VINA SUBBASIN (5-021.57) GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT – 2025

SUBMITTED BY

Vina GSA

Rock Creek Reclamation District

VINA AND ROCK CREEK RECLAMATION DISTRICT GROUNDWATER SUSTAINABILITY AGENCIES

PREPARED UNDER CONTRACT WITH

BUTTE COUNTY DEPARTMENT OF WATER AND RESOURCE CONSERVATION

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Prepared by Luhdorff and Scalmanini Consulting Engineers and Davids Engineering under contract with Butte County Department of Water and Resource Conservation on behalf of the GSAs in the Vina Subbasin.

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
µS/cm	micro siemens per centimeter
AF	acre-feet
AFY	acre-feet per year
AMSL	above mean sea level
BBGM	Butte Basin Groundwater Model
CalWATRS	California Water Accounting, Tracking, and Reporting System
DID	Durham Irrigation District
DWR	Department of Water Resources
GEEEO	Groundwater Extraction Estimates Earth Observations
GPS	global positioning system
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
IM	Interim Milestone
InSAR	Interferometric Synthetic Aperture Radar
MA	management area
MO	measurable objective
MT	minimum threshold
PMA	projects and management action
RCRD	Rock Creek Reclamation District
RMS	representative monitoring site
SC	specific conductivity
SGMA	Sustainable Groundwater Management Act
SI	sustainability indicator
SMC	sustainable management criteria
Subbasin	Vina Subbasin
SWRCB	State Water Resources Control Board
WY	water year (October 1-September 30)

EXECUTIVE SUMMARY

The Vina Subbasin (Subbasin) (5-021.57) Annual Report was prepared on behalf of the Vina Groundwater Sustainability Agency (GSA) and the Rock Creek Reclamation District GSA to fulfill the statutory requirements set by the Sustainable Groundwater Management Act (SGMA) legislation (§10728) and the Groundwater Sustainability Plan (GSP) regulations (§354.40 and §356.2) developed by the California Department of Water Resources (DWR). The regulations mandate the submission of an annual report to DWR by April 1st after the reporting year, which spans the water year (WY) from October 1st to September 30th. This Annual Report includes information from the recent WY 2025 for the Vina Subbasin, located within Butte County, and shown in **Figure ES-1.**

Measured conditions in the Subbasin complied with all minimum thresholds (MTs) for all applicable sustainability indicators (SIs). An MT is the quantitative value that represents the groundwater conditions at a representative monitoring site that, when exceeded individually or in combination with the MTs at other monitoring sites, may cause an undesirable result(s) in the basin per DWR's definition. Whether the MT represents a minimum or a maximum value is dependent on the SI. 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 conductivity (SC) concentration increases beyond the MO established for that site, it moves towards the MT. The SIs and SMC, including MOs and MTs, are summarized in **Table ES-1.** Note that seawater intrusion is not an applicable SI in this Subbasin. Each SI is measured at Representative Monitoring Sites (RMS).

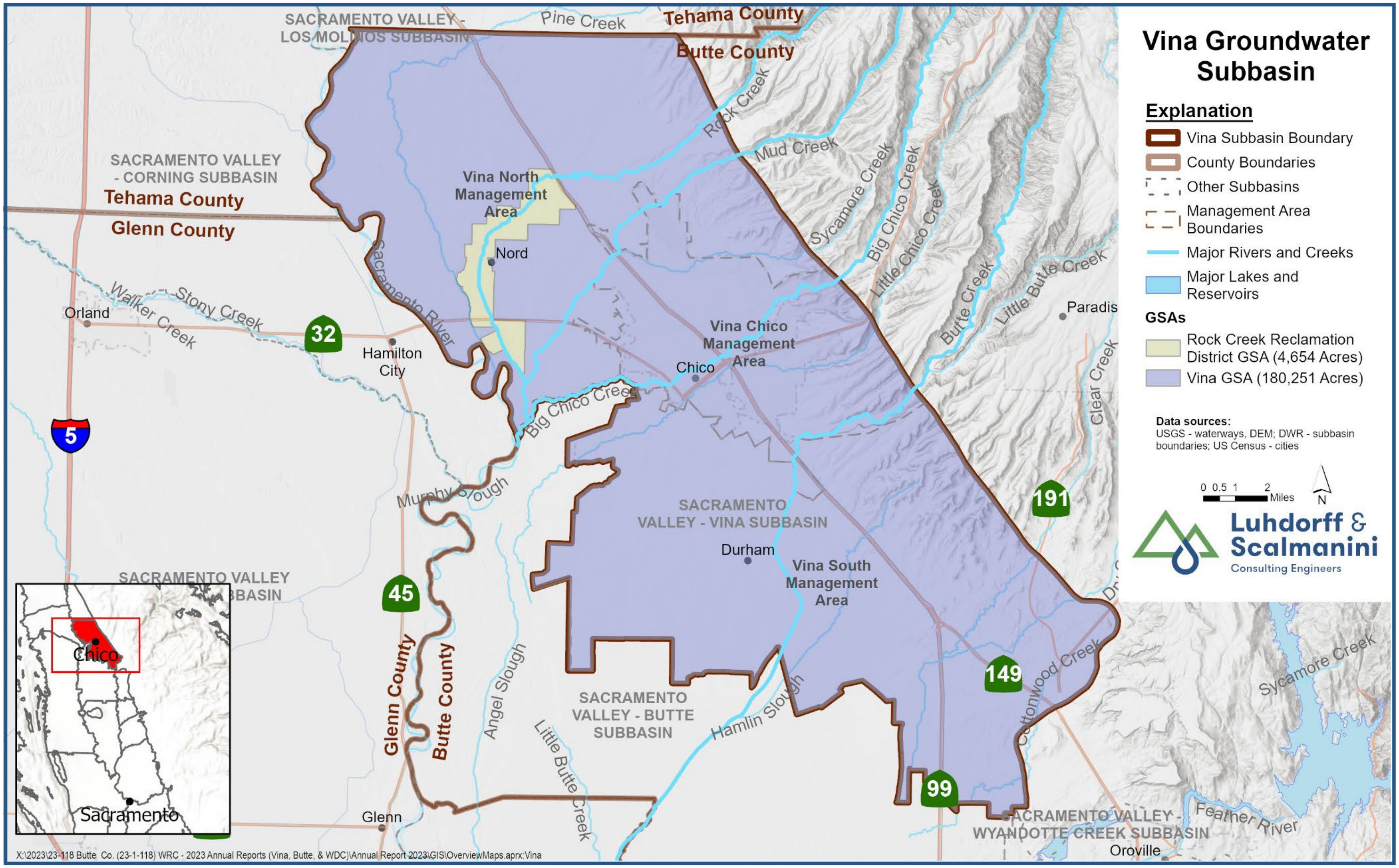

Figure ES-1. Vina Subbasin and Groundwater Sustainability Agency Boundaries

Table ES-1. Vina Subbasin Sustainability Indicator Summary			
2025 Status	**Undesirable Result Identification**	**Measurable Objective (MO) Definition**	**Minimum Threshold (MT) Definition**
Chronic Lowering of Groundwater Levels			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	When 2 RMS wells within a management area reach their MT for two consecutive non-dry year types.	The groundwater level is based on the groundwater trend line for the dry periods (over the period of record) of observed short-term climatic cycles extended to 2030 for each RMS well.	An elevation protective of sustainably constructed domestic wells (based on their well depths for wells drilled since 1980) within the polygon associated with the RMS well.
Reduction of Groundwater Storage			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.
Degraded Water Quality			
No indication of undesirable results There were no RMS wells with SC levels exceeding their MTs in 2025.	When 2 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.
Land Subsidence			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.

Table ES-1. Vina Subbasin Sustainability Indicator Summary			
2025 Status	**Undesirable Result Identification**	**Measurable Objective (MO) Definition**	**Minimum Threshold (MT) Definition**
Depletion of Interconnected Surface Water			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	Uses groundwater levels as a proxy. The GSP identifies data gaps and describes the "Interconnected Surface Water Sustainable Management Criteria Framework."	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.

Notes:

Salinity is the primary water-quality constituent of concern evaluated by measuring specific conductivity (SC).

MO = Measurable Objective, MT = Minimum Threshold, RMS = representative monitoring site, µS/cm = micro siemens per centimeter

Current Groundwater Level and Storage Conditions

The current groundwater conditions in the Subbasin are characterized by groundwater elevations that have remained consistently above the MO, have remained well above the corresponding MT, and remain 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, per the current SMC hence avoiding undesirable results as defined in the GSP.

On average, groundwater elevations were 71 feet above the MT throughout the Subbasin and 20 feet above the MOs in WY 2025 over both spring and fall. Elevations are mostly near or slightly higher than those observed in recent years. This positive trend is largely attributable to the above-normal hydrologic conditions of WY 2025, which enhanced natural recharge and improved surface water availability. It should be noted, however, that surface water constitutes only a minority of total water supplies.

Fluctuations in groundwater levels and storage within the Subbasin are influenced by the balance between aquifer recharge and extraction. Groundwater levels are used 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, increased agricultural irrigation demand and diminished surface water supplies lead to increased extractions and reduced recharge, resulting in a decline in groundwater storage.

WY 2025, classified as an Above-Normal WY (CDEC, 2025), marked an increase in groundwater storage of approximately 44,300 acre-feet (AF) in the Subbasin. For context, over the past 26 years, the largest one-year decrease in groundwater storage is estimated to be -151,700 AF, and the greatest one-year increase was estimated to be 144,100 AF. **Figure ES-2** shows groundwater pumping, as well as an annual and cumulative change in groundwater storage from WY 2000 to WY 2025.

Water Use

Groundwater extraction was approximately 261,600 AF in WY 2025, about 18,300 AF greater than the 243,300 AF extracted in WY 2024. The annual volume of surface water delivered to the Subbasin from surface water features such as Butte Creek was about 25,800 AF in WY 2025, less than the estimated 28,300 AF delivered in WY 2024.

Groundwater provided the majority (91%) of the water for agriculture in the Subbasin, and surface water was the source for the remainder. Groundwater also met the demand for municipal and rural residential users in WY 2025. The volume of groundwater and surface water used on an annual basis within the Subbasin is summarized directly from measured and reported groundwater pumping and surface water diversions when available; however, a water use estimation approach has been used to estimate the remaining unmeasured volume of groundwater extraction. Water use for the Subbasin is reported in **Appendix D**. The water use analysis methodology is discussed in **Appendix E. Table ES-2** provides a summary of water use by the water sector. Numbers are rounded to the nearest 100.

