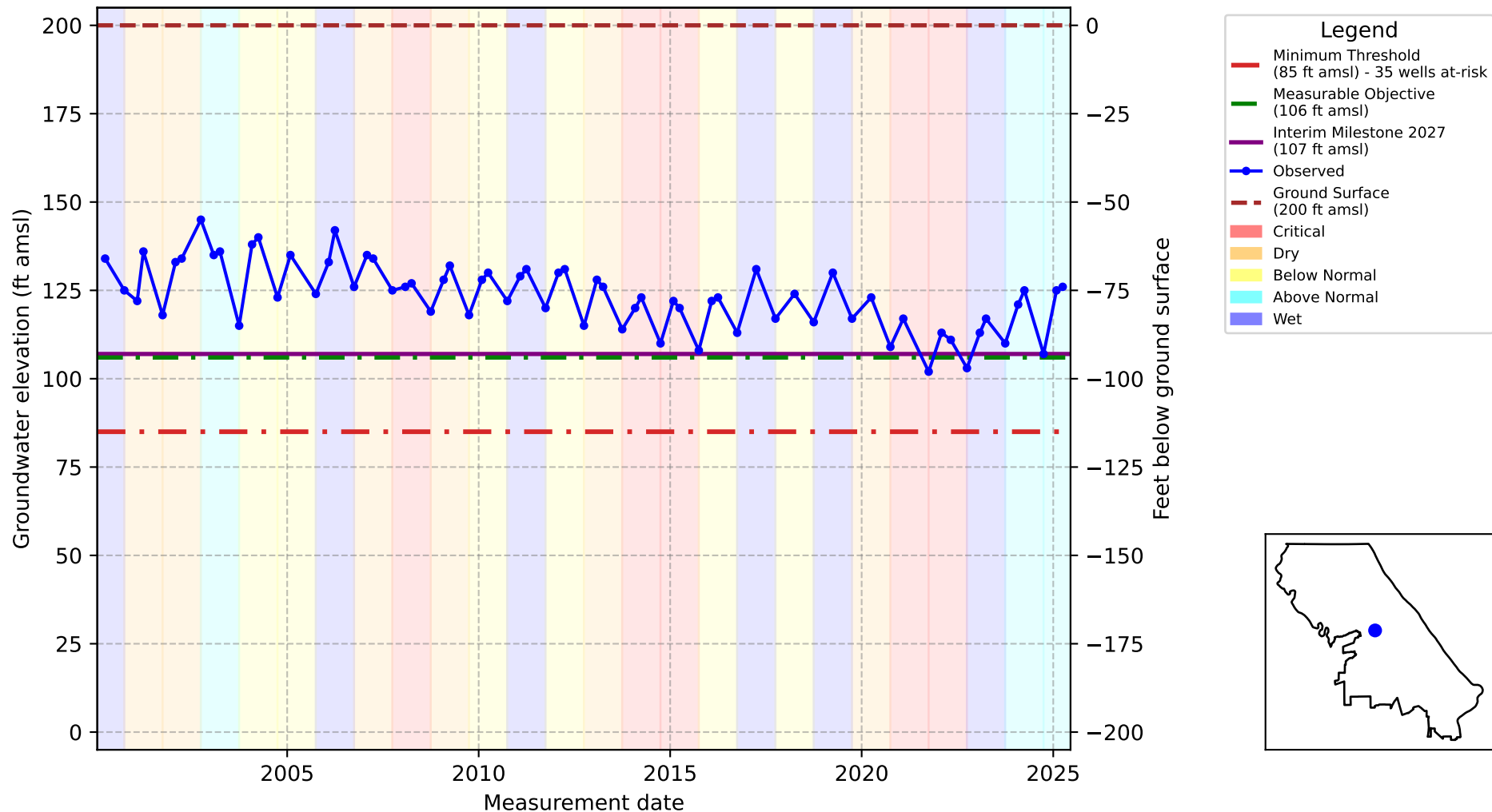
Vina Subbasin - State Well Number (SWN): 22N01E09B001M

Total Number of Domestic Wells = 12



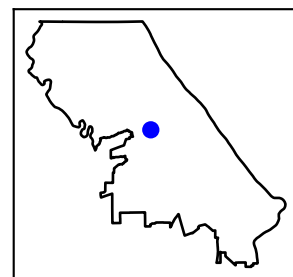
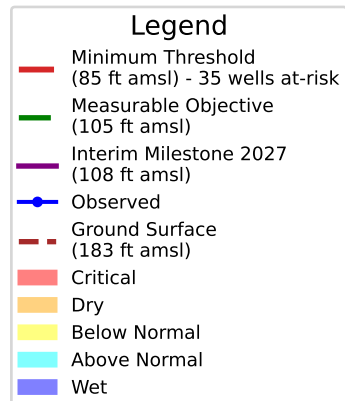
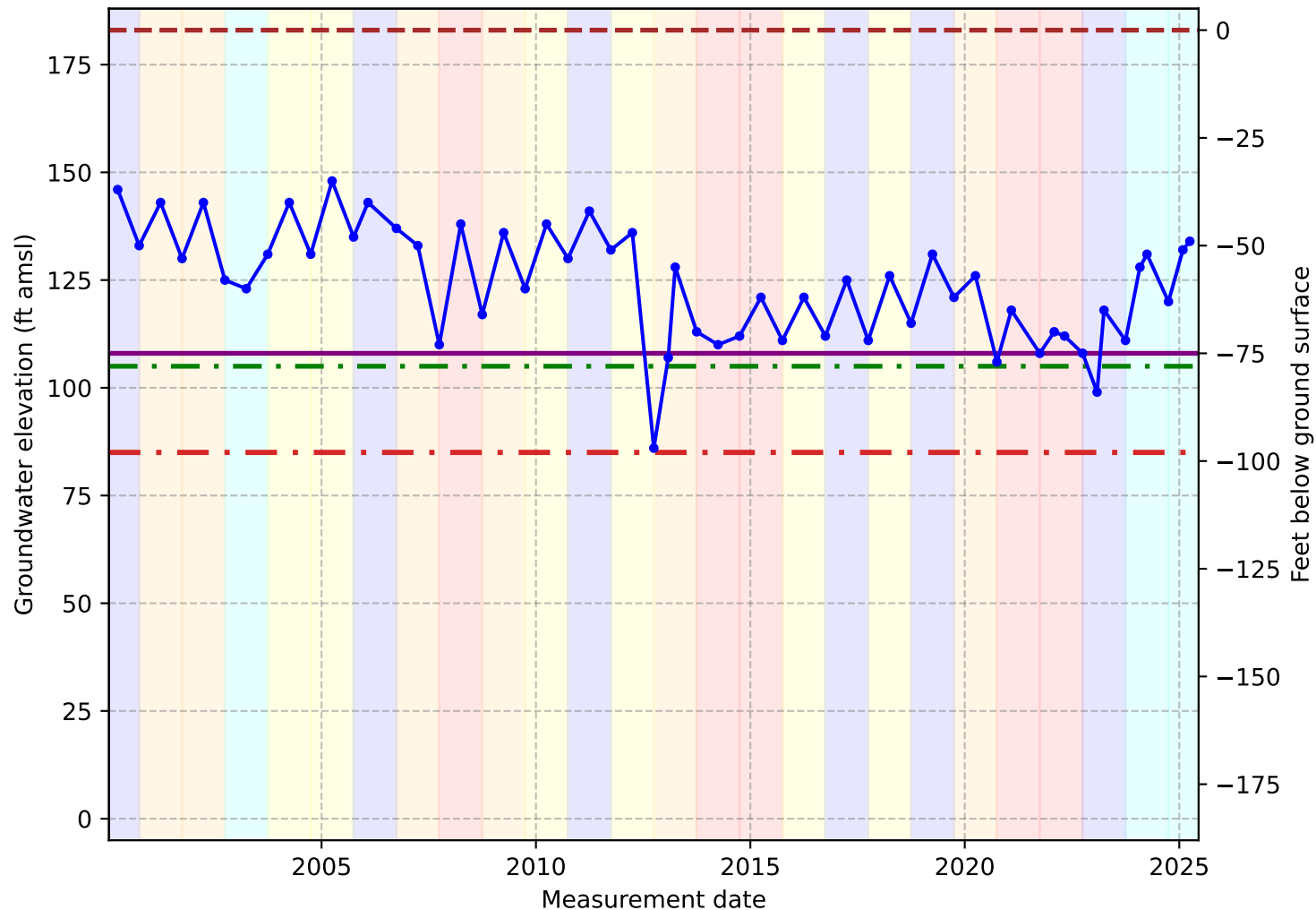
Vina Subbasin - State Well Number (SWN): PWSCH01b

Total Number of Domestic Wells = 387



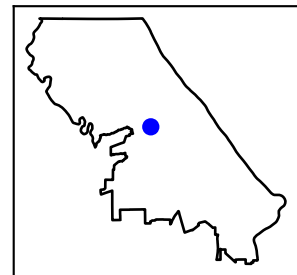
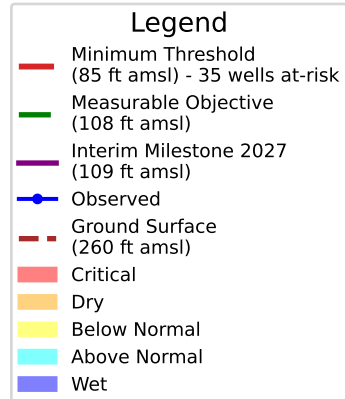
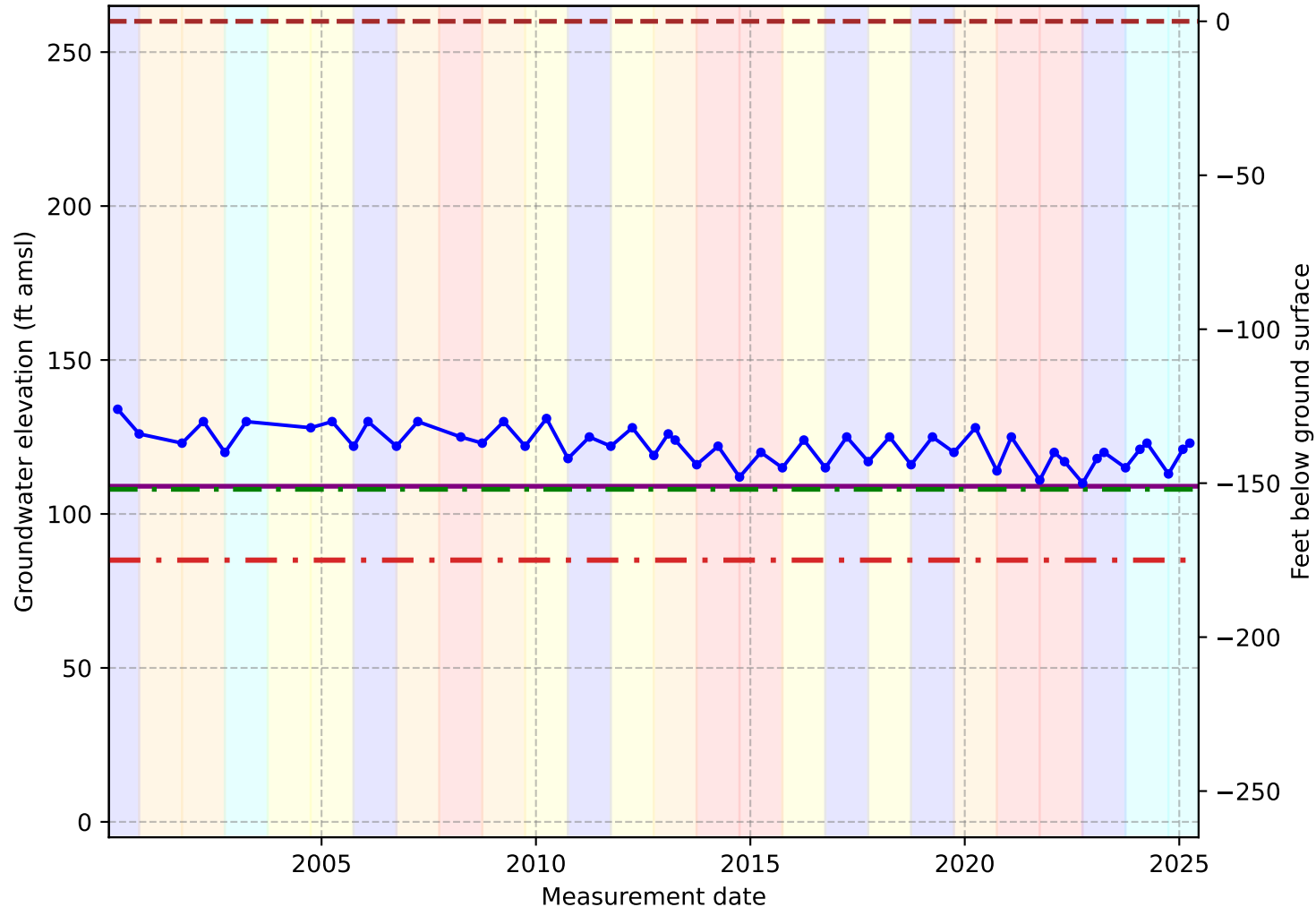
Vina Subbasin - State Well Number (SWN): PWSCH02

Total Number of Domestic Wells = 387



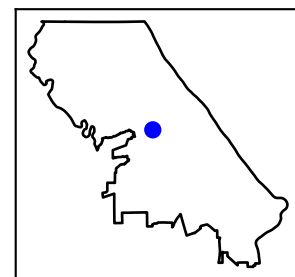
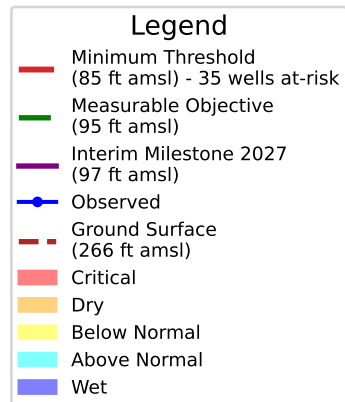
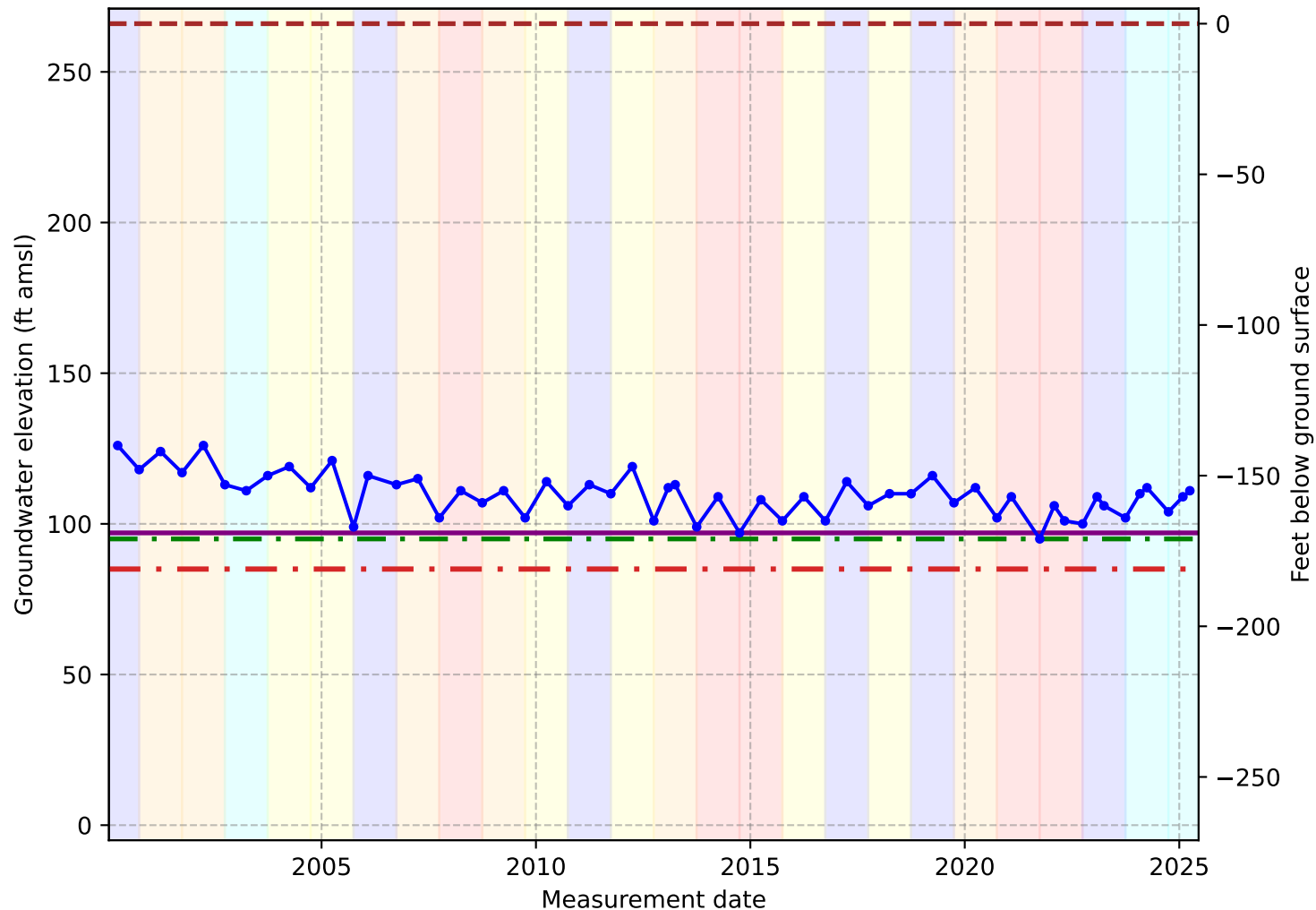
Vina Subbasin - State Well Number (SWN): PWSCH03

Total Number of Domestic Wells = 387



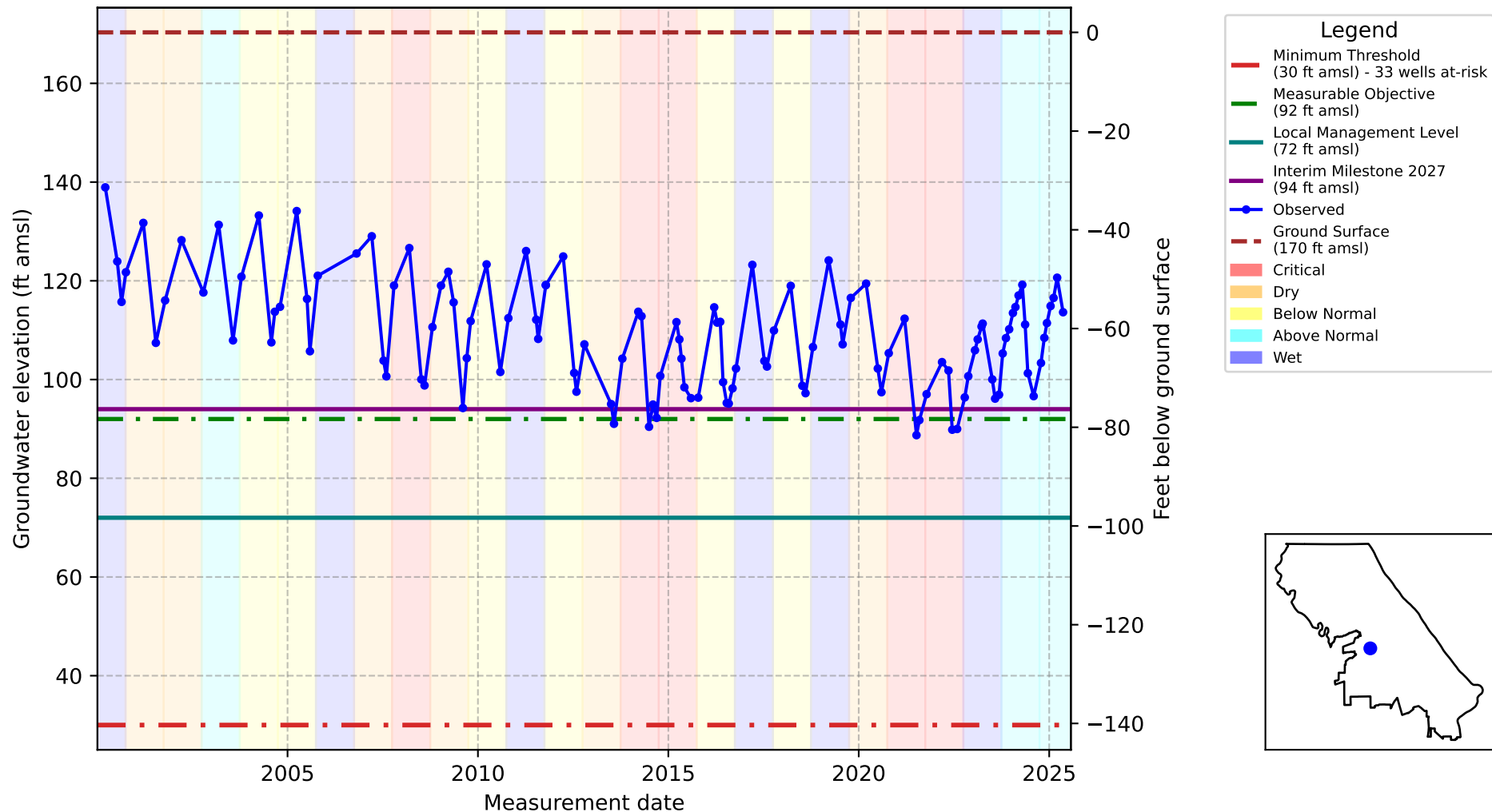
Vina Subbasin - State Well Number (SWN): PWSCH07

