

## SECTION 8: Progress towards Basin Sustainability (§ 356.2[c])

### 8.1 Introduction

This section describes several projects and management actions that are in process, have been initiated, or have been recently implemented in the Subbasin as a means to improve groundwater conditions, avoid potential undesirable results, attain subbasin sustainability, and improve understanding of the Subbasin groundwater dynamics as well as implications of GSP implementation. These projects and actions include capital projects and non-structural policies intended to reduce or optimize local groundwater use. Some of these projects were described in concept in the GSP; some of the actions described herein are new initiatives designed to make new water supplies available to the Subbasin that may be implemented by the GSAs to reduce pumping and partially mitigate the degree to which the management actions would be needed.

As described in the GSP (M&A, 2020), the need for projects and management actions is based on emerging Subbasin conditions, including the following:

- Groundwater levels are declining in some parts of the Subbasin, indicating that the amount of groundwater pumping is more than the natural recharge.
- The calculated water budget of the Paso Robles Formation aquifer indicates that the amount of groundwater in storage is in decline and will continue to decline if there is no net decrease in groundwater extractions.

To mitigate declines in groundwater levels in some parts of the Subbasin, achieve the Subbasin sustainability goal by 2040, and avoid undesirable results as required by SMGA regulations, new water supplies must be imported into the Subbasin [i.e., project(s)] and groundwater pumping must be reduced through management action(s).

In addition to project and management actions that address chronic declines in groundwater levels and depletion of groundwater in storage, this section also provides a brief discussion of land subsidence, potential depletion of interconnected surface waters, and groundwater quality trends that occurred during WY 2023.

The projects and management actions described in this section are all intended to help achieve groundwater sustainability in the Subbasin and avoid undesirable results.

### 8.2 Implementation Approach

As described in the GSP, the volume of annual groundwater pumping in the Subbasin is almost always greater than the estimated sustainable yield<sup>21</sup> (WY 2023 being the exception) and, as a result, groundwater levels are persistently declining in some parts of the Subbasin. In response, the GSAs have initiated several projects and management actions designed to address the impacts of the decline in groundwater levels and reductions of groundwater in storage. It is anticipated that additional new projects and management actions, some of which are described herein, will be implemented in the future to continue progress towards avoiding or mitigating undesirable results.

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<sup>21</sup> The GSP states that the future estimated long-term sustainable yield of the Subbasin under reasonable climate change assumptions is 61,100 AFY (M&A, 2020).

Some of the projects and management actions described in this section are Subbasin-wide initiatives and some are area-specific. Generally, the basin-wide management actions apply to all areas of the Subbasin. Area-specific projects have been designed to aid in mitigating persistent water level declines in certain parts of the Subbasin.

## 8.3 Basin-Wide Management Actions and Projects

### 8.3.1 Sustainable Groundwater Management Grant Program – Sustainable Groundwater Management Implementation Round 1

In February 2022, the County of San Luis Obispo Groundwater Sustainability Director submitted an application for DWR Sustainable Groundwater Management (SGM) Grant Program – Implementation Round 1 grant funding on behalf of the PBCC. The application was for \$10 million, of which \$7.6 million was awarded by DWR in July 2022.

In 2023, SGM Grant Program implementation included general grant oversight and management, ensuring invoicing, reporting, and deliverables were turned in on time and in final format. Work during 2023 also included identifying and retaining consultants who will provide ongoing administrative support and legal services during the grant term.

### 8.3.2 Paso Basin Land Use Ordinance

On February 7, 2023, the San Luis Obispo County Board of Supervisors adopted Ordinance No. 3484, amending Title 8 and Title 22 of the San Luis Obispo County Code, the Health and Sanitation Ordinance and the Land Use Ordinance, rescinding Ordinance No. 3483<sup>22</sup> and re-enacting and extending the previously adopted agricultural offset requirements ordinance for new or expanded irrigated crop production using water from the Paso Robles Groundwater Basin through January 1, 2028. This action effectively extends the existing Water Neutral New Development (WNND) amendments to Title 22.<sup>23</sup> A copy of Ordinance No. 3484 is included in Appendix H.

