

# CHOWCHILLA SUBBASIN STAFF ASSESSMENT

April 2025



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# Executive Summary

## SGMA Background

The mission and responsibility of the State Water Board is to preserve, enhance, and restore the quality of California’s water resources and protect them for all current and future generations. In 2014, the state Legislature passed the historic Sustainable Groundwater Management Act (SGMA) that established a new framework for how groundwater would be managed locally at the basin scale to achieve long-term sustainability. SGMA authorizes local public agencies to form Groundwater Sustainability Agencies (GSAs) in alluvial groundwater basins and requires that basins designated as high-priority and medium-priority by the California Department of Water Resources (DWR) be managed by Groundwater Sustainability Plans (GSPs). These local agencies are responsible for the sustainable management of their groundwater basins; however, state agencies are responsible for ensuring local groundwater management achieves SGMA's goals.

Under SGMA, DWR is responsible for reviewing GSPs to determine if local actions will be adequate to achieve the sustainable use of groundwater. If DWR finds management in a basin to be inadequate to remedy the unsustainable use of groundwater, DWR’s inadequate determination will trigger the State Water Board’s state intervention process. When a basin is determined to be inadequate, Board staff begin working with the GSAs to correct deficiencies identified in the GSAs’ plan or implementation of the plan. If the State Water Board determines the GSAs adequately addressed groundwater management issues, the Board may release a subbasin from the State Water Board’s process and return it to DWR’s jurisdiction. Otherwise, the State Water Board may, through a noticed public hearing process, designate the basin as “probationary” under SGMA and collect groundwater pumping information and fees from extractors in the basin. After one year of probationary status, the Board may develop and adopt an interim plan that directly manages pumping in the basin. State intervention is a process that could result in the State Water Board temporarily managing and protecting groundwater resources until local agencies are able and willing to do so adequately. State intervention is in addition to local management and intended to be temporary. The goal of the state intervention process is to ensure the sustainable use of groundwater and return a basin to local management as soon as local actions are sufficient to achieve sustainability. Section 1 of this State Water Board Staff Assessment (Staff Assessment) contains more detail on the state intervention process.

## Chowchilla Subbasin

The Chowchilla Subbasin is located in the central portion of the San Joaquin Valley, in Madera and Merced counties, and contains the city of Chowchilla (Figure 1). Since time immemorial, the following California Native American Tribes have had cultural, traditional, or ancestral connections to the Chowchilla Subbasin: Amah Mutsun Tribal

Band, Big Sandy Rancheria of Western Mono Indians, Dumna Wo-Wah Tribal Government, North Fork Rancheria of Mono Indians, North Valley Yokuts Tribe, Picayune Rancheria of Chukchansi Indians, Southern Sierra Miwuk Nation, Tule River Indian Tribe, and Wuksache Indian Tribe/Eshom Valley Band (NAHC 2023, personal communication, May 11, 2023).

The Chowchilla Subbasin is managed by four GSAs, and the primary uses of groundwater within the subbasin are for irrigated agriculture and drinking water. During most years, agriculture accounts for more than 97% of groundwater use in the subbasin (2025 GSP, p. 2-103). The subbasin is critically overdrafted, which means that groundwater is pumped out of the subbasin faster than it is recharged by rain and other sources. On average, the amount pumped from the subbasin in a year is 100,600 acre-feet greater than the amount recharged. Overdraft can cause the land surface to sink, potentially damaging infrastructure and reducing aquifer storage. In addition, overdraft threatens groundwater levels and drinking water quality and could have disparate impacts on communities that rely on shallow wells. Due to historic and political factors, many of these are economically disadvantaged and communities of color. The subbasin has an estimated population of 19,099 people as of 2022 with majority of the population reporting as Hispanic or Latino (48.3%) and white (40.7%) (United States Census Bureau, 2022). The average annual household income within the subbasin in 2022 is \$67,495, which is significantly less than the state average of \$91,905 (ibid.).

## Issues with 2022 Groundwater Sustainability Plan

The state intervention process for the Chowchilla Subbasin was triggered in March 2023 when DWR determined the subbasin's 2022 GSP was inadequate and identified multiple deficiencies in the GSP. DWR identified issues regarding the local agencies' plans for managing for the chronic lowering of groundwater levels and land subsidence (land sinking due to groundwater pumping). State Water Board staff reviewed the 2022 GSP and determined that implementing the 2022 GSP would result in additional groundwater level declines, potential impacts to drinking water wells, and damage to subbasin infrastructure, such as canals and levees, through continued land subsidence.

## 2025 Groundwater Sustainability Plan Improvements

The GSAs released a revised draft GSP in August 2024, which they adopted with slight revisions in March 2025 (2025 GSP). State Water Board staff evaluated the 2025 GSP to determine if identified deficiencies were addressed.

The GSAs made significant progress through the 2025 GSP and adequately addressed deficiencies. Through the 2025 GSP, the GSAs show a greater commitment to protecting drinking water users and improved groundwater management. Some of the improvements the GSAs made in the 2025 GSP include:

- New groundwater level goals to avoid drinking water impacts after 2040.

- Where drinking water impacts occur, a commitment to addressing these impacts through the adoption of a more protective Domestic Well Mitigation Program that includes mitigating for water quality impacts in addition to impacts from lowering groundwater levels.
- Revised groundwater level goals that shouldn't cause additional land subsidence after 2040. New objectives to eliminate further subsidence and plans to limit subsidence impacts in the basin on the way to sustainability by 2040. The GSAs considered critical infrastructure when setting subsidence goals in the 2025 GSP.
- More robust management practices that should lead to sustainable groundwater use. For example, the GSAs committed to more adaptive and stricter groundwater management actions that will likely be necessary for the basin to reach sustainability.

## Staff Recommendations and Next Steps

State Water Board staff concludes the GSAs amended the GSP such that a probationary designation of the Chowchilla Subbasin is unnecessary and recommends the Board return the Subbasin to DWR's jurisdiction for continued evaluation of local management under SGMA. Section 1.2.1 of the Staff Assessment includes more information about returning the basin to DWR's jurisdiction.

GSAs must continue to evaluate their GSPs as they continue toward achieving sustainability. [Once a basin is returned to DWR's jurisdiction](#), the GSP will be periodically reviewed. Section 4 of the Staff Assessment includes recommendations for the GSAs to consider including in future GSP revisions to support improved groundwater management in the basin.

## 1.0 Background: The Sustainable Groundwater Management Act and State Intervention

Section 1.1.1 provides general background on the Sustainable Groundwater Management Act (SGMA), including its goals and the roles it defines for groundwater sustainability agencies (GSAs), the California Department of Water Resources (DWR), and the State Water Resources Control Board (State Water Board or Board). The section describes the Board's role as a backstop; protecting groundwater and those who depend on it when local efforts alone are inadequate. Section 1.2.1 provides background on the process to return a basin to DWR's jurisdiction.

## 1.1 The Sustainable Groundwater Management Act Background

### 1.1.1 Legislative Enactment of the Sustainable Groundwater Management Act

Groundwater, one of California's greatest natural resources, makes up a significant portion of the state's water supply. Approximately 83% of Californians rely on groundwater for some portion of their water supply (California Department of Water Resources, 2021). Rain replenishes groundwater each year, but the amount of replenishment (or recharge) varies and depends on local conditions. Overdraft occurs when groundwater pumping removes water faster than precipitation can recharge the groundwater in a basin. Some groundwater basins in California are in a state of critical overdraft causing significant adverse environmental, economic, and social impacts. In some cases, groundwater levels have dropped so low that many existing wells are no longer able to pump water, including domestic supply wells in rural, largely economically disadvantaged communities (DACs). Wildlife and ecosystems that rely on shallow groundwater or rivers and streams connected to groundwater can also be adversely affected by low groundwater levels (California Department of Fish and Wildlife, 2019). Excessive pumping resulted in land subsidence in some areas, causing damage to critical infrastructure such as levees and canals.

SGMA authorizes local public agencies overlying groundwater basins to form GSAs and develop and implement groundwater sustainability plans (GSPs). GSAs are responsible for long-term management of their groundwater basins that avoids "undesirable results" (as defined under SGMA) within 20 years of implementing their GSPs. To achieve this, GSAs fill data gaps, monitor and set criteria for groundwater conditions, implement projects and management actions, and revisit their plan at least every five years.

The State Water Board also has a critical role in SGMA. DWR is the primary state technical assistance and oversight agency in SGMA and is tasked with assessing and evaluating GSPs for compliance with SGMA's and GSP Regulation requirements. The State Water Board is primarily responsible for acting to protect groundwater resources when necessary to ensure SGMA is implemented successfully and may temporarily intervene in groundwater management under SGMA's state intervention provisions when the management of a groundwater basin is deemed inadequate due to deficiencies in the GSP or with its implementation. When DWR, in consultation with the State Water Board, deems the GSP or GSPs in a basin inadequate (Wat. Code, § 10735.2, subd. (3)), the basin is transferred to the State Water Board for potential state intervention (Wat. Code, § 10735 et seq.). State intervention is a two-step process. If the GSA(s) successfully revises the GSP(s) to resolve deficiencies before or during the first step, the basin will not proceed to the second step. The first step under the SGMA statute is for the Board to consider basin management and consider whether to designate the basin as probationary. The second step is for the Board to consider the imposition of an interim plan for the basin, which may occur only if deficiencies identified

through the probationary designation process are not remedied within one year of a probationary designation. During probation, GSAs have time to resolve deficiencies, while the State Water Board collects data on groundwater extractions, collects fees from certain groundwater users, and may conduct additional investigations. Importantly, the GSA retains its authorities and responsibilities and must continue to implement its plan regardless of the probationary status.