Total Number of Domestic Wells = 387



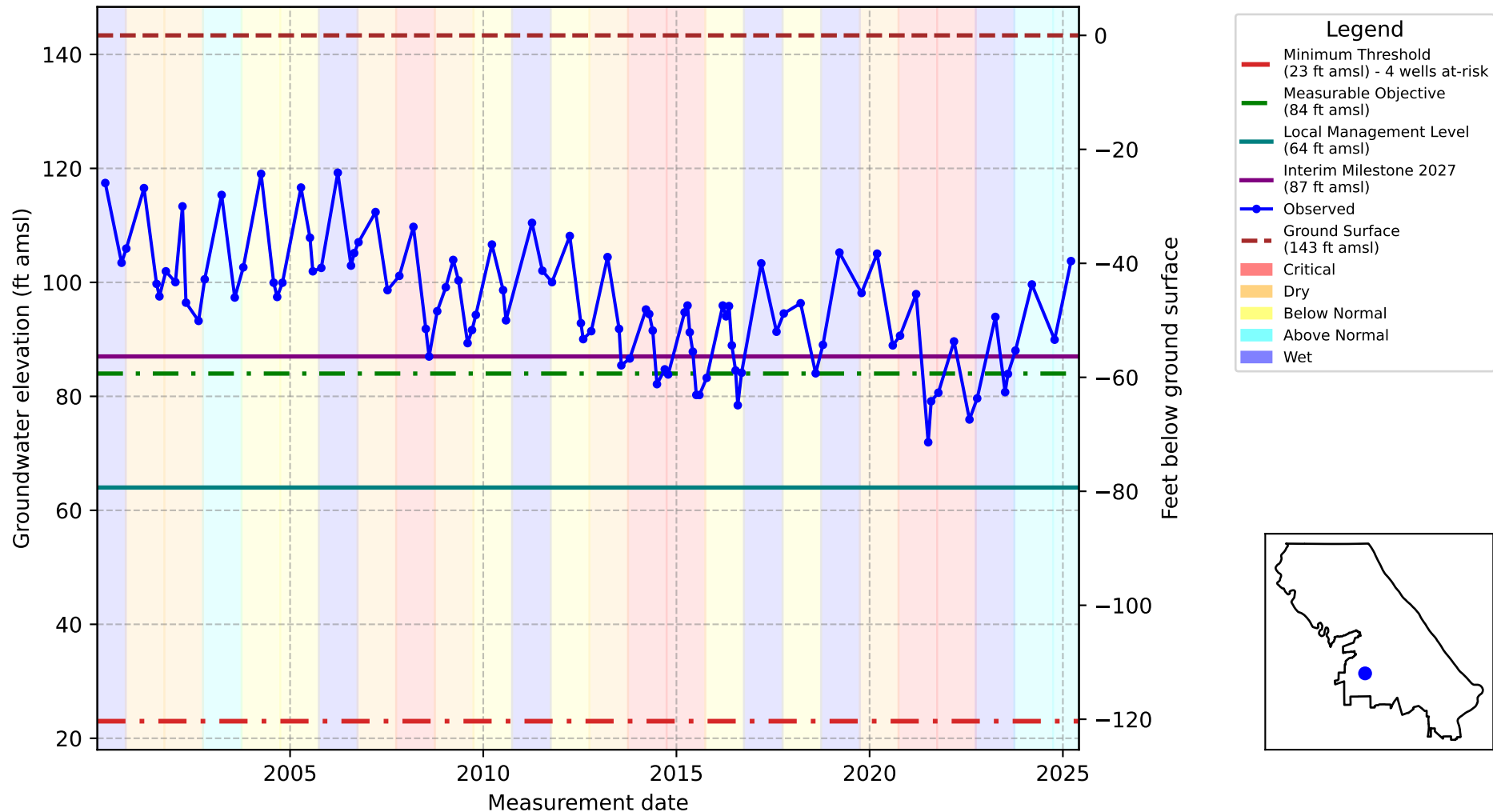
Vina Subbasin - State Well Number (SWN): 21N01E10B003M

Total Number of Domestic Wells = 105



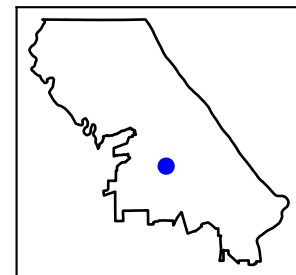
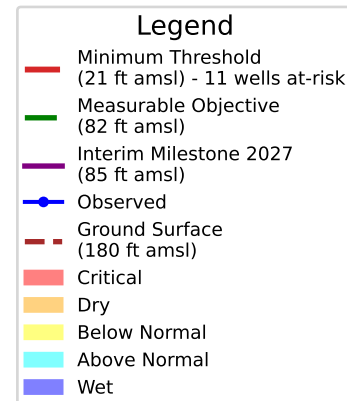
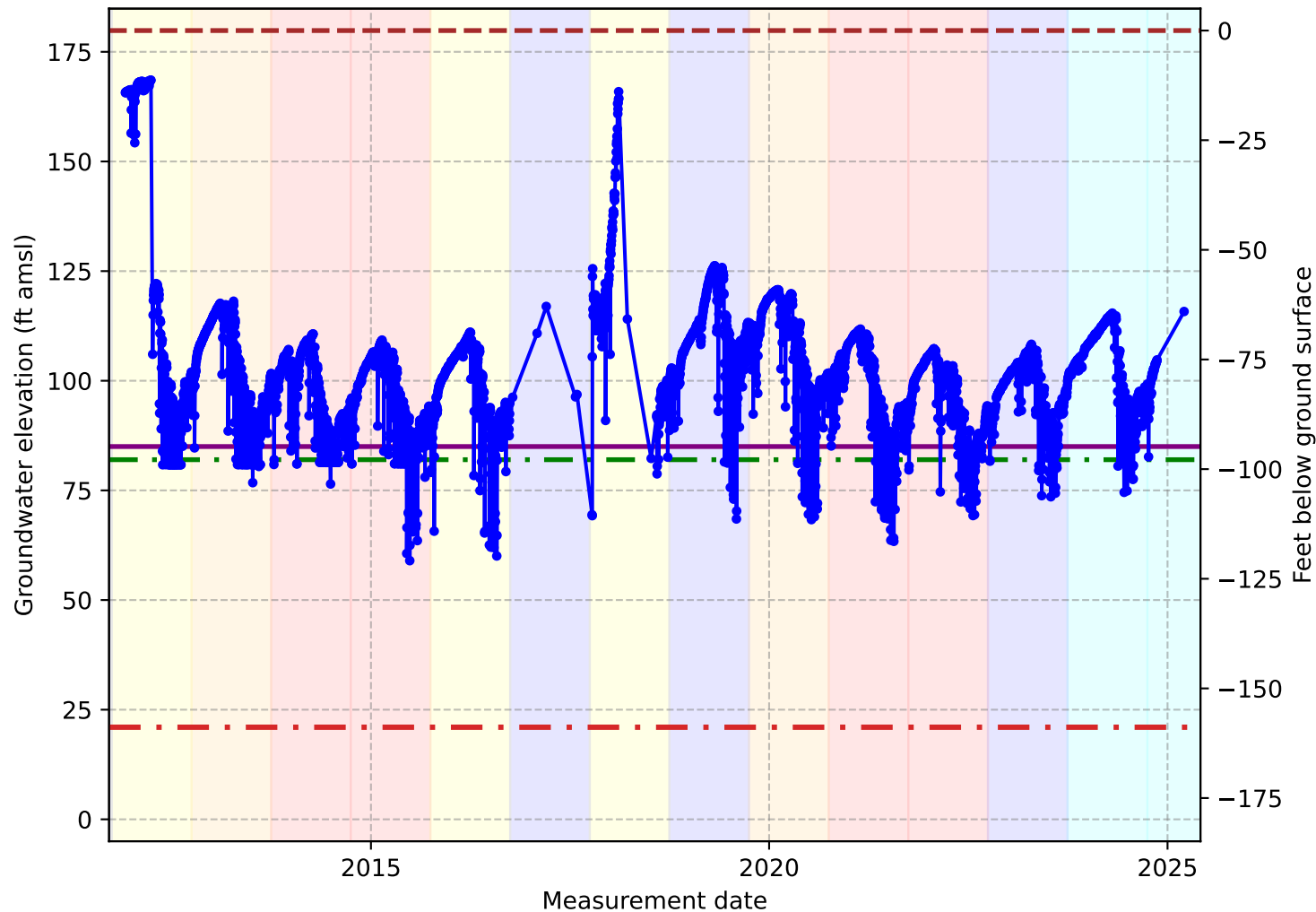
Vina Subbasin - State Well Number (SWN): 21N01E27D001M

Total Number of Domestic Wells = 61



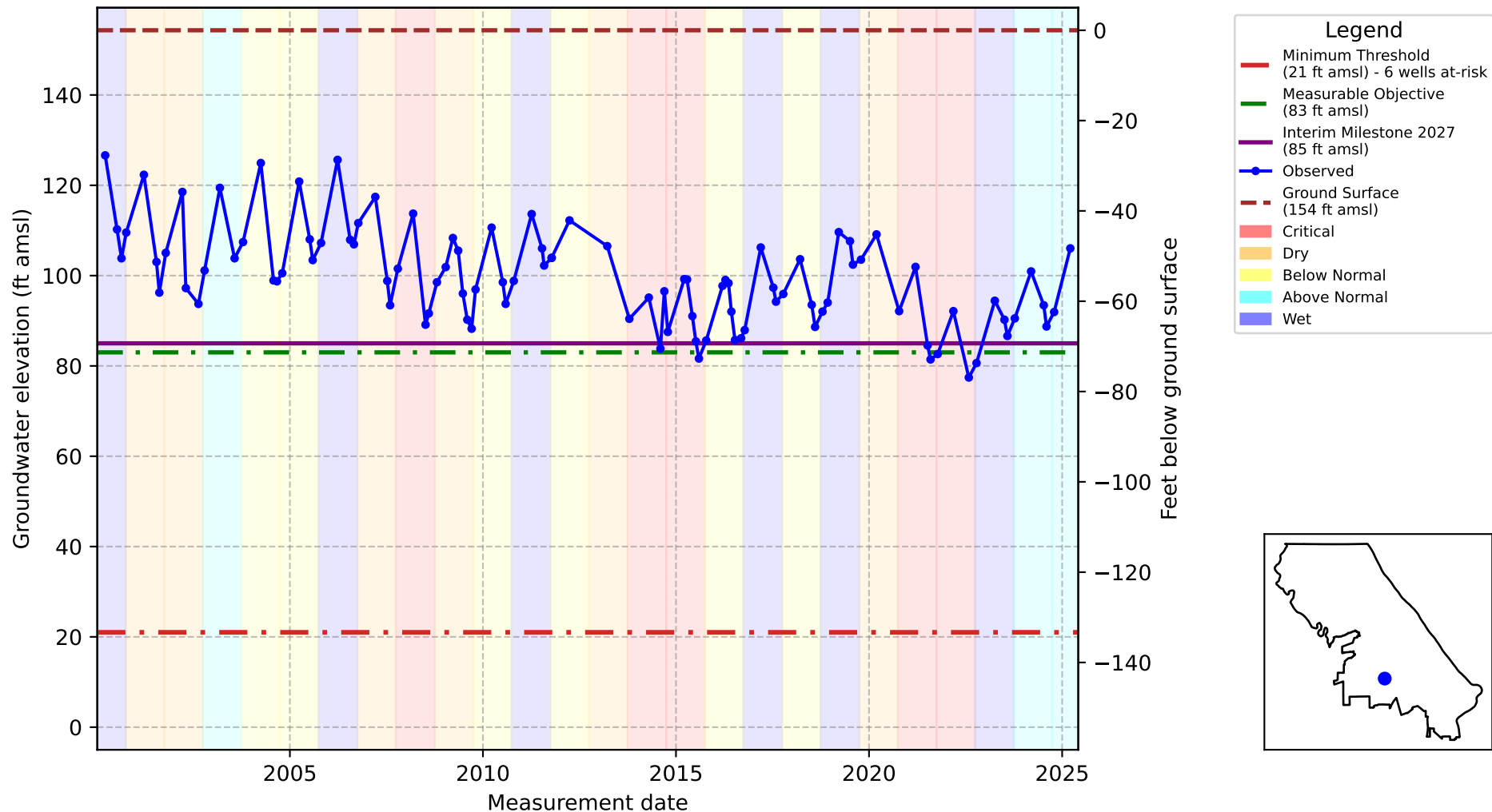
Vina Subbasin - State Well Number (SWN): 21N01E13L004M

Total Number of Domestic Wells = 28



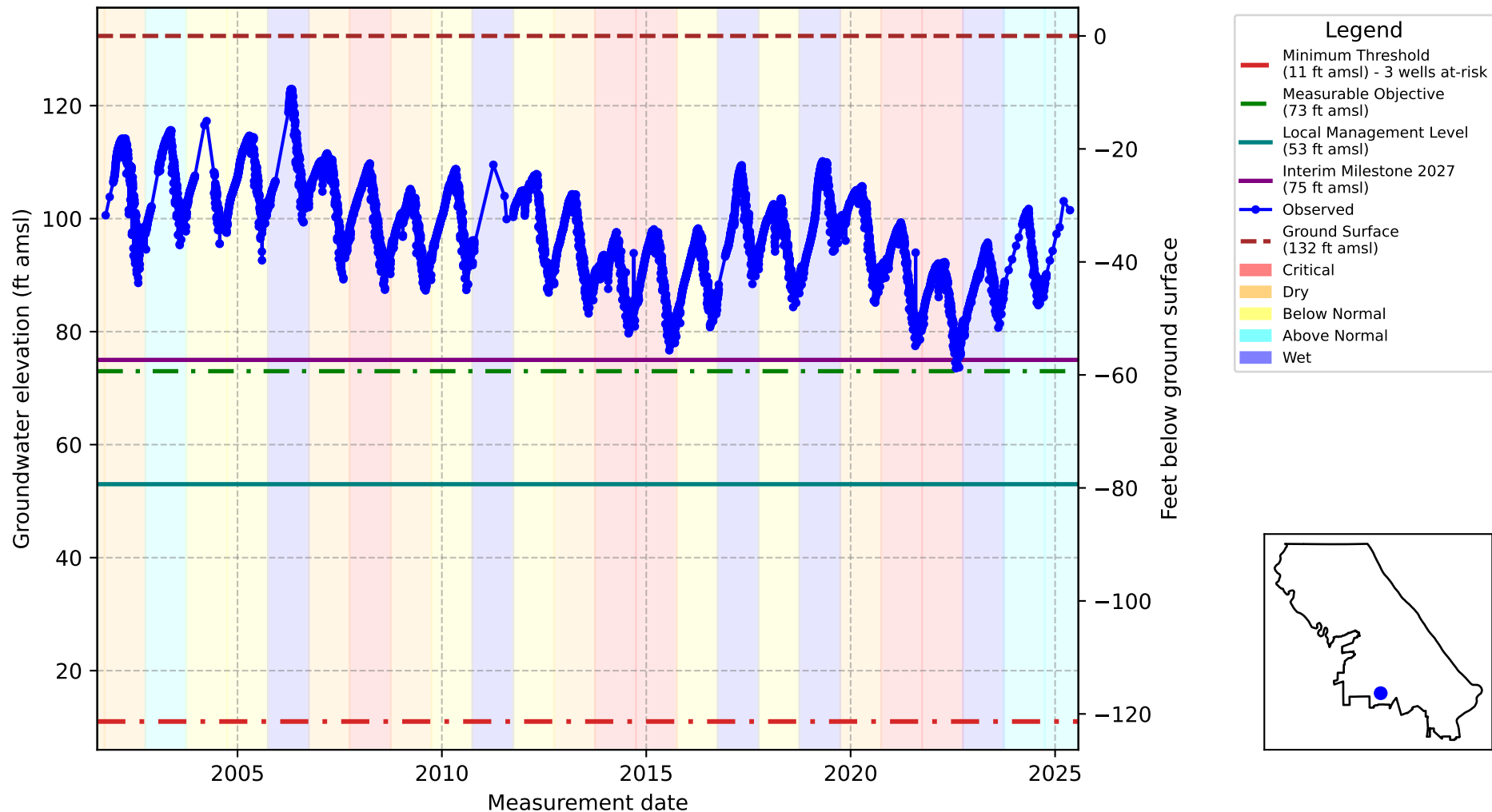
Vina Subbasin - State Well Number (SWN): 21N01E25K001M

Total Number of Domestic Wells = 27



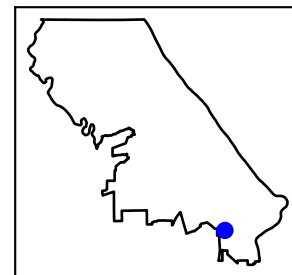
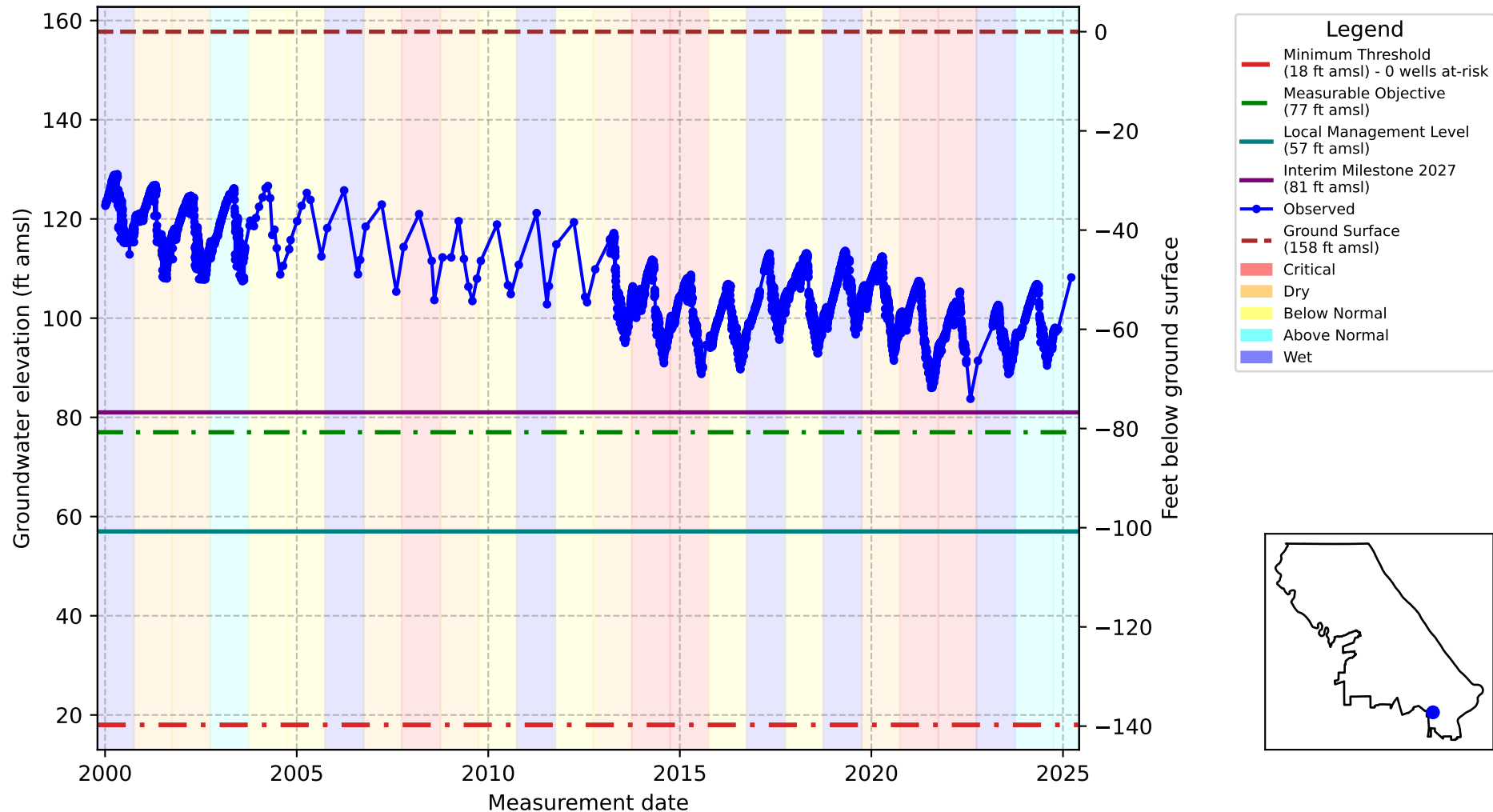
Vina Subbasin - State Well Number (SWN): 20N01E02H003M

Total Number of Domestic Wells = 15



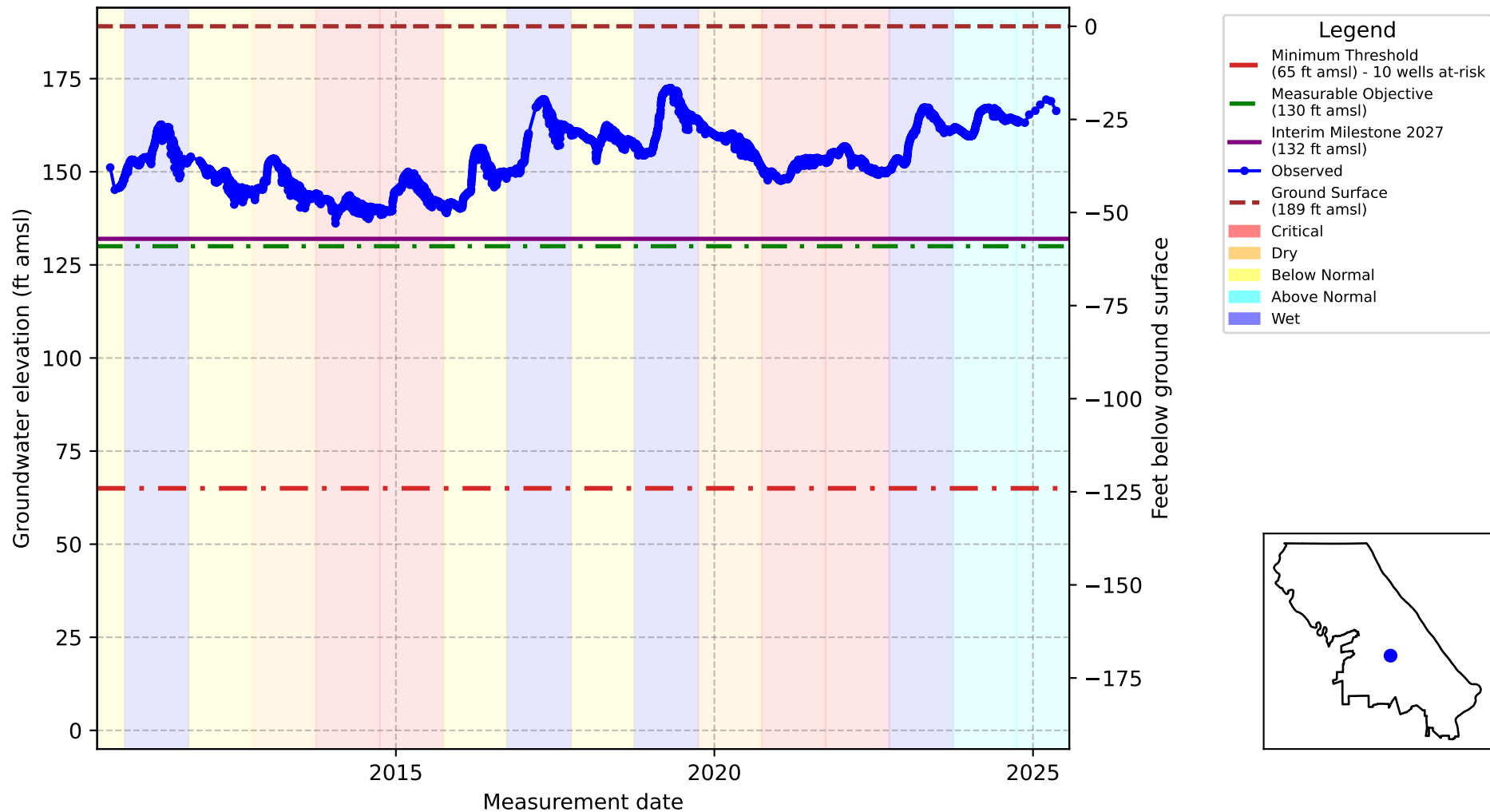
Vina Subbasin - State Well Number (SWN): 20N02E24C001M