### 8.3.3 Synoptic Streamflow Survey

Following the wet winter of 2022/2023 Shandon-San Juan Water District (SSJWD) retained the services of a consultant to perform a synoptic streamflow survey on several tributary streams to the Salinas River in the Subbasin. The opportunity to collect data of this nature presents itself infrequently in the Subbasin, where flashy, short-lived ephemeral stream flows are the norm. The survey included measurements of stream flow and stream depth at regularly spaced intervals collected along 19 transects located on Huer Huero Creek, Shell Creek, San Juan Creek, and the Estrella River. Discharge in cubic feet per second was calculated for each transect using the mean section equation. The results of this survey have identified gaining and losing reaches and greatly enhanced the understanding of surface water-groundwater interactions within the

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<sup>22</sup> Ordinance 3483, passed in November 2022, among other things allowed a 25 AFY exemption per site for new or expanded irrigated crop production in the Paso Basin. This was rescinded with the passing of Ordinance 3484 in February 2023.

<sup>23</sup> In October 2015, the County Board of Supervisors adopted the WNND amendments to the County Land Use Ordinance (Title 22) and Building and Construction Ordinance (Title 19). The amendments require a 1:1 water offset for new non-agricultural development and new or expanded irrigated commercial crop production while providing a 5 AFY exemption for irrigated properties outside of an “area of severe decline” defined based on changes in groundwater elevation measurements from spring 1997 to spring 2013. The action to amend the ordinances was taken in response to declining groundwater levels to minimize further depletion of the groundwater resource. The 1:1 water offset requirement was originally intended to be a stopgap measure to avoid further depletion of the groundwater basin until SGMA implementation and included a termination clause to expire upon the effective date of a final and adopted GSP. On November 5, 2019, the County Board of Supervisors extended the termination date of the WNND ordinances to January 1, 2022 and removed “off-site” agricultural water offsets.

Subbasin. This synoptic streamflow survey dataset will be used to improve the GSP groundwater model and more highly constrain predictive surface water-groundwater interaction simulations. The results from the synoptic streamflow survey is included in Appendix I.

### 8.3.4 Supplemental Environmental Project Stream Gage Data

The City of Paso Robles GSA installed three radar-based stream flow gage stations (using SEP funds) during WY 2021. These stations are bridge-mounted at the following locations:

- Geneseo Road at Huer Huero Creek,
- River Grove Drive at Estrella Creek, and
- North River Road at Salinas River

These stations have been collecting continuous data since their installation in WY 2021. The dataloggers were downloaded during preparation of this WY 2023 Annual Report. Graphs depicting time-series stage data for each station are included in Appendix I.

### 8.3.5 Expansion of Monitoring Well Network

As described in the GSP, SGMA regulations require a sufficient density of monitoring wells to characterize the groundwater elevation in each principal aquifer. The GSP concluded that a significant data gap existed in the number of monitoring wells in both the Alluvial Aquifer and Paso Robles Formation Aquifer within the Subbasin. The City of Paso Robles GSA project (using SEP funds) has partially addressed this data gap by drilling new monitoring wells, as described in the WY 2021 Annual Report (GSI, 2022).

The 22 wells in the Paso Robles Formation Aquifer monitoring network are insufficient to develop representative and sufficiently detailed groundwater contour maps. The lack of publicly available data for the aquifer is identified as a data gap that must be addressed in GSP implementation. This section describes ongoing and new projects and initiatives undertaken by SSJGSA, EPCWD, and the Groundwater Sustainability Director to expand the collection of water level data in the Subbasin.

#### 8.3.5.1 SSJGSA Program to Expand the Monitoring Well Network

The SSJGSA initiated a program in WY 2020 to enlist many well owners that are members of the SSJWD to join a pilot study to measure water levels in wells throughout the District. Beginning in March 2021 water levels have been measured approximately monthly in nearly 70 wells. This initial effort is being undertaken to gain a better understanding of the time of year of the seasonal high and low water levels and to identify key representative wells in each area throughout the District. Data collection is continuing into WY 2024.