## 1.2 Returning a Subbasin to DWR's Jurisdiction

State intervention commences when a triggering condition set forth in Water Code section 10735.2 occurs. In the case of the critically overdrafted Chowchilla Subbasin, DWR found that a triggering condition under subdivision (a)(3) of Section 10735.2—the absence of an adequate GSP—occurred.

If GSAs can demonstrate to the State Water Board that they addressed all deficiencies identified by DWR as the basis for the referral and other concerns that Board staff identifies as additional issues during any assessment of the GSP prior to a hearing, the State Water Board may determine that it is not necessary to designate the basin as probationary and return the basin to DWR's jurisdiction. In most cases, the GSAs identify specific revisions to the GSPs and how those revisions address the concerns described in DWR's 2022 GSP Inadequate Determination, propose a plan for implementing GSP revisions, and provide responses to concerns raised by State Water Board staff in technical meetings. In addition, as basins that exit state intervention will return to local GSA management under DWR's jurisdiction, it is appropriate for the Board to consider whether a GSA's efforts to address the deficiencies in a GSP will result in circumstances that could become separate triggers for state intervention and cause the basin to “boomerang” back into state intervention.

After considering the GSAs' efforts under the state intervention provisions of SGMA, if the State Water Board determines that the deficiencies identified by DWR no longer exist, then the State Water Board returns the basin to DWR's jurisdiction. DWR's jurisdiction includes DWR's periodic reviews of GSAs' GSPs, to be conducted at least every five years (Wat. Code, §§ 10733, 10733.8; California Department of Water Resources, 2025, p. 5). The process to return a basin to DWR's jurisdiction may include notice to the public and opportunity for public comment. In the case of the Chowchilla Subbasin, the State Water Board noticed the release of a Staff Assessment and proposal to return the basin to DWR's jurisdiction on April 25, 2025, provided an opportunity for written public comment on the Staff Assessment and proposal between April 25, 2025 and May 23, 2025, and expects to consider and potentially take action on the Board staff proposal at the June 3, 2025 Board meeting.

## 2.0 Chowchilla Subbasin Background

The Chowchilla Subbasin (subbasin) is located in the San Joaquin River hydrologic region within California's Central Valley (Figure 1). DWR determined the groundwater basin is high-priority and subject to conditions of critical overdraft. The subbasin is bounded to the north by the Merced Subbasin, to the south by the Madera Subbasin, and to the west by the Delta-Mendota Subbasin. It covers roughly 145,000 acres, and its major population center is the city of Chowchilla (population 19,328 as of 2023) (Figure 2). Groundwater in the subbasin is managed by four GSAs: County of Madera GSA, County of Merced GSA, Triangle T Water District GSA, and Chowchilla Water District GSA (collectively, the Chowchilla Subbasin GSAs).

The subbasin is subject to critical conditions of overdraft, meaning that groundwater extractions exceeded the sustainable yield of the subbasin for years. Groundwater is used primarily for agriculture as well as drinking water and industrial uses. In water year 2022 (October 2021 through September 2022), agricultural extractions totaled 399,700 acre-feet and urban use totaled 9,360 acre-feet. On average, groundwater extractions are estimated to exceed the sustainable yield of the subbasin (245,700 acre-feet per year) by 100,600 acre-feet per year (2025 GSP, p. ES-15). The western and central portions of the subbasin have an upper unconfined aquifer and a lower confined aquifer located below the Corcoran Clay layer (or E-clay). The eastern portion of the subbasin (east of the Corcoran Clay extent) is generally semi-confined with increasing confinement with depth.

The four Chowchilla Subbasin GSAs submitted a GSP to DWR in 2020 (2020 GSP) in compliance with SGMA deadlines. DWR determined in January 2022 that the 2020 GSP was incomplete, and the GSAs had 180 days to revise the GSP per DWR's feedback (2020 GSP DWR Incomplete Determination, p. 1). The GSAs submitted a revised GSP in July 2022 (2022 GSP). In March 2023, DWR determined that the 2022 GSP was inadequate (2022 GSP DWR Inadequate Determination). DWR's 2022 GSP Inadequate Determination triggered the State Water Board's role as the state backstop under SGMA pursuant to subdivision (a)(3) of Water Code section 10735.2.

DWR's 2022 GSP Inadequate Determination concluded that the 2022 GSP was inadequate due to deficiencies concerning sustainable management criteria (SMC) for chronic lowering of groundwater levels and land subsidence that would allow for significant and unreasonable impacts to beneficial uses and users of groundwater as well as surface land uses, including infrastructure; however, DWR found the GSAs made sufficient progress in the 2022 GSP related to interconnected surface water (ISW), citing an ISW Workplan submitted by the GSAs. The deficiencies identified in DWR's 2022 GSP Inadequate Determination are briefly summarized below:

Deficiencies involving groundwater level SMC:

- **The GSAs did not consider in the 2022 GSP how planned groundwater level decline would impact public supply wells.** Impacts to public water system wells and state small water system wells at groundwater level minimum thresholds (MTs) were not considered in the 2022 GSP, particularly given the Domestic Well Mitigation Program (DWMP) excluded public water systems and state small water systems from assistance under the program.
- **The planned groundwater level decline proposed in the 2022 GSP could lead to other worsening conditions.** Groundwater level declines allowed by the 2022 GSP groundwater level MTs<sup>1</sup> may result in greater subsidence rates and potentially greater impacts to other sustainability indicators.
- **The 2022 GSP allowed groundwater levels in some areas to decline even further than the 2020 GSP allowed.** The 2022 GSP groundwater level MTs were 40-80 feet lower than the equivalent 2020 GSP MTs in the western part of the subbasin where subsidence rates are highest.
- **The planned groundwater level decline proposed in the 2022 GSP would impact many wells and the GSP did not include an explanation how these wells would be mitigated to prevent significant and unreasonable impacts to well owners.** The 2022 GSP did not include a justification how the GSAs selected the number of failing well structures requiring replacement as an undesirable result.

Deficiencies involving land subsidence impacts and SMC:

- **Critical infrastructure impacts were not fully considered when determining how much subsidence the 2022 GSP would allow.** A tolerable cumulative subsidence amount based on infrastructure beneficial users was not established.
- **The 2022 GSP excluded residual subsidence expected from groundwater decline that has already happened when setting MTs.** The GSAs only proposed managing for subsidence caused by new pumping in the 2022 GSP, even though SGMA and the GSP Regulations do not differentiate between residual and new subsidence. Residual subsidence occurs from past pumping actions when there is a time lag between pumping and subsidence impacts.
- **The amount of subsidence allowed in the 2022 GSP only considered impacts to wells.** The 2022 GSP did not include a justification for the decision to use a number of well structure failures as an undesirable result and excluded consideration of other impacts such as infrastructure damage.

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<sup>1</sup> A minimum threshold is the quantitative value that represents the groundwater conditions at a representative monitoring site that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause an undesirable result(s) in the basin (CCR Title 23, section § 354.28)

- **The 2022 GSP did not include a proposal for measuring subsidence directly to assess how much subsidence was occurring; it included measuring groundwater levels as a proxy instead.** The 2022 GSP set subsidence SMC by using groundwater levels as a proxy but lacked sufficient evidence to support this approach.
- **The GSAs proposed in the 2022 GSP to allow subsidence impacts to continue.** Continued subsidence impacts were expected based on groundwater level MTs being set below historical lows. This would cause significant additional subsidence.
- **Subsidence mitigation was not consistent across the subbasin.** There are two subsidence management zones in the subbasin, Western and Eastern. The GSAs did not establish subsidence mitigation actions in the 2022 GSP for the Eastern management zone where considerable subsidence still occurs.

DWR noted in its 2022 GSP Inadequate Determination that the GSAs sufficiently addressed the ISW deficiency identified in the 2020 GSP in their 2022 GSP. However, DWR staff advised the GSAs to fill data gaps related to the hydraulic connectivity of groundwater and surface water in the subbasin, as well as revising SMC to be in compliance with the GSP Regulations. DWR stated in the determination that the GSAs could continue working with DWR to further efforts on ISW once DWR releases their upcoming guidance.

In response to DWR's 2022 GSP Inadequate Determination, the Chowchilla Subbasin GSAs adopted, and submitted to the State Water Board for review, a new revised plan in May 2023 (2023 GSP), which aimed to address all the deficiencies outlined in DWR's 2022 GSP Inadequate Determination. State Water Board staff evaluated the 2023 GSP to determine if the revisions were responsive to DWR's deficiencies; staff also identified additional technical concerns (discussed in Section 3 below) with the 2023 GSP that would still allow significant and unreasonable impacts to beneficial users. Board staff met with the GSAs over a series of technical meetings to discuss recommended actions to revise the 2023 GSP.