Total Number of Domestic Wells = 7



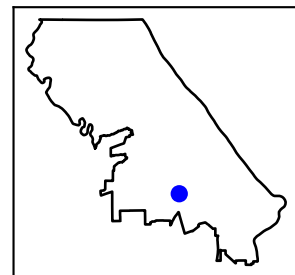
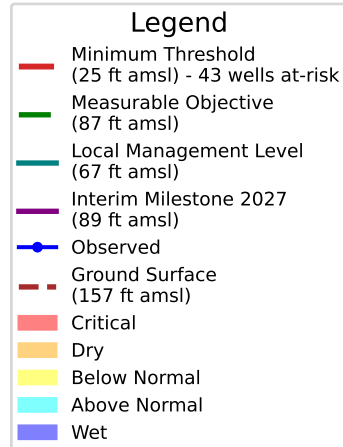
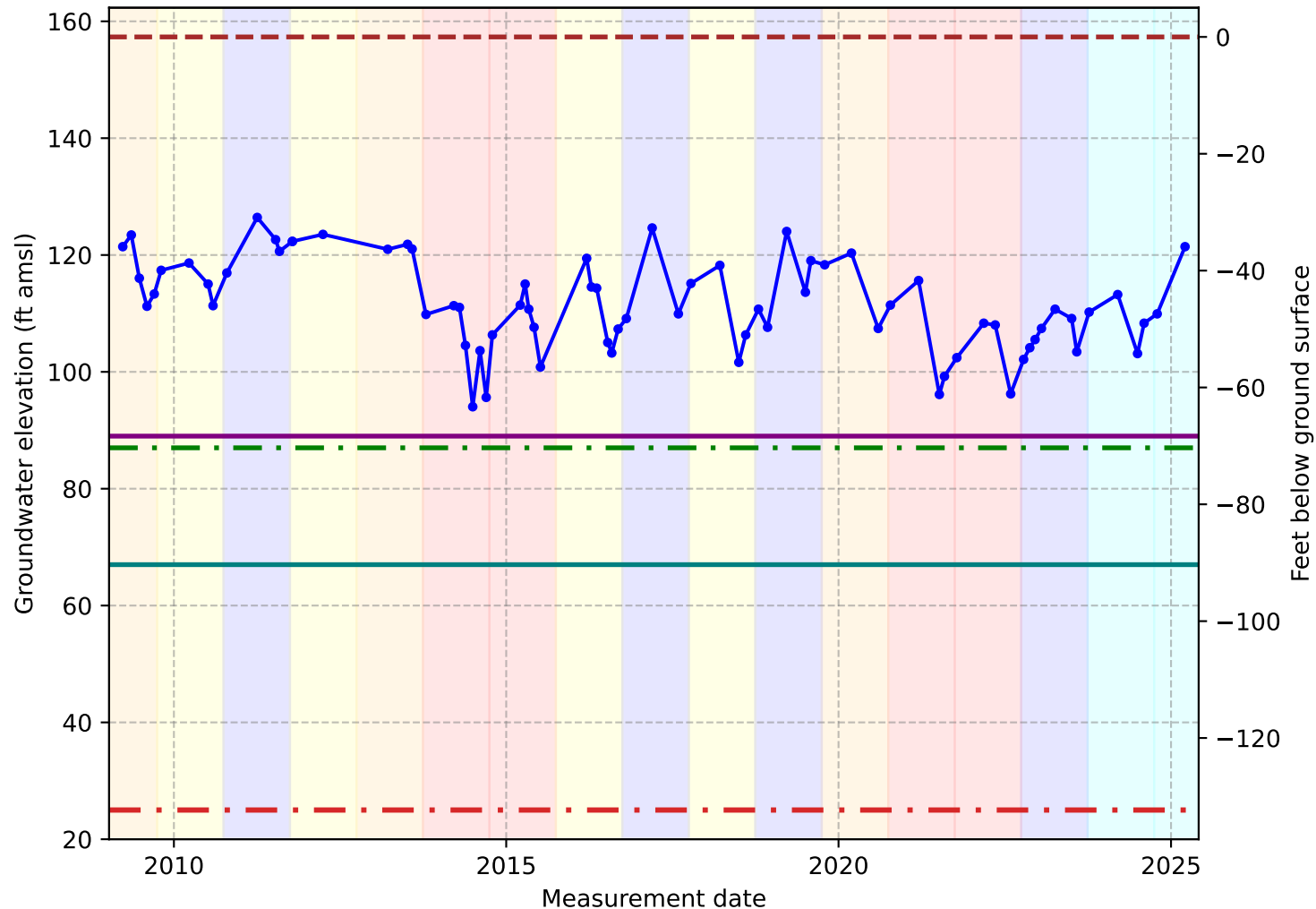
Vina Subbasin - State Well Number (SWN): 21N02E18C003M

Total Number of Domestic Wells = 92



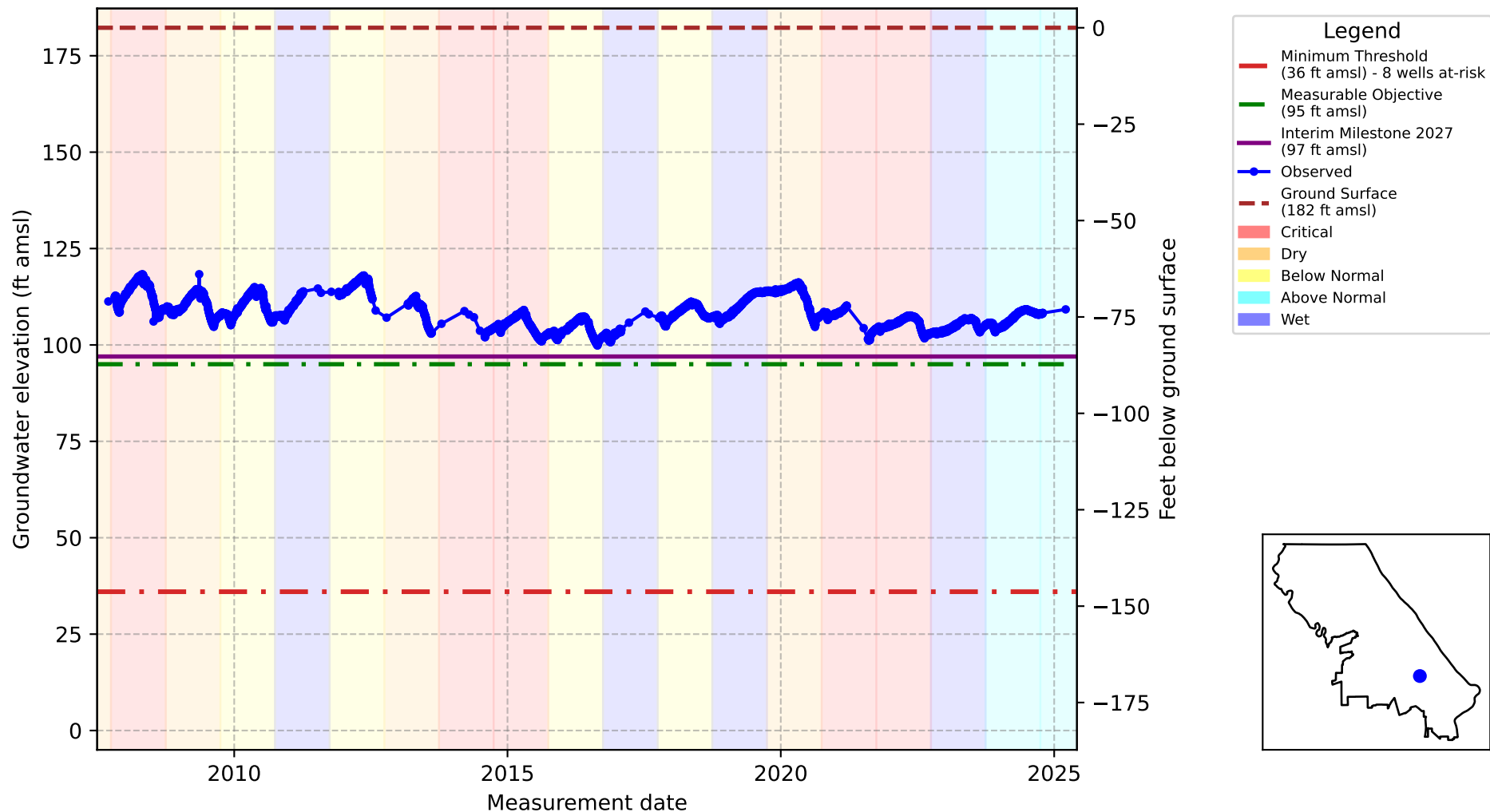
Vina Subbasin - State Well Number (SWN): 21N02E32E001M

Total Number of Domestic Wells = 110



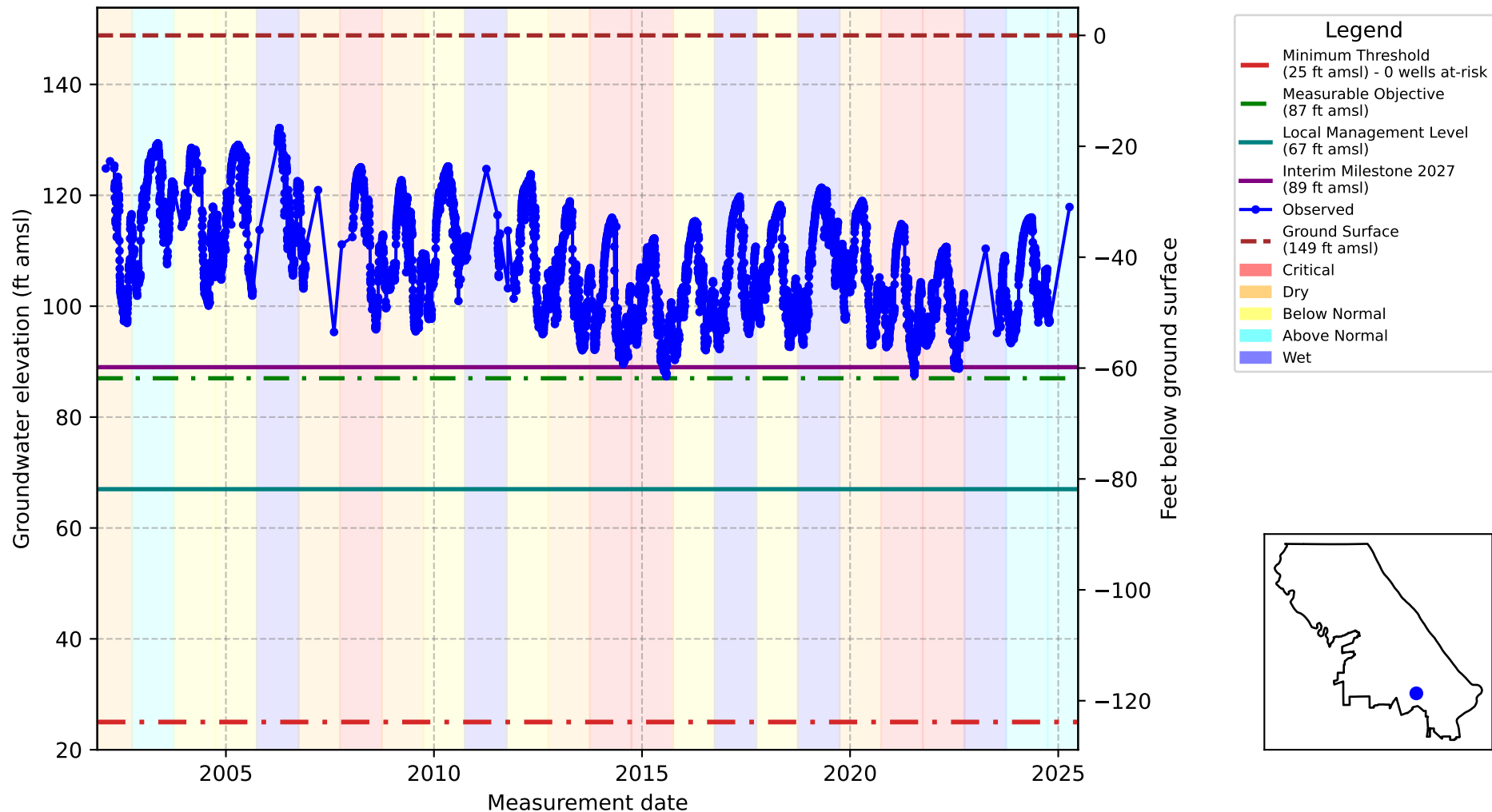
Vina Subbasin - State Well Number (SWN): 21N02E26E006M

Total Number of Domestic Wells = 20



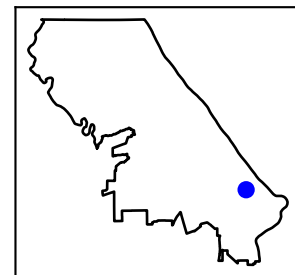
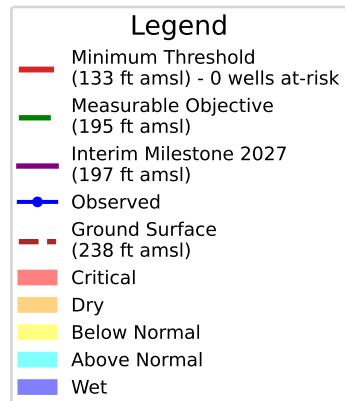
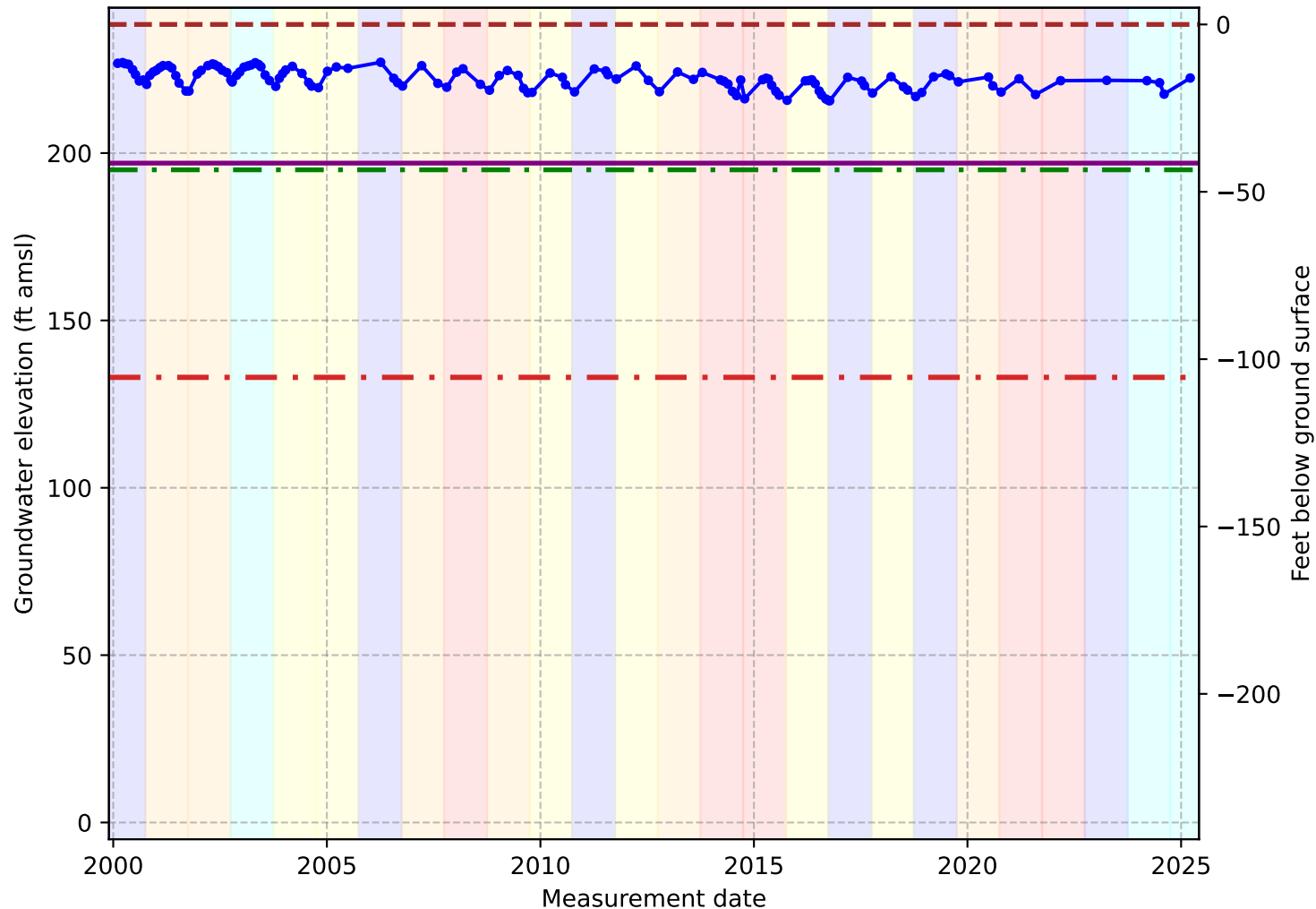
Vina Subbasin - State Well Number (SWN): 20N02E09G001M

Total Number of Domestic Wells = 2



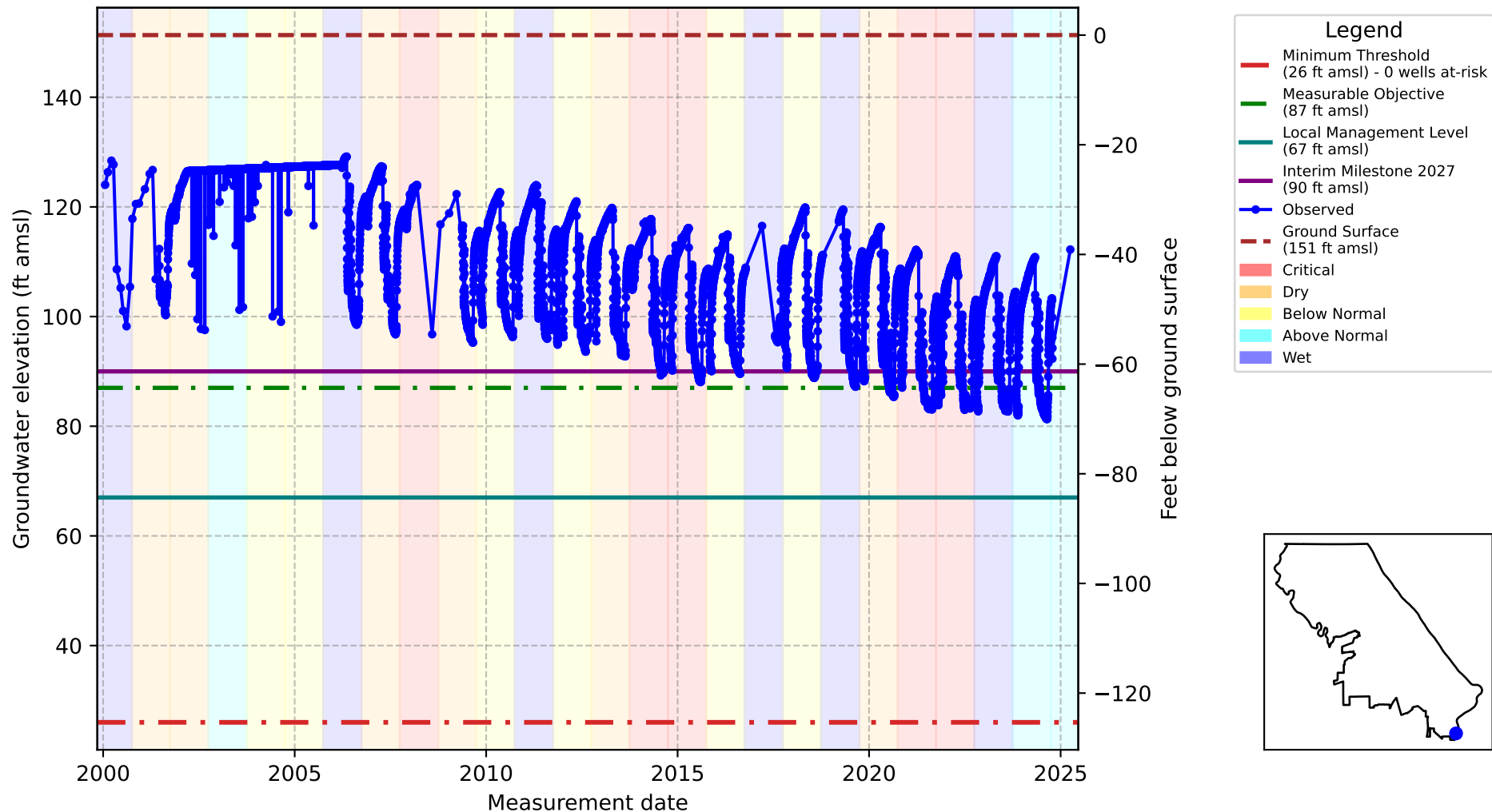
Vina Subbasin - State Well Number (SWN): 21N03E32B001M