As this groundwater elevation dataset grows the data are being analyzed with the intent to reduce the number of measuring points as key wells are identified. The eventual goal of the program is to develop a network of 20 to 30 new wells to incorporate into the expanded RMS groundwater level monitoring network (see below). The water level data from this expanded monitoring network has been incorporated into the groundwater elevation and change in groundwater in storage analyses for WY 2023. These data points infilled several prior data gaps and have had the effect of substantially reducing the uncertainty in the WY 2023 analyses.

#### 8.3.5.2 EPCWD Program to Expand the Monitoring Well Network

The EPCWD initiated a program in WY 2020 similar to the SSJGSA program. Beginning in April 2021 water levels have been measured quarterly in approximately 30 wells throughout the EPCWD membership area.

Data collection is continuing into WY 2023. Like the SSJGSA program, the eventual goal of the EPCWD initiative is to develop a network of 20 to 30 new wells to incorporate into the expanded RMS groundwater level monitoring network (see below). The water level data from this expanded monitoring network has been incorporated into the groundwater elevation and change in groundwater in storage analyses for WY 2023. These data points infilled several prior data gaps and have had the effect of substantially reducing the uncertainty in the WY 2023 analyses.

### 8.3.5.3 Paso Robles Basin Groundwater Level Monitoring Network Expansion and Refinement and Investigation of the El Pomar Junction Area

An Expanded Monitoring Network Technical Advisory Committee (Expanded Monitoring Network TAC) was formed by the PBCC in 2023 to spearhead the effort of expanding and refining the existing RMS groundwater level monitoring network. The purpose of expanding the monitoring network is to identify and address potential groundwater level impacts to domestic users, refine the hydrogeologic conceptual model, improve the GSP groundwater model which will allow the GSAs to improve tracking progress towards achieving sustainability, and to address several of the DWR recommended corrective actions presented in their June 20, 2023 GSP determination letter (see Section 8.5.1). The Expanded Monitoring Network TAC met on the following dates in WY 2023 to develop a recommended expanded monitoring network for the Paso Basin:

- July 13, 2023,
- August 30, 2023, and
- September 19, 2023

Work that was completed by the Expanded Monitoring Network TAC during WY 2023 includes:

- Selection of consultant to develop an expanded monitoring network recommendation based on previously developed scope of work.
- Review and feedback on the draft expanded monitoring network recommendation developed by consultant.
- Prioritization of a list of shallow alluvial wells to be constructed.
- Discussion of the strategy for installation of continuous monitoring equipment in select wells.
- Review and confirmation of the final draft expanded monitoring network recommendation for PBCC consideration.

The Expanded Monitoring Network TAC continued working into October 2023 (WY 2024), culminating in adoption of the Recommended Expanded Groundwater Level Monitoring Network for the Paso Basin by the PBCC at the October 25, 2023, board meeting. The adopted document details the recommendation to expand the existing 23-well RMS groundwater level monitoring network to 151 wells in the Subbasin. The work product of the Expanded Monitoring Network TAC is a recommended list of existing and new wells which constitutes a ‘wish list’<sup>24</sup> for the Expanded Groundwater Level Monitoring Network in the Subbasin. Also included in the work product are selections of up to two backup wells for each well in the ‘wish list’ to resort to if the preferred well is not available.

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<sup>24</sup> A majority of the wells in the recommended list are privately owned. A next step will be to approach the well owners and present the opportunity to have their well(s) included in the expanded monitoring network. It is expected that some portion of the well owners will opt out.

To implement this recommendation the GSAs will need to determine monitoring network responsibilities and cost share (e.g. each GSA, or coordinated GSA effort), identify current well owners, develop an access and data sharing agreement, drill new wells, contact existing well owners to determine participation, ensure the well is adequate for monitoring, determine what wells can be instrumented with a continuous monitoring device, develop monitoring protocols, and develop a data management system to host the data. This work will continue into 2024.