The GSAs released an amended draft GSP for public comment in August 2024 (2024 Draft GSP) and adopted the GSP in March 2025 (2025 GSP) with slight changes from the draft. Section 3.0 describes State Water Board staff's assessment of the 2025 GSP.

### 3.0 Board Staff Evaluation of the 2025 Chowchilla GSP

State Water Board staff evaluated the 2025 GSP to determine if the deficiencies outlined in DWR's 2022 GSP Inadequate Determination and concerns identified by Board staff were adequately addressed. Staff coordinated with the GSAs on all issues described in this section and reviewed the 2024 Draft GSP and changes made in the adopted 2025 GSP. Board Staff finds the GSAs adequately addressed the deficiencies

identified by DWR and Board staff concerns in the 2025 GSP and the plan sufficiently describes the method for implementing the 2025 GSP to avoid significant and unreasonable impacts to beneficial users. Board staff discusses evaluation of the GSA's approach to groundwater levels, land subsidence, ISW, groundwater quality, and domestic well mitigation in the following sections.

## 3.1 Groundwater levels

### 3.1.1 Defining undesirable results

The 2022 GSP stated that an undesirable result would occur if more than 25% of agricultural wells and more than 10% of drinking water wells required replacement. The GSAs then set MTs in the 2022 GSP by projecting out the groundwater levels at which these conditions would occur and adding a 10-foot buffer to those groundwater levels. As DWR noted in the 2022 GSP Inadequate Determination, the GSP did not include a justification on how the selection of a percentage of failing wells as a MT avoids significant and unreasonable results (2022 GSP DWR Inadequate Determination, p. 6).

The Chowchilla Subbasin GSAs shifted away from a groundwater level projection approach for setting groundwater level MTs in their 2025 GSP. Instead, the 2025 GSP sets new, substantially higher MTs and measurable objectives (MOs) within the subbasin. Groundwater level MTs<sup>2</sup> are set at fall 2015 levels and MOs are set at fall 2011 levels (2025 GSP, p. ES-20). An undesirable result is now defined as groundwater levels exceeding MTs in 25% or more representative monitoring site (RMS) wells for two consecutive years. The GSAs propose these revisions in the 2025 GSP are protective of domestic wells once sustainability is achieved. With water level MTs at 2015 levels, no wells should go dry after 2040; as long as water levels stay above MTs, wells that had not gone dry prior to SGMA will be protected or mitigated for on the way to sustainability through the DWMP, and therefore meets the requirements under SGMA.

### 3.1.2 Exacerbating subsidence

DWR's 2022 GSP Inadequate Determination noted that, because the 2022 GSP groundwater level MTs were below historic lows in many cases, groundwater level declines to MTs could result in subsidence-related undesirable results.

The groundwater level MTs set in the 2025 GSP are higher than historic lows at most RMS and, in some cases, are set higher than current groundwater levels at some RMS within the subbasin. The GSAs established groundwater level MTs in the 2025 GSP that are, on average, 40 feet higher than those established in the 2022 GSP. The 2025 GSP's more conservative SMC should limit the impact of groundwater level declines on

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<sup>2</sup> The GSAs used observed 2015 groundwater levels where possible, and used modeled values where observations were not available.

future subsidence rates. Therefore, the approach described in the 2025 GSP adequately addresses this deficiency.

### 3.1.3 Short-term groundwater level declines and drinking water well impacts

In the GSAs' attempt to address the deficiencies in DWR's 2022 GSP Inadequate Determination, the 2023 GSP includes interim milestones (IMs) that allow continued groundwater level declines until approximately 2030, as the GSAs bring proposed projects and management actions online. The GSAs then propose to raise groundwater levels back above MTs by 2040.

This approach may negatively impact domestic wells within the subbasin. The Chowchilla Subbasin GSAs developed and implemented a DWMP; however, State Water Board staff were concerned that an unreasonable number of drinking water wells may require mitigation prior to sustainability being reached. Board staff is encouraged by the ongoing efforts of the GSAs to mitigate domestic wells and recognize well mitigation is a necessity before sustainability is achieved; however, staff notes that well mitigation is not a net zero impact activity for well owners. The transition to using interim supplies for an unknown amount of time can be a disrupting experience for household water users. Board staff expressed this concern to the GSAs and recommended the GSAs limit the number of wells requiring mitigation to avoid undue and unreasonable hardship to a greater number of domestic well users within the subbasin.

In response to State Water Board staff's recommendations, the GSAs included an additional analysis of dry well susceptibility at the lowest IM groundwater levels in the 2025 GSP (2025 GSP, Appendix 3.K.). This analysis concluded that 50 domestic drinking water wells could be impacted at the lowest IMs. Board staff conducted an independent dry well susceptibility analysis and concluded approximately 115 drinking water wells could potentially be impacted at the lowest IM groundwater levels. The majority of these potentially impacted wells are located near the city of Chowchilla (Figure 3). The differing results between the GSAs' and board staff's analyses may be due to varying data accessibility and use of different methodologies. However, the differing results highlight the challenges of estimating potential impacts, making it important to establish a numeric limit of allowable dry wells not solely based on projections.

The GSAs addressed this concern in the 2025 GSP by revising the undesirable result definition. The revised groundwater level undesirable result definition indicates that no more than 50 wells are expected to be impacted at current IMs, starting January 1, 2026; however, if groundwater level IMs are revised in subsequent plan amendments, such a revision should not impact more than 75 domestic wells over the same period (2025 GSP, p. 3-63). The 2025 GSP reiterated the GSAs' commitment to mitigating the impacts to all of these wells through well replacement or other means, described in Section 3.2.

Fifty and 75 domestic wells represent 10% and 15% of the estimated total number of domestic wells in the subbasin, respectively (estimated 500 domestic wells, 2025 GSP, Appendix 2.G., p. 3). The revision transparently defines the real-world impacts that constitutes an undesirable result from chronic declining groundwater levels. Even temporary impacts to residents' drinking water sources are significant; however, with comprehensive and timely mitigation, and in consideration of the substantial overdraft the basin must mitigate by 2040, the GSAs' proposed approach is reasonable and the 2025 GSP addresses the concern created in the 2023 GSP.

### 3.1.4 Feasibility of groundwater level interim milestones

Based on the groundwater level IMs proposed in the 2023 GSP, State Water Board staff was concerned the project and management actions described in the GSP were inadequate to ensure the groundwater levels would rebound above 2015 levels by 2040. The groundwater level IMs vary significantly among RMSs and require some locations to rebound groundwater levels over 100 feet between 2030 and 2040, a rate of increase generally not observed in historical hydrographs for these RMSs. The GSAs cited two major demand management actions in the 2023 GSP: Madera County GSA's allocation program and Triangle T Water District GSA's voluntary subsidence agreement; however, most of the project and management actions were multi-benefit recharge projects and surface supply augmentations (2025 GSP, p. 4-1). These projects could fail to provide the intended benefits by 2040 if conditions between 2030 and 2040 are too dry to allow for sufficient recharge, and staff recommended the GSAs develop a clear demand management framework to ensure sustainability will be reached by 2040. The GSAs addressed this concern in the 2025 GSP by committing to develop a subbasin-wide Demand Management Program, effective on January 1, 2026, which will be operated through the executed Demand Management and Subsidence Mitigation Measures Memorandum of Understanding (Demand Management Program) (2025 GSP, Appendix 3.N.). The Demand Management Program implements mandatory demand management measures if specific trigger conditions are reached. Trigger conditions will be based on defined levels of impacts and/or trends in impacts to domestic wells, and triggers will be designed to avoid both groundwater level and subsidence undesirable results (2025 GSP, p. 4-1). The Demand Management Program includes both voluntary and mandatory measures for reducing groundwater extractions when triggers occur (2025 GSP, Appendix 3.N., p. 4). Additionally, the program introduces a penalty and fee structure for unsustainable groundwater extraction and a subbasin-wide allocations program in coordination with both Madera and Merced counties.

The Demand Management Program states that each GSA will fund the Program through a proportionate share approach (id. at p. 6). While the Program is not fully developed, staff understands the time required to implement a demand management program is lengthy. However, the Demand Management Program addresses staff's concerns regarding the 2023 GSPs' projects and management actions and lack of a

clear demand management backstop by providing the structure and funding critical to the Program's success.

## 3.2 Domestic Well Mitigation Program

The 2025 GSP includes a DWMP to provide mitigation assistance to impacted well owners resulting from degraded water quality and declining groundwater levels. After an applicant successfully qualifies for mitigation under the DWMP, the GSAs shall coordinate the delivery of short-term mitigation water supplies (e.g. bottled water, water dispensers, bulk water storage tanks, etc.) to the applicant the following business day (2025 GSP, Appendix 3.D., pdf p. 87). Short-term mitigation assistance will be temporary and cease once permanent mitigation is implemented. Permanent mitigation is dependent on the impact on the well (i.e. dry well or poor water quality) and will consist of one of the following: well replacement or modification, consolidation with an existing water system, or installation of a Point of Use or Point of Entry treatment system (id. at pdf p. 88).