Total Number of Domestic Wells = 7

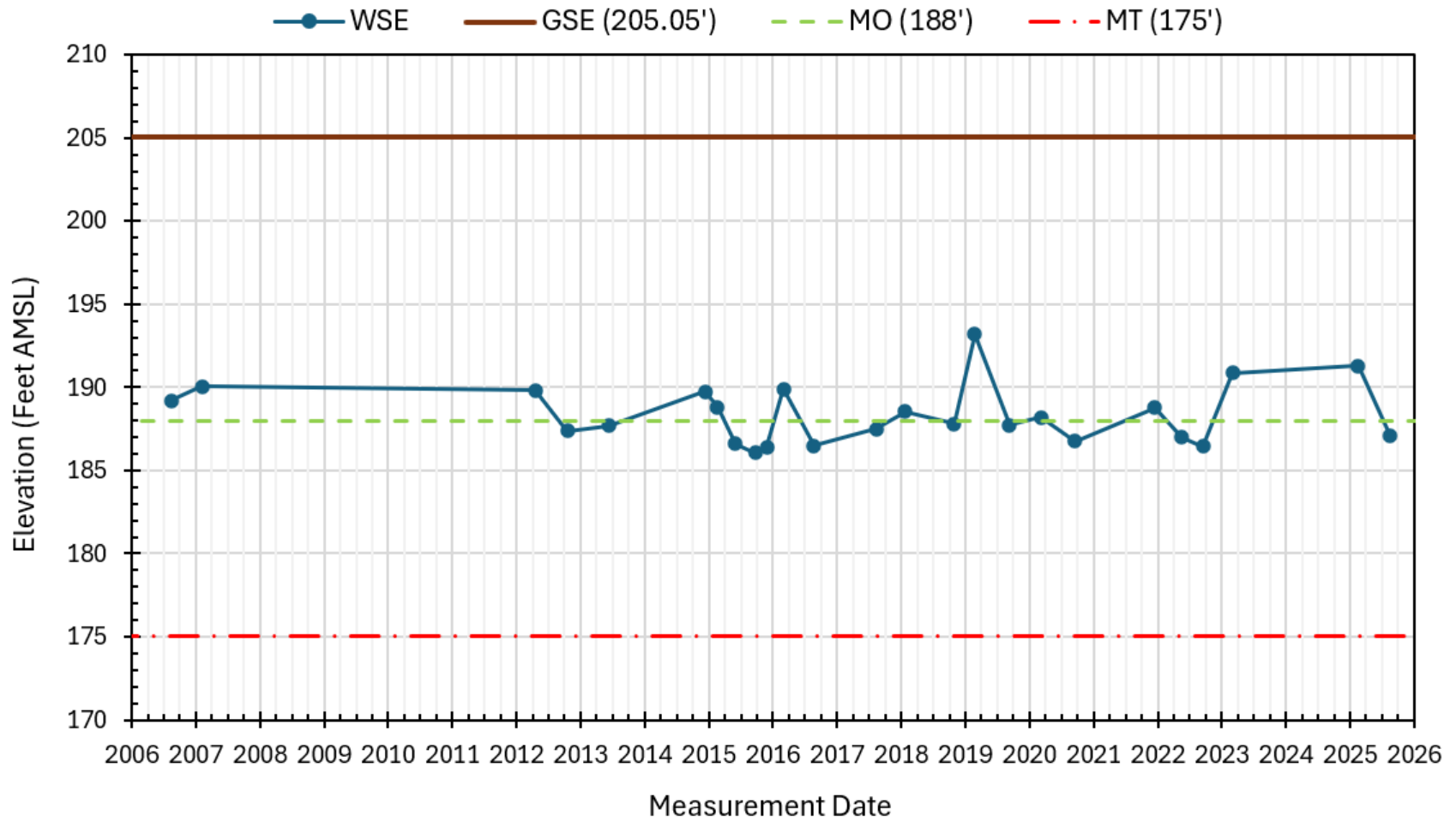


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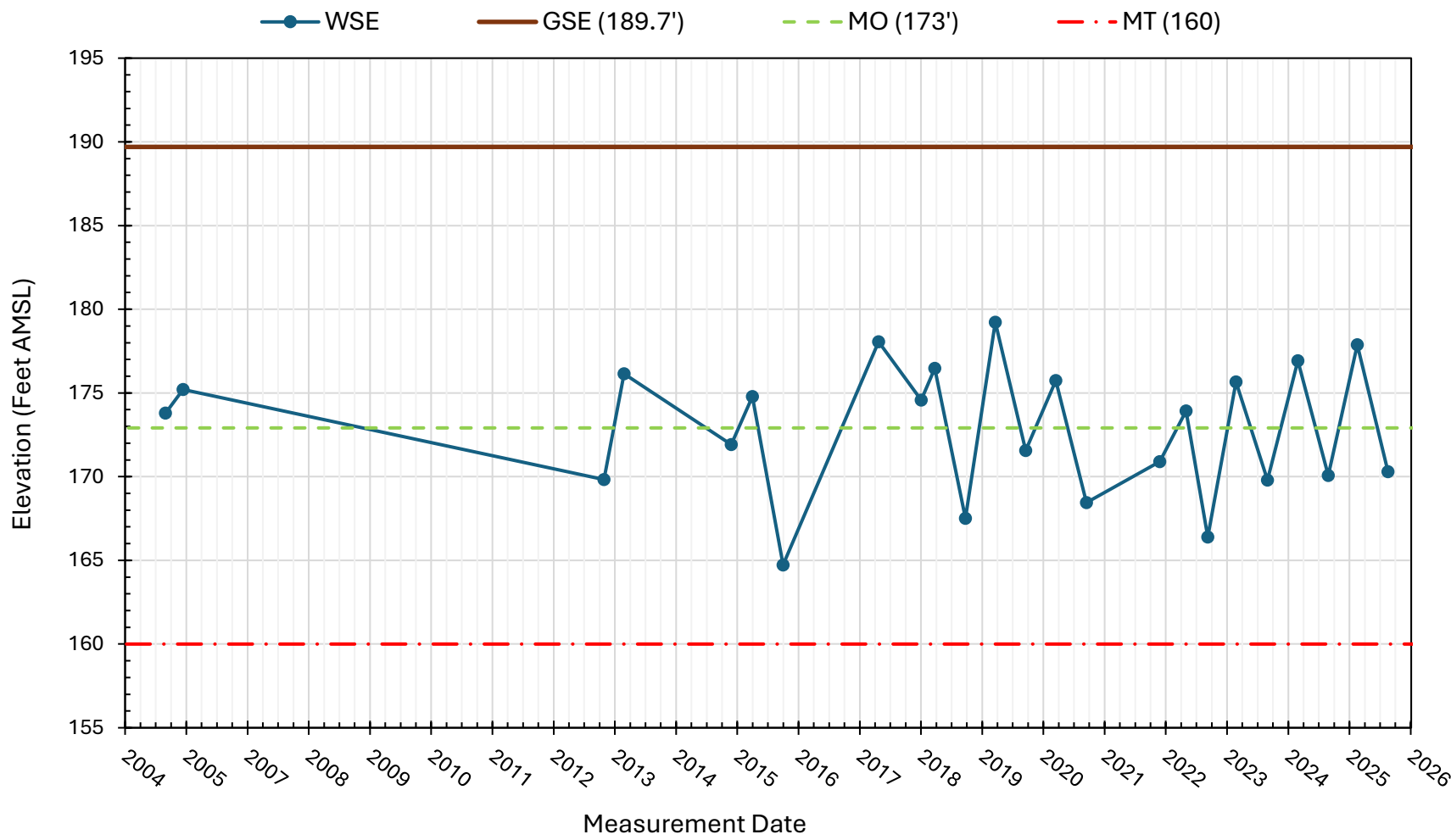
Total Number of Domestic Wells = 2



CMW-102A



SWMW-06A



ATTACHMENT B

UPDATED WATER QUALITY CONTAMINATION PLUME MAPS

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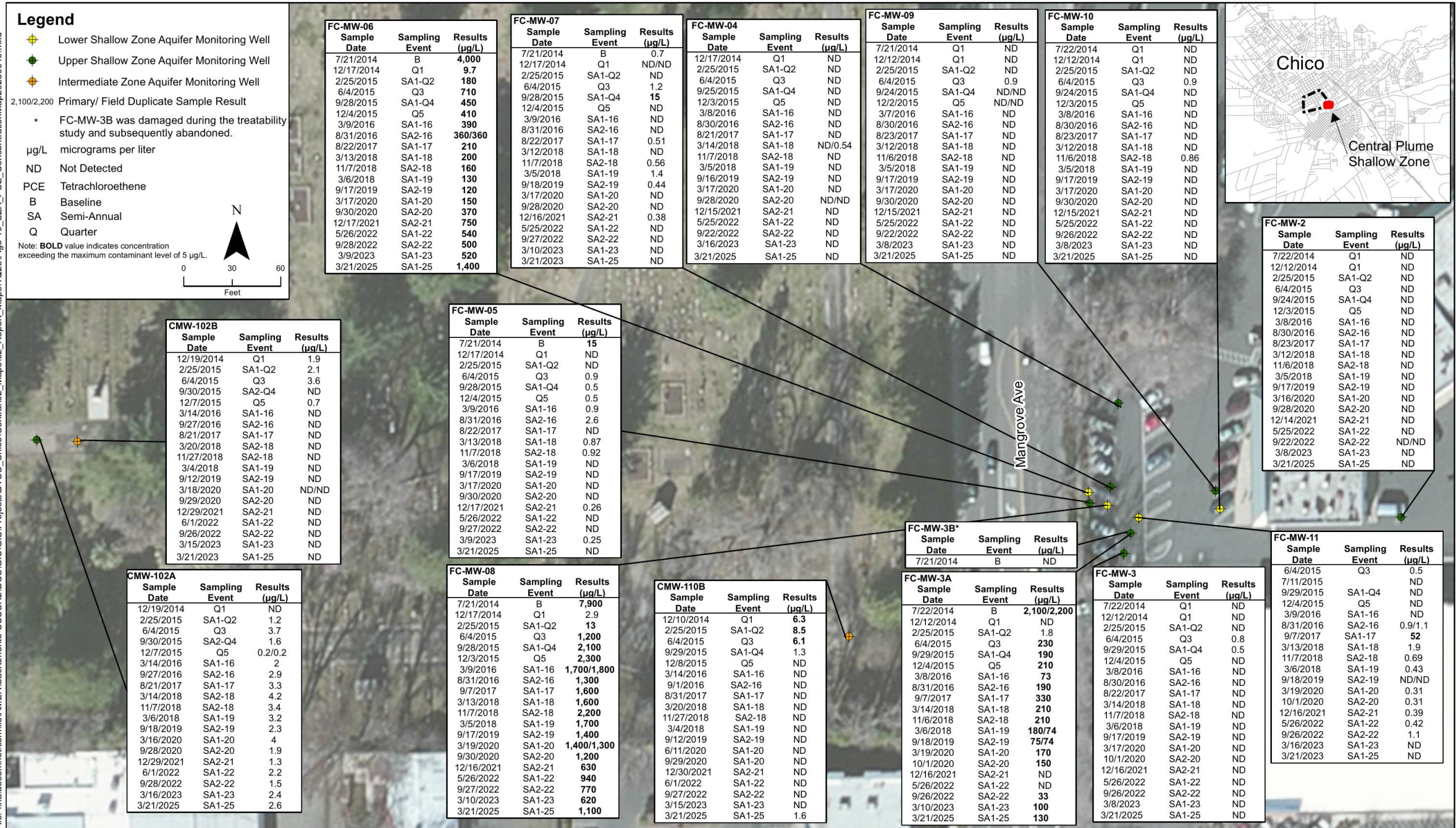
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Chico Central Plume – PCE Concentrations at Intermediate Zone Aquifer	B-3
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Chico Southwest Plume – PCE Concentrations at Shallow Zone Aquifer	B-5
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The following plume/concentration maps were collected from reports published to the State of California's Department of Toxic Substances Control (DTSC) EnviroStor website. These select sites were the ones found to have publicly available plume/concentration maps; many other sites exist throughout the subbasin but do not have any maps available. The table below summarizes the sites' information and report from which the maps were obtained. The GSAs will continue to work with Butte County Public Health as plumes maps are updated for the Water Well Ordinance review.

Table B-1: Summary of sites with mapped plumes/concentrations.

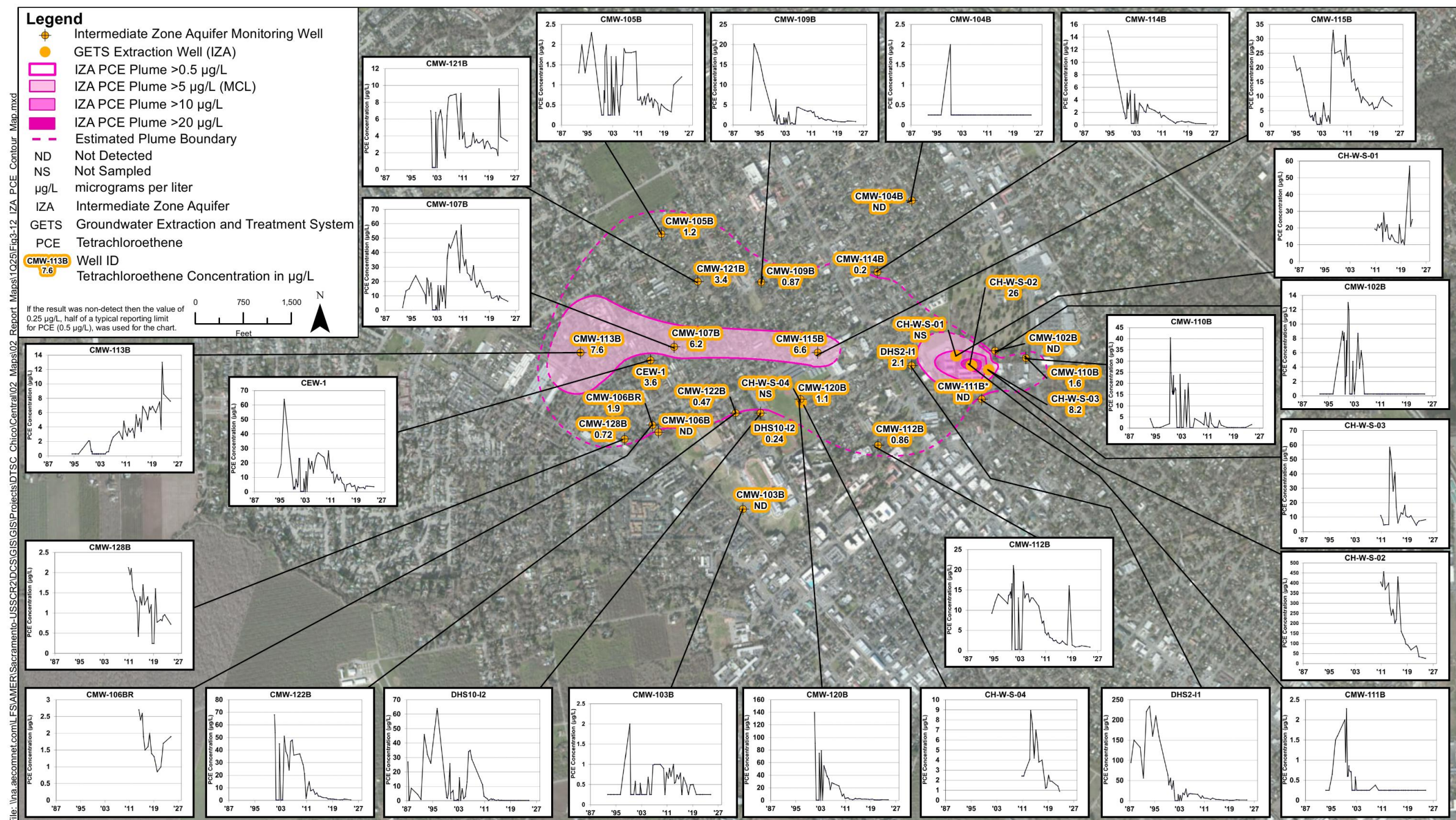
Site Name	EnviroStor ID	Map Source
Chico Central Plume	4990003	AECOM Technical Services, Inc. (2026). <i>Chico Central Plume Shallow, Intermediate, and Deep Zone Aquifers Semi-Annual Groundwater Monitoring Report, March 2025 Event</i> . Prepared for California Department of Toxic Substances Control (DTSC). Contract No. 11-T1080 A-9, Task/Work Order No. 1-080-2.6-100035. March 2026. [Link]
Chico Southwest Plume	4990002	AECOM Technical Services, Inc. (2026). <i>Chico Southwest Plume, Second Half 2025 Groundwater Monitoring Report</i> . Prepared for California Department of Toxic Substances Control (DTSC). Contract No. 11-T1093 A-10, Work Order No. 1-093-1.8-100504. March 2026. [Link]
Chico Municipal Airport	4450006	Geocon Consultants, Inc. (2026). <i>Second Semi-Annual Groundwater Monitoring Report – 2025, Chico Municipal Airport, 651 and 681 Liberator Street, Chico, California</i> . Prepared for City of Chico, Public Works – Engineering. Project No. S1243-07-08. April 2026. [Link]
Former North Valley Plaza Cleaners	4720005	Terraphase Engineering Inc. and Nichols Consulting Engineers, Chtd. (2026). <i>Annual Groundwater Monitoring and Site Operations and Maintenance Report, January through December 2025, Former North Valley Plaza Cleaners, 801 East Avenue, Chico, California</i> . Prepared for NVP Client Group. Project No. 0142.001.001. February 16, 2026 (Revised May 19, 2026). [Link]
Victor Industries (20 th Street)	4360003	AECOM Technical Services, Inc. (2024). <i>Victor Industries (20th Street), March 2024 Semi-Annual Groundwater Monitoring Report</i> . Prepared for California Department of Toxic Substances Control (DTSC), Region 1. Contract No. 11-T1039, Work Order No. 1-039-1.6-100178. June 2024. [Link]
Chico Skyway Subdivision Plume	4880002	WSP USA Inc. (2025). <i>Response to DTSC Comments dated July 21, 2025 — 2024 Annual Report, Skyway Subdivision Groundwater Plume, Chico, Butte County, California</i> . Prepared for California Department of Toxic Substances Control (DTSC). Project No. US0041504.1156. September 19, 2025. [Link]

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Shallow Zone Aquifer PCE Concentration Map
Central Plume - March 2025
Chico, California

Figure 3-10

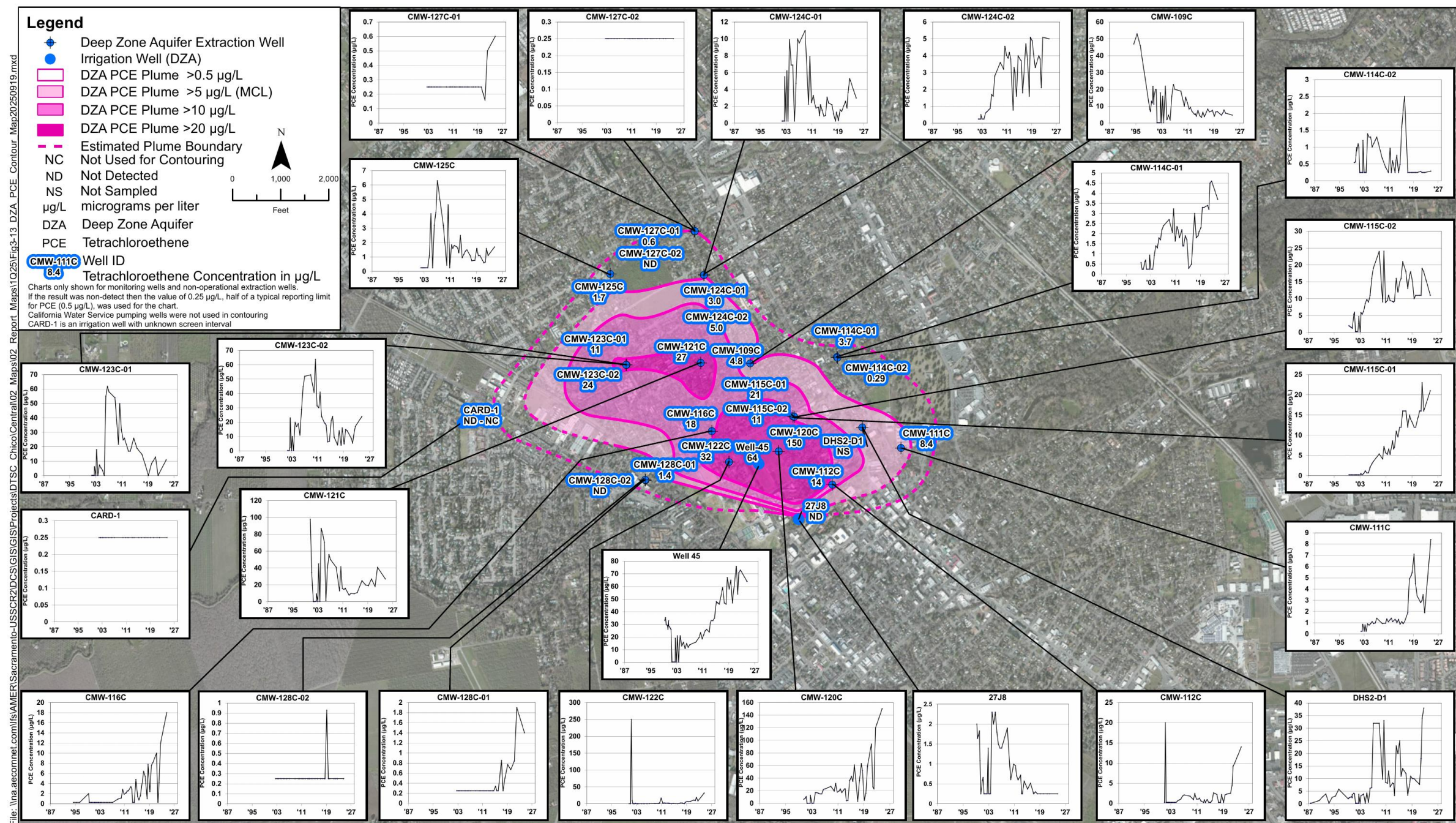


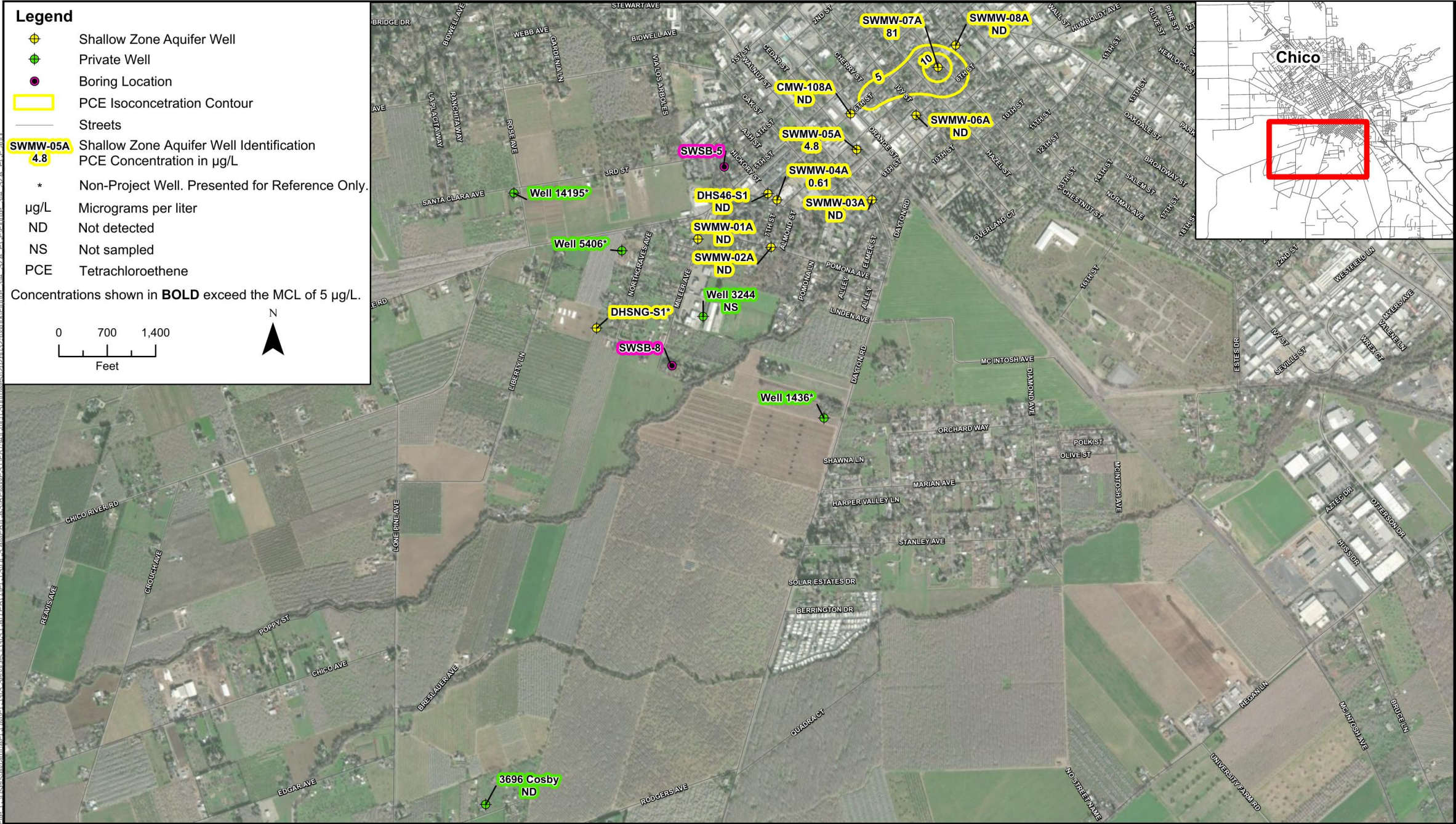
Intermediate Zone Aquifer PCE Concentration Map