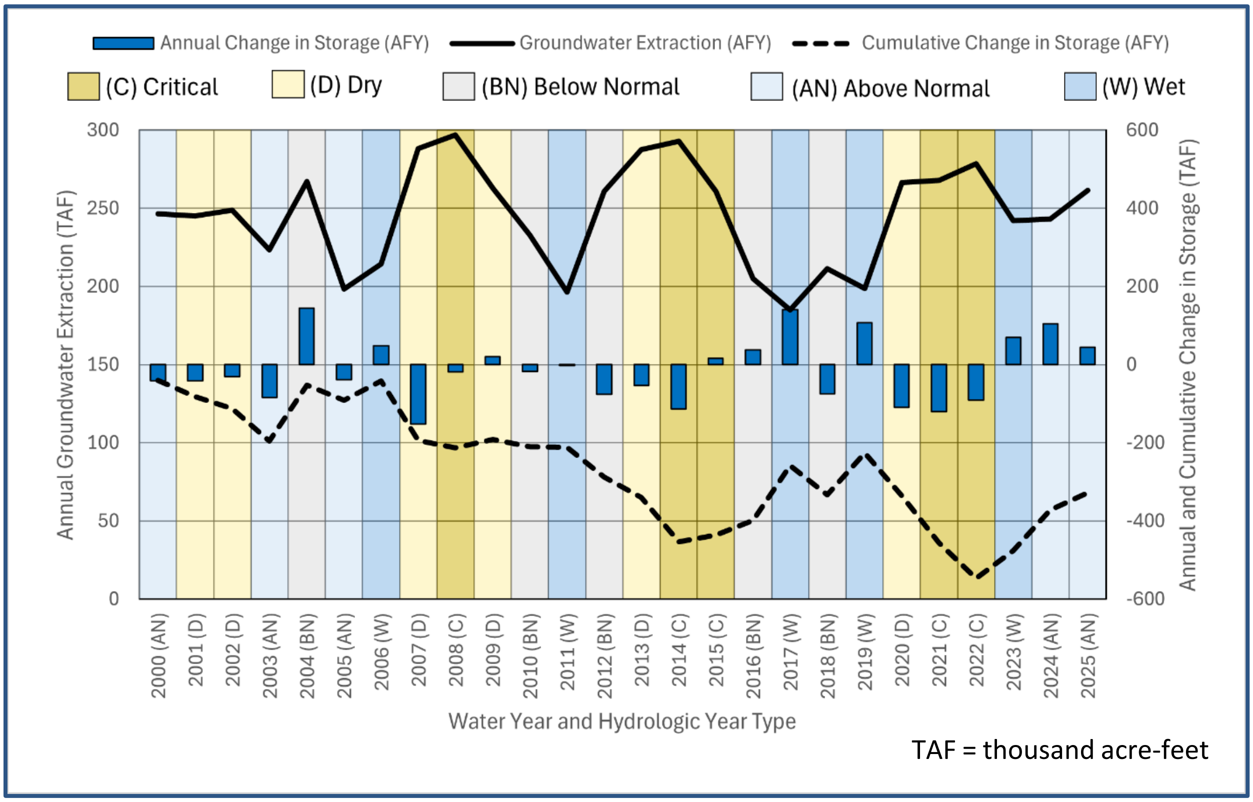

Figure ES-2. Vina Subbasin Groundwater Pumping, Annual and Cumulative Change in Storage from WY 2000 to WY 2025

Table ES-2. Vina Subbasin Total Water Use by Water Use Sector

Sector		WY 2025			
	Groundwater (AF)	Surface Water (AF)	Total (AF)	Percent of Total Water Use	Total Sector Area (ac)
Agricultural	240,200	25,800	**266,000**	**93%**	**75,500**
Municipal	18,400	--	**18,400**	**6%**	**19,100**
Rural Residential	3,000	--	**3,000**	**1%**	**n/a***
Total	**261,600**	**25,800**	**287,400**	**100%**	
Percent of Total Water Use	**91%**	**9%**	**100%**		

Notes:

Rural Residential water use is calculated based on population from census data, not area.

GSP Implementation Progress

The main activities and updates from the previous Annual Report are as follows:

1. All sustainability indicators (SIs) are in compliance with their MTs (see summary **Table 5-1**).
2. The GSAs completed the WY 2025 Annual Report and other critical tasks related to monitoring and data collection.
3. The GSAs continued to participate in ongoing intra- and inter-basin coordination.
4. The GSAs adopted an initial uniform acreage-based property-related service fee to fund its operations and implementation costs required to comply with SGMA, with the intention of conducting a new fee study to explore funding options that reflect the diversity of groundwater users within its boundaries. The new fee study was initiated in the previous water year, and in the 2025 water year the GSAs adopted a two-part SGMA fee, which was implemented for the 2025-26 fiscal year.
5. Progress has been made on 12 PMAs since the last annual report (**Appendix G**).
6. The Vina GSA was recently awarded about $5.5 million to complete specific tasks ranging from filling data gaps, conducting feasibility analyses for two water supply projects, performing recharge feasibility and pilot projects, and designing and implementing pilot programs for demand reduction strategies. This portfolio approach funds various phases of projects listed in the GSP. Implementation of these projects continued in the 2025 WY.

The GSP was approved in July of 2023, and DWR proposed six recommended corrective actions that will enhance the GSP:

1. Providing additional information on historical and current groundwater quality conditions in the Subbasin and refining the definition of sustainable management criteria through a number of actions further described in the letter.
2. Review the model inputs/outputs and provide consistent information regarding stream loss and gains, clarifying whether values represent the overall interaction between the surface water and groundwater system or the quantity of depletion due to groundwater pumping.
3. Providing more information regarding the 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 through a number of actions further described in the letter.
4. Revising the definition of undesirable results to remove the non-dry year condition or discuss how degradation during dry periods will be managed as necessary to ensure that adverse water-quality conditions are offset during other periods.
5. Providing more information about the criteria used to identify undesirable results and sustainable management criteria for land subsidence through a number of actions further described in the letter.

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 a number of actions.

In 2025, the GSAs continued implementing projects to address recommended corrective actions, largely funded by the SGM Implementation Grant Program. The ongoing implementation of PMAs, described in **Appendix G**, aims to address these corrective actions effectively through the Periodic Evaluation of the GSP, which is due in January 2027.

1 GENERAL INFORMATION §356.2(A)

The Annual Report for the Vina Subbasin (Subbasin) (5-021.57) was prepared on behalf of the Vina Groundwater Sustainability Agency (GSA) and the Rock Creek Reclamation District (RCRD) GSA to fulfill the statutory requirements of the Sustainable Groundwater Management Act (SGMA) legislation (§10728) and regulatory requirements developed by the California Department of Water Resources (DWR) included in the Groundwater Sustainability Plan (GSP) regulations (§354.40 and §356.2). The regulations require GSAs to submit an Annual Report to DWR by April 1st of the year following the reporting year, which spans the water year (WY) from October 1st to September 30th. This Annual Report is the fifth annual report submitted on behalf of the Subbasin and includes data for the most recent WY 2025 (October 1, 2024, to September 30, 2025). Members of the public seeking information on Vina Subbasin and GSP Implementation, Vina GSA meeting schedules and recordings, and other resources should visit the **Vina Groundwater Sustainability Agency** website (www.vinagsa.org) and the **Rock Creek Reclamation District Groundwater Sustainability Agency** website (www.rockcreekreclamation.com).

1.1 Report Contents

This report is the fifth annual report prepared for the adopted Vina Subbasin GSP submitted in January 2022. The first annual report included data elements for the first reporting year, WY 2021, as well as a "bridge year," WY 2020. The second, third, and fourth annual reports contain data only for the current reporting year, WY 2022, WY 2023, and WY 2024, respectively. Data elements presented in this report refer to WY 2025, the 12-month period spanning October 2024 through September 2025 unless otherwise noted. Pursuant to GSP regulations, the Annual Report includes:

- Groundwater Elevation Data
- Water Supply and Use
- Change in Groundwater Storage
- GSP Implementation Progress

1.2 Subbasin Setting

The Subbasin is a 289-square-mile (184,905 acres) area on the eastern side of the Sacramento Valley. The Subbasin is managed by the Vina and Rock Creek Reclamation District GSAs. The two GSAs have worked cooperatively to develop and submit a single GSP for the Subbasin and to submit Annual Reports every year.

The Subbasin is shown in **Figure 1-1** and **Figure 1-2**. The Subbasin lies in the eastern central portion of the Sacramento Groundwater Basin (**Figure 1-1)**. The Subbasin's northern boundary is the Butte-Tehama County line, the western boundary is the Butte-Glenn County line, the southern boundary is a combination of property boundaries owned by the M&T Ranch, Reclamation District 2106 and Western Canal Water District, while the eastern boundary is the edge of the alluvium as defined by DWR Bulletin 118 (DWR, 2018), **Figure 1-2**. There are several surface water features located in the Subbasin, including Big Chico Creek, Butte Creek, Mud Creek, and Rock Creek. Generally, the streams traverse the Subbasin, moving northeast to southwest. Groundwater generally flows from northeast to southwest.

The GSP defines three management areas (MAs) in the Vina Subbasin: Vina North, Vina Chico, and Vina South. An MA refers to an area within a Subbasin for which a GSP may identify different minimum thresholds (MTs), measurable objectives (MOs), monitoring, and projects and management actions (PMAs) based on unique local conditions or other circumstances as described in the GSP regulations. Although all stakeholders have a shared interest in the sustainable management of groundwater in this predominantly groundwater-dependent Subbasin, the landscape of beneficial users varies between MAs. Vina North is dominated by irrigated agriculture dependent on wells with sparsely distributed rural residential and domestic well users, and the small community of Nord. The Vina-Chico MA is predominantly an urban area with California Water Service, Chico (Cal Water-Chico), providing groundwater supplies for residential and municipal/industrial use. To a very limited extent, private domestic wells provide households with their primary source of water or, in some cases, as a secondary supply for outdoor water use. The Vina South MA is dominated by irrigated agriculture dependent on groundwater and, to a lesser extent, surface water diversions (primarily from Butte Creek). In and around the Durham community, significant numbers of rural residents and ranchettes depend on groundwater, typically from relatively shallow domestic wells interspersed with agricultural land uses. In addition, Durham Irrigation District serves household water needs using groundwater from district wells in a portion of the Durham community.

The Vina Subbasin GSP estimates the sustainable yield of the Subbasin to be 233,500 acre-feet per year (AFY) based on historical groundwater pumping averages of 243,500 AFY, and an annual decrease in storage of 10,000 AFY (Geosyntec, 2021). Water use in the Subbasin is dominated by agricultural uses, including irrigation of nut and fruit trees, vineyards, row crops, grazing, and rice fields. Municipal and household water use accounts for the rest of the water used. Groundwater constitutes the majority of the Subbasin’s water supplies, while surface water constitutes the remaining portion.