DWR identified a deficiency regarding the subbasin's DWMP in the 2022 GSP Inadequate Determination. As DWR noted in the 2022 GSP Inadequate Determination, the DWMP eligibility is limited to private domestic wells, excluding public water systems and state small water systems from eligibility for mitigation. The 2022 GSP did not include an explanation how the GSAs considered those water systems in setting its SMC or designing the DWMP.

In the 2023 GSP, the GSAs expanded the well mitigation eligibility to include public water systems and state small water systems (2023 GSP, p. ES-16). These revisions resolved the deficiency identified in DWR's 2022 GSP Inadequate Determination regarding the DWMP in the 2022 GSP, but State Water Board staff identified additional concerns regarding the funding mechanisms, eligibility criteria, and the lack of short-term mitigation timeline details.

The 2023 GSP DWMP stated that the maximum funding available for mitigation per well shall be \$30,000 (2023 GSP, Appendix 3.D., p. 4). The GSAs based this cap on feedback from well drillers that work in the area. The estimated cost to drill and install a well to a depth of 500 feet is \$25,000 (2025 GSP, Appendix 3.C., p. A3.C-2). The GSAs added an additional buffer of \$5,000 to reach a cap of \$30,000. Costs associated with providing interim supplies are not deducted from the funding cap. Staff noted the funding cost cap of \$30,000 could be insufficient to cover the costs of a well replacement, particularly for a public water system well.

The GSAs address this concern in the 2025 GSP by establishing criteria for considering applications for mitigation projects that exceed the \$30,000 funding cost cap (2025 GSP, p. 3-7). The review of applications that exceed the mitigation cost cap will be based on one or more of the following established criteria: the receipt and review of dual bids, potential systems consolidation to two or more domestic users, construction

means and methods review, and feasibility and appropriateness review of permanent water quality mitigation alternatives (2025 GSP, Appendix 3.D., pdf p. 87).

The DWMP's funding sources remained unclear in the 2023 GSP, calling into question the feasibility of the GSAs' approach. In response, the GSAs executed a Memorandum of Understanding (MOU) between the Madera County GSA and the Chowchilla Subbasin Growers (CSG), establishing DWMP funding commitments (Madera County and CSG MOU).<sup>3</sup> The Madera County and CSG MOU explicitly states that the Madera County GSA and the CSG agree to mitigate for domestic well impacts caused by declining groundwater levels that occur from groundwater management activities (id. at pdf p. 88). The Madera County and CSG MOU establishes a proportionate share funding mechanism, stating the CSG members set forth in the MOU will fund the DWMP annually on a per acre basis (rate of \$16.89 per acre) (id. at pdf p. 3). With the execution of CSG MOU, the 2025 GSP DWMP addressed the concerns regarding the funding mechanisms and the ability of the DWMP's funding sources outlined in the 2025 GSP. The DWMP is also operational: as of March 2025, the GSAs have awarded mitigation to nine applicants so far and are providing interim supplies to accepted applicants (WY 2024 Annual Report, p. 45). Therefore, the GSAs are actively demonstrating their ability and commitment to mitigating impacts to domestic wells as the GSAs work towards their sustainability goals.

The 2023 GSP's DWMP eligibility criteria did not appear to include impacts to drinking water wells caused by water quality degradation. The Chowchilla Subbasin has historical nitrate contamination and arsenic and total dissolved solids (TDS) concentrations that approach drinking water standards in some locations. The water quality SMC in the 2025 GSP may allow for further water quality degradation where MTs are set above applicable drinking water standards. Section 4 further discusses water quality in the subbasin. Board staff noted that the DWMP should expand the eligibility criteria to address the impacts resulting from the degradation of water quality for the constituents of concern identified in the subbasin.

In the 2025 GSP, the Chowchilla Subbasin GSAs include an executed MOU with the Chowchilla Management Zone (CMZ) to coordinate efforts in monitoring groundwater quality for nitrate concentrations in the subbasin (2025 GSP, Appendix 3.D., pdf, p.90). The CMZ, which was formed to manage the implementation of the Nitrate Control Program in the subbasin in compliance with the CV-SALTS program, offers domestic well testing for nitrate and provides drinking water supplies to well users impacted by nitrate levels that exceed the state's primary maximum contamination level (id. at pdf p. 92). The CMZ MOU also states that the GSAs will mitigate for groundwater quality impacts to domestic wells caused by GSP implementation that result from degradation

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<sup>3</sup> The Chowchilla Subbasin Growers (CSG) is a mutual beneficial corporation that represents a service area in Madera County GSA as described in Madera County Contract 12652-23.

of groundwater quality above certain levels in the GSP, as part of the DWMP (id. at pdf p. 91). The CMZ MOU agreement terms establish that the CMZ and Chowchilla Subbasin GSAs coordinate their administration of the following management actions:

- Compiling and assessing groundwater data
- Groundwater monitoring
- Groundwater quality testing for constituents of concern in domestic wells
- Mitigating for dry wells
- Providing drinking water supplies to impacted domestic well users
- Developing a review process for siting new wells to ensure new wells are not installed in areas with degraded water quality (ibid.)

The DWMP also states that the subbasin GSAs coordinated with Madera County and Merced County to test the water quality of wells replaced through the DWMP (id. at pdf p. 88). In the event of a non-nitrate related water quality issue, the DWMP will coordinate with the CMZ to determine the appropriate mitigation action. Board staff supports the subbasin's approach of partnering with the CMZ to mitigate for contamination in drinking water wells; this revision is a substantial improvement from the 2022 GSP, which did not include any form of mitigation for water quality impacts in domestic wells.

State Water Board staff expressed concerns about the timeline for people who may qualify for well mitigation to begin to receive interim water supplies. In reviewing the 2023 GSP's DWMP, the GSAs outlined the timeline from when the drinking water well user applies for well mitigation to when mitigation is completed. However, the GSAs provided no details about how quickly short-term mitigation (e.g. interim drinking water supplies) will be delivered to domestic well users.

The 2025 GSP DWMP includes details for short-term mitigation timelines, stating that the GSAs will provide short-term mitigation to the applicant the next business day following submission of a completed application (id. at pdf p. 87). Short-term mitigation is defined in two categories: water quality and water quantity. Short-term mitigation for water quality consists of the delivery of 5-gallon water dispensers, bottled water, and an initial volume of 60 gallons per month per household. The DWMP states that deliveries and pick-up of 5-gallon containers will occur on a regular basis. The initial delivery volume may be adjusted based on the needs of the household. Short-term mitigation for water quantity consists of the delivery of bulk water storage tanks and bottled water (id. at pdf pp. 87-88). With the inclusion of monitoring and timely water replacement, the GSAs addressed staff concerns regarding short-term mitigation in the 2025 GSP.

## 3.3 Land Subsidence

### 3.3.1 Land Subsidence SMC

DWR identified multiple deficiencies involving subsidence SMC in the 2022 GSP. DWR determined that the subsidence SMC in the 2022 GSP did not consider the amount of total subsidence tolerable for the subbasin's land surface beneficial uses and users (2022 GSP DWR Inadequate Determination, p. 9). DWR outlined concerns with disparate management actions for the Western and Eastern management areas. The management areas were created due to historical and recent subsidence impacts to infrastructure in the western portion of the subbasin (2025 GSP, p. 2-118). DWR also found the 2022 GSP inadequate due to the use of a water level proxy approach to establish subsidence SMC. DWR noted several concerns with land subsidence SMC derived from using water levels as a proxy. Sufficient correlation between water levels and subsidence rates was not established in the 2022 GSP. DWR further noted that the modeled water level thresholds for subsidence—fall 2015 levels—were significantly lower than observed historical 2015 levels, and projected water levels were below historical lows at all RMS, making it difficult to determine how much subsidence would occur (2022 GSP DWR Inadequate Determination, p. 11).

Board staff recommended the GSAs establish a cumulative subsidence cap that is protective of surface land uses within the subbasin. In response, GSAs reached out to operators of critical infrastructure and other interested parties in the subbasin to determine the tolerable amount of future subsidence for various infrastructure (2025 GSP, p. 3-67). Based on this outreach, the GSAs concluded that additional subsidence over 2.5 feet would negatively impact the most sensitive critical infrastructure identified within the subbasin: the San Joaquin River Restoration Project projects. The GSAs established a subbasin-wide cumulative subsidence cap of two feet from December 2023 to 2040 (*id.* at pp. 3-19). The GSAs also established stricter subsidence IMs in the 2025 GSP that ramp down to zero subsidence by 2040. Finally, the 2025 GSP includes a proposal to establish a Subbasin Critical Infrastructure Operator Group, with annual meetings to provide updates on potential subsidence impacts to infrastructure and ongoing project and management actions implementation. These revisions within the 2025 GSP address concerns regarding the amount of allowable subsidence.