Central Plume - March 2025

Chico, California

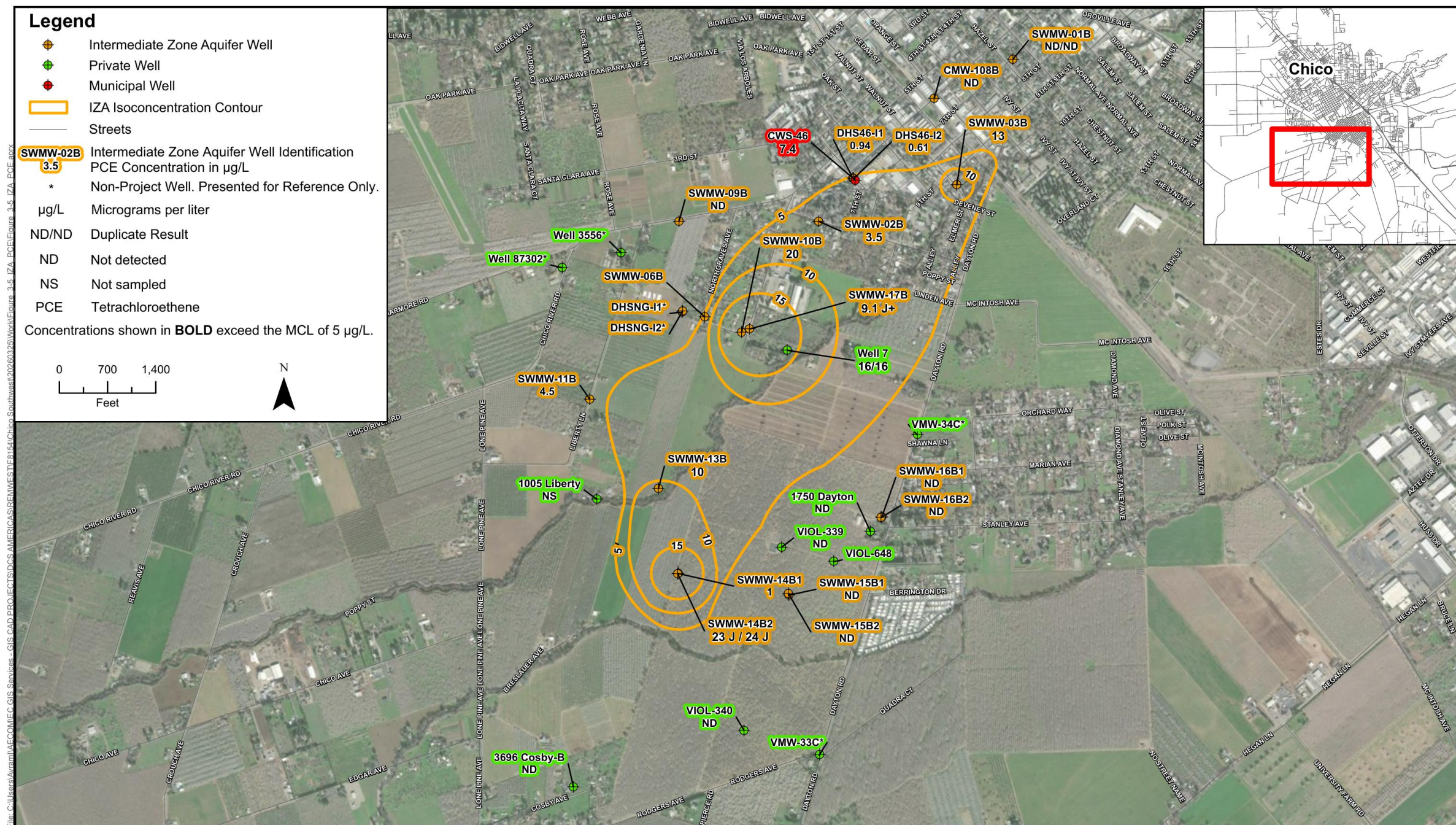
Figure 3-12





**PCE Concentrations at
Shallow Zone Aquifer Wells**
Chico Southwest Plume
Chico, California

Figure 3-4



PCE Concentrations at Intermediate Zone Aquifer Wells

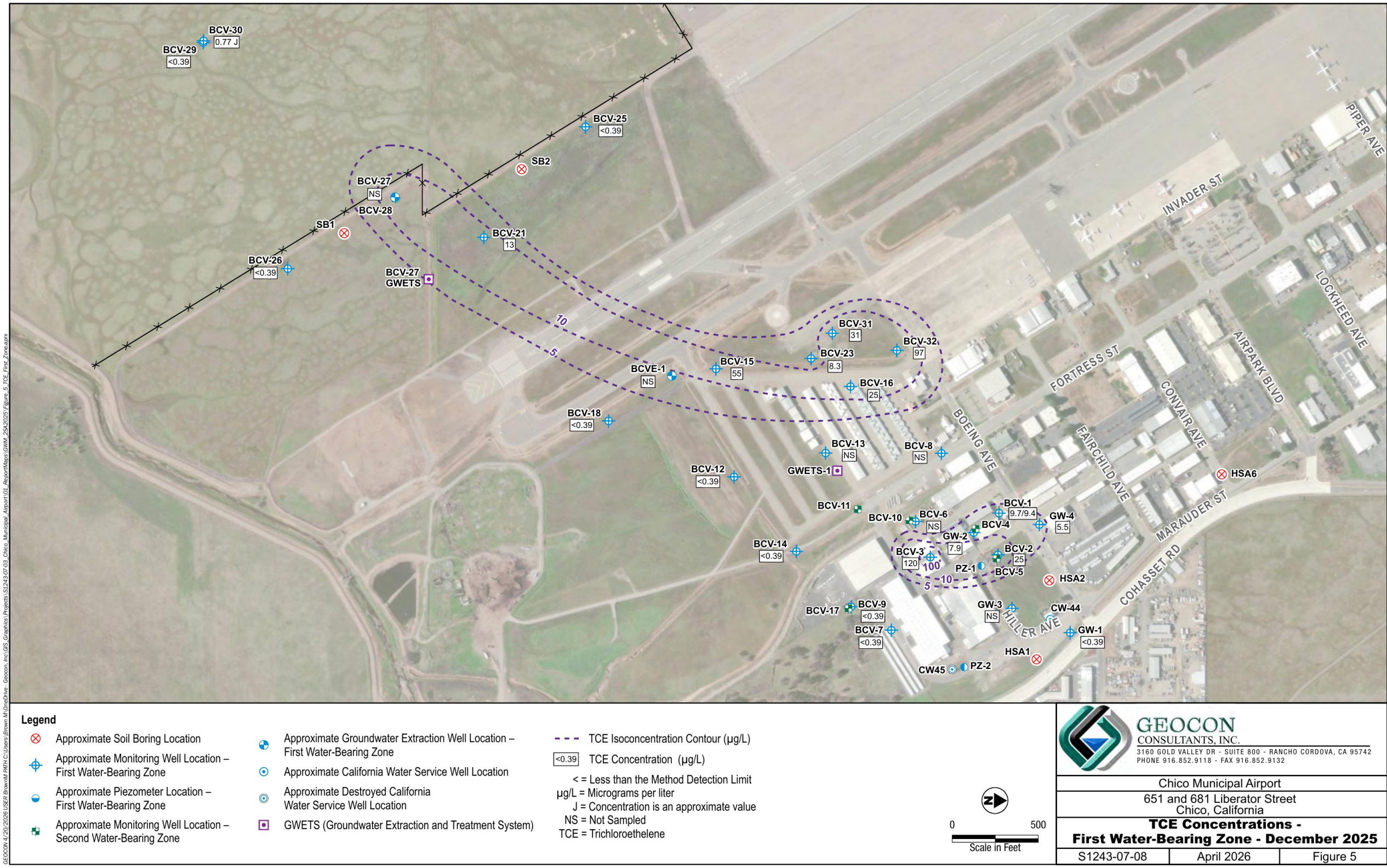
Chico Southwest Plume
Chico, California

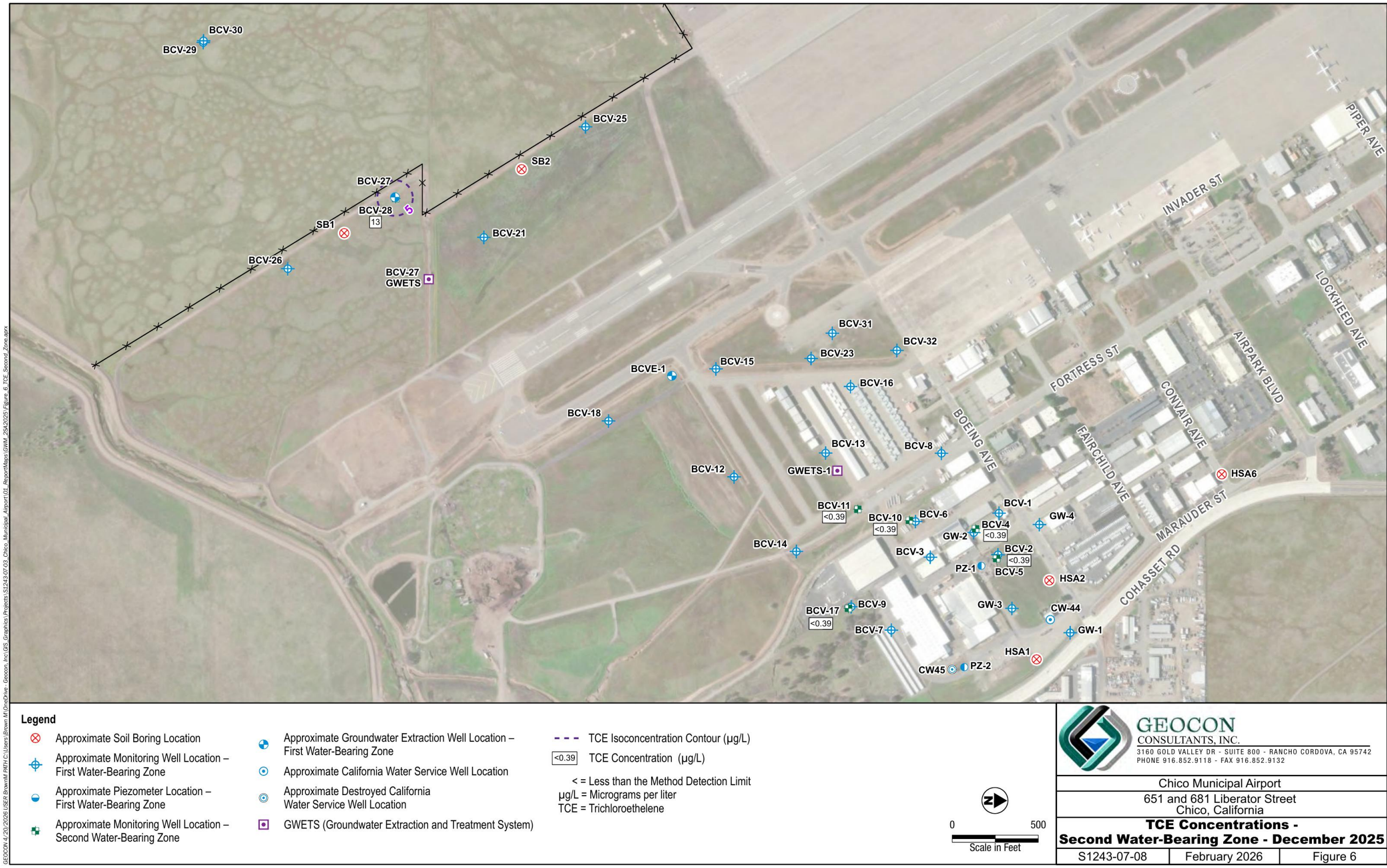
Figure 3-5

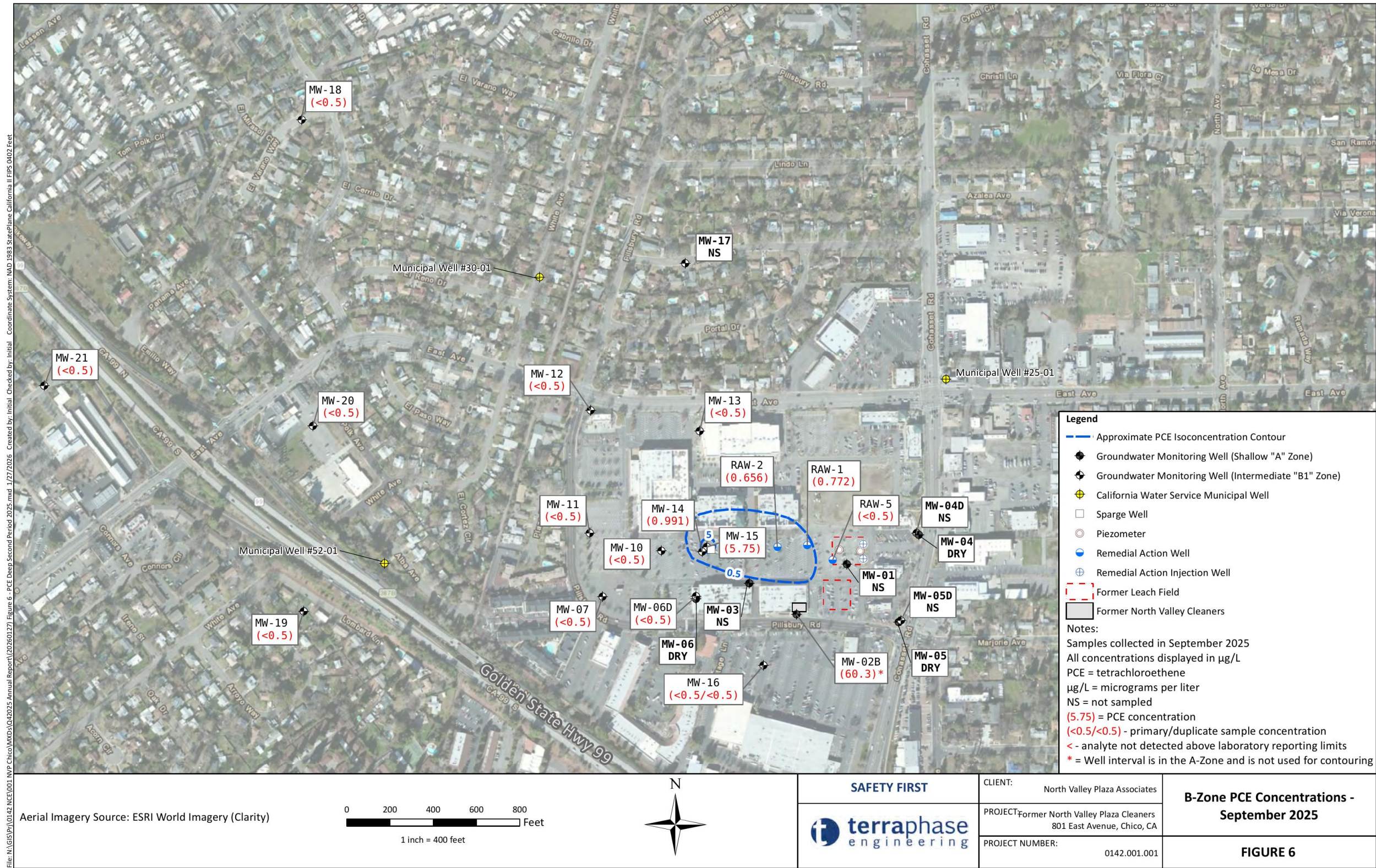


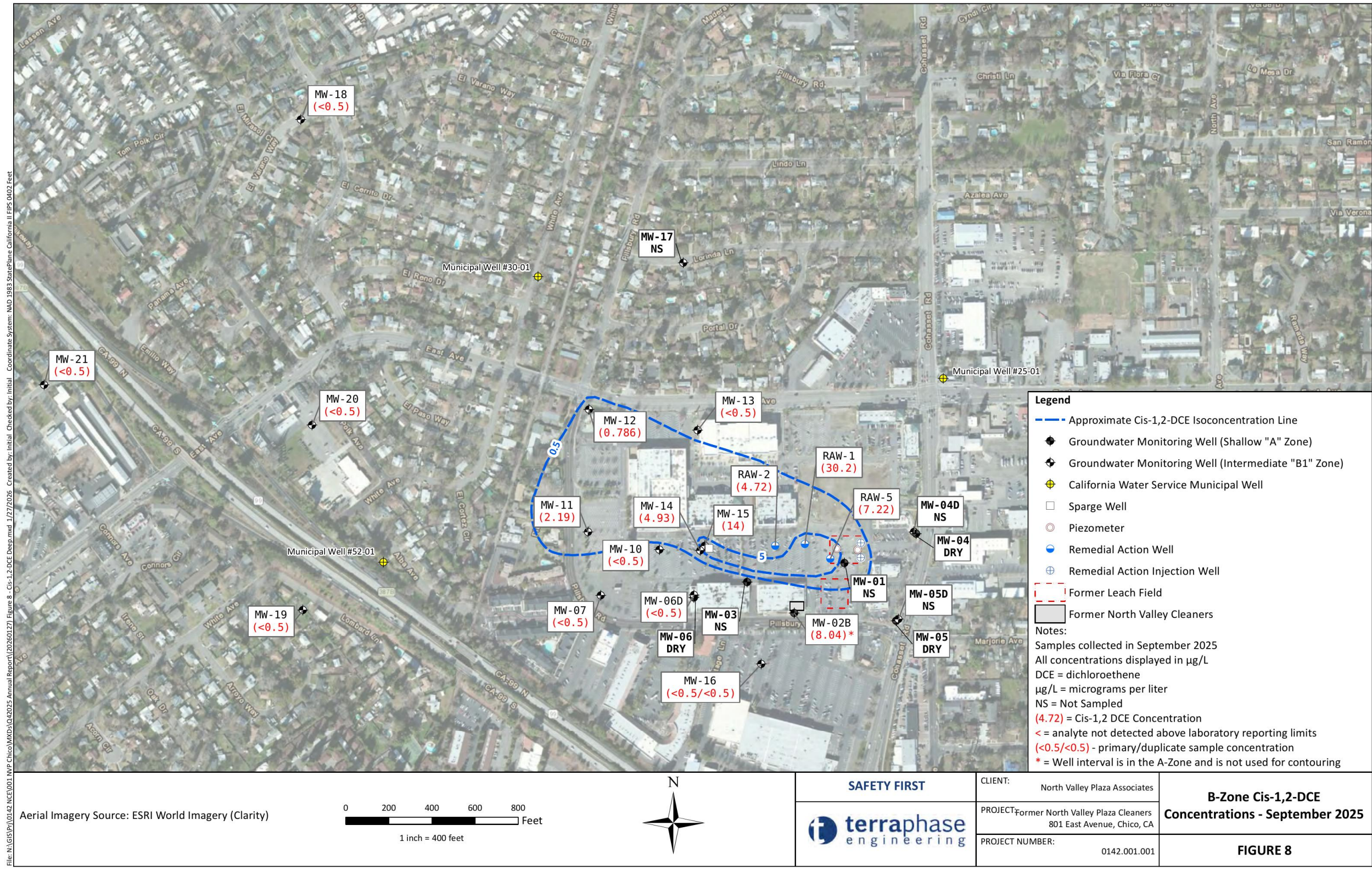
**PCE Concentrations at
Deep Zone Aquifer Wells**
Chico Southwest Plume
Chico, California