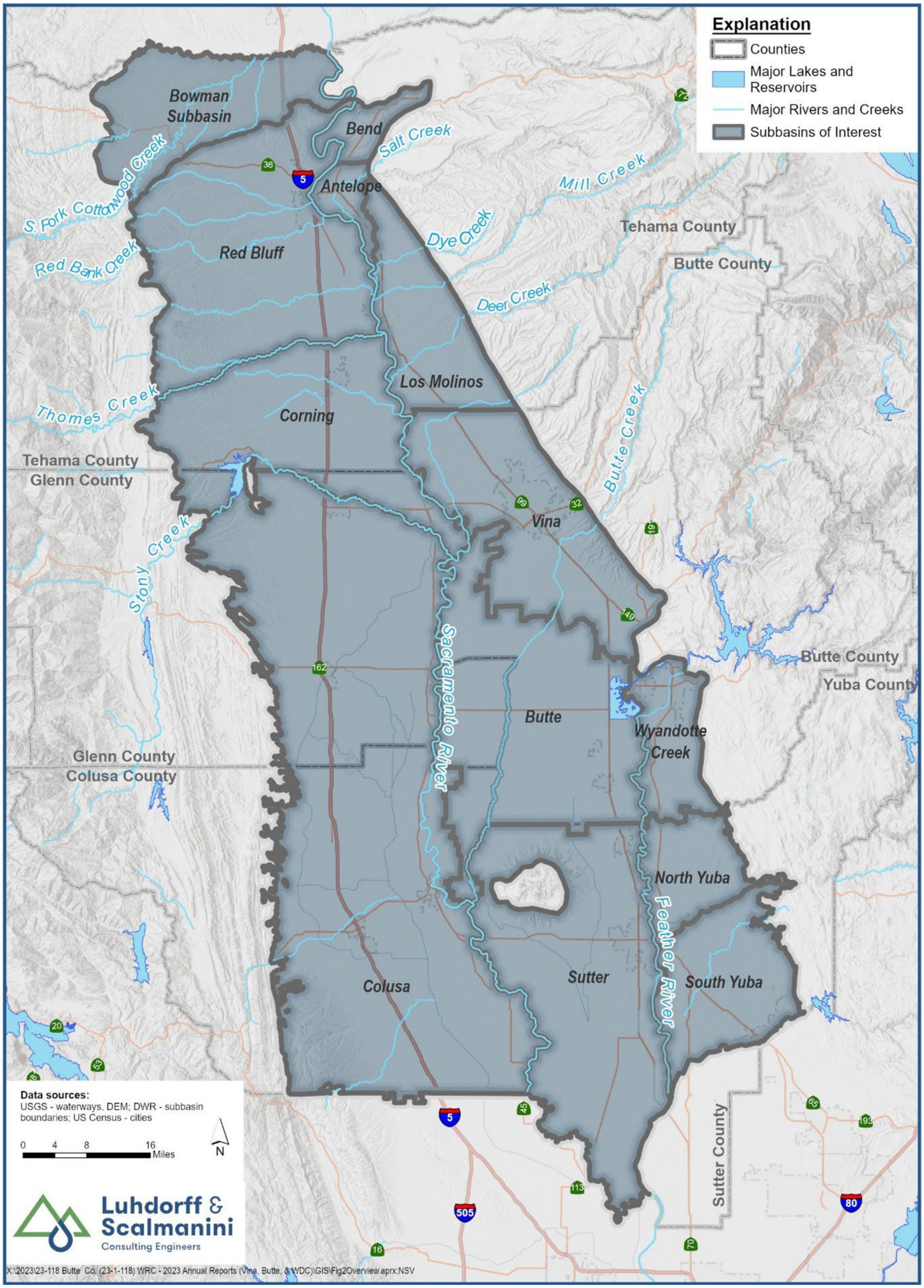

Figure 1-1. Subbasins in the Northern Sacramento Valley

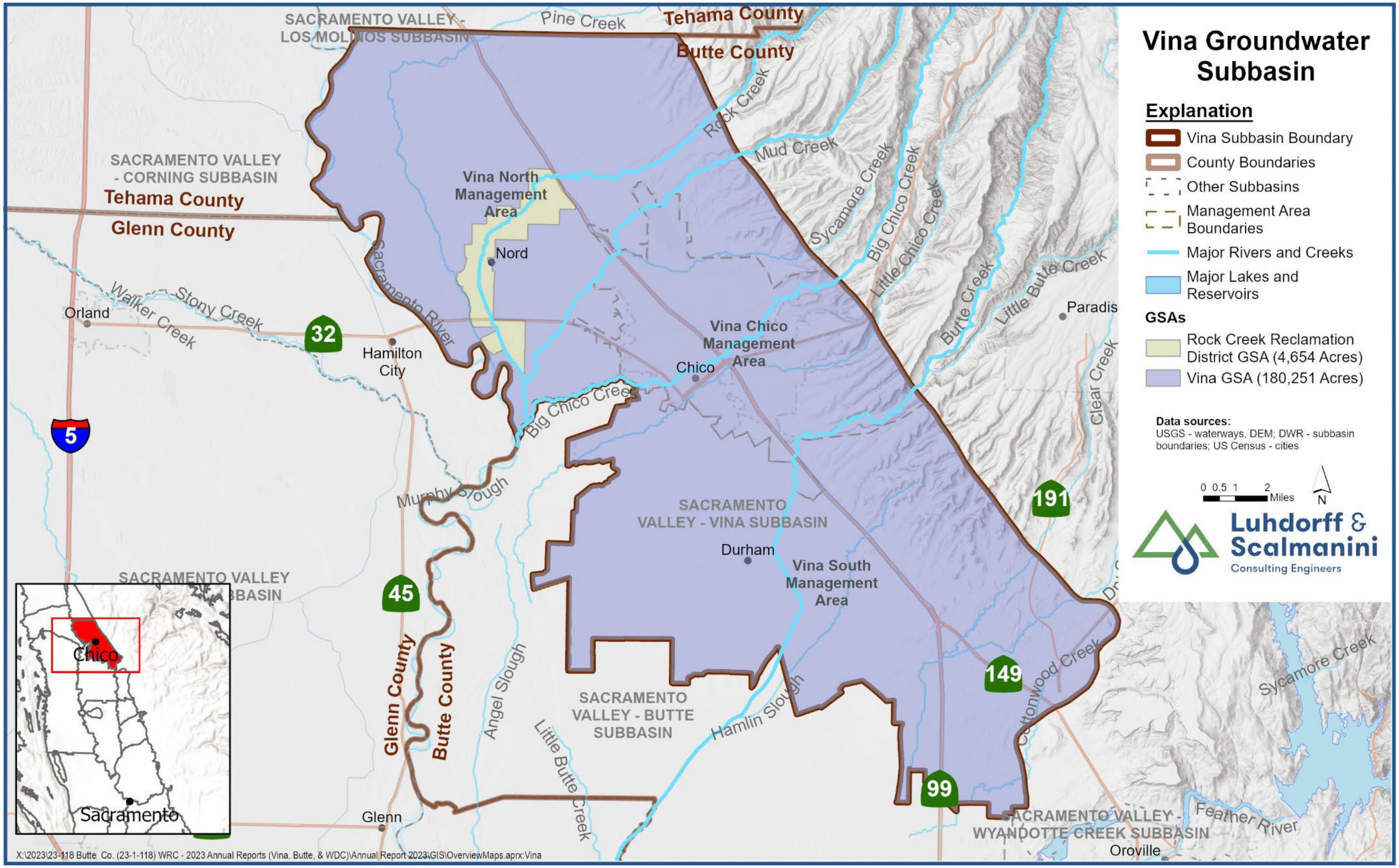

Figure 1-2. Vina Subbasin and Groundwater Sustainability Agency Boundaries

2 GROUNDWATER ELEVATIONS §356.2(b)(1)

Groundwater elevations in the Subbasin typically fluctuate seasonally between and within water years, particularly in groundwater-dependent areas or during drought years when groundwater is used to compensate for diminished surface water supplies. Seasonal fluctuations in groundwater levels occur in response to groundwater pumping and recovery, land and water use activities, recharge, and natural discharge. Sources of recharge into the groundwater system include precipitation, applied irrigation water, and seepage from local creeks and rivers.

Groundwater pumping for irrigation typically occurs from April to September, although depending on the timing of rainfall, it may shift earlier and/or later in the season. Consequently, groundwater levels are usually highest in the spring and lowest during the irrigation season in the summer months. Fall groundwater measurements (typically measured in October) indicate groundwater conditions after the primary irrigation season. Groundwater levels follow a variety of patterns in different areas of the Subbasin; in the WY of 2025, the depth to groundwater ranged from about 10 feet below ground surface to about 160 feet below ground surface in the RMS wells.

Groundwater levels in the Subbasin are monitored at representative monitoring site (RMS) wells that were selected in the GSP to represent localized groundwater conditions in specified areas of the Subbasin. RMS wells include a mixture of domestic wells, irrigation wells, and dedicated observation wells. In total, 17 RMS wells are used to monitor conditions in the Subbasin. **Appendix A** includes a map of the approximate locations of the RMS wells and hydrographs depicting groundwater elevations in the RMS wells. Sustainable management criteria (SMC) described in **Appendix B** are assigned to groundwater levels at the RMS wells.

Certain RMS wells, measured by DWR and Butte County, are equipped with data loggers and pressure transducers, which continuously monitor and record hourly changes in groundwater levels. These and the remaining wells in the network are measured by hand at least twice each year (in spring and fall) but up to four times each year in March, July, August, and October. Data from groundwater level monitoring wells are available from DWR's online SGMA Data Viewer tool (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer).

Spring and fall 2025 groundwater elevation measurements from RMS wells in the Subbasin system are summarized in **Table 5-2**. Groundwater elevation data in the Subbasin is collected by DWR and Butte County and is publicly available from DWR's online SGMA Data Viewer tool (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer). The groundwater level monitoring methods are consistent with the protocols described in the Vina Subbasin GSP. Depending on the well, groundwater elevations are measured using a steel tape, an electric sounder, or a pressure transducer. The accuracy of groundwater level measurements is typically either 0.01 feet or 0.1 feet, depending on the equipment used.

Groundwater elevations have remained on average 20 feet above their MOs over both seasons and well above their corresponding MTs and, therefore, remained within the Subbasin's margin of operational flexibility established for each RMS well. Therefore, none of the RMS wells fell below the MT for two consecutive non-dry years, hence avoiding undesirable results as defined in the GSP.

The following sections provide a summary of groundwater elevations and conditions during WY 2025 through the presentation and description of groundwater elevation contours (**Section 2.1**) and hydrographs of groundwater elevations (**Section 2.2; Appendix A**).

2.1 Groundwater Elevation Contour Maps – §356.2(b)(1)(A)

Groundwater elevation contour maps for spring and fall 2025 were prepared for the Subbasin, as shown in **Figures 2-1** and **2-2**. Spring contours are intended to generally represent seasonal high groundwater elevations (shallower depth to water), while fall contours are intended to generally represent seasonal low groundwater elevations (a deeper depth to water). Groundwater elevation contours were developed by creating a continuous groundwater elevation surface based on available monitoring well data (e.g., monitoring well measurements recorded in March of WY2025 and the average of February and April measurements recorded for Cal Water Wells) using the kriging interpolation method. Questionable groundwater elevation measurements were excluded, and minor adjustments to the contours were made based on professional judgment.

The contour maps of the Subbasin (**Figures 2-1** and **2-2**) each show that groundwater elevations are generally higher in the northern and eastern areas of the Subbasin versus the southern and western areas, indicating a general gradient – and thus groundwater flow – from the northeast to the southwest. The contour maps illustrate several general features of the groundwater flow system in the Vina Subbasin, including:

- Overall, west-southwest groundwater flow is consistent with recharge from the north and along the eastern foothills.
- Convergence of groundwater flow toward pumping areas west of Butte Creek and near Durham in the Vina South MA.
- The higher concentration of contours in the southeast portion of the Subbasin indicates a steeper gradient and could suggest higher groundwater flow. However, given the characteristics of the aquifer materials in the eastern portion of the Subbasin, the steep gradient is likely evidence of aquifer materials with lower transmissivity. Nonetheless, the contours are consistent with the current understanding of recharge coming from the lower foothills.
- New sources of information and data may improve understanding of this area.

Average elevations in fall 2025 tend to be approximately 9 feet lower than elevations in spring 2025 throughout the Subbasin. Groundwater levels are typically lower in the fall at valley floor locations due to irrigation-season pumping.