DWR determined that the 2022 GSP's approach of using groundwater level SMC as a proxy for subsidence was not sufficiently supported (2022 GSP DWR Inadequate Determination, p. 10). The 2025 GSP defines new subsidence SMC that no longer use groundwater levels as a proxy. Subsidence MTs and MOs are now set at zero feet, subject to an uncertainty of up to 0.16 feet per year due to the potential error range of the RMS subsidence benchmark global positioning system (GPS) units (2025 GSP, p. ES-20). Board staff supports these revised SMC definitions based on annual subsidence rates; the definitions are an improvement from previous GSP editions that allowed significant future subsidence to occur. The MTs and MOs established in the

2025 GSP are more protective of conveyance infrastructure and well structures and sufficiently address the subsidence deficiency.

### 3.3.2 Land Subsidence Management Actions

In a subbasin with historical subsidence of up to 9 feet (2025 GSP, p. ES-13) and more than 5.5 feet of subsidence since 2015, it was imperative the GSAs outline a clear implementation pathway to achieving the GSP's sustainability goals. The project and management actions in the 2022 and 2023 GSPs were not sufficient to demonstrate the subbasin was on a path towards zero subsidence. The 2023 GSP included only one subsidence-specific management action: the Subsidence Control Measures Agreement between landowners in and around Triangle T Water District GSA and water agencies in the Delta-Mendota Subbasin.<sup>4</sup>

DWR identified a related subsidence deficiency in the 2022 GSP regarding disparate management actions between the Western and Eastern management areas, and noted,

The GSP does not propose any specific projects and management actions related to subsidence plan for the Eastern Management Area, nor does it explain how implementation of the projects and management actions is consistent with avoiding or minimizing subsidence within the tolerable amount of cumulative subsidence over the long-term implementation horizon (2022 GSP DWR Inadequate Determination, p. 12).

Through several technical meetings with the GSAs, State Water Board staff conveyed the need for improved management actions involving demand management with clear implementation triggers to avoid additional subsidence and minimize residual subsidence. Board staff also recommended the GSAs develop mitigation plans to fund and repair infrastructure damaged by subsidence in the event project and management actions are not as effective as planned. Without mitigation, the GSAs are unable to avoid significant and unreasonable impacts and substantial infrastructure damage caused by subsidence. Mitigation may reduce an unreasonable impact to a reasonable impact, even if the impact is still significant.

The GSAs address these concerns in the 2025 GSP by establishing the Demand Management and Subsidence Mitigation Measures MOU. The Demand Management Program will mitigate damage from subsidence if other project and management actions are unable to sufficiently address sustainability issues within the subbasin (2025 GSP,

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<sup>4</sup> This is an Agreement between certain landowners managing more than 14,000 acres in the western portion of the Chowchilla Subbasin and multiple water districts/companies in the neighboring Delta-Mendota Subbasin. The Agreement was designed to mitigate subsidence and avoid undesirable results in the adjacent Delta-Mendota subbasin. Under the Agreement, Chowchilla landowners limit lower aquifer pumping and receive purchased surface waters from the districts in Delta-Mendota Subbasin.

p. ES-22). This agreement introduces several management actions, including both voluntary and mandatory measures, to avoid subsidence impacts and reach the subbasin's sustainability goals. Mandatory measures to avoid subsidence impacts are anticipated to include a groundwater allocation program with associated penalties and fees for unsustainable groundwater extraction (2025 GSP, Appendix 3.N., p. 4).

Anticipated trigger conditions for mandatory demand management include (id. at p. 5):

- Groundwater conditions (e.g., groundwater levels or subsidence) that exceed the IMs specified in the Revised GSP at the interim milestone date.
- Groundwater conditions (e.g., groundwater levels or subsidence) that are approaching undesirable results in the subbasin or some portion thereof.
- Occurrence of undesirable results in the subbasin or some portion thereof.

Mandatory groundwater allocations will likely be necessary for the subbasin to reach its goals of zero subsidence by 2040, particularly in the lower aquifer where the majority of inelastic subsidence occurs from compaction of clay layers (Lees, Knight, & Smith, 2022). The subbasin will have to maintain annual subsidence rates that are much lower than rates observed since 2015 to achieve the revised IMs and avoid exceeding two feet of additional subsidence by 2040 (Figure 4). The Demand Management Program also intends to create a financial mechanism to fund mitigation projects for subsidence-related impacts to critical infrastructure (2025 GSP, p. ES-4). Anticipated funding sources include GSA reserve funds, fees and assessments, overdraft penalties, and county/state/federal funds. While details of this program element are limited, Board staff is encouraged by its inclusion and note that funding for subsidence mitigation should be developed through GSA activities. Crucially, the Demand Management Program includes mandatory pumping restrictions as an adaptive management action. These restrictions will be necessary to stop subsidence by 2040.

The Demand Management Program in the 2025 GSP provides specific actions to avoid subsidence undesirable results. This program, in conjunction with the suite of revised subsidence SMC, warrants the GSAs the opportunity to enact GSP elements and work towards sustainable conditions. Board staff finds the GSAs made enough progress through the Demand Management Program to address disparate subsidence mitigation in the subbasin and potentially insufficient project and management actions to address subsidence mitigation.

### 3.3.3 Narrowing Subsidence undesirable results

State Water Board staff was also concerned with the updated 2023 GSP's subsidence undesirable result definition, which required over 75% of RMS have MT exceedances for two consecutive years. This definition could allow significant local and regional subsidence above MTs, and consequent impacts on infrastructure.

The GSAs address this issue in the 2025 GSP by establishing a more protective subsidence undesirable result definition as a "Subsidence rate at two RMS within a

given Management Area exceeding the minimum threshold for two consecutive years” (2025 GSP, p. ES-20). This approach will allow fewer RMSs to experience MT exceedances before an undesirable result occurs, allowing the GSAs to better identify areas experiencing disparate, local subsidence and resolves staff’s concerns with the undesirable result definition for subsidence.

### 3.3.4 Filling Subsidence Data Gaps

The Subsidence Data Gaps Workplan (Subsidence Workplan) was developed when the GSAs still planned to use groundwater level proxies to manage subsidence. Due to the updated subsidence approach to establishing SMC in the 2023 GSP, State Water Board staff recommended the GSAs update the Subsidence Workplan to reflect the data the GSAs would need to manage for a land surface cumulative subsidence approach. Specifically, Board staff recommended that the GSAs prioritize improving RMS coverage, given the limited number of RMS benchmarks (11) in the subbasin.

The GSAs addressed this concern by including a revised Subsidence Workplan in the 2025 GSP. The updated Subsidence Workplan includes plans to:

- Install up to three GPS monitoring units within the subbasin.
- Install additional instrumentation for existing well facilities.
- Address other data gaps related to subsidence and develop an approach to managing groundwater pumping in the lower aquifer (2025 GSP, Appendix 3.H., p. 4).
- Collect and analyze existing data (beyond data compiled for the Revised GSP) and review data gaps.
- Install new monitoring facilities and collect additional field data, complete additional technical analyses.
- Engage with interested parties.
- Prepare an updated assessment of the adequacy of the Revised GSP SMC and project and management actions to address land subsidence.

Differentiating residual subsidence and active subsidence through updated groundwater modeling will also be a priority. This is an important addition to the Subsidence Workplan with both regional groundwater modeling and more localized 1-D subsidence modeling to better understand subsidence mechanisms and timeframes. These efforts aim to improve the GSAs’ understanding of the groundwater levels that are required to minimize residual subsidence in the subbasin. The Subsidence Workplan indicates that tasks will continue through 2026, with a technical memorandum developed in late 2025 (id. at p. 15).

Subsidence is a long-term issue for the subbasin and was a primary focus of both DWR’s 2020 GSP Incomplete Determination and Board staff’s recommended actions. The GSAs considerably improved the SMC and other subsidence related components in the 2025 GSP to address this deficiency.

### 3.4 Interconnected Surface Water

In its 2020 GSP Incomplete Determination, DWR identified a deficiency in the 2020 GSP related to ISW, citing a lack of evidence to support the claim that ISW is not present and groundwater extractions are therefore unlikely to cause ISW related undesirable results in the subbasin (2020 GSP DWR Incomplete Determination, p. 16). In response, the GSAs set interim ISW MTs as a percentage of time of interconnection between surface water and groundwater in the 2022 GSP (2022 GSP, p. 3-59). DWR determined this change was sufficient to remove the ISW deficiency in their 2022 GSP Inadequate Determination, but DWR also noted that the GSAs should revise the ISW SMC to comply with the GSP Regulations. Specifically, the GSP Regulations state that ISW MTs “shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results” (Cal. Code Regs., tit. 23, §354.28). State Water Board staff concurred with DWR’s recommendation to revise ISW SMC.

The Chowchilla Subbasin GSAs included an ISW Data Gap Work Plan (ISW Workplan) in the 2025 GSP. The ISW Workplan includes plans for improving the monitoring the network along the San Joaquin River, conducting aquifer testing, and updating the groundwater model. These efforts will assist the GSAs in better understanding groundwater and surface water interactions along the San Joaquin River and will inform their updated ISW SMC. Board staff encourages the GSAs to continue their efforts described in the ISW Workplan and does not identify further deficiencies related to ISW.