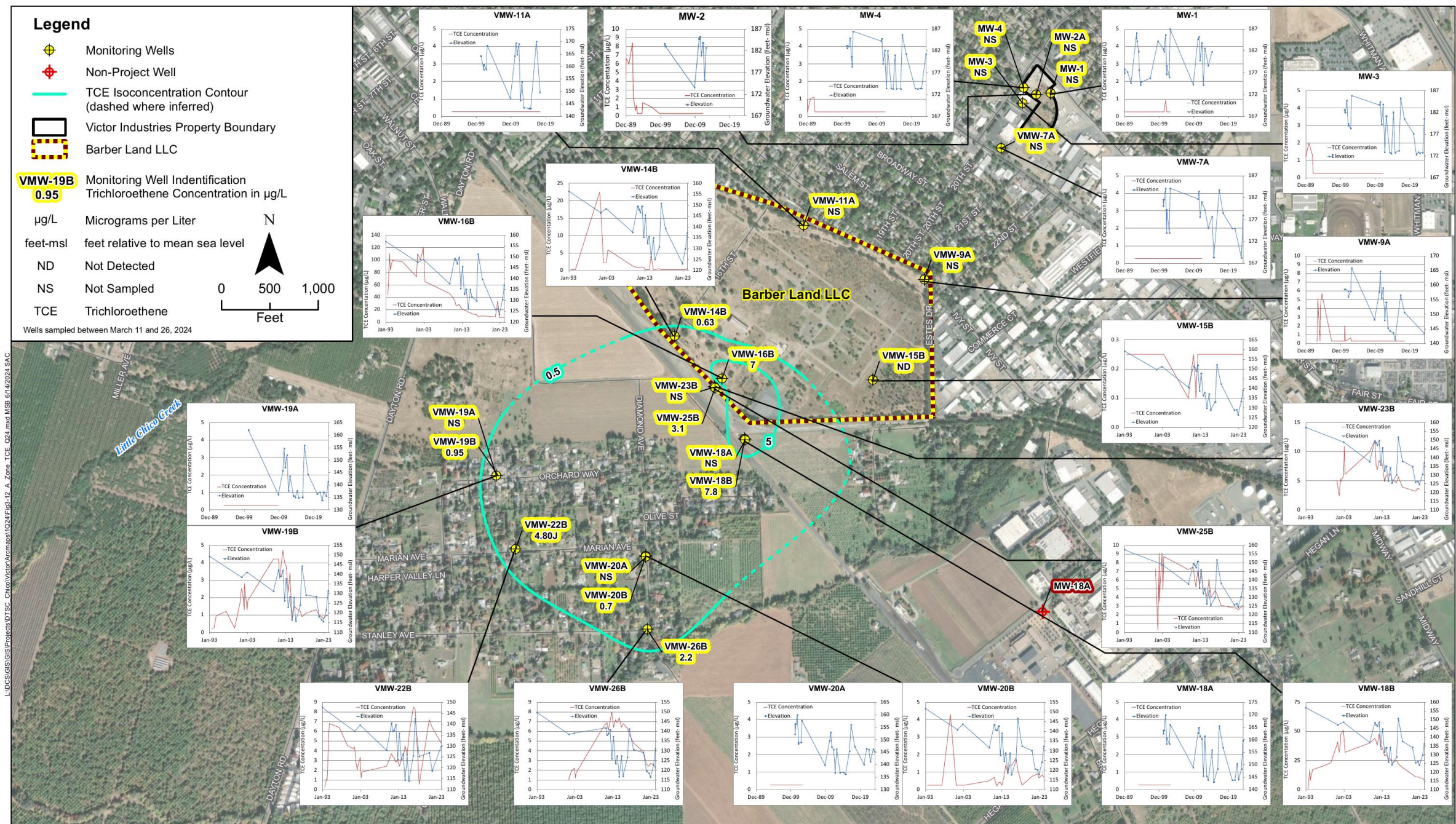
Figure 3-6

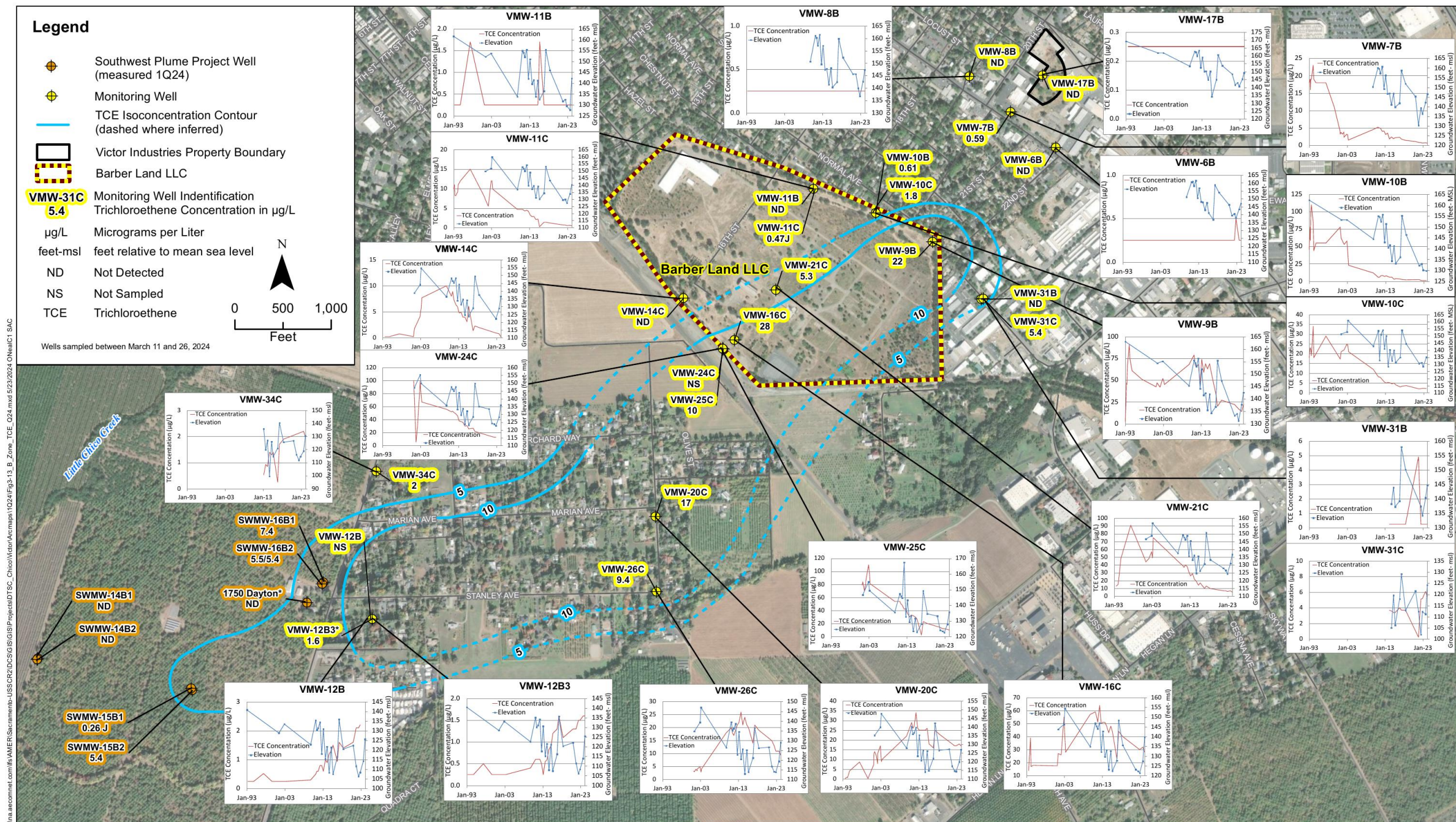






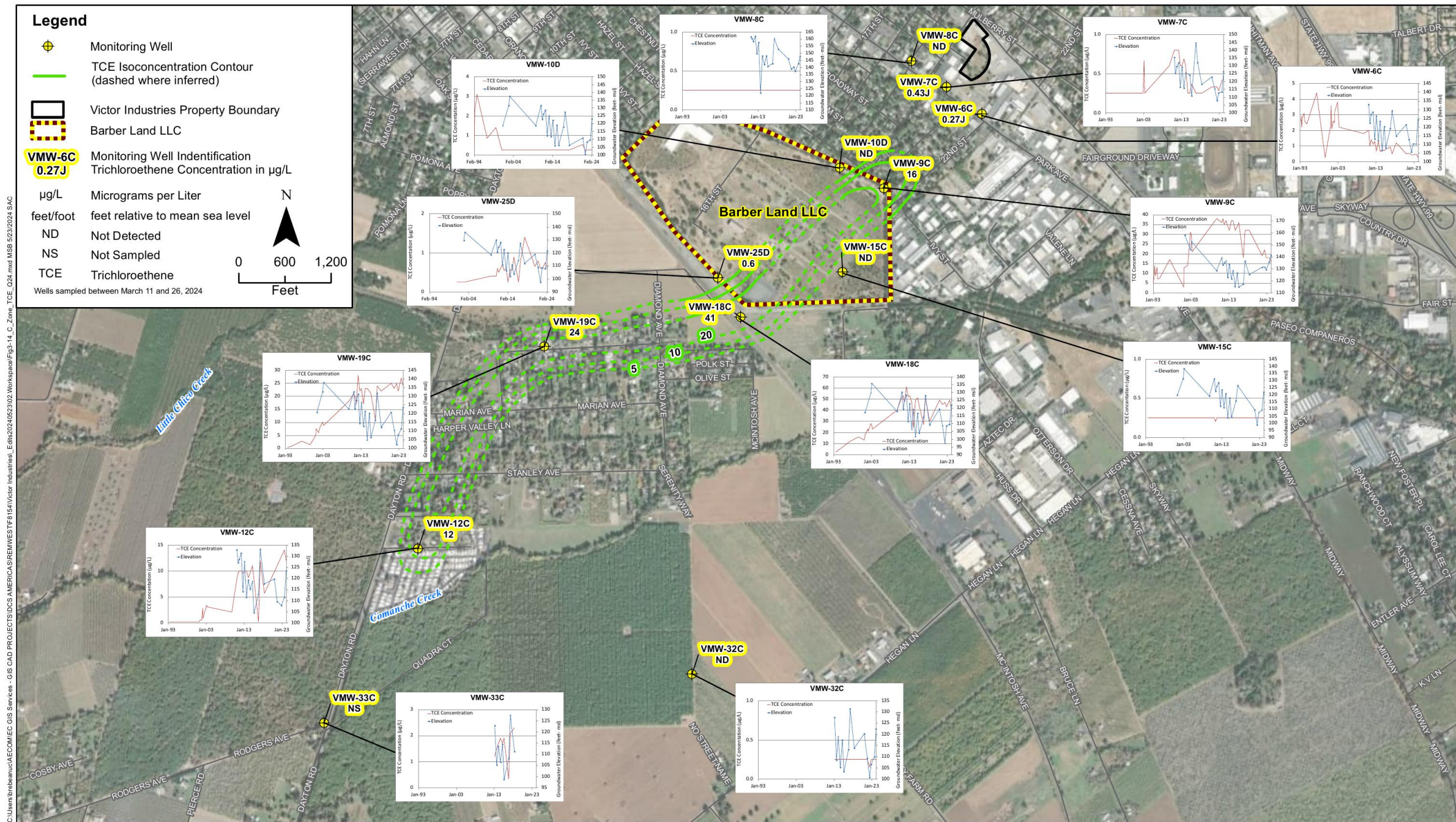






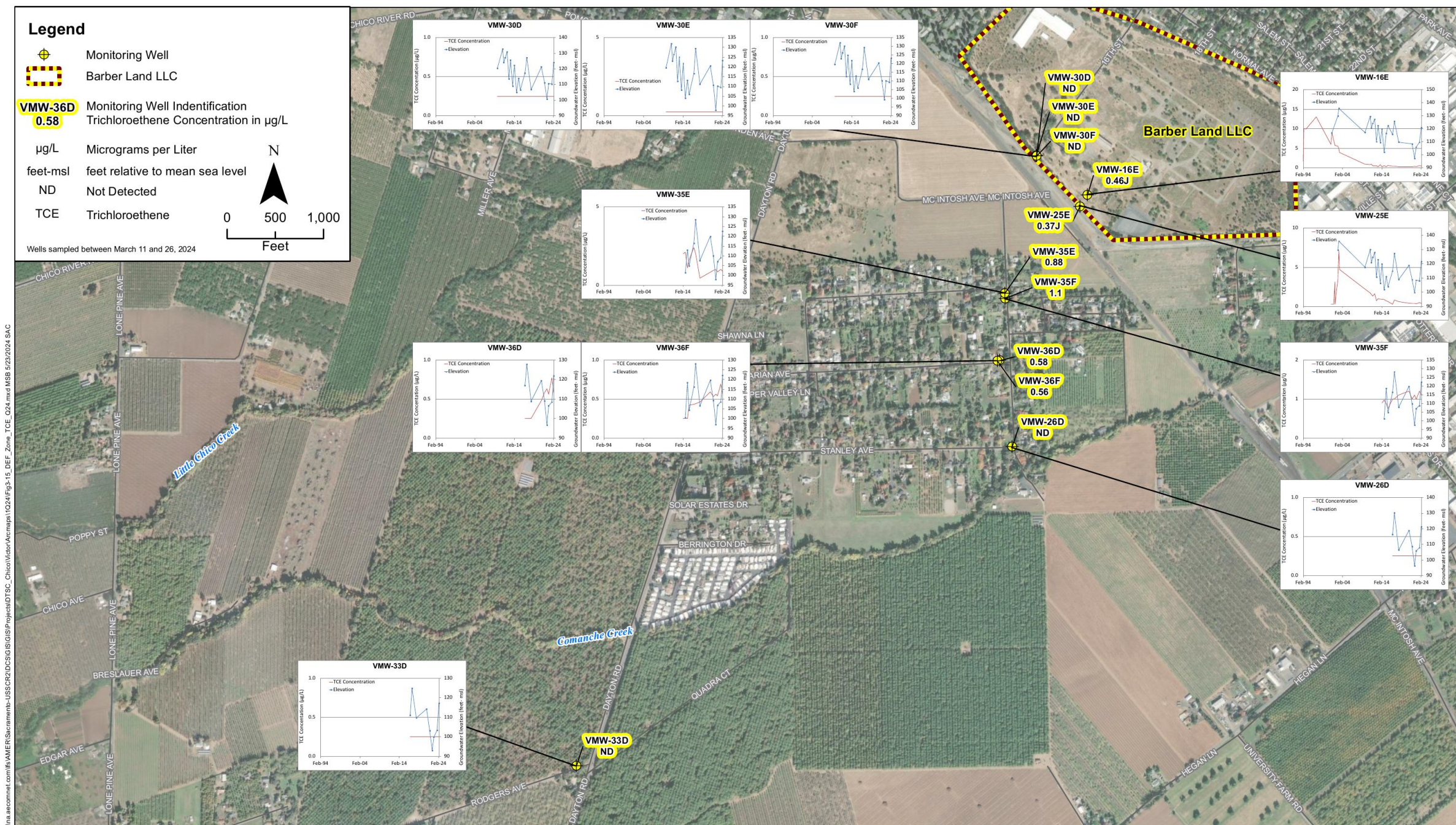
Victor Industries (20th Street)
Chico, California

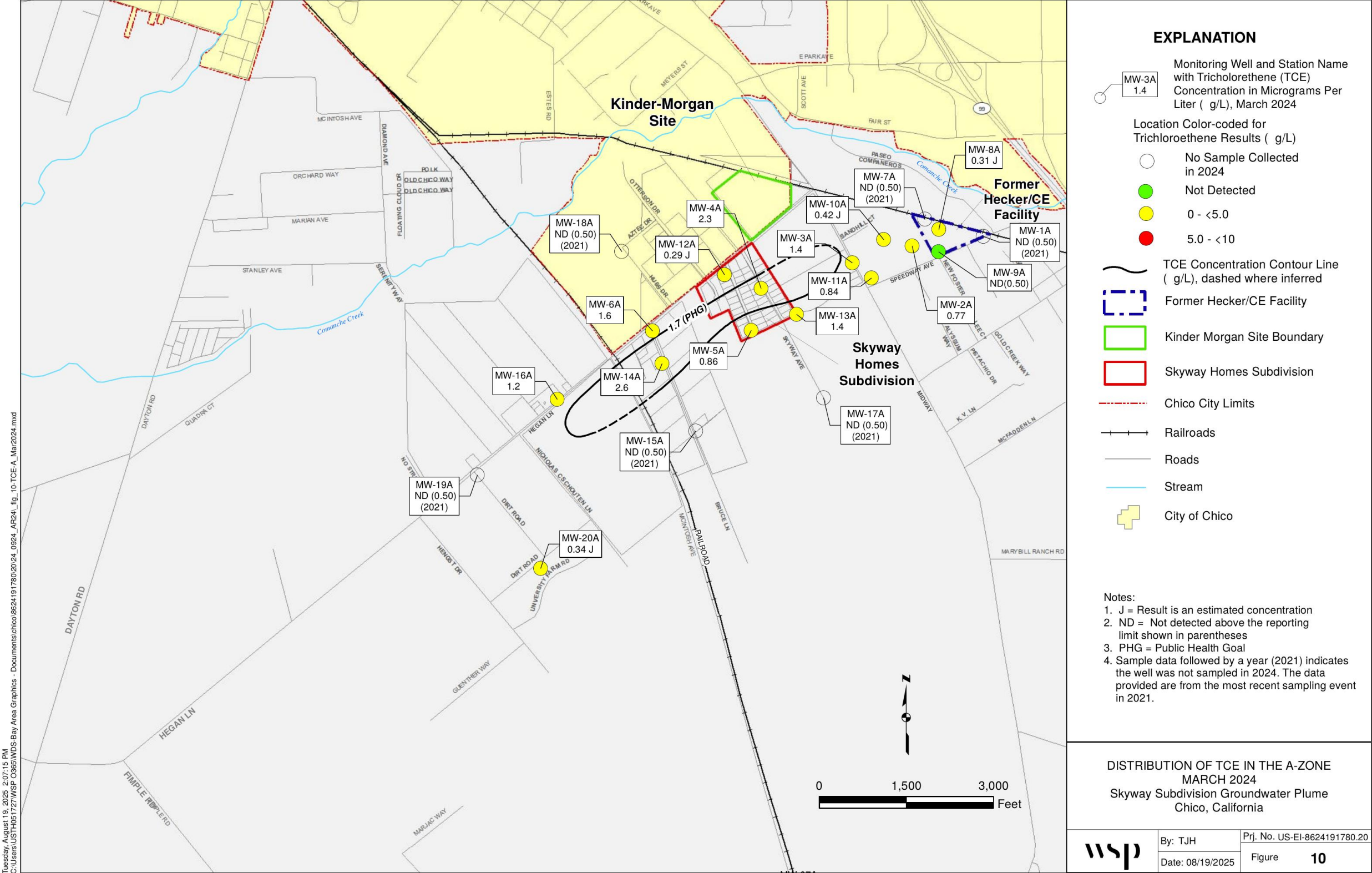
Figure 3-13

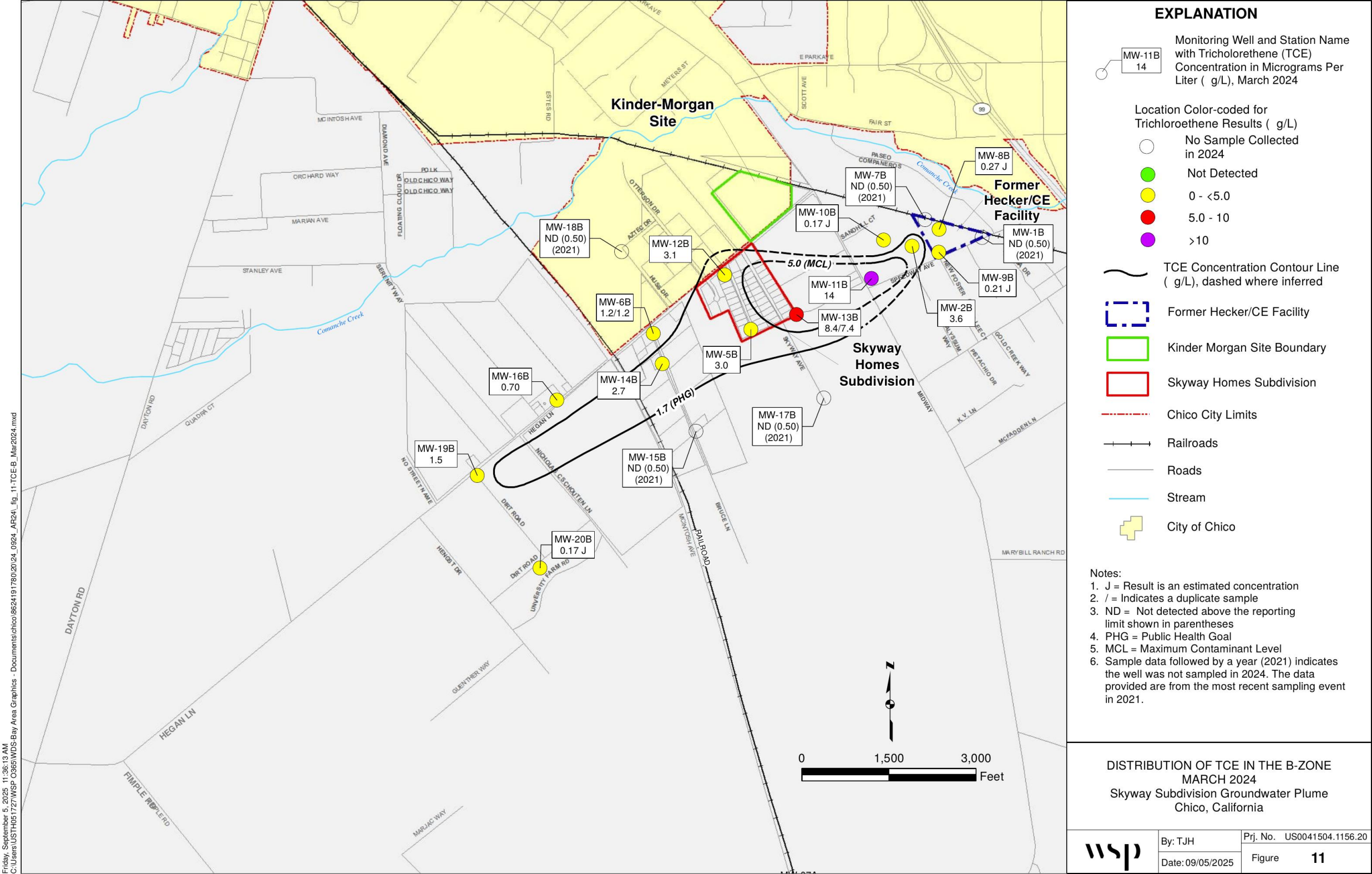


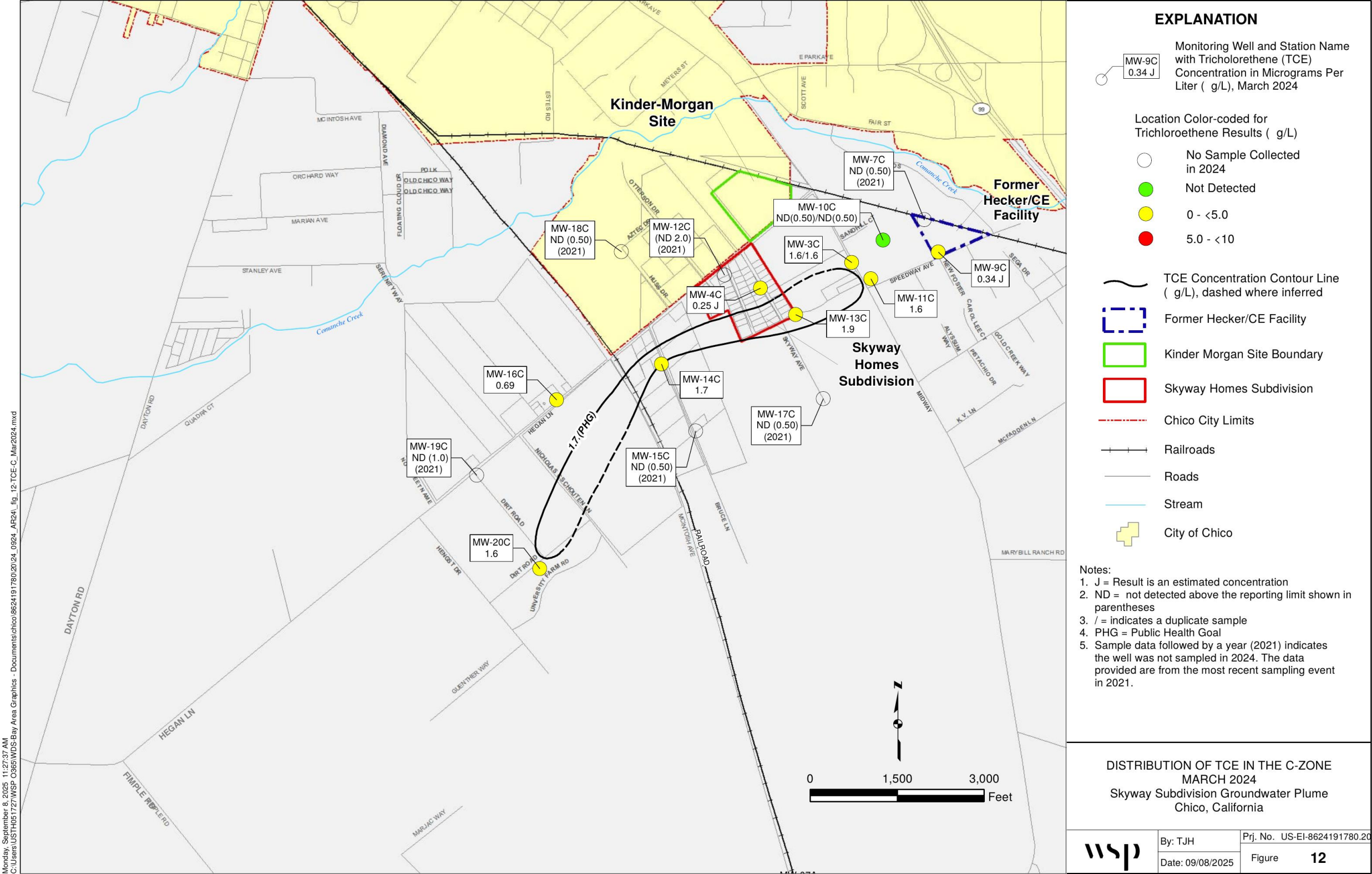
TCE Concentrations for C Zone Wells
Victor Industries (20th Street)
Chico, California