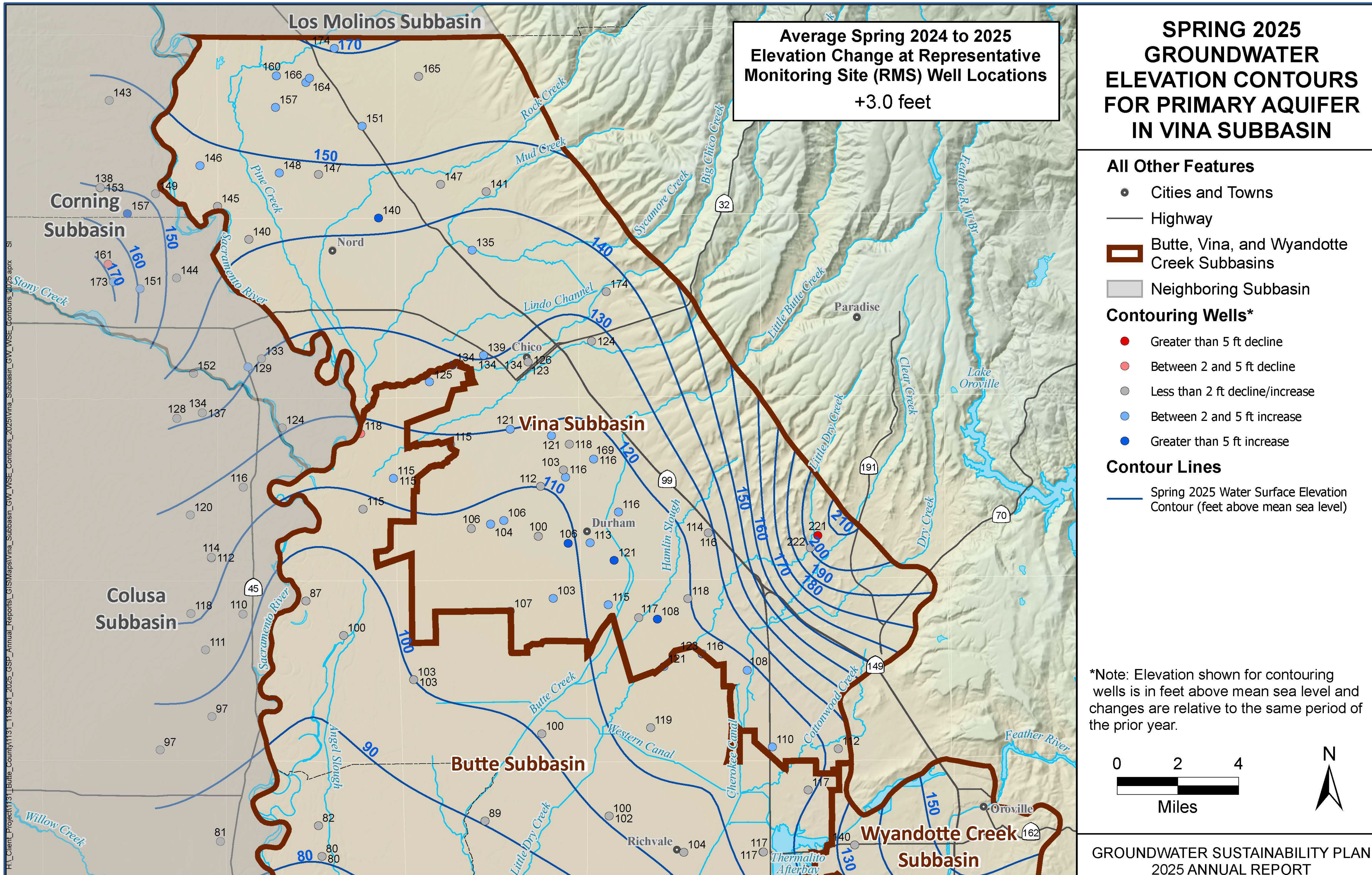

Figure 2-1. Vina Subbasin Contours of Equal Groundwater Elevation, Spring 2025 (Seasonal High)

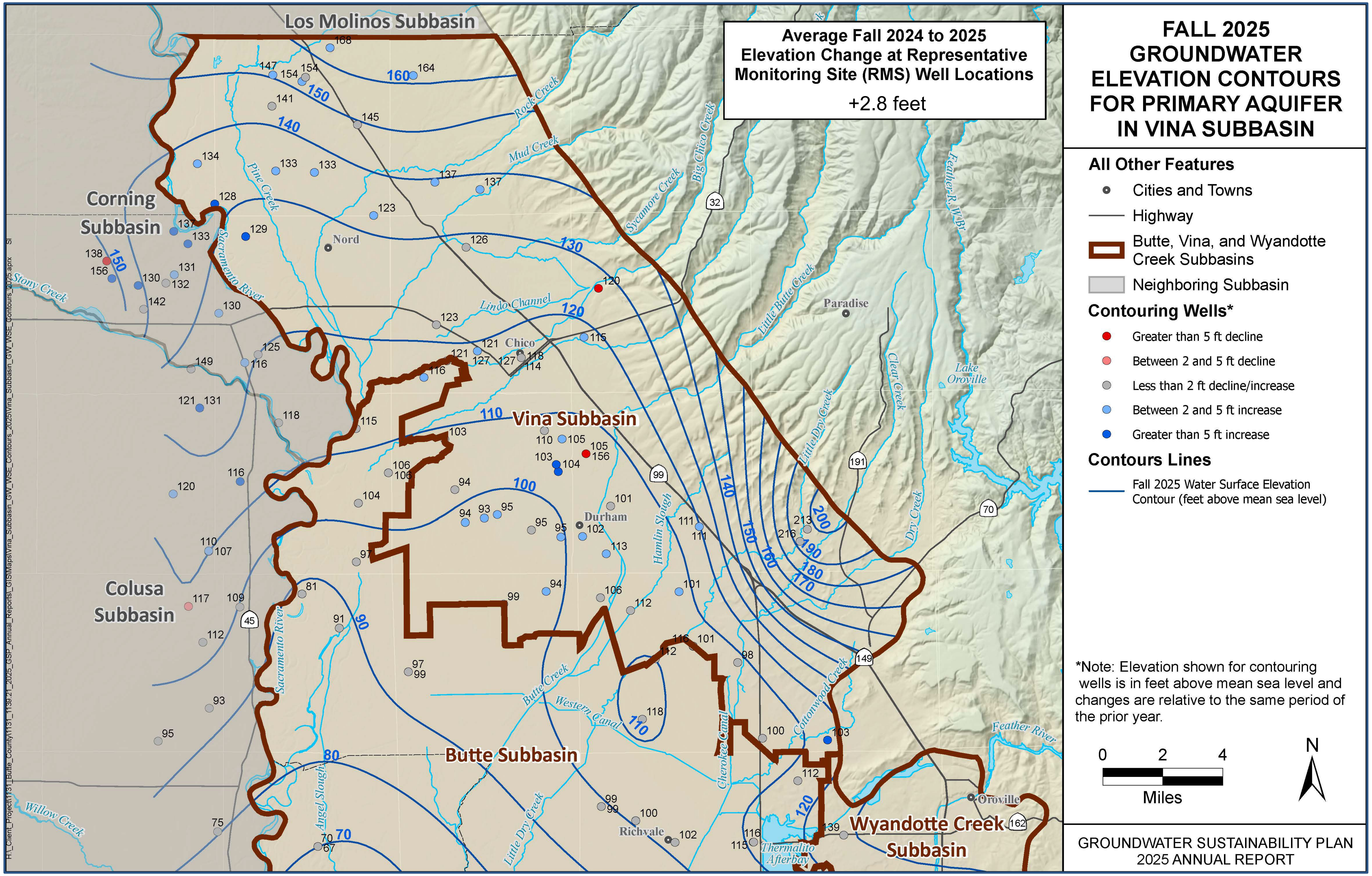

Figure 2-2. Vina Subbasin Contours of Equal Groundwater Elevation, Fall 2025 (Seasonal Low)

2.2 Hydrographs of Groundwater Elevations – §356.2(b)(1)(B)

Groundwater elevation hydrographs for each RMS well are presented in **Appendix A**. The groundwater hydrographs also include a calculation of recent trends at each well. These are calculated based on spring measurements over the previous 10 years (or a shorter period depending on data availability). A linear regression is performed on spring elevations (excluding questionable measurements), and the slope of the regression line is used as the calculated rate of change over this period in feet per year. **Appendix B** provides an explanation of the SMC terminology defined in Section 3 of the GSP (e.g., MT, MO, interim milestone [IM]). **Table 5-1** summarizes the MOs, MTs, and identification of undesirable results for all applicable sustainability indicators (SIs) for WY 2025, and **Table 5-2** contains a summary of the spring 2025 (seasonal high) and fall 2025 (seasonal low) groundwater elevations measured at each RMS well. **Table 5-2** also summarizes the MA each well is located within, established MO and MT for groundwater elevations, the IM for 2027, the changes in groundwater elevations from WY 2024 to WY 2025, and the differences between the 2025 groundwater elevations and the MO for each RMS well in the spring and fall.

Historically, groundwater levels have typically remained at or above their respective MOs in the Subbasin's RMS wells. The GSP also established IMs to provide numerical metrics for GSAs to track the Subbasin's conditions relative to the overall sustainability goal every five years, ensuring that the groundwater management of the Subbasin remains sustainable.

Spring and fall 2025 groundwater elevations were generally near or slightly higher than seasonal groundwater elevations in previous years. In WY 2025, the average seasonal high was 134 feet above mean sea level (AMSL), and the average seasonal low was 125 feet AMSL. In WY 2024, the average seasonal high was 131 feet AMSL, and the average seasonal low was 120 feet AMSL. Rises in groundwater level elevations are expected due to increased recharge following consecutive Above-Normal water years (2024 and 2025).

All wells remained well above the MOs during spring and fall of 2025. All measured groundwater elevations also remained above the corresponding MT of that RMS well in both spring and fall, avoiding undesirable results related to groundwater levels as defined in the GSP. Groundwater levels in RMS wells were, on average, about 20 feet higher than MO elevations and 71 feet higher than MT elevations over both the spring and fall of 2025. All WY 2025 measured groundwater levels remained within the Subbasin's margin of operational flexibility and above the MOs and MTs.

3 WATER SUPPLY AND USE

As required by §356.2, this section summarizes water supply and use in the Subbasin, categorized by groundwater, surface water, and total supply. The total water available for use in the Subbasin was tabulated from groundwater extraction volumes reported in **Table 3-1** and the surface water supply reported in **Table 3-2**. The total water available is summarized in **Table 3-3** for WY 2025. Groundwater extraction volumes are either based on measured data or are estimates from a water use analysis based on 2024 land use data and 2025 climate conditions. Groundwater use data was supplied by water districts and or municipalities when available. Water use for the Subbasin is reported in **Appendix D**. The water use analysis methodology is discussed in **Appendix E**. Surface water use was estimated using electronic Water Rights Information Management System (EWRIMS) data or historic diversions when records were not available.

3.1 Groundwater Extraction – §356.2(b)(2)

Groundwater extraction volumes and percentages by sector in the Subbasin are summarized in **Table 3-1**. Groundwater extraction is reported from pumping records where available, (i.e. municipal suppliers) while the remaining groundwater extraction is estimated through the water use analysis approach described in the previous section and in **Appendix E**. In summary, the water use analysis approach uses a Groundwater Extraction Estimates from Earth Observations (GEEEO) model, which estimates unmeasured groundwater extraction for agricultural irrigation by integrating satellite-based evapotranspiration (i.e. OpenET data), land use, climate, and locally available water supply data. This method is used in lieu of annually updating the groundwater flow model. The methodology quantifies monthly spatially distributed results for applied water demand, effective precipitation, and known surface water supplies, and estimates groundwater extraction to meet the remaining applied water demand on irrigated lands.

The majority of the Subbasin uses groundwater supplies for agricultural irrigation, although portions of the Subbasin may rely on surface water for irrigation. There is generally less groundwater extraction in Above-Normal and Wet water years with wetter hydrological conditions, as some of the precipitation meets the irrigation demand to offset the need to pump groundwater. However, even between two years with similar water year types, there may be large differences in the volumes of groundwater extracted each year. One reason for this is the difference in timing, intensity and distribution of rainfall, which influences the volume of rainfall that is available to meet irrigation water demands, and as a result, offset groundwater extractions. This is known as "effective precipitation." Effective precipitation also affects the volume of infiltration contributing to groundwater storage via recharge versus the amount that runs off the ground surface and contributes to high stream flows during intense storm events. While there may be other reasons not listed here, the precipitation patterns in 2025 resulted in significantly less “effective precipitation” (i.e. the amount infiltrated into the soil versus running off the ground surface) in 2025 compared to 2024, which contributed to the increase in groundwater extraction from last year.