In parallel, and in coordination with the Expanded Monitoring Network TAC, the DWR Technical Support Services (TSS) was engaged by the GSAs to install three sets of paired monitoring wells in the Subbasin. Initial well siting for each of the TSS well locations was completed in WY 2023.

### El Pomar Junction Area

In 2022 the Groundwater Sustainability Director retained the services of a consultant to prepare a draft work plan for expansion and refinement of the Subbasin groundwater level monitoring network and to investigate the hydrogeology in the El Pomar Junction area in response to the chronic lowering of groundwater elevation undesirable result recorded in RMS well 27S/13E-28F01 (see Section 3.3.1). The chronic lowering of groundwater elevation undesirable result identified in RMS well 27S/13E-28F01 in the WY 2021, WY 2022, and this year's Annual Reports and the chronic lowering of groundwater elevation undesirable result identified in RMS well 27S/13E-30J01 in this year's Annual Report requires an investigation to determine if this undesirable result is a localized or basin-wide issue. The draft work plan details a hydrogeologic investigation of the El Pomar Junction area to satisfy this requirement and to generally improve upon the hydrogeologic understanding of the area. Details from this investigation shall be incorporated into the expansion and refinement of the groundwater monitoring network.

Based on preliminary review of well completion reports (WCRs) provided by San Luis Obispo County Environmental Health Services, lithologic evidence was discovered indicating that several wells located in the El Pomar Junction area, including active irrigation wells, are completed below the Paso Robles Formation either partially or completely within the Santa Margarita Formation, a non-Basin aquifer. Among these wells are three of the existing RMS wells (27S/12E-13N01, 27S/13E-30J01, and 27S/13E-30N01), which each appear to be completed entirely within the Santa Margarita Formation. The investigation of the El Pomar Junction area continued during WY 2023 as part of the Expanded Monitoring Network TAC efforts. It is anticipated that further review of El Pomar Junction area WCRs and any other discoverable hydrogeologic information shall be undertaken during WY 2024.

### 8.3.6 Multibenefit Irrigated Land Repurposing Program

A Multibenefit Irrigated Land Repurposing (MILR) Program TAC (MILR Program TAC) was formed by the PBCC in 2023. The combined impacts to groundwater resources from the multi-year drought and lack of available and reliable supplemental surface water supplies may increase the likelihood of requiring some irrigated agriculture in the Subbasin to temporarily come out of production. Statewide, extreme recent drought conditions have created momentum for new voluntary incentivized programs for growers facing the difficult decision of taking land out of production and to support some amount of continued farming even if in a smaller irrigated footprint. Typically called repurposing, these programs can provide a strategically designed way to approach following decisions and potentially find new uses for areas taken out of production. As one of the high priority management actions funded by the SGM Grant Program – Implementation Round 1 (see Section 8.3.1) the MILR Program is expected to be a critical component in achieving long-term groundwater sustainability in the Subbasin.

The MILR Program TAC met on the following dates to develop the framework for the MILR Program:

- July 11, 2023
- September 19, 2023

Work completed by the MILR Program TAC in WY 2023 includes:

- Review and comment on conceptual pricing model.
- Development and presentation of a summary of lessons learned from successfully awarded agencies for the Department of Conservation Multi-benefit Land Repurposing Program Regional Block Grant Solicitation.
- Development and presentation of an overview of Pajaro Valley Groundwater Management Agency Strategies regarding land repurposing.
- Continued discussions on program funding requirements and recommendation to the PBCC to develop a rate study.
- Development of a draft MILR project categories and discussion of potential demonstration projects.