### 3.5 Groundwater Quality

The 2025 GSP states,

Significant and unreasonable degradation of water quality occurs when beneficial uses and users of groundwater are adversely impacted by constituent concentrations increasing to levels above the drinking water MCLs for one or more of the key constituents (nitrate, arsenic, TDS) at indicator wells in the representative groundwater quality monitoring network due to implementation of a GSP project or management action. When existing or historical concentrations for the key constituents already exceed the MCL, the MT is set at the recent concentration plus 20 percent (2025 GSP, p. 3-54).

Groundwater quality samples are to be collected annually for three key constituents (nitrate, TDS, and arsenic) and every five years for 13 other constituents. There are currently 29 RMS wells, with 21 new monitoring wells identified for inclusion in the RMS. These additional wells were constructed by 2024 and are being monitored (2025 GSP, Appendix 3.M.). Drinking water wells with documented groundwater quality issues will be eligible for mitigation under the well mitigation program. DWR’s 2022 GSP Inadequate Determination did not include a groundwater quality deficiency and Board

staff did not identify concerns regarding groundwater quality degradation that warrant consideration of a probationary designation for the subbasin. However, in Section 4, Board staff recommends several improvements to the definitions of groundwater quality SMC and monitoring that can improve groundwater quality management in the subbasin.

## 4.0 Recommendations for GSP Improvement

State Board staff determined that the revisions outlined in the 2025 GSP are sufficient to return the subbasin to DWR's jurisdiction at this time. While reviewing the 2025 GSP, Board staff noted several improvements that could provide more protection to drinking water beneficial users and improve sustainability goals. GSAs should continue improving GSPs in response to monitoring results and new data to ensure progress is being made toward achieving sustainability. As DWR develops additional guidance documents and best management practices, Board staff recommend the GSAs incorporate those into future iterations of the GSP. Additionally, Board staff recommend the GSAs consider the following suggestions for future periodic evaluations:

1. Establish proactive measures to avoid impacts to small community wells or domestic well clusters (e.g., pumping restrictions or other management actions near at-risk areas).

Under SGMA, GSAs must consider the interests of all beneficial uses and users of groundwater, including domestic well owners, municipal well operators, and public water systems (Wat. Code, § 10723.2, subs. (a), (b), (c)). Board staff encourages GSAs to implement proactive measures that could prevent impacts to drinking water wells and therefore eliminate the need for mitigation assistance. GSAs may proactively coordinate with interested parties to develop site-specific measures that would be most effective in preventing impacts to at-risk drinking water wells.

2. Develop a proactive notification warning mechanism to notify domestic well users about groundwater conditions that may potentially impact drinking water supplies.

Board staff recommends that GSAs notify well users of potential impacts to drinking water wells from declining groundwater levels and/or degradation of water quality. SGMA requires a GSP to:

include monitoring protocols that are designed to detect changes in... groundwater quality... and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin. The monitoring protocols shall be designed to generate information that promotes efficient and effective groundwater management (Wat. Code, § 10727.2, subd. (f)).

A notification mechanism can expedite mitigation for drinking water well users who may experience a dry well or poor water quality. The notification may include information about groundwater conditions, potential impacts to human health, available resources (e.g., DWMP application or well testing), etc.

3. Revise the DWMP temporary mitigation response time to be more responsive to impacted drinking water well users/owners.

GSA's should revise the temporary mitigation response time from one business day to 24 hours to be more responsive to impacted drinking water well users who seek mitigation assistance. By setting the response time at one business day, drinking water well users may be deprived of access to safe and clean water for domestic purposes (i.e. human consumption, cooking, and sanitary purposes) for multiple days (two to three days over a weekend, and longer if it is a holiday weekend). This is not responsive to the needs of drinking water well users. By setting the response time at 24 hours, the DWMP will be more responsive to impacts caused by the GSA's groundwater management, preventing a situation where the response is delayed by a weekend or a holiday. Although SGMA and the GSP Regulations do not require development of a domestic well mitigation plan, the State Water Board considers them as one way to avoid significant and unreasonable impacts to beneficial uses and users in the subbasin and ensure water availability, and setting the response time at 24 hours will better respond to the needs of drinking water well users affected by impacts from groundwater management.

4. Develop action levels above MTs as a trigger for mandatory pumping restrictions.

GSA's report that multiple triggers for mandatory measures outlined in the Demand Management Program are being developed. Current trigger language includes "Groundwater conditions (e.g., groundwater levels or subsidence) that are approaching undesirable results in the Subbasin or some portion thereof" (2025 GSP, Appendix 3.N., p. 5). Staff encourages the GSA's to establish clear, progressive action levels that will prevent MT exceedances and associated undesirable results.

5. Align groundwater level IMs with project and management action schedules.

The methodology for establishing IMs appears to be based on the Merced Subbasin GSP's approach of setting IMs below MTs with recovery above MTs by 2040. Groundwater level increases expected between 2030 and 2040 will require substantial changes in groundwater management. The GSP regulations state that GSPs should be evaluated on whether projects and management actions are feasible and likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield (Cal. Code Regs., tit. 23, § 355.4, subd. (b)(5)). Board staff recommends the GSA's use updated groundwater level modeling to further evaluate IMs and the changes in groundwater inflows and outflows necessary to achieve them. The GSA's could then couple that information with the timing and scope of projects and management actions

to demonstrate the IMs represent a reasonable path to achieve the sustainability goal for the subbasin.

6. Revise ISW SMC to meet the GSP Regulations.

The GSAs should be persistent in completing efforts outlined in the ISW Workplan; once guidance is released by DWR, the GSAs should work diligently to update the interim ISW SMC to ensure the SMC meet the full requirements of SGMA. The San Joaquin River provides valuable riparian and riverine habitat for numerous ecosystems for both local flora and fauna. Moreover, ISW depletions due to groundwater extractions could result in the U.S. Bureau of Reclamation releasing additional water from Friant Dam to meet San Joaquin River Restoration Program flow obligations, leaving less water in storage for Central Valley Project contractors.

7. Revise groundwater quality SMC to prevent further degradation of groundwater quality and avoid significant and unreasonable impacts to beneficial uses and users.

SGMA states and defines a water quality undesirable result as occurring if “significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies” (Wat. Code, § 10721, subd. (x)(4)). GSAs should revise the methodology for establishing SMC for degradation of groundwater quality at RMSs that exceeded regulatory water quality thresholds before SGMA was enacted. SGMA states that:

The plan may, but is not required to, address undesirable results that occurred before, and have not been corrected by, January 1, 2015 and that a groundwater sustainability agency has discretion as to whether to set measurable objectives and the timeframes for achieving any objectives for undesirable results that occurred before, and have not been corrected by, January 1, 2015 (Wat. Code, § 10727.2, subd. (b)(4)).

GSAs should establish a protective MT that is consistent with pre-SGMA baseline conditions. Additionally, the 20% buffer could allow groundwater quality to degrade below pre-SGMA baseline conditions for extended periods of time. GSAs only have discretion on addressing undesirable results that occurred prior to 2015. Establishing MTs at the pre-SGMA baseline conditions would allow for earlier detection of potential water quality impacts at historically degraded RMSs, since the current MTs do not trigger adaptive management prior to meeting the GSP’s qualitative definition of an undesirable result. If the GSAs do not revise the methodology, the GSP should be improved to explain how the addition of the 20% buffer will prevent groundwater from further degrading below drinking water standards.

8. Increase the frequency of sampling for primary constituents of concern to at least twice annually (representing wet and dry conditions).

Board staff notes that, at minimum, semi-annual sampling is required to monitor groundwater quality seasonal highs and lows and to be consistent with the GSP regulations (Cal. Code Regs., tit. 23, § 354.34, subd. (f)). In some cases, however, constituent- and site-specific details may make quarterly sampling necessary to better understand seasonal fluctuations in water quality impacts. Basing sampling on location-specific details would likely improve water quality monitoring under the GSP. For example, GSAs should consider increasing sampling frequency as concentrations approach MTs and should also consider the potential impacts of MT exceedances on beneficial uses and users when scheduling sampling events. Annual fall measurements may be appropriate for some constituents, but Board staff recommends increased sampling frequencies to determine trends and alert domestic well owners of groundwater quality degradation where MTs are exceeded. GSAs should continue to coordinate groundwater quality sampling procedures with the CV-SALTS program's CMZ to optimize monitoring and reduce duplication of efforts.

#### 9. Consider impacts of planned recharge projects on groundwater quality.

The GSP should clearly describe which project and management actions may influence groundwater quality, especially proximal to recharge projects. The GSP should also describe how the GSAs propose to monitor for potential degradation of groundwater quality. The GSP Regulations state that agencies shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions to include adverse impacts to beneficial uses and users of groundwater (Cal. Code Regs., tit. 23, § 354.38, subd. (e)). GSAs should consider existing constituents, aquifers, and beneficial uses and users when siting monitoring wells and determining sampling frequencies to evaluate potential adverse impacts of projects and management actions. Additionally, GSAs should consider the influence of groundwater levels and flow directions caused by recharge projects. GSAs should consider that recharge projects may result in short-term groundwater quality degradation, but over the long-term may improve groundwater quality (especially if nitrates are present in the soil). A sufficient monitoring network and sampling rate should be implemented to monitor for impacts from recharge projects and adjust management as needed.