Municipal water users extracted approximately 18,400 AF of groundwater in the Subbasin in WY 2025. Municipal water supplies are measured and provided by Cal Water, Chico, and the Durham Irrigation District (DID). The record of municipal supplies does not distinguish between urban and industrial water uses.

Rural residential water users rely on private domestic wells to meet their household water needs and extracted approximately 3,000 AF in WY 2025. Rural residential groundwater extraction was quantified based on average per capita water use and estimated population. The average per capita water use reported in the California Water Service Chico-Hamilton City District 2020 Urban Water Management Plan 2020 (Cal Water-Chico, 2020) was 181 gallons per capita per day. This is considered representative of rural residential per capita water use in the region. Population estimates were based on average household sizes from the US census and aggregated to those living outside city water district boundaries. Population estimates were used to estimate residential groundwater pumping.

The total estimated groundwater extraction was approximately 261,600 AF in WY 2025, the majority of which was used to meet agricultural water demands (approximately 240,200 AF). The total groundwater extraction is about 261,600 AF. **Figure 3-1** shows the general areas where extraction occurs. The area of municipal extraction, which only uses groundwater, is shown alongside areas of agricultural extraction which are limited to coverage of irrigated lands and are divided into those with access to surface water and groundwater and those with access to only groundwater. **Figure 3-1** was generated using the following approach: water use by sector was first divided up by water source type as reported by water suppliers (e.g., surface water, groundwater, etc.) and then further divided into sectors based on use type (e.g., agriculture, municipal, mixed use, etc.). Most of the total groundwater extraction was used by the agricultural sector, while the remaining amount was used for municipal and rural residential water needs.

Table 3-1. Vina Subbasin Groundwater Use by Water Use Sector

Sector	WY 2025 (AF)	Percent of Total Groundwater Use
Agricultural	240,200	92%
Municipal	18,400	7%
Rural Residential	3,000	1%
Total	**261,600**	**100%**

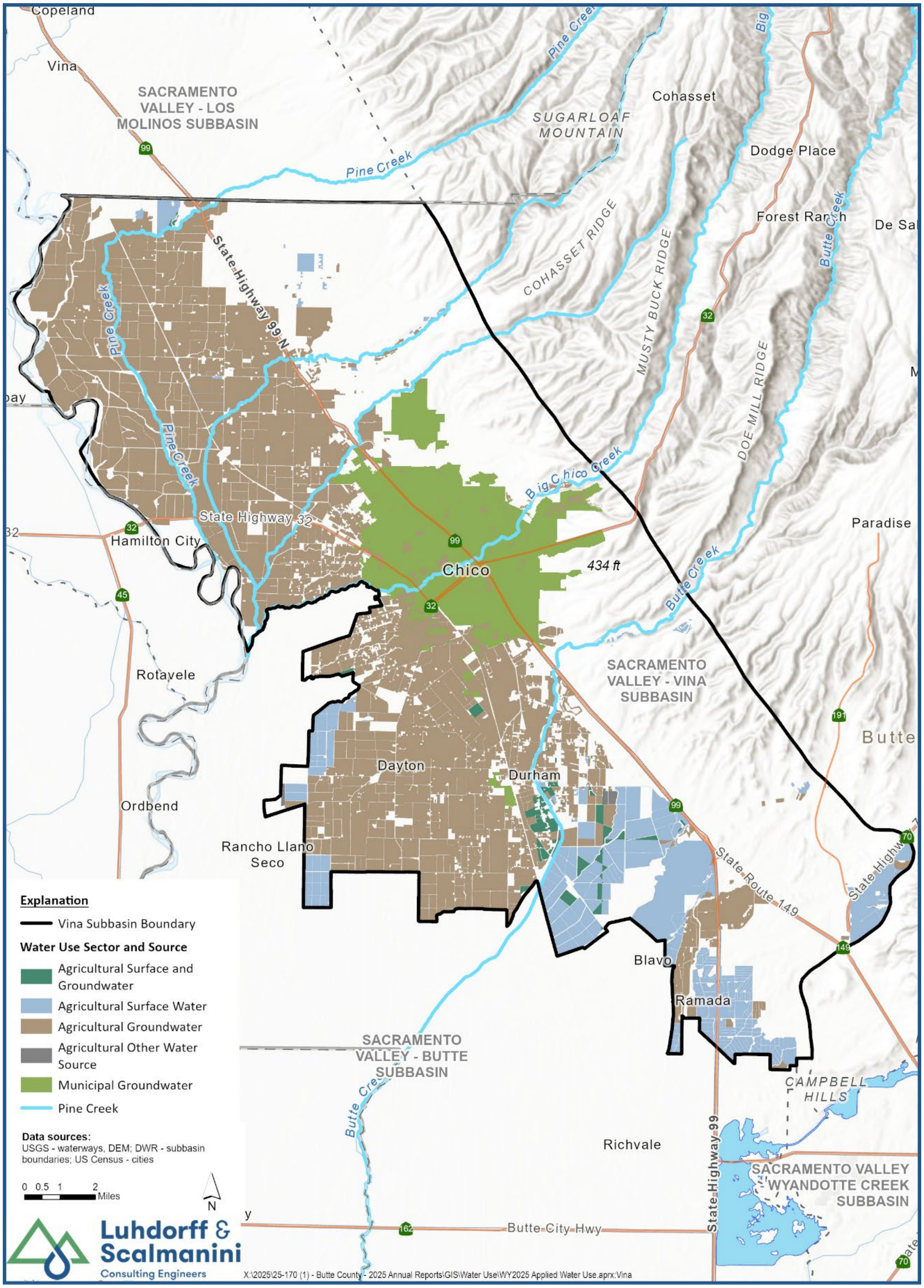

Figure 3-1. Vina Subbasin Areas of Groundwater Extraction - WY 2025

3.2 Surface Water Supply – §356.2(b)(3)

Surface water supplies used or available for use in the Subbasin by sector are summarized in **Table 3-2.** Surface water supplies are reported directly from water supplier records or collected from publicly available sources (water rights diversion records, etc.) where available. Missing surface water supply data was estimated based on available historical diversions data in similar water years.

Surface water provided a small portion of the agricultural water demand in the Subbasin for WY 2025. Diversions from Butte Creek were accessed from the State Water Resource Control Board's (SWRCB) CalWATR or direct requests from diverters. Data from CalWATR on surface water delivery indicated which water rights holders on Butte Creek had made diversions during WY 2025. There are currently no surface water supplies for municipal use in the Vina Subbasin. Total surface water diversions and deliveries for the Vina Subbasin are estimated to be about 28,800 AF and 25,800 AF, respectively. The difference between these two volumes represents estimated conveyance losses between points of diversion and application, such as seepage, evaporation, or spillage.

In contrast with reduced surface water supplies experienced in WY 2022 (20,500 AF), WY 2025 was an Above-Normal WY with more substantial surface water supplies (similar to WY 2024). These, combined with above-normal hydrological conditions, supported groundwater recharge and offset groundwater extraction volumes compared to WY 2022, a critically dry year.

Table 3-2. Vina Subbasin Surface Water Use by Water Use Sector for WY 2025

Sector	Diverted (AF)	Applied (AF)	Percent of Total Surface Water Use
Agricultural	28,800	25,800	100%
Municipal	--	--	0%
Total	**28,800**	**25,800**	**100%**

3.3 Total Water Use by Sector – §356.2(b)(4)

Total water demand in the Subbasin for WY 2025 was supplied mostly by groundwater and to a lesser extent, surface water. The total water available for use in the Subbasin was tabulated from groundwater extraction volumes reported in **Table 3-1** and the surface water supply reported in **Table 3-2**. The total water available is summarized in **Table 3-3** for WY 2025. The results are either based on measured data or estimates, as described in the previous two sections. **Table 3-3** also shows the total irrigated area in WY 2025 within the Subbasin.

Table 3-3. Vina Subbasin Total Water Use by Water Use Sector					
Sector		WY 2025			
	Groundwater (AF)	Surface Water (AF)	Total (AF)	Percent of Total Water Use	Total Sector Area (ac)
Agricultural	240,200	25,800	**266,000**	**93%**	**75,500**
Municipal	18,400	--	**18,400**	**6%**	**19,100**
Rural Residential	3,000	--	**3,000**	**1%**	**n/a***
Total	**261,600**	**25,800**	**287,400**	**100%**	
Percent of Total Water Use	**91%**	**9%**	**100%**		

Notes:
**Rural Residential water use is calculated based on population from census data, not area.*

3.4 Uncertainties in Water Use Estimates

Estimated uncertainties in the water budget components are presented in **Table 3-4**. The uncertainty of these water budget components is based on typical accuracies given in technical literature and the cumulative estimated accuracy of all inputs used to calculate the components.

Table 3-4. Vina Subbasin Estimated Uncertainty in Water Use Estimates			
Water Budget Component	Data Source	Estimated Uncertainty (%)	Source
Groundwater			
Agricultural	Measurement	20%	Typical uncertainty from water balance calculation.
Municipal/Industrial	Measurement/ Estimate	5%	Typical accuracy of municipal water system reporting.
Rural Residential	Calculation	15%	Estimated from per capita water use and Census information.
Surface Water			
Agricultural	Calculation	10%[1]	Estimated from the Senate Bill 88 measurement accuracy standards.

[1] *Higher uncertainty of 10%-20% is typical for estimated surface water inflows, including ungauged inflows from small watersheds into creeks that enter the Subbasin.*

4 GROUNDWATER STORAGE

Long-term fluctuations in groundwater levels and groundwater in storage occur when there is an imbalance between the volume of water recharged into the aquifer and the volume of water removed from the aquifer, either by extraction or natural discharge to surface water bodies. If, over a period of years, the amount of water recharged to the aquifer exceeds the amount of water removed from the aquifer, then groundwater levels will increase and groundwater storage increases (i.e., positive change in storage). Conversely, if, over time, the amount of water removed from the aquifer exceeds the amount of water recharged, then groundwater levels decline, and groundwater storage decreases. These long-term changes can be linked to various factors, including increased or decreased groundwater extraction, boundary inflows/outflows, or variations in recharge associated with wet or dry hydrologic cycles.

A review of the RMS well hydrographs (**Appendix A**) indicates that groundwater elevations are either relatively stable or show a declining trend over time. Declines may be influenced by the significant percentage of water years since 2006 that have been dry (i.e., characterized as Below-Normal, Dry, or Critical). Since groundwater storage is closely related to groundwater levels, measured changes in groundwater levels can serve as a proxy for and be utilized to estimate changes in groundwater storage. Changes in groundwater storage in the Subbasin follow a pattern typically seen in the majority of the Sacramento Valley. During normal to wet years, groundwater is withdrawn during the summer for irrigation and is replenished during the winter through recharge of precipitation and surface water inflows, allowing groundwater storage to potentially rebound by the following spring. This is evidenced by stable or increased groundwater levels when comparing spring levels over time. During dry years and drought conditions, this pattern is disrupted when more groundwater may be pumped to meet irrigation demand, and less recharge may occur due to reduced precipitation, diminished or curtailed surface water supplies, and reduced stream flow. The net effect of these changes in inflows and outflows can result in lower groundwater levels and therefore decreased groundwater in storage.