## 8.4 Area-Specific Projects

### 8.4.1 City of Paso Robles Recycled Water Program

In 2016, the City of Paso Robles completed a major upgrade of its Wastewater Treatment Plant to remove all harmful pollutants efficiently and effectively from the wastewater. The City's master plan is to produce tertiary-quality recycled water and distribute it to various locations within the City as well as east Paso Robles, where it may be used for irrigation of city parks, golf courses, and vineyards. The City of Paso Robles Recycled Water Program will reduce the need to pump groundwater from the Subbasin and will further improve the sustainability of the City's water supply. In 2019, the City completed an upgrade to full tertiary treatment and began producing high-quality recycled water. Design and environmental permitting of the recycled water distribution system are complete.

In 2022, the City received \$3.5 million in SGM Grant Program – Implementation Round 1 grant funding, via the County of San Luis Obispo (see Section 8.3.1), for construction of a difficult 1,900 lineal foot segment of the distribution system under the Salinas River. The City of Paso Robles Recycled Water Program will have the capacity to use up to 2,200 AFY of tertiary quality recycled water for in-lieu recharge inside the City of Paso Robles and in the central portion of the Subbasin (see Section 8.4.3). Water that is not used for recycled water purposes may be discharged to surface infiltration facilities, such as Huer Huero Creek, with the possibility for additional recharge benefits.

The primary benefit from the City's Recycled Water Program is higher groundwater elevations in the central portion of the Subbasin due to in lieu recharge from the direct use of the recycled water and potential surface recharge opportunities.

Work completed on the City of Paso Robles Recycled Water Program in WY 2023 includes:

- Continued review of technical submittals and procuring materials;
- Completed environmental training for construction personnel;
- Continued regular construction progress meetings; and
- Contractor excavated entrance and exit pits for horizontal directional drilling operation; dewatered groundwater from entrance pit; installed 48-inch-diameter casings on both sides of river; bored under Salinas River; reamed out borehole to a diameter of 40 inches; fused together a 700-foot-long string of

26-inch-diameter high-density polyethylene (HDPE) pipe; pressure tested the pipe string; pulled the pipe string in under the river; and then pressure-tested the installed pipeline again. Contractor then turned their attention to installation of 24-inch-diameter ductile iron pipe via open cut construction in North River Road. This work required hard closure of North River Road for 4 weeks.

### 8.4.2 San Miguel Community Services District Recycled Water Project

The San Miguel CSD Recycled Water Project will upgrade the CSD wastewater treatment plant to meet California Code of Regulations Title 22 criteria for disinfected tertiary recycled water for irrigation use by vineyards. Potential customers include a group of agricultural irrigators on the east side of the Salinas River, and a group of agricultural customers northwest of the wastewater treatment plant. The project could provide between 200 AFY and 450 AFY of additional water supplies. The primary benefit from the CSD's Recycled Water project is higher groundwater elevations in the vicinity of the community of San Miguel due to in lieu recharge from the direct use of the recycled water.

Work completed on the San Miguel CSD Recycled Water Project in WY 2023 includes:

- Continued meetings with nearby wineries and vineyards regarding interest in purchasing recycled water and recycled water pipeline easement needs.
- Continued outreach to the Union Pacific Railroad for a crossing easement and potential purchase of adjacent property.
- Survey pipeline alignment for design.
- Prepare California Environmental Quality Act (CEQA) Project description and begin developing the Initial Study / Mitigated Negative Declaration.

### 8.4.3 Blended Water Project

Private entities and individuals are working actively with the City of Paso Robles and numerous agricultural irrigators to develop a project that can bring recycled water to the central portion of the Subbasin. As described above, the City estimates that as much as 2,200 AFY of recycled water will be available, and the volume will likely increase in the future as the City grows. The wastewater treatment plant is designed to process and deliver up to 4,000 AFY.

The goal of the Blended Water Project is to design and construct a pipeline system to connect to the City's Recycled Water Program and convey recycled water into the agricultural areas east of the City. Although there are many ways to use the Recycled Water Program water directly, certain challenges exist to make the water quality of the recycled water attractive to some agricultural users. Blending the recycled water with surplus NWP water, when available, may mitigate these challenges. The primary benefit from the Blended Water Project is higher groundwater elevations in the central portion of the Subbasin east of the City of Paso Robles due to reductions in groundwater pumping for irrigation and in-lieu recharge from the direct use of the blended water. Associated benefits may include improved groundwater quality from the use and recharge of high-quality irrigation water.