## 5.0 Recommendations for Board Action on Chowchilla Subbasin

The Chowchilla Subbasin GSAs substantially revised their GSP, submitting the 2025 GSP to DWR's SGMA Portal on March 21, 2025. State Water Board staff determined that the revisions the GSAs made in the 2025 GSP sufficiently addressed staff's concerns regarding the 2023 GSP. Staff recommends that:

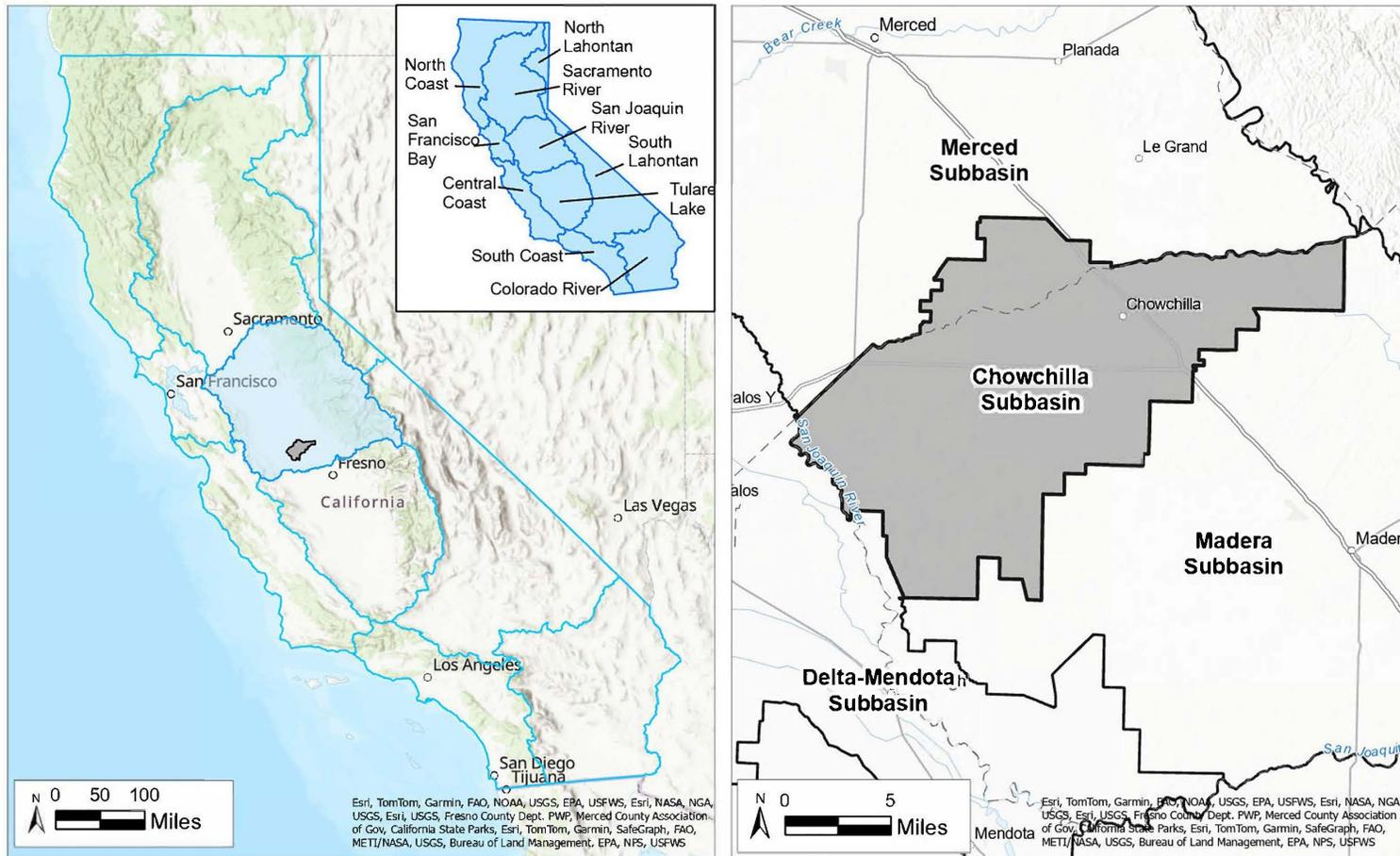
1. Further consideration of a probationary designation for the Chowchilla Subbasin based on DWR's 2022 GSP Inadequate Determination is not warranted at this time.
2. The State Water Board return the Chowchilla Subbasin to DWR's jurisdiction under chapter 10 of SGMA.
3. The Chowchilla Subbasin GSAs continue to implement their 2025 GSP and consider Board staff's recommended improvements listed above in preparing future plan amendments to fill data gaps and enhance the basin's approach to reaching sustainability.