In WY 2025 (an Above-Normal WY type), groundwater storage increased by approximately 44,300 AF in the Subbasin. This is significantly less than the groundwater storage change estimated in WY 2024 (104,500 AF), which was also an Above-Normal WY type. Although 2025 received overall more precipitation than 2024, the timing and distribution of rainfall affected the volume of infiltration contributing to groundwater storage via recharge verses the amount that runs off the ground surface and contributes to high stream flows during intense storm events. The precipitation patterns in 2025 resulted in significantly less "effective precipitation" (i.e. the amount infiltrated into the soil verses running off the ground surface) in 2025 compared to 2024. Another factor is the increased groundwater extraction in 2025 compared to 2024, however it is possible there are other factors contributing to this not listed here. Even given these changes relative to WY 2024, WY 2025 was the third consecutive year with an increase in storage (corresponding to the third consecutive year with Wet or Above-Normal water year classifications).

The following sections present a summary of groundwater use and change in storage over time, along with a description of the uncertainty in storage change estimates.

4.1 Change in Groundwater Storage – §356.2(b)(5)(B)

Annual groundwater pumping, groundwater storage changes, and the cumulative change in storage over time are presented for WY 2000 through WY 2025 in **Table 4-1** and **Figure 4-1**. Substantial decline in groundwater storage occurred in the dry to critical WY 2020 through WY 2022 timeframe. Significant recovery began in the wet WY 2023 and continued in the above normal WY 2024 and WY 2025. Groundwater storage in the Subbasin increased by 44,300 AF in WY 2025. For context, in the past 26 years, the largest one-year decrease in groundwater storage is estimated to be -151,700 AF, and the highest one-year increase was estimated to be 144,100 AF.

The historical record since 2000 includes multiple data sources. Groundwater extractions for WY 2000 through WY 2018 were obtained from the Butte Basin Groundwater Model (BBGM) (BCDWRC, 2021), and the water budgets were prepared as part of the Vina Subbasin GSP (Geosyntec, 2021). The WY 2019 and WY 2020 groundwater extraction values were calculated as the average based on the hydrologic year type from WY 2000 to WY 2018. The WY 2021 groundwater extraction estimates were based on a drought impact analysis conducted around the time of annual report development that year (LSCE, 2022). The WY 2022, WY 2023, and WY 2024 groundwater extraction values were obtained from prior annual reports and were developed using the same methods as WY 2025, as described in **Section 3** and **Appendix E**. Groundwater extractions for the entire period include pumping for agricultural, municipal, and rural residential purposes.

Observed groundwater levels are the basis of the annual and cumulative changes in groundwater storage calculated for the period from WY 2000 through WY 2025 based on the methodology described below in **Section 4.2**. This methodology differs from the change in groundwater storage estimates available through the BBGM (which are not shown). An evaluation of a total of 20 pairs of concurrent annual storage changes over the period from WY 1999 through WY 2018 was assembled from the BBGM, and the methodology described in **Section 4.2** was completed to evaluate the consistency of the new methodology with the BBGM results. Although groundwater storage changes differ in some cases, the general trends are similar, and there is agreement between the methodologies.

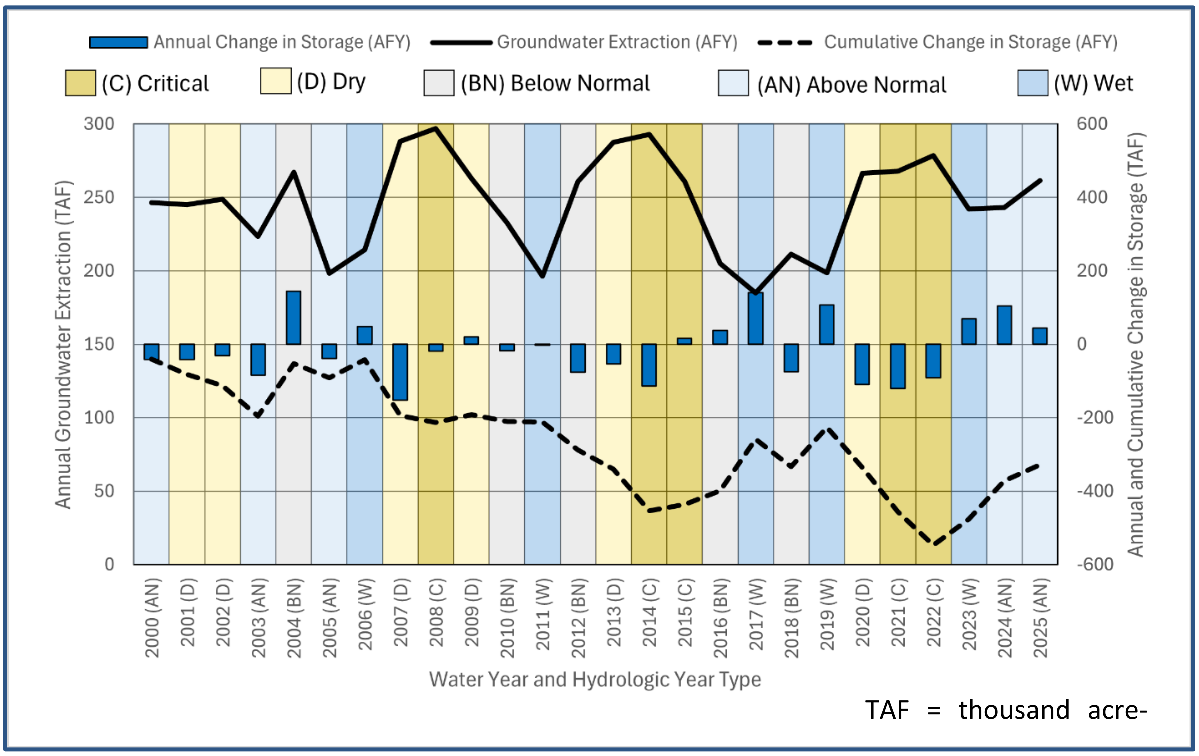

Figure 4-1. Vina Subbasin Groundwater Pumping and Annual and Cumulative Change in Storage from WY 2000 to WY 2025

Table 4-1. Vina Subbasin Groundwater Extraction, Annual Groundwater Storage Change, and Cumulative Change in Storage			
Water Year & Type	Groundwater Extraction[1] (AFY)	Annual Change in Storage (AFY)	Cumulative Change in Storage (AFY)
2000 (AN)	246,600	-41,000	-41,000
2001 (D)	245,200	-40,800	-81,800
2002 (D)	248,900	-30,300	-112,100
2003 (AN)	223,500	-83,900	-196,000
2004 (BN)	267,200	144,100	-51,900
2005 (AN)	198,400	-38,800	-90,700
2006 (W)	214,400	48,700	-42,000
2007 (D)	288,400	-151,700	-193,700
2008 (C)	297,100	-18,900	-212,600
2009 (D)	263,000	20,700	-191,900
2010 (BN)	232,700	-17,600	-209,500
2011 (W)	196,500	-2,100	-211,600
2012 (BN)	261,000	-75,700	-287,300
2013 (D)	287,600	-53,000	-340,300
2014 (C)	293,000	-112,600	-452,900
2015 (C)	260,900	16,800	-436,100
2016 (BN)	205,100	37,200	-398,900
2017 (W)	185,000	140,300	-258,600
2018 (BN)	211,400	-73,900	-332,500
2019 (W)	198,600	106,700	-225,800
2020 (D)	266,600	-109,400	-335,200
2021 (C)	267,980	-120,400	-455,600
2022 (C)	278,700	-90,700	-546,300
2023 (W)	242,000	70,200	-476,100
2024 (AN)	243,300	104,500	-371,600
2025 (AN)	261,600	44,300	-327,300
Average[2]			
2000-2024 (25 years)	244,900	-14,900	
W (5 years)	207,300	72,800	
AN (4 years)	228,000	-14,800	
BN (5 years)	235,500	2,800	
D (6 years)	266,600	-60,800	
C (5 years)	279,500	-65,200	

Notes: *Table notes are included on the following page.*

Positive values indicate inflows to the groundwater system, and negative values indicate outflows from the groundwater system.

AF = acre-feet

Water Year Types Classified According to the Sacramento Valley Water Year Index:

W = Wet, AN = Above-Normal, BN = Below-Normal, D = Dry, C = Critical

[1] *Groundwater extraction values from 2000 to 2018 were estimated using BBGM (Geosyntec, 2021). Values for 2019-2020 are averages from that period. Estimates for 2021 were based on a drought impact analysis (LSCE, 2022), while estimates for 2022-2025 are based on a GEEEO process (described in **Appendix E**).*

[2] *The historical average calculation covers the period from 2000 to 2024, excluding the current water year.*

4.2 Groundwater Storage Maps – §356.2(b)(5)(A)

The spatial distribution of estimated changes in groundwater storage for the period from spring 2024 to spring 2025 are shown in **Figure 4-2** for the Subbasin. Since groundwater storage is closely related to groundwater levels, measured changes in groundwater levels can serve as a proxy for and be utilized to estimate changes in groundwater storage. The change in groundwater storage was 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.

Spring measurements used to calculate the change in groundwater storage were computed as the average of all available groundwater level measurements from March of the respective year, with the exception of CalWater wells, for which the spring measurement was calculated as the average of available February and April measurements. Spring measurements used to calculate the change in groundwater storage are depicted in **Table 5-2**. The representative storage coefficient was established by roughly calibrating the estimated change in storage based on changes in observed groundwater levels (i.e., calculated using groundwater level data, representative area, and a storage coefficient parameter) with estimated change in storage outputs from the BBGM, as reported in the GSP, to aggregate characteristics across all zones of the Subbasin system. A total of 20 pairs of concurrent annual storage changes assembled from both methods over the period from WY 1999 through WY 2018 were used for calibration. Determination of a representative storage coefficient allows for estimating the change in volume of groundwater storage based on the measured change in groundwater levels and known representative area (i.e., Thiessen polygon) associated with each groundwater level measurement.

Negative changes in storage values indicate lowering groundwater levels and depletion of groundwater storage, whereas a positive change in storage values represents rising groundwater levels and accretion of groundwater in storage. As shown in **Figure 4-2**, the change in storage for each representative area (i.e., Thiessen polygon) in the Subbasin over the previous year ranged from roughly -1,500 AF to 4,000 AF. One representative area near the central portion of the Subbasin had a negative change in storage, while the northern, southern, and surrounding central areas had neutral or positive changes in storage. Total groundwater storage change in the Subbasin was estimated to be approximately 44,300 AF between spring 2024 and spring 2025.