Key developments in 2023 include progress on the City of Paso Robles Recycled Water Program (see Section 8.4.1) and successful removal of the limitations on place of use for NWP water on irrigated agricultural lands within San Luis Obispo County—a constraint originally included in the existing water right held by the Monterey County Water Resources Agency.

The Blended Irrigation Water Supply Project TAC (Blended Water TAC) was formed by the PBCC in 2023. The Blended Water TAC met on July 13, 2023, to develop a scope of work for feasibility and preliminary

engineering study request for proposals (RFP) for the Blended Water Project. The Blended Water TAC issued an RFP for the Paso Robles Groundwater Basin Blended Water Supply Project Water Supply Feasibility and Engineering Study.

#### 8.4.4 Diversion of Flood Flows to Recharge Groundwater

In 2023 two temporary flood flow diversion projects were completed under the authority of California State Executive Order N-4-23. Between the two projects carried out by J. Lohr Vineyards Inc. and Kylix Vineyards California LP there is estimated to have been up to 47 AF of diverted flood water recharged to underlying aquifers during March and April 2023. The flood diversion reports submitted to the State are included in Appendix J.

#### 8.4.5 Expansion of Salinas Dam and Ownership Transfer

One of the conceptual projects discussed in the GSP (Section 9.5.2.7 of the GSP) is expansion of the Salinas Dam. The dam is owned by the United States Army Corps of Engineers (USACE), which jointly holds Santa Margarita Reservoir water rights permits with the City of San Luis Obispo (City of SLO). The USACE leases the dam to the SLOFCWCD, who oversees its operation and maintenance, including water delivery to the City of SLO.

The original dam design included the installation of spillway gates that would raise the reservoir elevation, however they were not installed due to seismic safety concerns. The storage capacity of Santa Margarita Reservoir could be expanded by installing the spillway gates, potentially increasing the maximum volume in the reservoir from 23,843 AF to 41,792 AF.

As described in the GSP, expanded reservoir storage might benefit the Subbasin by scheduling summer releases from reservoir storage to the Salinas River, which would benefit the Subbasin by increasing streamflow recharge through augmented flows in the Salinas River. Another way the project might indirectly benefit the Subbasin is if the City of SLO could increase their Santa Margarita Reservoir deliveries, thereby freeing up a portion of their NWP water allocation for purchase by the GSAs.

In 2018, the USACE initiated a Disposition Study to evaluate options to dispose of the Salinas Dam, including transferring ownership to a local agency. An option under investigation is to transfer the dam to a local agency such as the SLOFCWCD, thus the USACE has requested that the County Board of Supervisors, acting in their role as the SLOFCWCD, submit a letter expressing interest in potentially moving forward with the ownership transfer process. Such an ownership transfer would help facilitate the dam expansion, should it prove to be a cost-effective and worthwhile project.

Some of the known issues with transferring ownership of the dam include:

- The USACE has indicated that the Salinas Dam has some deficiencies but is considered low risk. As such, the USACE has indicated that the dam would need to be transferred “as-is”, with the USACE only willing to consider providing minimal funding to support retrofit.
- The State, as the DWR Division of Safety of Dams (DSOD), has indicated that seismic rehabilitation of Salinas Dam would be required. Any retrofit or structural improvements, including expanding the dam’s capacity, will require coordination with and approval by the DSOD following acquisition of the dam by the SLOFCWCD.
- Because the USACE has indicated they are unlikely to install the gates, ownership of the dam would need to be transferred from the federal government to a local agency to pursue the opportunity. This transfer would result in the Salinas Dam oversight responsibilities transferring from federal to state



jurisdiction and require the dam retrofit and expansion to meet any additional requirements from the State.