Figure 3-14









ATTACHMENT C

EVALUATION OF GROUNDWATER LEVEL MONITORING NETWORK FOR SELECTION OF REPRESENTATIVE MONITORING SITES

**Water and Resource Conservation**

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bcwater@buttecounty.net

MEMORANDUM

DATE: November 17, 2025

TO: Vina Groundwater Sustainability Agency (GSA) and Rock Creek Reclamation District GSA

FROM: Christina Buck, Asst. Director and Kelly Peterson, Water Resource Scientist

RE: Evaluation of Groundwater Level Monitoring Network for Selection of Representative Monitoring Sites

Purpose

This memo provides background and technical analysis conducted by the Butte County Department of Water & Resource Conservation ("Department") to support the Vina and Rock Creek Reclamation District (RCRD) GSAs in preparing for the 2027 Periodic Evaluation of the 2022 Vina Groundwater Sustainability Plan (2022 GSP). The Department's analysis evaluates the existing groundwater level monitoring network, with a focus on identifying wells that may be suitable for inclusion as Representative Monitoring Sites to support the work of the Periodic Evaluation.

Background

The Department has a long-standing role in groundwater monitoring and data reporting. In addition, Department staff contributed to the development of the 2022 GSP and since 2022 has managed SGMA annual reporting for all three subbasins in Butte County. Department staff conducts spring, summer, and fall groundwater level measurements throughout the County in partnership with staff from the Department of Water Resources, Northern Region Office.

Through a subrecipient agreement with the Vina GSA, the Department is providing technical assistance for the Data Gaps Identification and Data Improvement Project (Component 2) of the GSAs' grant funded work. This component also includes completion of the Periodic Evaluation and potential GSP Amendments.

RMS Wells in the SGMA Framework

Representative Monitoring Sites (RMS) are the specific wells assigned Minimum Thresholds (MTs), Measurable Objectives (MOs), and Interim Milestones (IMs). There are six sustainability indicators defined by SGMA, including Groundwater Levels (GWL) and Interconnected Surface Water (ISW) and each has an RMS network. Selected wells make up the RMS network designated for each sustainability indicator. The focus of this evaluation is on monitoring wells for the GWL RMS network. The 2022 GSP identified 17 RMS wells across the Vina North, Vina Chico, and Vina South Management Areas for the GWL RMS network.

Since adoption of the GSP, three of the RMS wells have been identified as regularly having questionable measurements or missing data (23N01W10E001M, 20N02E09L001M, 21N01E21C001M) and one of the wells is located just outside of the southern subbasin boundary (20N01E10C002M). Removing these wells from the GWL RMS network would lead to the need to supplement the network with additional wells to fill the gaps. Since there is a robust available network of groundwater level monitoring wells with historical data within the subbasin, the Department has worked with the GSAs' technical consultant, Larry Walker Associates (LWA) to identify existing monitoring wells for possible inclusion in a revised GWL RMS network. This memo provides technical information for the GSAs' consideration and to support the ongoing work of LWA, who will ultimately bring an updated RMS network to the GSA Boards for their consideration.

General Considerations

Advantages of Including More RMS Wells

Increasing the number of RMS wells in the GWL RMS network, when justified, provides a couple advantages:

1. Better Representation of Beneficial Users: Improves the ability to reflect shallow domestic well conditions and localized trends.
2. Improved Spatial Distribution: Reduces reliance on a small number of wells and provides information on conditions across the subbasin
3. Increased Confidence in Trend Analysis: More RMS wells reduce the impact of anomalies and / or data gaps caused by questionable measurements and strengthen basin-wide assessments.

This approach has been used successfully in the Butte Subbasin, where some wells serve both GWL and ISW monitoring functions. As such, some GWL RMS monitoring wells may also be part of the ISW RMS network with different sustainable management criteria (SMC) for each. Other subbasins, including Butte, have used dual-purpose wells.

Boundary-Adjacent Wells

Several monitoring wells are located near the boundaries with the Los Molinos, Corning or Butte Subbasins. These wells can be useful for tracking boundary conditions but may also be influenced by actions outside the GSA's boundaries. For this reason, they are listed below for special consideration. Staff recommends the GSA technical team work with neighboring subbasins to identify additional wells on the other side of the boundary for inclusion in a subbasin boundary network for tracking purposes. This could be addressed through ongoing Inter-basin Coordination efforts.

23N01W03H002-4M
 23N02W25C001M
 23N01W31M001-4M
 22N01W05M001M
 20N01E10C002M
 20N02E06Q001M
 20N02E24C001-3M
 20N03E31M001M
 20N03E33L001M

Department Analysis

The Department conducted a systematic evaluation of the groundwater level monitoring network to determine which wells may be suitable for RMS designation. The analysis involved the following information and approach:

Evaluation Criteria: Each well was reviewed based on access reliability in the field, measurement history and quality of data (i.e. considering frequency of missing data in hydrographs and/or presence of numerous questionable measurements), well construction information, alignment with local domestic well depths, density of domestic wells in the area, and geographic distribution.

Domestic Well Context: Domestic well statistics were obtained from the California Open Data Portal ([i07 WellReportStatsBySection](#)). This was utilized to assess the monitoring well's alignment with depths of domestic wells within its vicinity to evaluate how representative it is of nearby domestic wells. This dataset does not incorporate the refined LWA domestic well inventory but is still useful for understanding general spatial trends in well depth and density.

Spatial Analysis and Mapping: Two maps were prepared showing monitoring wells, average domestic well depths, and subbasin and management area boundaries (see Attachment 1).

Categorization of Wells: Wells were categorized as “Yes” (suitable for RMS), “Consider” (those that could be suitable RMS), or “No” based on construction, data quality, representativeness, access and / or geographic distribution needs.

Results

Described below are high level observations from the results of the evaluation. The attached summary table (Attachment 1) contains the result of the well-by-well evaluation and rationale for the RMS categorization.

Vina North: Several additional wells appear to be strong candidates for RMS designation due to multi-completion construction, alignment with domestic well depths, and improved spatial coverage.

Vina Chico: The majority of beneficial users of groundwater for residential use in Chico are served by Cal Water Service. The 2022 GSP includes four Cal Water wells as RMS. In addition, two monitoring wells on the west side of Chico would be suitable as RMS to represent the high density of domestic well users on the outskirts of Chico.

Vina South: Opportunities exist to improve spatial representation and include wells better aligned with domestic well conditions.

Anticipated Next Steps

LWA will continue evaluating the monitoring networks for both GWL and ISW as part of the 2027 Periodic Evaluation. The GSAs will review and approve any recommended RMS network changes as part of the Periodic Evaluation and any GSP amendments, if necessary. The Department will continue to engage with the technical team to provide input on available data, the monitoring networks, and inter-basin considerations with other Butte County subbasins specifically, and the northern Sacramento Valley region more broadly.

Attachments

1. Summary Table and Maps: Vina Subbasin Groundwater Level Monitoring Network Evaluation Results
2. Detailed Evaluation Results Summary Table with Maps indicating Domestic Well density

Vina Subbasin Groundwater Level Monitoring Network Evaluation Results

Conducted by Butte County Department of Water and Resource Conservation. November 17, 2025

	Well ID	SWN	Butte County Analysis: RMS?	Butte County Reasoning/Considerations	Well Use
North	05M001	22N01W05M001M**	Yes	Good geographical location. Long period of record. No screen info.	Irrigation-Observation
	07H001	23N01E07H001M**	Yes	Good align w/ dom. Good geographical location	Residential
	29P002	23N01E29P002M	Yes	Near significant number of dom. and good align. No screen info.	Irrigation
	33A001	23N01E33A001M**	Yes	East side location beneficial. A bit deep with long screen interval.	Irrigation-Observation
	03H004	23N01W03H004M	Yes	Multi-completion well. Good align w/ dom. Close to boundary	Observation
	09E001	23N01W09E001M	Yes	Good align w/ dom. No screen interval but shallow.	Irrigation
	10M001	23N01W10M001M	Yes	Good align w/ dom.	Observation
	14R002	23N01W14R002M	Yes	Good geographical location. No screen info.	Irrigation
	27L001	23N01W27L001M	Yes	Good align w dom well.	Residential
	28M004	23N01W28M004M	Yes	Multi-completion well. A little deep for dom. 27L001 nearby, good alternative.	Observation
	31M004	23N01W31M004M	Yes	Multi-completion well. Close to boundary.	Observation
	36P001	23N01W36P001M**	Yes	Good align w/ dom well. Good geographical location. No screen info.	Residential
	25C001	23N02W25C001M**	Yes	Good geographical location. A little deep for dom. No screen info.	Irrigation
	03H002	23N01W03H002M	No	Redundant:Shallower zone selected	Observation
	10E001	23N01W10E001M**	No	Missing data	Irrigation
	16E001	23N01W16E001M	No	Lots of missing data. Deep for dom wells. Not mapped	Irrigation
	25G001	23N01W25G001M	No	Lots of Questionable Measurements (oil). Not mapped	Irrigation
	28M002	23N01W28M002M	No	Redundant:Shallower zone selected	Observation
	28M003	23N01W28M003M	No	Redundant:Shallower zone selected	Observation
	28M005	23N01W28M005M	No	Redundant: deeper zone selected	Observation
	31M001	23N01W31M001M	No	Redundant:Shallower zone selected	Observation
	31M002	23N01W31M002M	No	Redundant:Shallower zone selected	Observation
	03H003	23N01W03H003M	Consider	Redundant:Shallower zone selected. Consider for deeper monitoring	Observation
	31M003	23N01W31M003M	Consider	Redundant:Shallower zone selected. Could include this one instead	Observation

** Indicates the well is included in the 2022 GSP GWL RMS Network

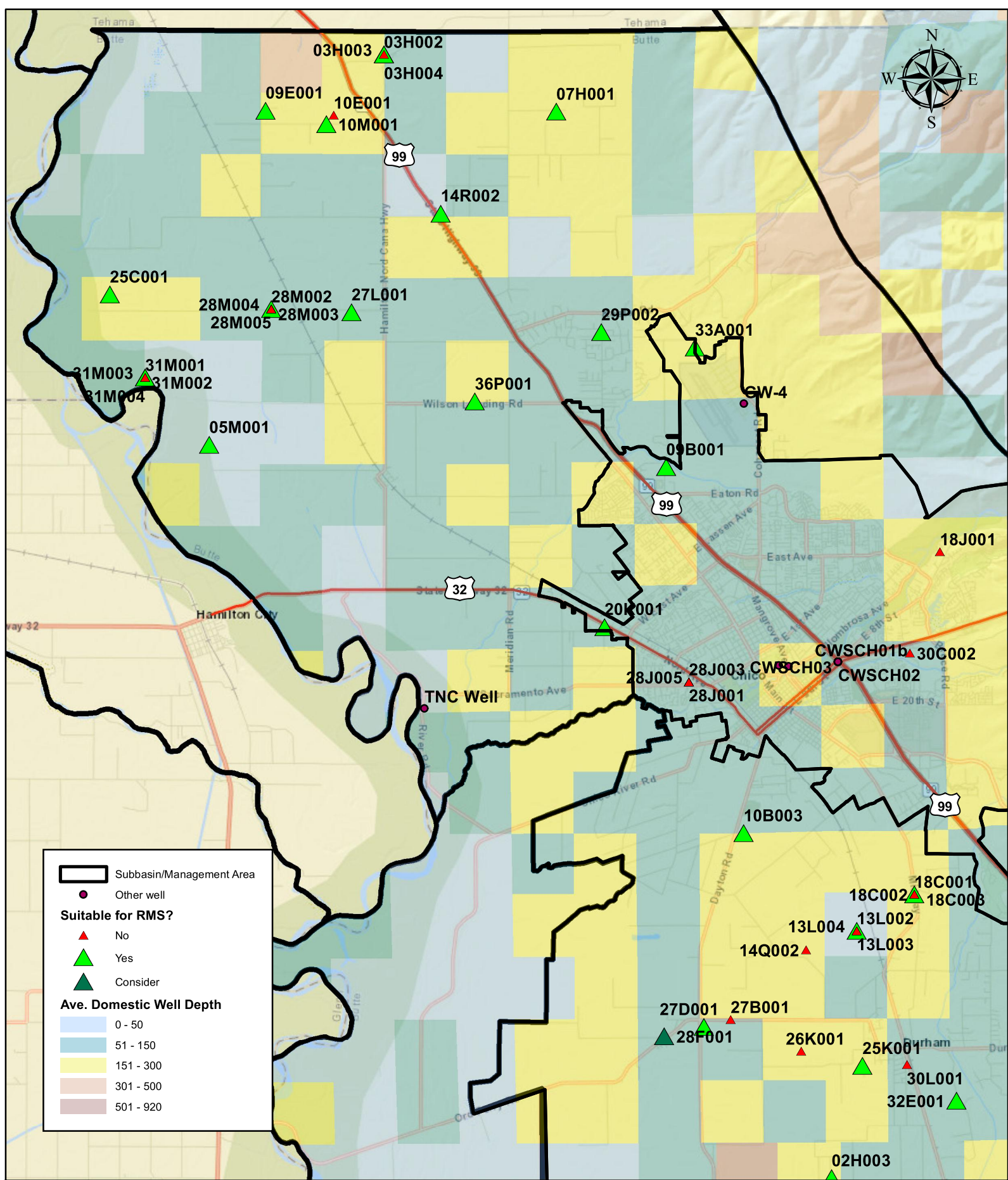
	Well ID	SWN	Butte County Analysis: RMS?	Butte County Reasoning/Considerations	Well Use
Chico*	09B001	22N01E09B001M	Yes	Good align w/ dom. Good geographical location. No Screen info	Residential
	20K001	22N01E20K001M	Yes	Good align w/ dom. Good geographical location. No Screen info	Residential
	28J001	22N01E28J001M	No	Old mon. well, concerned about future reliability	Observation
	28J003	22N01E28J003M**	No	Remove: Old mon. well, concerned about future reliability	Observation
	28J005	22N01E28J005M	No	Old mon. well, concerned about future reliability	Observation
	18J001	22N02E18J001M	No	East side of Chico. (CalWater Service area). Good align w/ dom. No Screen info.	Residential
	30C002	22N02E30C002M	No	East side of Chico (CalWater Service area). Dedicated observation. Good align w/ dom.	Observation

* CalWater wells not evaluated. Four CalWater wells are included in the 2022 GSP GWL RMS network in the Chico Management Area

** Indicates the well is included in the 2022 GSP GWL RMS Network

	Well ID	SWN	Butte County Analysis: RMS?	Butte County Reasoning/Considerations	Well Use
South	09G001	20N02E09G001M	Yes	Good geographical location and mid-depth. No dom wells nearby	Observation
	02H003	20N01E02H003M	Yes	Good align w dom.	Observation
	08H003	20N02E08H003M	Yes	Good align w dom.	Residential
	24C001	20N02E24C001M**	Yes	Good align w dom.	Observation
	33L001	20N03E33L001M	Yes	Good align w/ dom. Good geographical location	Other-Observation
	10B003	21N01E10B003M	Yes	Good geographical location. Deep for dom.	Irrigation-Observation
	13L004	21N01E13L004M	Yes	Multi-completion well	Observation
	25K001	21N01E25K001M	Yes	Good align w/ dom wells.	Residential
	27D001	21N01E27D001M	Yes	Good align w/ dom. Reliable access.	Residential
	18C003	21N02E18C003M**	Yes	Unique pattern during drought years. Good align w dom	Observation
	26E006	21N02E26E006M	Yes	Good align w/ dom. Multi-completion well	Observation
	32E001	21N02E32E001M	Yes	Lots of dom wells. Good align w/ dom.	Irrigation
	32B001	21N03E32B001M	Yes	Good geographical location. Very shallow.	Irrigation-Observation
	10C002	20N01E10C002M**	No	Outside subbasin. Good for tracking boundary conditions	Irrigation-Observation
	09L001	20N02E09L001M**	No	Often pumping, Too deep, Oil. Not mapped	Irrigation
	24C002	20N02E24C002M	No	Redundant:Shallower zone selected	Observation
	24C003	20N02E24C003M	No	Redundant:Shallower zone selected	Observation
	12D001	21N01E12D001M	No	NMs, patchy data, often pumping. Not mapped	Irrigation
	12K001	21N01E12K001M	No	Questionable Measurements (Oil). Not mapped	Irrigation
	13F001	21N01E13F001M	No	Missing data, always pumping. Not mapped	Irrigation
	13L002	21N01E13L002M	No	Redundant:Shallower zone selected	Observation
	13L003	21N01E13L003M	No	Redundant:Shallower zone selected	Observation
	14Q002	21N01E14Q002M	No	Redundant, 13L004 better alternative; lacking screen info	Irrigation
	21C001	21N01E21C001M**	No	QMs (oil). Too deep for dom. Not mapped.	Irrigation
	26K001	21N01E26K001M	No	Missing data	Irrigation
	27B001	21N01E27B001M	No	Too deep for dom. Redundant, 27D001 better alternative	Irrigation-Observation
	18C001	21N02E18C001M	No	Redundant:Shallower zone selected	Observation
	18C002	21N02E18C002M	No	Redundant:Shallower zone selected	Observation
	20P001	21N02E20P001M	No	QMs, tape hangs up. Not mapped	Irrigation
	26E003	21N02E26E003M	No	Redundant:Shallower zone selected	Observation
	26E004	21N02E26E004M	No	Redundant:Shallower zone selected	Observation
	30L001	21N02E30L001M	No	Redundant w/ 25K001. A little deep for dom. No screen info.	Residential-Observation
	22C001	21N03E22C001M	No	Outside subbasin	Residential
	29J003	21N03E29J003M	No	QM measurements due obstructions post 2018 Camp Fire	Residential-Other
	26E005	21N02E26E005M**	Consider	Redundant:Shallower zone selected	Observation
	06Q001	20N02E06Q001M	Consider	Deep for dom. Redundant w/ 2H003 and 8H003?	Irrigation
	31M001	20N03E31M001M	Consider	A little deep for dom but dedicated observation well. Close to boundary.	Observation
	28F001	21N01E28F001M	Consider	Redundant, 27D001 better alternative. Located in Dayton, lots of dom. Good align w/ dom	Irrigation