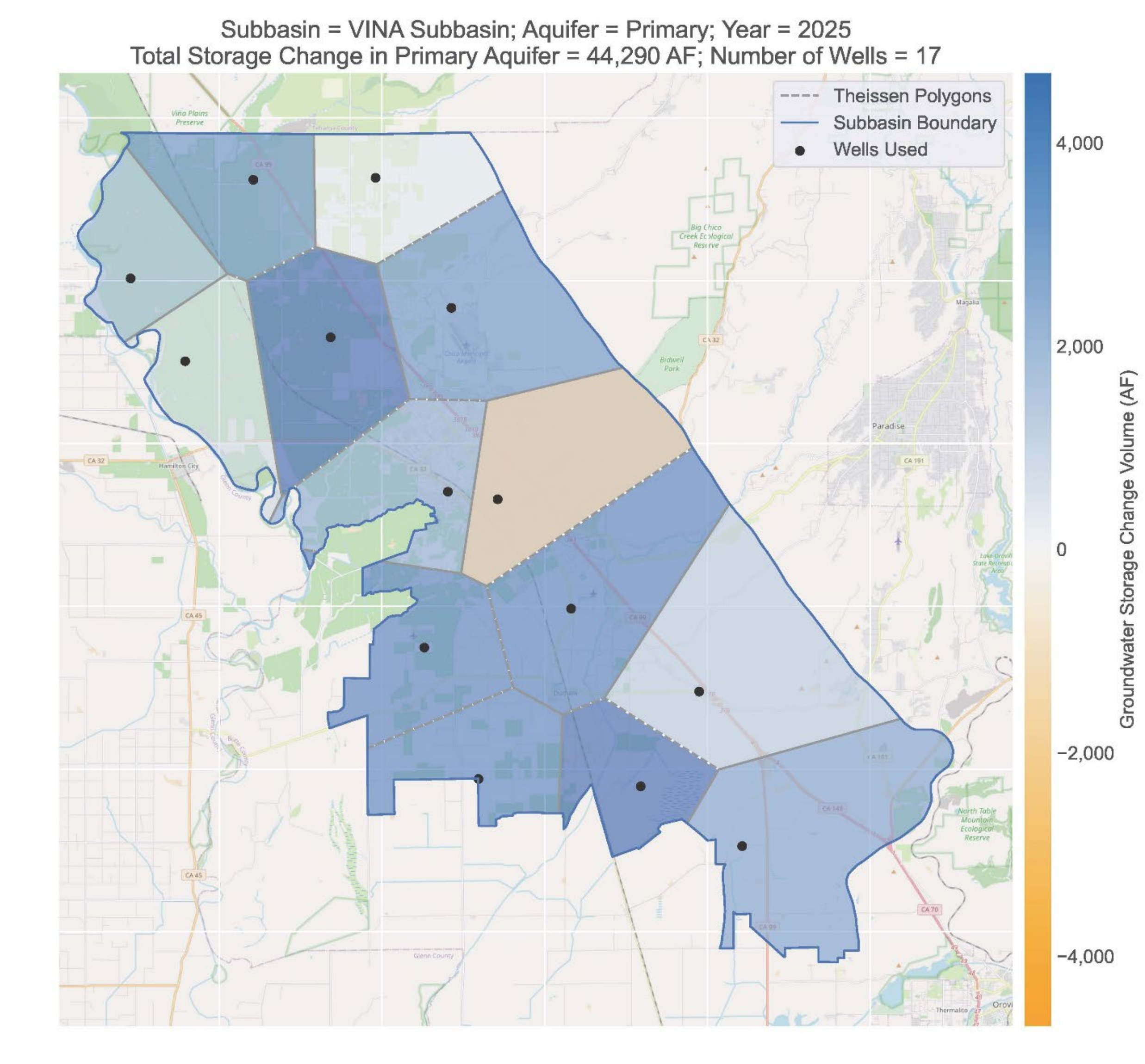

Figure 4-2. Vina Subbasin Change in Groundwater Storage from Spring 2024 to Spring 2025

4.3 Uncertainty in Groundwater Storage Estimates

The uncertainty associated with the change in groundwater storage estimates depends in part on the underlying uncertainty of the groundwater level data, the representative area (i.e., Thiessen polygon), and the calibrated storage coefficient parameter used to calculate the change in groundwater storage. As described in **Section 4.2**, a calibration process was conducted to roughly align the estimated change in groundwater storage based on observed groundwater levels to the estimated change in groundwater storage outputs from the BBGM. Thus, the uncertainty of the estimated change in groundwater storage reported in **Table 4-1** and **Figure 4-2** is estimated to be approximately equal to the uncertainty of the estimated change in groundwater storage outputs from the BBGM (typically 20-30% for integrated hydrologic models).

5 GSP IMPLEMENTATION PROGRESS – §356.2(B)(5)(C)

5.1 Main Activities of Water Year 2025

The main activities and updates from the previous Annual Report are as follows:

1. All sustainability indicators (SIs) are in compliance with their MTs (see summary **Table 5-1**).
2. The GSAs completed the WY 2025 Annual Report and other critical tasks related to monitoring and data collection.
3. The GSAs continued to participate in ongoing intra- and inter-basin coordination.
4. The GSAs adopted an initial uniform acreage-based property-related service fee to fund its operations and implementation costs required to comply with SGMA, with the intention of conducting a new fee study to explore funding options that reflect the diversity of groundwater users within its boundaries. The new fee study was initiated in the previous water year, and in the 2025 water year the GSAs adopted a two-part SGMA fee, which was implemented for the 2025-26 fiscal year.
5. Progress has been made on 12 PMAs since the last annual report (**Appendix G**).
6. The Vina GSA was awarded about $5.5 million in 2024 to complete specific tasks ranging from filling data gaps, conducting feasibility analyses for two water supply projects, performing recharge feasibility and pilot projects, and designing and implementing pilot programs for demand reduction strategies. This portfolio approach funds various phases of projects listed in the GSP. Implementation of these projects continued in the 2025 WY.

The GSP was approved in July of 2023, and DWR proposed six recommended corrective actions that will enhance the GSP:

1. Providing additional information on historical and current groundwater quality conditions in the Subbasin and refining the definition of sustainable management criteria through a number of actions further described in the letter.
2. Review the model inputs/outputs and provide consistent information regarding stream loss and gains, clarifying whether values represent the overall interaction between the surface water and groundwater system or the quantity of depletion due to groundwater pumping.
3. Providing more information regarding the 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 through a number of actions further described in the letter.
4. Revising the definition of undesirable results to remove the non-dry year condition or discuss how degradation during dry periods will be managed as necessary to ensure that adverse water-quality conditions are offset during other periods.

5. Providing more information about the criteria used to identify undesirable results and sustainable management criteria for land subsidence through a number of actions further described in the letter.
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 a number of actions.

In 2025, the GSAs continued implementing projects to address recommended corrective actions, largely funded by the SGM Implementation Grant Program. The ongoing implementation of PMAs, described in **Appendix G**, aims to address these corrective actions effectively through the Periodic Evaluation of the GSP, which is due in January 2027.

5.2 Progress Toward Achieving Interim Milestones

Observed conditions for all SIs are in compliance with their MTs (see summary **Table 5-1**). An MT is a quantitative value that represents the groundwater conditions at an RMS that, when exceeded individually or in combination with MTs at other monitoring sites, may cause an undesirable result in the basin per DWR's definition. Whether the MT represents a minimum or maximum value is dependent on the SI. As an example of a minimum, if groundwater levels are lower than the value of the MO for that site, they are moving in the direction of the MT. As an example of a maximum, for the groundwater quality SMC, as the value of the specific conductance concentration increases from the MO established for that site, it moves in the direction of the MT. The SIs and SMC, including MTs, are summarized in **Table 5-2**. Seawater Intrusion is not an applicable SI in the Vina Subbasin.

Table 5-1. Vina Subbasin Sustainability Indicator Summary

2025 Status	Undesirable Result Identification	Measurable Objective (MO) Definition	Minimum Threshold (MT) Definition
Chronic Lowering of Groundwater Levels			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	When 2 RMS wells within a management area reach their MT for two consecutive non-dry year types.	The groundwater level is based on the groundwater trend line for the dry periods (over the period of record) of observed short-term climatic cycles extended to 2030 for each RMS well.	An elevation protective of sustainably constructed domestic wells (based on their well depths for wells drilled since 1980) within the polygon associated with the RMS well
Reduction of Groundwater Storage			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.
Degraded Water Quality			
No indication of undesirable results There were no RMS wells with SC levels exceeding their MTs in 2025.	When 2 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.
Land Subsidence			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.

Table 5-1. Vina Subbasin Sustainability Indicator Summary			
2025 Status	**Undesirable Result Identification**	**Measurable Objective (MO) Definition**	**Minimum Threshold (MT) Definition**
Depletion of Interconnected Surface Water			
No indication of undesirable results There were no RMS wells with spring or fall 2025 groundwater level measurements below the MT.	Uses groundwater levels as a proxy. The GSP identifies data gaps and describes the "Interconnected Surface Water Sustainable Management Criteria Framework."	Groundwater levels are a proxy, per SGMA regulations.	Groundwater levels are a proxy, per SGMA regulations.

Notes:

Salinity is the primary water-quality constituent of concern, evaluated by measuring specific conductivity (SC).

MO = measurable objective, MT = minimum threshold, RMS = representative monitoring site, µS/cm = micro siemens per centimeter

5.2.1 Chronic Lowering of Groundwater Levels and Reduction in Groundwater Storage SMC

The reduction in groundwater storage SMC utilizes the chronic lowering of groundwater levels SMC as a proxy (**Table 5-1**). Thus, groundwater conditions related to storage and chronic lowering of groundwater levels are discussed together. Groundwater conditions in the Subbasin are on track to meet the first 5-year 2027 IMs and avoid undesirable results for groundwater levels at each of the RMS wells. In spring 2025, all groundwater elevations at the RMS wells were above the established MOs and MTs (as indicated in **Table 5-2**), which shows measurements from WY 2025 for spring seasonal highs and fall seasonal lows, along with MOs and MTs. Spring water level data for non-Cal-Water wells was recorded from measurements taken during the month of March, while water level data for Cal Water wells was recorded as the average of both the February and April measurement for each well. **Table 5-2** also compares the WY 2025 measurements to those from WY 2024 and to the measurable objectives. Spring and fall 2025 groundwater elevations were all at or above the established MOs (DWR, 2025). Groundwater elevations are all above the MTs throughout the Subbasin, with elevations mostly near or slightly higher than those observed in recent years (**Appendix A**). Higher water levels observed in spring 2025 compared to spring 2024 have bolstered groundwater storage in the Subbasin due to above-normal hydrological conditions, and increased recharge despite an increase in groundwater extraction from the previous year.

Table 5-2. Vina Subbasin Measurable Objectives, Minimum Thresholds, and Seasonal Groundwater Elevations of Representative Monitoring Site Wells										
State Well Number	Groundwater Elevation (feet above mean sea level)						Spring 2025 vs. MO (ft)	Fall 2025 vs. MO (ft)	Spring 2025 vs. Spring 2024 (ft) (seasonal high)	Fall 2025 vs. Fall 2024 (ft) (seasonal low)
	2025 Measurements				MO	MT				
	Date Measured	Spring (seasonal high)	Date Measured	Fall (seasonal low)						
Vina North Management Area										
23N02W**25C001M**	3/11/2025	146	10/10/2025	133.9	130	50	16	3.9	2.2	2.3
23N01W**10E001M**	3/11/2025	163.88	10/8/2025	153.68	136	80	27.88	17.68	3.2	--
23N01E**07H001M**	3/18/2025	165.2	10/7/2025	163.9	136	72	29.2	27.9	0.3	1.6
22N01W**05M001M**	3/11/2025	140.48	10/8/2025	129.08	115	31	25.48	14.08	0.8	8
23N01W**36P001M**	3/11/2025	140.45	10/8/2025	123.35	108	45	32.45	15.35	7.5	3.6
23N01E**33A001M**	3/18/2025	140.69	10/7/2025	136.64	125	72	15.69	11.64	1.93	2.75
Vina Chico Management Area										
CWSCH01b	2/1/2025,4/1/2025**	125.5	10/25/2025	118	106	85	19.5	12	4.5	11
CWSCH02	2/1/2025,4/1/2025**	133	10/25/2025	127	105	85	28	22	5	7
CWSCH03	2/1/2025,4/1/2025**	122	10/25/2025	114	108	85	14	6	1	1
CWSCH07	2/1/2025,4/1/2025**	110	10/25/2025	104	95	85	15	9	0	0
22N01E**28J003M**	3/18/2025	138.79	10/10/2025	126.78	111	85	27.79	15.78	4.56	3.46
Vina South Management Area										
21N01E**21C001M**	3/19/2025*	--	10/8/2025*	--	64	10	--	--	--	--
21N02E**18C003M**	3/18/2025	169.4	10/7/2025	155.59	130	65	39.4	25.59	2.35	-7.96

20N01E**10C002M**	3/19/2025	106.85	10/8/2025	99.15	92	20	14.85	7.15	--	--
20N02E**24C001M**	3/21/2025	108.21	10/9/2025	98.29	77	18	31.21	21.29	4.12	0.4
20N02E**09L001M**	3/21/2025	119.63	10/10/2025	108.33	91	30	28.63	17.33	5.6	2.6
21N02E**26E005M**	3/19/2025	114.06	10/8/2025	111.45	95	36	19.06	16.45	2.6	3

[1] The portion of the State Well Number shown in bold, underlined text is the RMS ID.