In WY 2023 the County Groundwater Sustainability Director made a request to DWR to reappropriate resources from the Expansion of Salinas Dam and Ownership Transfer effort to the ongoing work with the MILR Program rate study.

## 8.5 Summary of Progress towards Meeting Subbasin Sustainability

Since the publication of the GSP in 2020 there has been a mix of wet years, average years, and drought. The Subbasin in WY 2023 has returned to the same level of cumulative change in groundwater in storage estimated in the GSP. Historical groundwater pumping in excess of the sustainable yield has created challenging conditions for sustainable management. Of particular concern are communities and rural residential areas that rely solely on groundwater for their water supply<sup>3</sup> (see Figure 10). During WY 2023, several dry wells were replaced, a direct result of declining water levels. The distribution of these dry well replacements that occurred during WY 2023 is shown on Figure 10.

Actions are underway to collect data, improve the monitoring and data collection networks, and coordinate with affected agencies and entities throughout the Subbasin to develop solutions that address the shared mutual interest in the Subbasin's overall sustainability goal.

### 8.5.1 DWR Acceptance of Revised GSP

On January 21, 2022, DWR released an official 'incomplete' determination for the Paso Robles Subbasin GSP. The Paso Robles Subbasin GSAs retained a consultant to address the deficiencies identified in the GSP and resubmitted the revised GSP to DWR before the July 20, 2022, deadline. On June 20, 2023 DWR released a determination letter approving the revised GSP. Included with the June 20, 2023, determination letter is a Statement of Findings and Staff Report. Several recommended corrective actions are presented in the Staff Report that should be considered by the GSAs for the first periodic evaluation of the GSP. The June 20, 2023, determination letter with attachments is included in Appendix K.

### 8.5.2 Subsidence

Land subsidence is the lowering of the land surface. As described in the GSP, several human-induced and natural causes of subsidence exist, but the only process applicable to SGMA are those due to permanently lowered ground surface elevations caused by groundwater pumping (M&A, 2020). Historical subsidence can be estimated using InSAR data provided by DWR. InSAR measures ground elevation using microwave satellite imagery data. The GSP documents minor subsidence in the Subbasin using data provided by DWR depicting the difference in InSAR measured ground surface elevations between June 2015 and June 2018. These data show that subsidence of up to 0.025 feet may have occurred during this 3-year period in a few small, isolated areas of the Subbasin (M&A, 2020). The GSP established minimum thresholds for InSAR measured land subsidence as "no more than 0.1 foot in any single year and a cumulative 0.5 foot in any five-year period", as measured using InSAR between June of one year and June of the following year (M&A, 2020).

Updated InSAR data has been provided by DWR through October 2023. As discussed in the GSP, to minimize the influence of elastic subsidence, changes in ground level should be measured annually from June of one year to June of the following year (M&A, 2020). For this WY 2023 Annual Report, the single-year land subsidence was measured using InSAR from June 2022 through June 2023 and the 5-year land subsidence land subsidence was measured from June 2018 through June 2023. According to Towill, Inc. (2023) there is a potential error of +/- 18 millimeters, or 0.059 feet associated with the InSAR measurement and reporting

methods. Therefore, an InSAR measured land surface change of less than 0.059 feet is within the noise of the data and is equivalent to no evidence of subsidence. Considering this range of potential error, examination of the single-year change InSAR data from June 2022 to June 2023 show that zero land subsidence has occurred (see Figure 16). Considering the same potential error for the 5-year cumulative change InSAR data from June 2018 to June 2023 it is apparent that as much as 0.14 feet of subsidence has occurred during this period (see Figure 17). Although minor land subsidence is documented during the 5-year period of June 2018 to June 2023, neither of these results indicate an undesirable result as specified by the land subsidence minimum thresholds. The GSAs will continue to monitor and report annual subsidence as more data become available.