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# 7.0 Figures

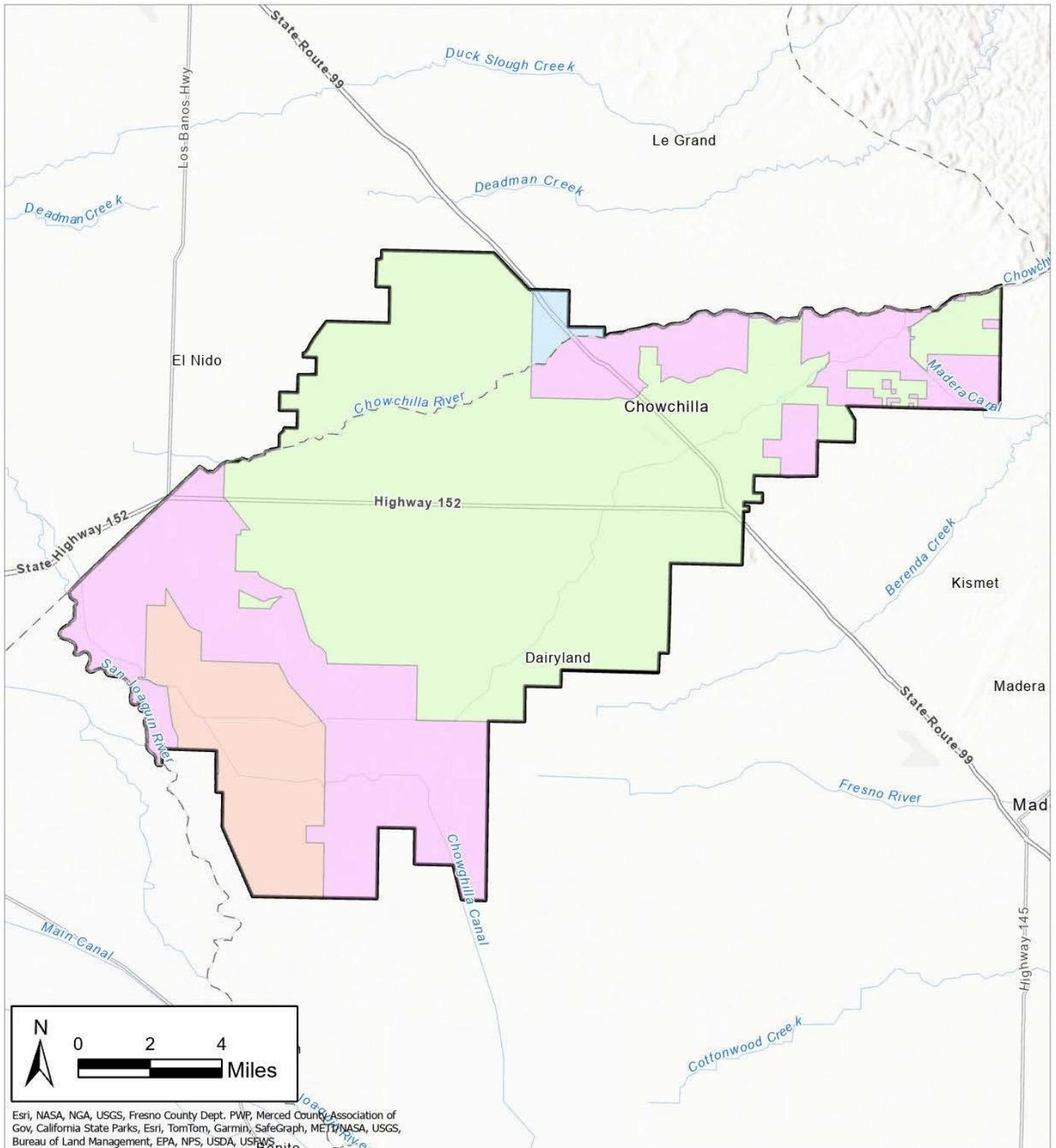


**Figure 1**  
**Overview of the**  
**Chowchilla Subbasin**

*Chowchilla Subbasin Staff Assessment*  
*April 2025*

- Chowchilla Subbasin
- Hydrologic Regions





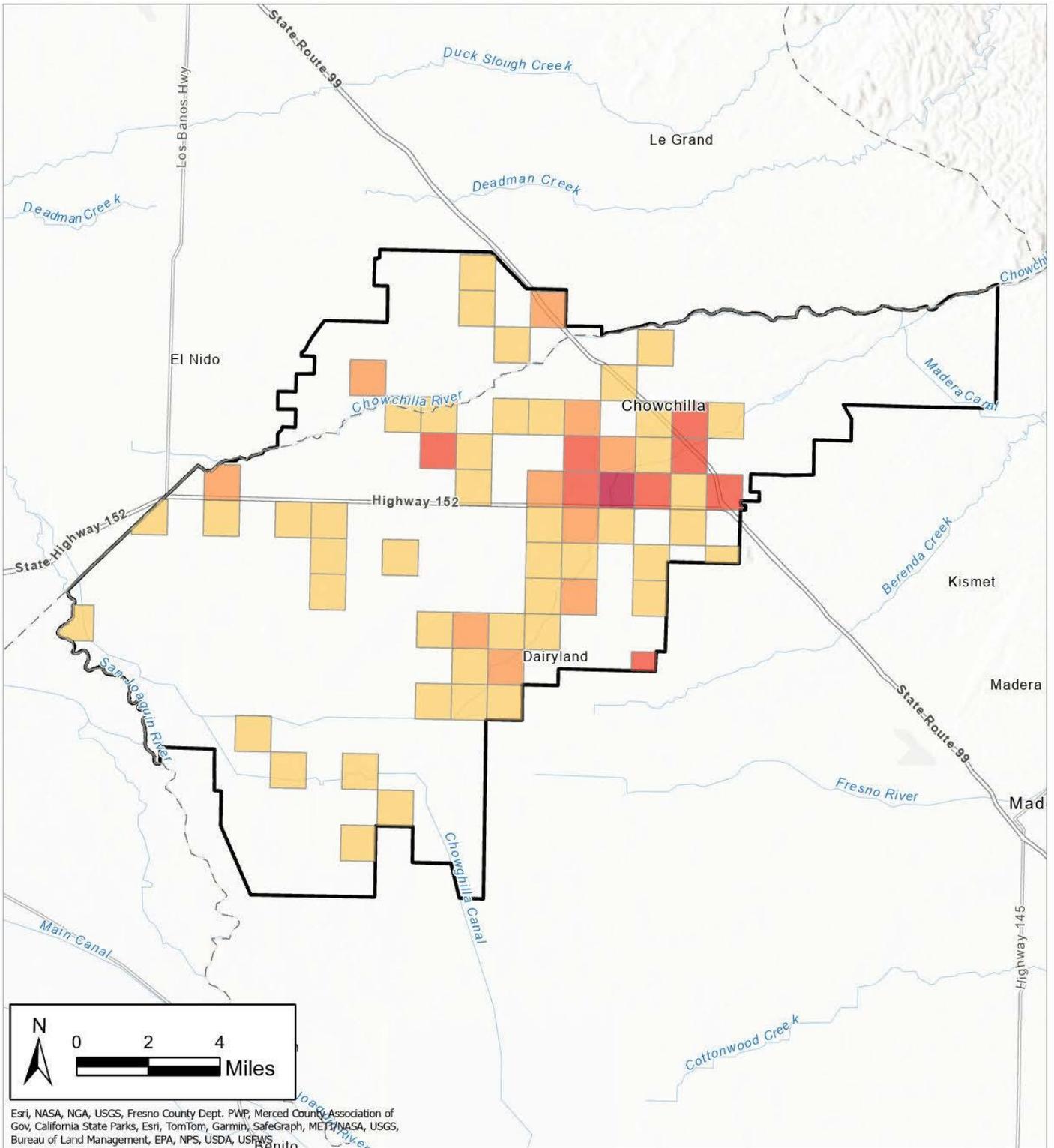
**Figure 2**  
**Groundwater Sustainability Agencies**  
**in the Chowchilla Subbasin**

*Chowchilla Subbasin Staff Assessment*  
*April 2025*

-  Chowchilla Subbasin
-  Chowchilla Water District GSA
-  County of Madera GSA - Chowchilla
-  County of Merced GSA - Chowchilla
-  Triangle T Water District GSA



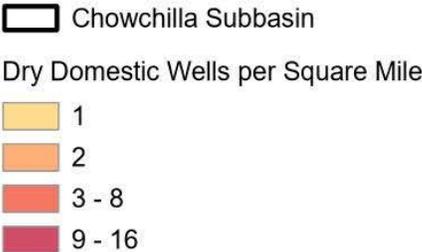
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<https://sgma.water.ca.gov/portal/gsa/all>  
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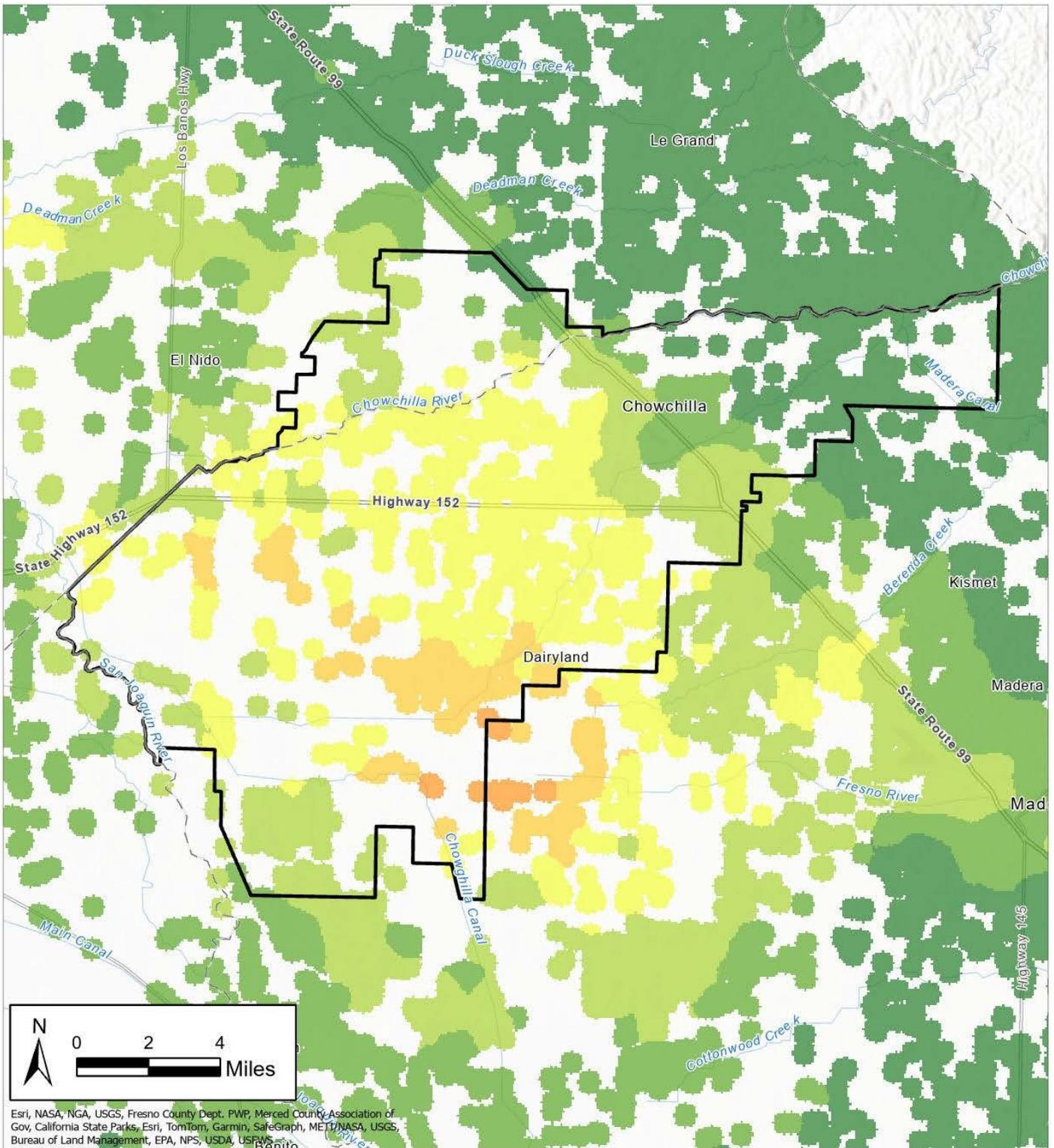


**Figure 3**

**Dry Domestic Wells in the Chowchilla Subbasin at 2030 IMS**

*Chowchilla Subbasin Staff Assessment  
April 2025*

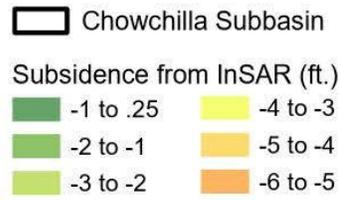




**Figure 4**

**Subsidence in the Chowchilla Subbasin (June 2015 - October 2024)**

*Chowchilla Subbasin Staff Assessment  
April 2025*



Data Source:  
California Department of Water Resources  
TRE ALTAMIRA database  
- Accessed January 2025