**questionable measurement; **averaged WLE over two measurements*

MO = measurable objective, MT = minimum threshold, -- = Indicates missing or questionable data

5.2.2 Degraded Water Quality SMC

The degraded water quality MT and MO are summarized in **Table 5-1**. Salinity is the main constituent of concern in the Subbasin and is evaluated by SC. Salinity (i.e., SC) is measured at RMS wells throughout the Subbasin, and the County collected the data in WY 2025. There were no wells above the established MOs and MTs in 2025. A summary of groundwater quality monitoring data is available in **Appendix F**. Groundwater conditions are on track to avoid undesirable water quality results.

5.2.3 Land Subsidence SMC

The land subsidence MT and MO are summarized in **Table 5-1**. Only inelastic subsidence, solely due to lowered groundwater elevations, will be considered relevant to the SMC. Data from monuments in the Sacramento Valley Global Positioning System (GPS) Subsidence Monitoring Network were utilized to track cumulative subsidence in the area in 2008 and 2017 (DWR, 2024a) and were used for identifying undesirable results in the GSP; however, these sites have not been measured since then. Observations from the Sacramento Valley GPS Subsidence Monitoring Network are supplemented by Interferometric Synthetic Aperture Radar (InSAR) data provided by DWR annually (DWR, 2024b) to assess this SMC. The InSAR data has a resolution of 0.5 ft and represents average vertical displacement over 100m × 100m areas. Rasters were interpolated from these point measurements. InSAR data was analyzed from October 2024 to October 2025 to track annual changes (**Figure 5-1**), from October 2020 to October 2025 to track net 5-year changes (**Figure 5-2**).

Conditions indicate that there has not been any inelastic land subsidence historically or during the reporting period. Subsidence and uplift measured by InSAR from October 2024 to October 2025 were negligible and ranged from 0.1 to 0.17 feet of vertical change within the Subbasin. Subsidence and uplift measured by InSAR over the 5-year period from WY 2020 to WY 2025 resulted in uplift only ranging from 0.1 feet to 0.125 feet of uplift. Groundwater conditions in the Subbasin are on track to meet the first 5-year 2027 IMs and avoid undesirable results for land subsidence.

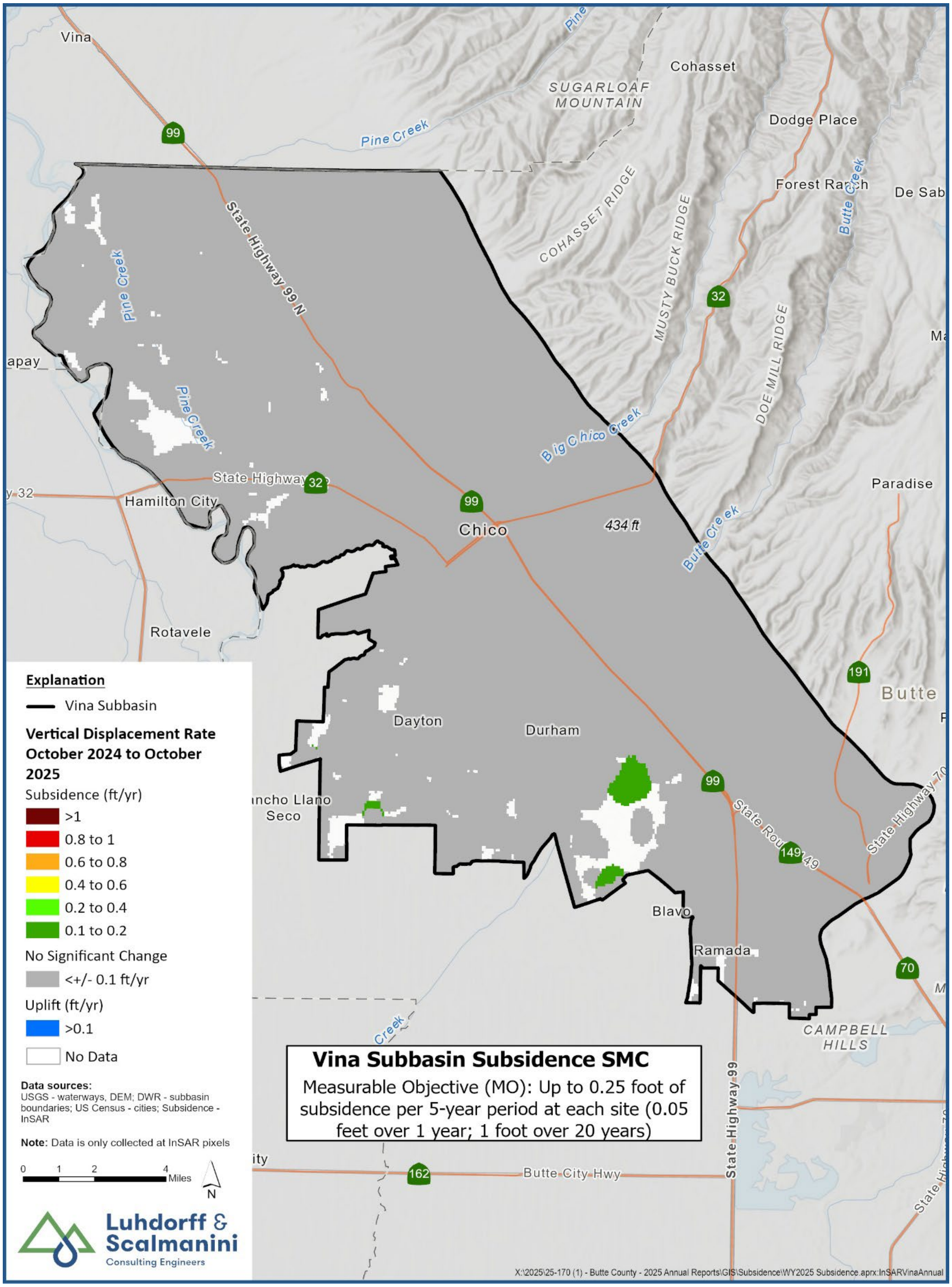

Figure 5-1. Vina Subbasin Vertical Displacement in Ground Surface from 10/2024 to 10/2025

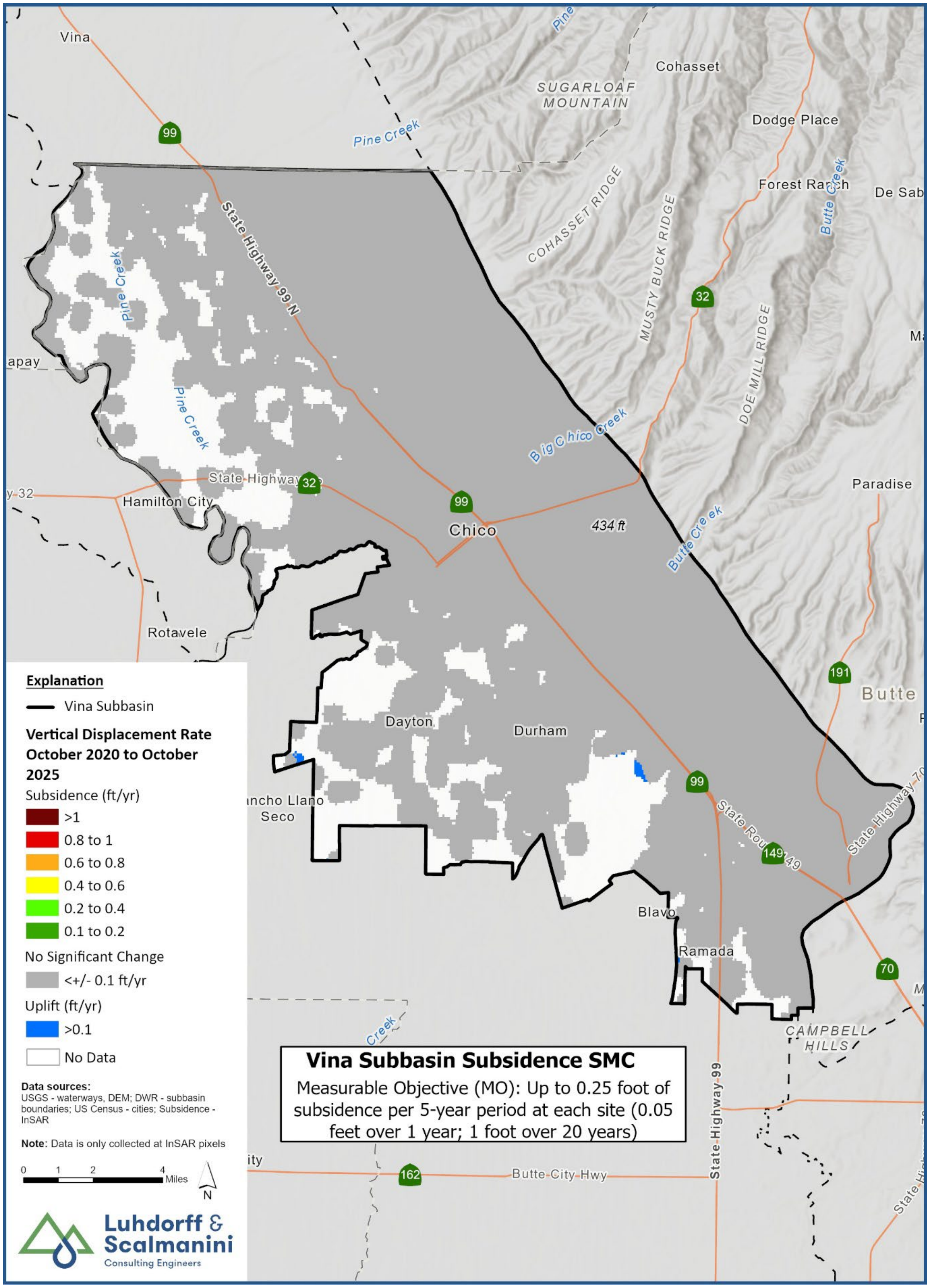

Figure 5-2. Vina Subbasin Vertical Displacement in Ground Surface from 10/2020 to 10/2025

5.2.4 Depletion of Interconnected Surface Water SMC

The depletion of interconnected surface water utilizes the chronic lowering of groundwater levels SMC as a proxy (**Table 5-1**). Groundwater conditions in the Subbasin are on track to meet the first 5-year 2027 IMs and to avoid undesirable results for groundwater levels at each of the RMS wells.

5.3 Progress Toward PMA Implementation

The Vina GSP includes a description of the projects and management actions the GSAs have determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin. A description of progress towards implementing projects and management actions in the GSP is included in the PMA Module in **Appendix G.**

6 Conclusions

The Vina Subbasin GSAs adopted and submitted the GSP to DWR in January 2022 and continue to actively work on sustainable groundwater management in the Subbasin directly and with partners. As presented in **Section 5** of this report, recent progress made on activities applicable to the GSAs demonstrates the commitment of the GSAs to implement the GSP by allocating the necessary time and resources to achieve long-term sustainable management of the groundwater resources in the Vina Subbasin.

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