### 8.5.3 Interconnected Surface Water

Ephemeral surface water flows in the Subbasin make it difficult to assess the interconnectivity of surface water and groundwater and to quantify the degree to which surface water depletion has occurred. The revised GSP submitted to DWR in July 2022 identifies potential surface water/alluvial groundwater connection along certain sections of the Salinas River, along the middle reach of the Estrella River (from Shedd Canyon to Martingale Circle) and along San Juan Creek upstream of Spring Creek (Paso Robles Subbasin GSAs, 2022). There is no evidence that the Salinas River surface water flows are connected to the underlying Paso Robles Formation Aquifer (Paso Robles Subbasin GSAs, 2022). The potential connection between the surface water system along the middle reach of the Estrella River (from Shedd Canyon to Martingale Circle) and along San Juan Creek upstream of Spring Creek, and the underlying Paso Robles Formation Aquifer is unknown but sufficient evidence exists that there could potentially be a connection, and therefore further investigation in these areas is recommended (Paso Robles Subbasin GSAs, 2022). At this time, there are insufficient data available to adequately assess the interconnectivity of surface water and groundwater and the potential depletion of interconnected surface water. Although there is at present only a single Alluvial Aquifer RMS well in the Subbasin, seven existing alluvial wells are monitored including three wells along the Salinas River, one well next to the Estrella River near Jardine Road and one well next to San Juan Creek about 7 miles above Shandon (Paso Robles Subbasin GSAs, 2022). Additional Alluvial Aquifer wells will need to be established in the monitoring network before groundwater/surface water interaction can be more robustly analyzed. The Recommended Expanded Groundwater Level Monitoring Network for the Paso Basin produced by the Expanded Monitoring Network TAC (see Section 8.3.5) includes a plan to install new alluvial monitoring wells and address these data gaps.

### 8.5.4 Groundwater Quality

Although groundwater quality is not a primary focus of SGMA, actions or projects undertaken by GSAs to achieve sustainability cannot degrade water quality to the extent that they would cause undesirable results. As stated in the GSP, groundwater quality in the Subbasin is generally suitable for both drinking water and agricultural purposes (M&A, 2020). Eight COCs were identified and discussed in the GSP that have the potential to be impacted by groundwater management activities. These COCs identified in the GSP are salinity (as indicated by electrical conductivity), TDS, sodium, chloride, nitrate, sulfate, boron, and gross alpha. For this WY 2023 Annual Report, trends of concentrations of these eight COCs were analyzed through WY 2023 using data from the GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA) database (GAMA, 2024). All COCs reviewed show a steady concentration trend since 2016.

Overall, there are no significant changes to groundwater quality since 2016, as documented in the GSP, preceding annual reports, and this WY 2023 Annual Report. Implementation of sustainability projects and/or management actions, as presented in the GSP, in this WY 2023 Annual Report, or in future reports or GSP updates, are not anticipated to result in degraded groundwater quality in the Subbasin. Any potential changes in groundwater quality will be documented in future annual reports and GSP updates.

### 8.5.5 Summary of Changes in Basin Conditions

Groundwater elevations observed in the Subbasin during WY 2023 are generally higher than the previous year across a majority of the Subbasin, due to above-average rainfall conditions during the winter of 2022/2023. Although groundwater elevations in a few of the Paso Robles Formation Aquifer RMS wells are stable to slightly increasing during the past few years, groundwater elevations in several of the RMS wells are continuing to trend downward. In most years (WY 2023 being the exception) groundwater pumping continues to exceed the estimated future sustainable yield and the projects and management actions described in the GSP and in this WY 2023 Annual Report will be necessary to bring the Subbasin into sustainability.

### 8.5.6 Summary of Impacts of Projects and Management Actions

Additional time will be necessary to judge the effectiveness and quantitative impacts of the projects and management actions either now underway or in the planning and implementation stage. However, it is clear that the actions in place and as described in this WY 2023 Annual Report are a good start towards reaching the sustainability goals laid out in the GSP. It is too soon to judge the observed changes in basin conditions against the interim goals outlined in the GSP, but the anticipated effects of the projects and management actions now underway are expected to significantly affect the ability of the Subbasin to reach the necessary sustainability goals.