** Indicates the well is included in the 2022 GSP GWL RMS Network

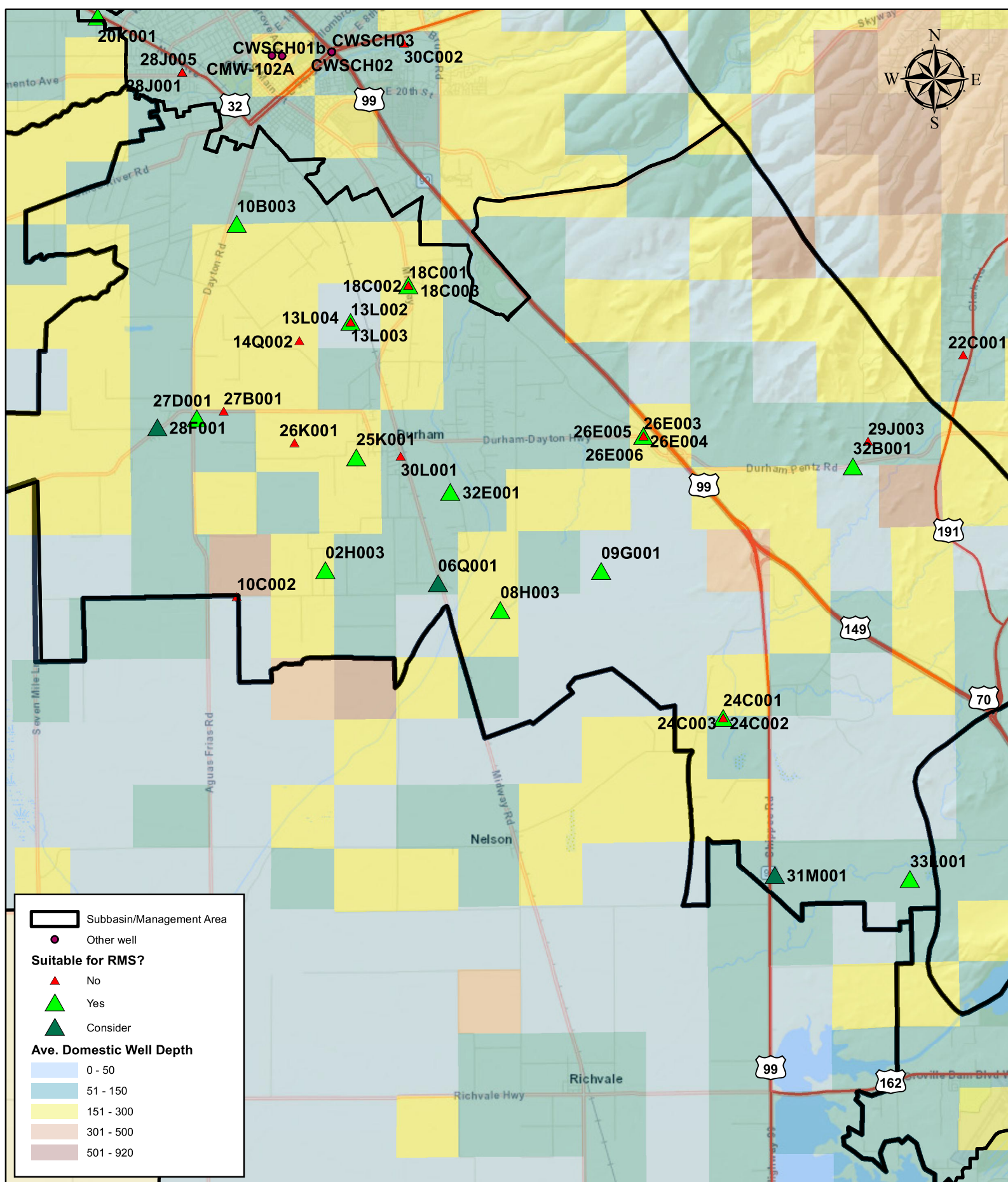


Vina Groundwater Level Monitoring Network

revised 11/24/2025 WRC

0 1 2 4 Miles





Vina Groundwater Level Monitoring Network

revised 11/24/2025 WRC

0 1 2 4 Miles



Vina Subbasin Groundwater Level Monitoring Network Evaluation Results

Conducted by Butte County Department of Water and Resource Conservation. November 17, 2025

	Well ID	SWN	Butte County Analysis: RMS?	Butte County Reasoning/Considerations	Well Use	Drill Depth	Ave. Dom Well Depth	Min. Dom Well Depth	Max. Dom Well Depth	Aquifer Category	Location Description	LWA Proposed RMS (Oct. 2025)	LWA Reason for Removal
North	05M001	22N01W05M001M**	Yes	Good geographical location. Long period of record. No screen info.	Irrigation-Observation	200	0	0	0	both	South of Wilson Landing box	Yes	
	07H001	23N01E07H001M**	Yes	Good align w/ dom. Good geographical location	Residential	195	193	113	275	deep	Meridian Rd/Wildhorse Hollow	Yes	
	29P002	23N01E29P002M	Yes	Near significant number of dom. and good align. No screen info.	Irrigation	265	150	100	300	both	Garner Ln.	Yes	
	33A001	23N01E33A001M**	Yes	East side location beneficial. A bit deep with long screen interval.	Irrigation-Observation	506	187	130	250	both	Chico Airport	Removed	Redundancy
	03H004	23N01W03H004M	Yes	Multi-completion well. Good align w/ dom. Close to boundary	Observation	115	154	62	200	shallow	Gaia Way - MultiComp	Yes	
	09E001	23N01W09E001M	Yes	Good align w/ dom. No screen interval but shallow.	Irrigation	110	162	100	220	shallow	Cana Pine Creek N. of Broyles	No	
	10M001	23N01W10M001M	Yes	Good align w/ dom.	Observation	220	208	116	300	both	Broyles Rd. observation	No	
	14R002	23N01W14R002M	Yes	Good geographical location. No screen info.	Irrigation	183	0	0	0	shallow	Hwy 99	No	
	27L001	23N01W27L001M	Yes	Good align w dom well.	Residential	102	133	102	200	shallow	Bennett Rd Residential	No	
	28M004	23N01W28M004M	Yes	Multi-completion well. A little deep for dom. 27L001 nearby, good alternative.	Observation	217	123	123	123	both	Bennett Rd MultiComp	Yes	
	31M004	23N01W31M004M	Yes	Multi-completion well. Close to boundary	Observation	106	49	49	49	shallow	Sacramento River MultiComp	No	
	36P001	23N01W36P001M**	Yes	Good align w/ dom well. Good geographical location. No screen info	Residential	165	162	145	180	shallow	Wilson Landing Residential	Yes	
	25C001	23N02W25C001M**	Yes	Good geographical location. A little deep for dom. No screen info.	Irrigation	243	157	120	200	both	Bennett Rd. slough	Yes	
	03H002	23N01W03H002M	No	Redundant:Shallower zone selected	Observation	553	154	62	200	deep	Gaia Way - MultiComp	No	
	10E001	23N01W10E001M**	No	Missing data	Irrigation	668	208	116	300	deep	Broyles Rd. orchard	Removed	Redundancy
	16E001	23N01W16E001M	No	Lots of missing data. Deep for dom wells. Not mapped	Irrigation	365	89	0	195	both	Cana Pine Creek Rd. S. of Broyles	No	
	25G001	23N01W25G001M	No	Lots of Questionable Measurements (oil). Not mapped	Irrigation	660	143	105	210	deep	Hwy 99/Meridian	No	
	28M002	23N01W28M002M	No	Redundant:Shallower zone selected	Observation	1044	123	123	123	deep	Bennett MultiComp	No	
	28M003	23N01W28M003M	No	Redundant:Shallower zone selected	Observation	696	123	123	123	deep	Bennett MultiComp	No	
	28M005	23N01W28M005M	No	Redundant: deeper zone selected	Observation	72	123	123	123	shallow	Bennett MultiComp	No	
	31M001	23N01W31M001M	No	Redundant:Shallower zone selected	Observation	1,200	49	49	49	deep	Sacramento River MultiComp	No	
	31M002	23N01W31M002M	No	Redundant:Shallower zone selected	Observation	616	49	49	49	deep	Sacramento River MultiComp	No	
	03H003	23N01W03H003M	Consider	Redundant:Shallower zone selected. Consider for deeper monitoring	Observation	351	154	62	200	deep	Gaia Way - MultiComp	No	
	31M003	23N01W31M003M	Consider	Redundant:Shallower zone selected. Could include this one insteac	Observation	245	49	49	49	deep	Sacramento River MultiComp	No	

** Indicates the well is included in the 2022 GSP GWL RMS Network

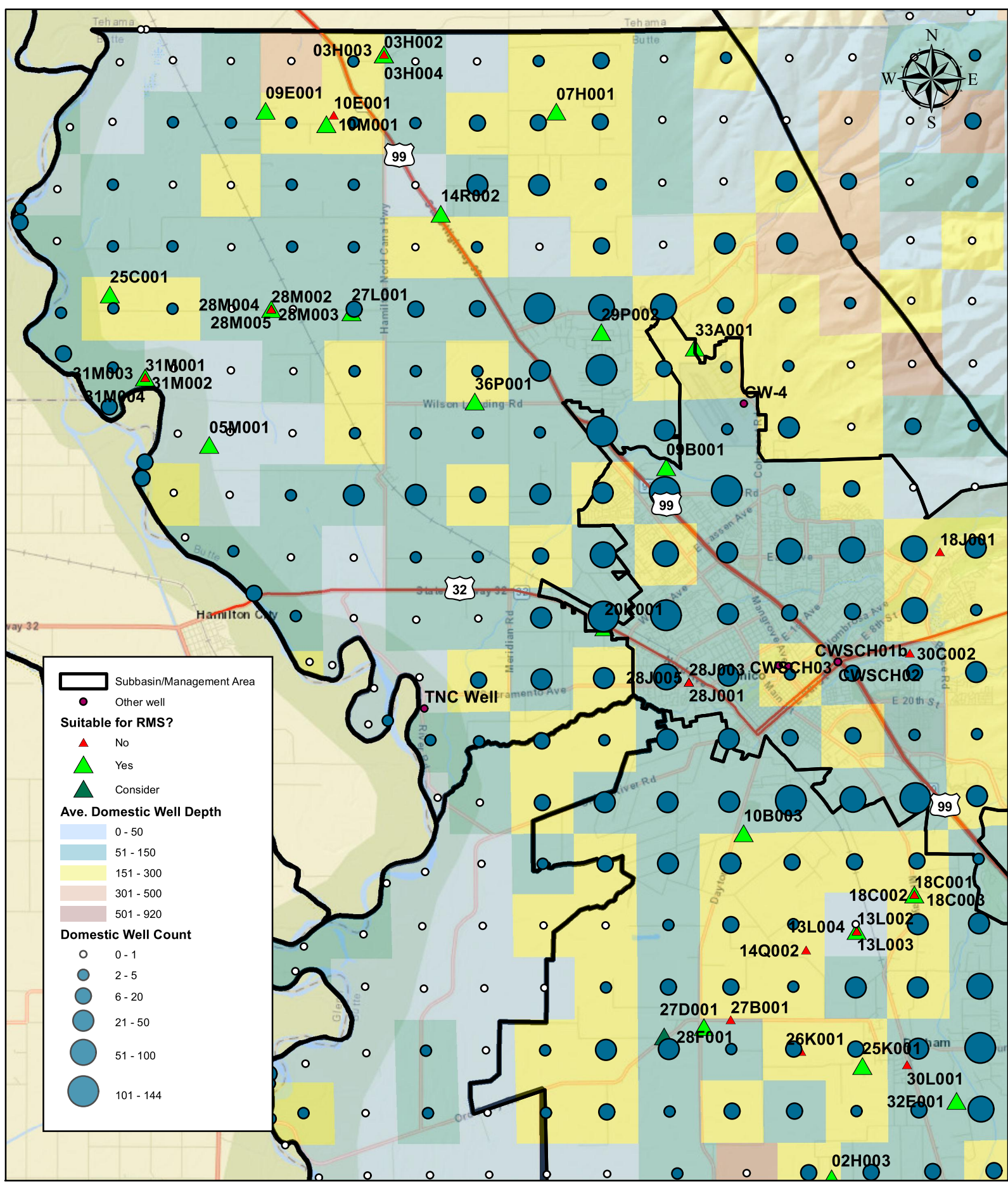
	Well ID	SWN	Butte County Analysis: RMS?	Butte County Reasoning/Considerations	Well Use	Drill Depth	Ave. Dom Well Depth	Min. Dom Well Depth	Max. Dom Well Depth	Aquifer Category	Location Description	LWA Proposed RMS (Oct. 2025)	LWA Reason for Removal
Chico*	09B001	22N01E09B001M	Yes	Good align w/ dom. Good geographical location. No Screen infc.	Residential	156	145	50	475	shallow	Hicks Ln	No	
	20K001	22N01E20K001M	Yes	Good align w/ dom. Good geographical location. No Screen infc.	Residential	110	138	45	265	shallow	Hwy 32	No	
	28J001	22N01E28J001M	No	Old mon. well, concerned about future reliability	Observation	660				deep	W. Sacramento Ave	No	
	28J003	22N01E28J003M**	No	Remove: Old mon. well, concerned about future reliability	Observation	320				both	W. Sacramento Ave	Yes	
	28J005	22N01E28J005M	No	Old mon. well, concerned about future reliability	Observation	948				deep	W. Sacramento Ave	No	
	18J001	22N02E18J001M	No	East side of Chico. (CalWater Service area). Good align w/ dom. No Screen info.	Residential	180	152	23	345	shallow	Rondo Ct by 5 Mile	No	
				East side of Chico (CalWater Service area). Dedicated observation.									
	30C002	22N02E30C002M	No	Good align w/ dom.	Observation	203	103	42	192	shallow	Marsh Jr. High	No	

* CalWater wells not evaluated. Four CalWater wells are included in the 2022 GSP GWL RMS network in the Chico Management Area

** Indicates the well is included in the 2022 GSP GWL RMS Network

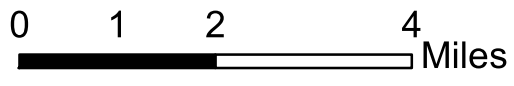
	Well ID	SWN	Butte County Analysis: RMS?	Butte County Reasoning/Considerations	Well Use	Drill Depth	Ave. Dom Well Depth	Min. Dom Well Depth	Max. Dom Well Depth	Aquifer Category	Location Description	LWA Proposed RMS (Oct. 2025)	LWA Reason for Removal
South	09G001	20N02E09G001M	Yes	Good geographical location and mid-depth. No dom wells nearby	Observation	202	0	0	0	deep	Esquon Airstrip	No	
	02H003	20N01E02H003M	Yes	Good align w dom.	Observation	201	161	44	465	both	Harvest Ln. N. of Grainland Rd	Yes	
	08H003	20N02E08H003M	Yes	Good align w dom.	Residential	187	151	102	210	deep	Esquon Residential	No	
	24C001	20N02E24C001M**	Yes	Good align w dom.	Observation	155	90	90	90	shallow	Nelson Rd. MultiComp	Yes	
	33L001	20N03E33L001M	Yes	Good align w/ dom. Good geographical location	Other-Observation	101	140	140	140	shallow	East of Hwy 99 nr S. boundary	No	
	10B003	21N01E10B003M	Yes	Good geographical location. Deep for dom.	Irrigation-Observation	525	155	60	235	deep	Dayton Rd/Rodgers Ave	Yes	
	13L004	21N01E13L004M	Yes	Multi-completion well	Observation	353	0	0	0	deep	CSU Farm MultiComp	Yes	
	25K001	21N01E25K001M	Yes	Good align w/ dom wells.	Residential	93	200	40	577	shallow	Turner Road, Durham	No	
	27D001	21N01E27D001M	Yes	Good align w/ dom. Reliable access.	Residential	112	111	82	143	shallow	Agua Fria/Durham Dayton Hwy	Yes	
	18C003	21N02E18C003M**	Yes	Unique pattern during drought years. Good align w dom	Observation	240	151	87	362	deep	Patrick's Ranch MultiComp	Yes	
	26E006	21N02E26E006M	Yes	Good align w/ dom. Multi-completion well	Observation	179	152	88	260	shallow	Custom Fab near Hwy 99	Yes	
	32E001	21N02E32E001M	Yes	Lots of dom wells. Good align w/ dom.	Irrigation	184	135	50	680	shallow	Stanford Ln, Durham	No	
	32B001	21N03E32B001M	Yes	Good geographical location. Very shallow.	Irrigation-Observation	57	0	0	0	shallow	Durham Pentz Rd. East	No	
	10C002	20N01E10C002M**	No	Outside subbasin. Good for tracking boundary conditions	Irrigation-Observation	210	0	0	0	both	Agua Fria/Grainland	Removed	Well outside subbasin boundary
	09L001	20N02E09L001M**	No	Often pumping. Too deep. Oil. Not mapped	Irrigation	710	0	0	0	deep	Esquon Irrigation	Removed	Poor data quality, oil
	24C002	20N02E24C002M	No	Redundant:Shallower zone selected	Observation	390	90	90	90	deep	Nelson Rd. MultiComp	No	
	24C003	20N02E24C003M	No	Redundant:Shallower zone selected	Observation	520	90	90	90	deep	Nelson Rd. MultiComp	No	
	12D001	21N01E12D001M	No	NMs, patchy data, often pumping. Not mapped	Irrigation	600	163	105	220	both	Nr. Hegan Ln. CSU Farm	No	
	12K001	21N01E12K001M	No	Questionable Measurements (Oil). Not mapped	Irrigation	465	163	105	220	deep	Bruce Ln/Hegan	No	
	13F001	21N01E13F001M	No	Missing data, always pumping. Not mapped	Irrigation	515	0	0	0	both	CSU Farm north	No	
	13L002	21N01E13L002M	No	Redundant:Shallower zone selected	Observation	771	0	0	0	deep	CSU Farm MultiComp	No	
	13L003	21N01E13L003M	No	Redundant:Shallower zone selected	Observation	574	0	0	0	deep	CSU Farm MultiComp	No	
	14Q002	21N01E14Q002M	No	Redundant, 13L004 better alternative; lacking screen info	Irrigation	290	167	120	240	both	Fimple/Hegan	No	
	21C001	21N01E21C001M**	No	QMs (oil). Too deep for dom. Not mapped.	Irrigation	565	119	37	240	deep	N. of Dayton/Chico St.	Removed	Poor data quality, oil
	26K001	21N01E26K001M	No	Missing data	Irrigation	462	168	100	278	deep	Burkirk Lane, Durham	No	
	27B001	21N01E27B001M	No	Too deep for dom. Redundant, 27D001 better alternative	Irrigation-Observation	517	111	82	143	both	Four Corners	No	
	18C001	21N02E18C001M	No	Redundant:Shallower zone selected	Observation	914	151	87	362	deep	Patrick's Ranch MultiComp	No	
	18C002	21N02E18C002M	No	Redundant:Shallower zone selected	Observation	701	151	87	362	deep	Patrick's Ranch MultiComp	No	
	20P001	21N02E20P001M	No	QMs, tape hangs up. Not mapped	Irrigation	238	131	40	300	deep	Cummings Rd. Nr Butte Crk	No	
	26E003	21N02E26E003M	No	Redundant:Shallower zone selected	Observation	660	152	88	260	deep	Durham Dayton Hwy MultiComp	No	
	26E004	21N02E26E004M	No	Redundant:Shallower zone selected	Observation	518	152	88	260	deep	Durham Dayton Hwy MultiComp	No	
	30L001	21N02E30L001M	No	Redundant w/ 25K001. A little deep for dom. No screen info.	Residential-Observation	317	119	30	259	both	Memorial Hall, Durham	Yes	
	22C001	21N03E22C001M	No	Outside subbasin	Residential	123	146	45	295	shallow	West Branch Ln	No	
	29J003	21N03E29J003M	No	QM measurements due obstructions post 2018 Camp Fire	Residential-Other	513	143	100	180	deep	Butte College	Yes	
	26E005	21N02E26E005M**	Consider	Redundant:Shallower zone selected	Observation	315	152	88	260	deep	Durham Dayton Hwy MultiComp	Removed	MultiComp; replaced
	06Q001	20N02E06Q001M	Consider	Deep for dom. Redundant w/ 2H003 and 8H003?	Irrigation	383	142	56	267	both	Midway/White Dr.	No	
	31M001	20N03E31M001M	Consider	A little deep for dom but dedicated observation well. Close to boundary.	Observation	201	123	123	123	deep	Hwy 99 nr S. boundary	No	
	28F001	21N01E28F001M	Consider	Redundant, 27D001 better alternative. Located in Dayton, lots of dom. Good align w/ dom	Irrigation	173	137	56	238	shallow	Yokum Ln, Dayton	No	

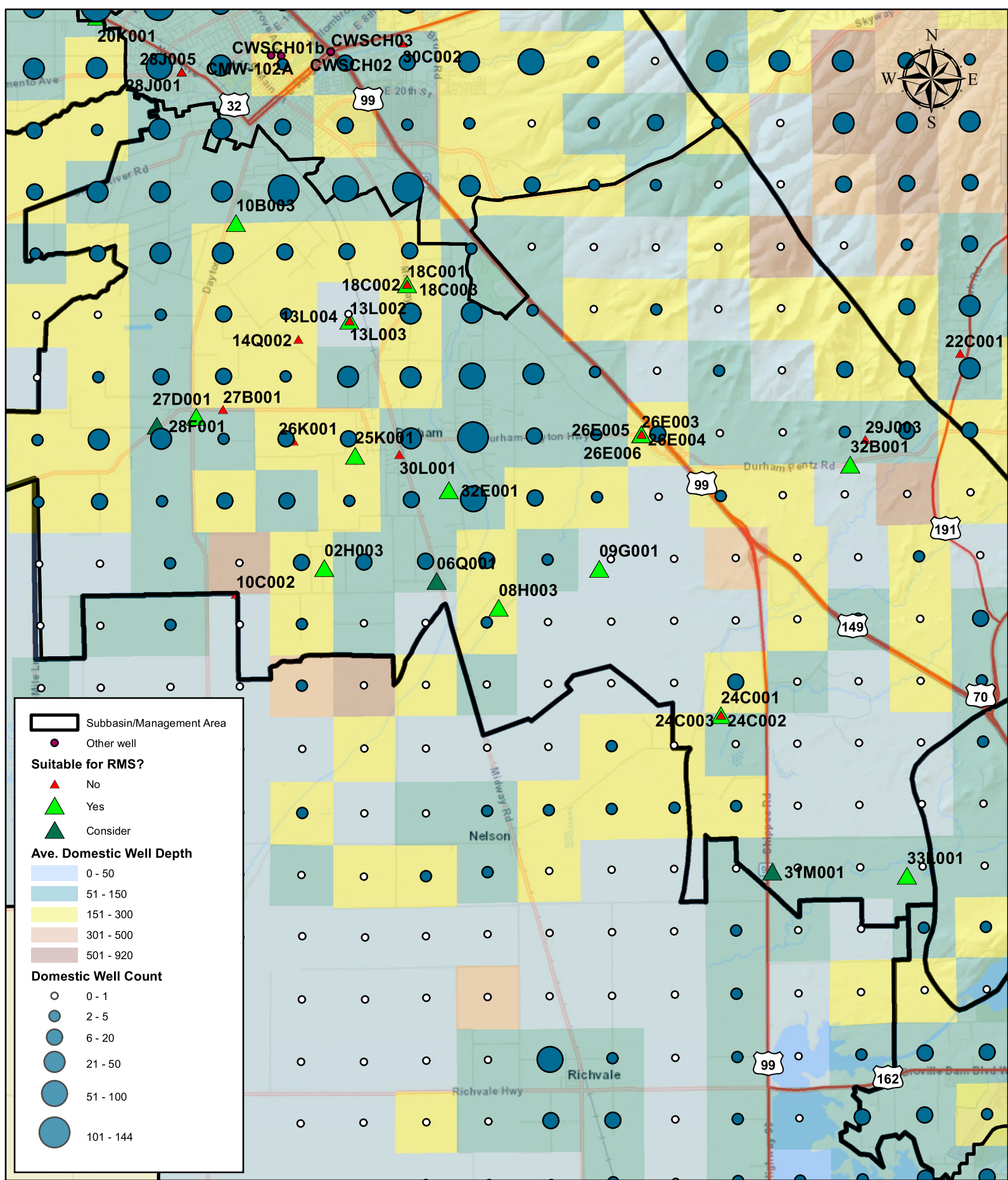
** Indicates the well is included in the 2022 GSP GWL RMS Network



Vina Groundwater Level Monitoring Network

revised 11/24/2025 WRC





Vina Groundwater Level Monitoring Network

revised 11/24/2025 WRC

0 1 2 4 Miles

